

*CDPHE All Hazards Internal Emergency Response
and Recovery Plan*

*ANNEX B: Colorado Crisis
Standards of Care Plan
May 10, 2018*



COLORADO
Department of Public
Health & Environment



Pursuant to the authority vested in the Office of the Governor of the State of Colorado, and pursuant to the relevant portions of the Colorado Disaster Emergency Act, 24 - 33.5 - 704(5) *et seq.*, C.R.S., I, John W. Hickenlooper, Governor of the State of Colorado, hereby approved Annex B: Colorado Crisis Standards of Care as an Annex to the CDPHE All Hazards Internal Emergency Response and Recovery Plan.

Given under my hand and Executive
Seal of the State of Colorado, this
_____ day of _____ 2018.

John W. Hickenlooper
Governor

I. Executive Summary

The Colorado Department of Public Health and Environment (CDPHE) serves the citizens of Colorado by providing high-quality, cost-effective public health and environmental protection and educational services focused on evidence-based best practices in the public health and environmental arenas. To accomplish this and the department's mission to protect and improve the health of Colorado's people and the quality of its environment, CDPHE must ensure plans are in place to support the department's mission to provide support to our local environmental, healthcare and public health partners.

This Crisis Standards of Care Plan is intended to provide comprehensive guidance and support to manage disasters and emergencies within the state of Colorado that threaten healthcare and public health. This plan provides the structure for coordinating response activities and guidelines for altering normal patient care and treatment decisions. This plan is designed to assist healthcare providers in their decision making with the intention of maximizing patient survival and minimizing the adverse outcomes that might occur due to changes to normal operations when the volume of patients and their resource needs far surpass available capabilities and the capacity of healthcare professionals and facilities to provide normal standards of care.

The Crisis Standards of Care Plan is assigned as Annex B of the CDPHE Internal Emergency Response and Recovery Plan. Additionally, this plan is assigned as an appendix under the Emergency Support Function (ESF) 8 annex to the Colorado Hazard and Incident Response and Recovery Plan (CHIRRP).

A. Plan Activation

This plan is activated in emergency situations requiring healthcare and public health resources or protective actions that exceed the capabilities of the local jurisdictions. Activation will occur following a declaration of a local disaster, upon request by the local jurisdiction, or in any incident affecting the health and safety of employees or the public. This plan can only be activated following the Governor's Declaration of a Public Health Emergency and may be accompanied by associated Executive Orders.

B. Who May Activate the Plan?

- Executive Director of the CDPHE or Designee
- Chief Medical Officer or Designee
- Director of Environmental Health Programs
- Director of Public Health Programs
- Director of the Office of Emergency Preparedness and Response Division or Designee
- Department Emergency Response Coordinator or Designee (ESF 8 Lead)

Larry Wolk, M.D., MSPH
Executive Director and Chief Medical Officer
Colorado Department of Public Health and Environment

Signature Date

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Table 1 – Record of Change

Record of Change • 6

V. Introduction

A. Background

The Colorado Department of Public Health and Environment (CDPHE) coordinated with representatives from public health, emergency management, first responders, healthcare, legal, and other partners to create this Crisis Standards of Care (CSC) Plan for the State of Colorado. This project was guided by a Crisis Standards of Care Workgroup that received direction and approval from the Governor's Expert Emergency Epidemic Response Committee (GEEERC).

The Crisis Standards of Care Plan was developed through the evolution of two previous documents. The first document, the Pandemic Flu Plan, was originally authored in 2005 and was updated most recently in 2018. In 2009, the GEEERC recommended the development of a new plan to address the extreme conditions of a pandemic outbreak. The Altered Standards of Care Plan was authored and implemented in 2009. This plan was based upon extreme conditions stemming from a pandemic flu outbreak. In 2013, the GEEERC recognized the need to update and broaden this plan to an all-hazards based plan that dealt with the "crisis" impact to the healthcare system. The Crisis Standards of Care Workgroup, a subcommittee workgroup of the GEEERC, was created to accomplish this task.

The process for development of the Plan included stakeholder engagement sessions, workgroup meetings, and a comment and review process. Ethical and legal considerations and principles have guided the process. The goal of this process was to provide an ethical, reasonable, transparent and flexible framework to achieve the following:

- Provide guidance to Colorado healthcare providers, systems and facilities to support consistent and equitable resource allocation decisions during a catastrophic disaster;
- Optimize the quality of care that can be provided to the largest number of patients presenting to an overwhelmed healthcare system (population based healthcare);
- Minimize serious illness and death by administering a finite pool of resources to those who have the greatest opportunity to benefit from them;
- Maximize self-triage and self-care by the general public using a variety of media to deliver public health messages;
- Provide a legal framework for developing triage decisions and utilizing nonstandard healthcare facilities and resources in an emergency;
- Maximize force protection to allow the healthcare delivery system to recover quickly following the CSC event.

Stewardship of resources, duty to care, soundness, fairness, reciprocity, proportionality, transparency, and accountability are guiding ethical elements of this Plan. This ethical foundation has been integrated into a set of public health and emergency response principles to establish this common framework for statewide CSC.

During a public health disaster, the GEEERC will facilitate the development of incident-specific priorities and guidance for the delivery of healthcare and use of scarce medical resources. This Plan addresses:

- Triage for emergency medical services (EMS);
- Primary, secondary, and tertiary triage for healthcare facilities;
- Expanded scopes of practice, as approved by regulatory authorities;
- Priorities for medical resources including space, staff, and supplies;
- Considerations for healthcare access points, including hospitals, out-of-hospital facilities, and alternate care sites; and

- Considerations for supply line protection and use of, supply reserves when ongoing or further system degradation is expected.

As the statewide advisory group, the GEEERC will establish and modify guidance for healthcare institutions and providers as needed during an event, but will not manage the emergency response.

B. Purpose

The purpose of the Colorado Crisis Standards of Care Plan is to provide a framework and tools for altering normal patient care, staffing, medical equipment, supplies, and treatment decisions in any type of healthcare setting. This Plan is designed to assist healthcare providers in their decision making with the intention of maximizing patient survival and minimizing the adverse outcomes that might occur due to changes to normal operations when the volume of patients surpasses the available capabilities and capacity of healthcare providers/facilities and normal standards of care can no longer be maintained. Regardless of the location or magnitude of an event, this Plan is to be implemented only when the governor has declared a disaster.

It is important that the Crisis Standards of Care Plan is not considered a substitute for healthcare emergency management planning. These standards are intended to guide the allocation of scarce resources after other measures, such as conservation of resources and strategies for sharing (e.g. the Colorado Hospital Memorandum of Understanding), have been exhausted.

The Colorado Crisis Standards of Care Plan, consistent with the principles of all-hazard preparedness, is applicable to any catastrophe in which demands related to patient care and public health needs radically exceed available resources. Appendices have been included to provide tools to assist with triage and allocation of scarce resources decisions in some specific types of catastrophic events.

The Plan builds on past pandemic influenza planning initiatives, existing interdisciplinary relationships, crisis planning practices in other states, and planning guidance provided in the National Academy of Medicine (NAM) Crisis Standards of Care Toolkit (<http://www.nationalacademies.org/hmd/Reports/2013/Crisis-Standards-of-Care-A-Toolkit-for-Indicators-and-Triggers.aspx>). Additional resources utilized included Arizona Crisis Standards of Care Plan: A Comprehensive and Compassionate Response February 2015 (<http://www.azdhs.gov/documents/preparedness/emergency-preparedness/response-plans/azcsc-plan.pdf>); Connecticut Department of Public Health October 2010 Standards of Care: Providing Health Care During A Prolonged Public Health Emergency (http://www.ct.gov/dph/lib/dph/legal/standards_of_care_final.pdf); University of Toronto Joint Centre for Bioethics Pandemic Influenza Working Group Stand on Guard for Thee: Ethical Considerations in Preparedness Planning for Pandemic Influenza 2005 (http://jcb.utoronto.ca/people/documents/upshur_stand_guard.pdf).

The NAM toolkit outlines five principles that provide guidance to CSC planning across the nation:

- A strong ethical grounding based in transparency, consistency, proportionality, and accountability;
- Integrated and ongoing community and provider engagement, education, and communication;
- The necessary legal authority and legal environment in which CSC can be ethically and optimally implemented;
- Clear indicators, tactics, and lines of responsibility; and
- Evidence-based, clinical processes and operations.

C. Scope

Crisis Standards of Care may apply during a catastrophic disaster impacting local or statewide areas.

When a situation is statewide or nationwide – When the catastrophic disaster impacts healthcare resources and capability across the nation or throughout Colorado and the Governor has declared a state of emergency, these Crisis Standards of Care may apply to all healthcare professionals, clinics, patients and facilities in the State of Colorado.

When the situation is limited – When the catastrophic disaster impacts healthcare resources within a particular geographic area of Colorado, a local declaration of emergency, and the Governor's declaration of disaster has been made, these Crisis Standards of Care will apply to the medical community affected in the jurisdiction where the disaster has been declared.

D. Planning Assumptions

The following planning assumptions were made during the development of this document.

- This Plan is meant to serve as a framework for decisions that must be considered during a catastrophic disaster.
- Healthcare coalitions will be involved in coordinating planning prior to an event requiring the use of CSC. Healthcare coalitions will also be involved in coordinating information and resources during a CSC activation.
- This document is not final; it is meant to be fluid, flexible and will be reviewed at least bi-annually and revised as new information becomes available.
- This Plan applies to medical professionals including those in clinical and private practice. This Plan provides specific guidance for vaccine distribution and administration which are often provided by private practice providers.
- It is important to recognize a catastrophic disaster has a natural progression or arc. Expected resupplies, additional personnel resources and local, state and federal support affect the arc, and excellent situational awareness is critical for making ethical decisions about resource allocation throughout the disaster.
- The Plan should be considered at multiple points along the event arc. As the incident occurs, there may be times when the availability of resources does not meet demand.

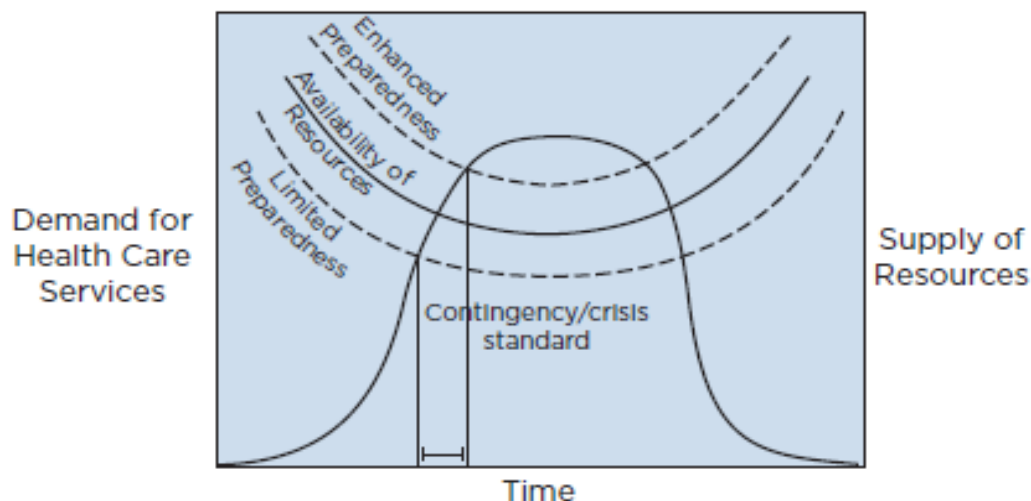


Figure 1: Demand for healthcare services and supply of resources as a function of time after disaster onset, taking into account care capacity as a function of time (Hanfling, Aletevov, Viswanathan, & Gostin, 2012, pp. 42)

- The emergency response and management needs vary throughout a catastrophic disaster as the event cycles through activation, response, and recovery. This Plan supports healthcare provider decision making throughout the event.

- The Plan does not encompass every scenario that a community may face during a catastrophic disaster and is based on information that is currently available.
- While this Plan is intended to provide broad-based guidance, a future catastrophic disaster may have a markedly different course from previous incidents; thus, this Plan may provide little or no value, or may even be counterproductive, depending on specific features of future disasters. Every use of this Plan should be carefully considered in the current context.
- Management of recovery efforts is not addressed in this plan. Recovery will be managed through existing plans and processes employed by emergency management, healthcare, and public health agencies. Transition away from utilization of CSC will be addressed according to the needs of the impacted communities and healthcare providers.
- The Colorado Attorney General's Office has reviewed and commented on legal matters with regard to this document during the drafting phase. The Colorado Attorney General's Office also has worked with the Colorado Department for Public Health and Environment to identify state statutes, orders, and regulations that may be waived or modified to facilitate appropriate responses to a healthcare crisis. There are relevant federal statutes and regulations which require formal waivers from the federal government before states are excused from compliance, even during emergency situations; and examples of these laws have been called out in the body of these Crisis Standards of Care.

There are several criteria that must be met for local jurisdictions to request the declaration of a disaster emergency by the governor and activation of the CSC. A disaster may occur at an individual hospital or healthcare facility, requiring short-term alteration of normal provision of care at that location. Activation of CSC will only occur when the Governor has declared a state of emergency at a state or local level during a widespread catastrophic disaster, impacting multiple hospitals/ healthcare facilities in a large geographical area or densely populated urban area.

The following criteria describe a situation that may require CSC at the state or local level:

- Staff, supplies, infrastructure or other vital resources are unavailable or undeliverable to healthcare facilities;
- Similar strategies are required by other healthcare delivery systems;
- Patient transfer is not possible or feasible, at least in the short term;
- Access to medical countermeasures (vaccines, medications, antidotes, blood products) is likely to be limited and not sufficient to meet expected demands;
- Available local, regional, state, and federal resource caches (equipment, supplies, medications) have been distributed, and no short-term resupply of such stocks is foreseeable; and
- Multiple healthcare access points within a community or region are impacted (Hanfling et al., 2012, pp. 1-10).

E. Ethical Foundations/Framework

CDPHE is committed to helping protect the health and well-being of the community, and to ensuring responsible stewardship of limited resources. This extends to the duty to provide and adhere to a defined ethical framework in preparing for and responding to disasters. To appropriately respond to a catastrophic disaster in which resources are overwhelmed, the needs of the greater community generally must rise above the needs of any single individual, and there may be circumstances in which resources should be diverted from patients with a lower likelihood of benefit to those with a greater likelihood to benefit. In making such resource allocation decisions, healthcare professionals will be faced with trying to balance several integrated elements: their accustomed, well-established standards of practice; professional codes of ethics; the primacy of principles such as beneficence, non-maleficence, justice and autonomy; concern for one's own personal and family safety; and the demands of working in an extremely stressful environment where there are too many ill or injured and too few resources.

The people of Colorado are best served by addressing early on and forthrightly the complex ethical concerns surrounding planning and response to such a disaster, and by establishing ethically acceptable standards that can be universally applied. This Plan follows an ethical framework, which values the classical principles of medical ethics including a person's right to self-determination and the healthcare provider's obligations to beneficence, non-maleficence and justice. This Plan is especially concerned with the principle of justice, as it is intended to facilitate fair decision-making when healthcare professionals and others face the inevitable reckoning, in the midst of a catastrophic disaster, with the dilemma of very limited or unavailable resources in the face of critical human needs.

Ultimately, allocation of limited resources should support achieving the greatest measurable benefit for the greatest possible number of persons over the long run. During an incident with scarce resources, all therapies that might usually be available may not be appropriate for some patients, yet other curative and/or comfort care treatments should still be provided. There is also an ethical duty to maximize preparedness efforts and adopt prevention strategies that will minimize the scarcity of resources and the need to ration resources at a later time during a disaster. These Crisis Standards of Care are based upon several ethical principles that have been recognized as central to a just process for allocating limited resources during catastrophic disasters.

Fairness – Every healthcare provider should attempt to be fair to all those who are affected by the disaster, without regard to factors such as race, ethnicity, socioeconomic status, disability or region that are not medically relevant.

Proportionality – any reduction in the quality of care provided should be commensurate with the degree of emergency and the degree of scarcity of resources.

Solidarity - when limited available resources are unable to meet everyone's needs, all people should consider the greater good of the entire community.

Participatory – planners and decision-makers should engage the community, healthcare providers, and emergency management agencies during the development of CSC, which can encourage greater understanding, clarity, and trust when CSC implementation is required.

F. Legal Framework

1. Supporting Regulations

Coordination of any response during a catastrophic disaster that impacts healthcare is contingent upon having sufficient legal authority to adequately address the varying needs of the affected community. Pursuant to C.R.S. §25-1.5-102(1)(b), the Colorado General Assembly has tasked CDPHE with the duty “to investigate and monitor the spread of disease that is considered part of an emergency epidemic as defined in section C.R.S. §24-33.5-703(4), to determine the extent of environmental contamination resulting from the emergency epidemic, and to rapidly provide epidemiological and environmental information to the Governor's Expert Emergency Epidemic Response Committee (GEEERC), created in section C.R.S. §24-33.5-704(8).” CDPHE exercises this power, in conjunction with local public health agencies at the county level, to assess the public health risk created by an emergency event and determine the appropriate response. C.R.S. §25-1-506(3)(b)(V), (VIII) and (X). Coordination among all appropriate public health authorities will help ensure consistency with other response measures and prevent losing the public's confidence due to receipt of potentially conflicting information.

During a catastrophic disaster, the medical community will likely be managing scenarios not contemplated by current licensing requirements and standards of care. Because there is no way to predict with absolute certainty what the next healthcare crisis will entail, healthcare providers managing the emergency will need the flexibility to alter their practices to meet the demands created by the emergency. While medical standards of care in Colorado are organizational- and/or discipline-specific and not set forth in statute or

rule, statutes pertaining to various healthcare professions make it unlawful and/or grounds for discipline by the appropriate regulatory board for the licensee to fail to meet generally accepted standards of practice. Additionally, the liability associated with a breach of such standard is codified in the Health Care Availability Act, C.R.S. §13-64-101 *et seq.* While critical standards concerning worker and patient safety, including appropriate infection control precautions, must be maintained to ensure that medical care is provided during an emergency event; it may be necessary to alter certain standards regarding, for example, scopes of practice, civil and criminal liability, and confidentiality requirements for patient records. Furthermore, some elective procedures may need to be suspended in order to devote the necessary medical resources to meeting the needs of those urgently impacted by the emergency event.

2. Authority

The governor has the authority pursuant to the Colorado Disaster Emergency Act (“Disaster Act”) of 1992, C.R.S. § 24- 33.5-701 *et seq.*, to declare a disaster emergency by executive order or proclamation when he determines that a disaster has occurred or that such a disaster or the threat thereof is imminent. C.R.S. §24-33.5-704(4). Disaster is defined as “the occurrence or imminent threat of widespread or severe damage, injury, or loss of life or property resulting from any natural cause or cause of human origin, including but not limited to fire, flood, earthquake, wind, storm, wave action, hazardous substance incident, oil spill or other water contamination requiring emergency action to avert danger or damage, volcanic activity, epidemic, air pollution, blight, drought, infestation, explosion, civil disturbance, hostile military or paramilitary action, or a condition of riot, insurrection, or invasion existing in the state or in any county, city, town or district in the state.” C.R.S. § 24-33.5-703(3). Disaster declarations last for no more than thirty (30) days, unless renewed by the governor, or until the emergency event no longer exists and the governor terminates the state of emergency by executive order or proclamation. C.R.S. § 24-33.5-704(4).

Declaration of a disaster emergency activates state, local and interjurisdictional emergency plans for the areas in question. C.R.S. §24-33.5-704(5). The Disaster Act provides the governor with broad powers during the state of emergency, including the ability to “suspend the provisions of any regulatory statute prescribing the procedures for conduct of state business or the orders, rules, or regulations of any state agency, if strict compliance with the provisions of any statute, order, rule, or regulation would in any way prevent, hinder, or delay necessary action in coping with the emergency.” C.R.S. § 24-33.5-704(7). The Disaster Act also establishes the GEEERC, which advises the governor with respect to possible measures to implement during an emergency, including but not limited to “ordering physicians and hospitals to transfer or cease admission of patients or perform medical examinations of persons.” C.R.S. § 24-33.5-704(8)(e).

In recognition of its responsibilities should a disaster emergency be declared, the GEEERC has prepared several draft executive orders for the governor’s potential use during a public health emergency. It must be noted that while the governor’s powers pursuant to the Disaster Act are broad, the governor does not have the authority to modify or waive federal law; thus, any executive orders addressing altered standards concerning federal law do not provide an absolute shield from any federal tort claims and other legal liability. A draft executive order activating the CSC Plan includes the authority to take and use any necessary medical equipment and supplies for the purpose of responding to the emergency event, in addition to empowering the GEEERC to act as a triage team for facilities or jurisdictions that do not have this capacity, and authorizing CDPHE to redistribute medical supplies and equipment to meet the highest priority needs. Additional executive orders contemplate addressing compliance with federal requirements such as the Emergency Medical Treatment and Active Labor Act of 1986 (EMTALA); acquisition and dispensing of medications, including antivirals; suspension of licensure standards; isolation, quarantine, and social distancing; transferring mentally ill patients and suspension of death certificates and burial practices may also be implemented when crisis standards are warranted. The executive order process and draft executive orders can be found in the CDPHE All-Hazards Internal Emergency Response and Recovery Plan, Annex Q: Executive Orders. Other executive orders that could be drafted in anticipation of a healthcare crisis event include:

- Allowing for the operation of alternate care sites;
- Altering childcare standards (e.g. caregiver/child ratios or emergency caregiver provisions); and
- Allowing medical staff to prescribe medications to patients with whom they do not have a professional relationship.
- Adjusting the parameters of pharmacists for providing drugs or refilling prescriptions.

If it is determined that existing orders, rules or regulations are hindering response to the catastrophic disaster or if guidance issued in this document needs to be implemented, CDPHE will convene the GEEERC to determine the most prudent course of action to take. An executive order detailing the current circumstances, the order, rule or regulation to be modified, who or what is affected and the duration the order is in effect will be drafted and sent to the Governor's Office for approval and signature. Once approved, CDPHE will make the executive order information available to response partners, the media and the public.

At the local level, the principal executive officer of a political subdivision may declare a local disaster for a period of up to seven (7) days, renewable by or with the consent of the governing board of the political subdivision. C.R.S. § 24-33.5-709. The effect of such a declaration is to activate the response and recovery aspects of any and all local and interjurisdictional disaster emergency plans, and also to authorize the furnishing of aid and assistance under such plans. Declaration of a disaster at the local level would not trigger the implementation of the Crisis Standards of Care Plan, as the CSC Plan can only be implemented by a signed executive order from the governor declaring a disaster emergency and activating the Colorado Hazards Incident Response and Recovery Plan (CHIRRP), which includes this CSC Plan as an annex.

Additionally, the federal government may play a role in altering certain standards during an emergency event. The Public Health Security and Bioterrorism Preparedness and Response Act of 2002 ("Bioterrorism Preparedness Act") allows federal authorities to waive or modify certain state and federal laws during a federally declared emergency event. 42 U.S.C. § 262a. Likewise, the Social Security Act of 1935 authorizes the secretary of HHS to temporarily waive or modify certain Medicare, Medicaid, Children's Health Insurance Plan (CHIP), and HIPAA requirements when the secretary has declared a public health emergency pursuant to the Public Health Service Act and the president has declared an emergency or disaster. For example, EMTALA requires hospitals to stabilize any patient who presents for treatment prior to transfer. 42 U.S.C. § 1395dd. Section 1135 waivers may be an appropriate mechanism to authorize alternate screening locations during a catastrophic disaster. 42 U.S.C. § 1320b-5. The Centers for Medicare and Medicaid Services (CMS) within the U.S. Department of Health and Human Services (HHS) issued guidance in December 2007 concerning waiving sanctions for hospital EMTALA violations located within areas covered by a public health emergency declaration. The declaration must be made by both the president, pursuant to the National Emergencies Act of 1976 or the Stafford Disaster Relief and Emergency Assistance Act of 1988 (42 U.S.C. § 68), and the secretary of HHS pursuant to Section 319 of the Public Health Service Act of 1944. CMS currently requires states or localities to present requests for 1135 waivers in the case of a disaster or public health emergency. Thus, while the statute remains unchanged, HHS has expressed its intent not to enforce its requirements during a federally declared emergency. The governor may request a non-enforcement waiver of additional key federal regulations and rules. A draft letter will be prepared to speed its issuance when an emergency situation arises.

3. *Liability*

The legal concept of liability applies when a public health worker or a volunteer injures someone in the course of performing public health actions. Emergency responders may receive some form of immunity from state liability in four different ways. First, state law provides protection for a "Good Samaritan", meaning a person who in good faith renders emergency assistance without compensation at the place of an emergency or accident. C.R.S. § 13-21-108. Thus, those who spontaneously respond to an emergency event and render care at the scene should be protected from state liability, unless the acts or omissions of the responder were grossly negligent or willful and wanton.

Second, the Colorado Governmental Immunity Act (CGIA) provides liability protection for state and local government employees concerning claims based on state law. C.R.S. § 24-10-103(4)(a) includes “authorized volunteer” in the definition of a public employee, meaning “a person who performs an act for the benefit of a public entity at the request of and subject to the control of such public entity.” Public employees are not liable for injuries arising out of an act or omission occurring during the performance of the employee’s duties and within the scope of employment, unless the act or omission is willful or wanton. C.R.S. § 24-10-105. A public entity is immune from liability in all claims for injury that lie in tort, or could lie in tort, with certain exceptions specifically set forth in the CGIA. C.R.S. § 24-10-106. The exceptions to immunity which might apply to public health activity include: (a) the operation of a motor vehicle, owned or leased by the public entity, by a public employee while in the course of employment (except emergency vehicles operated in certain circumstances) (b) the operation of a public hospital, (c) a dangerous condition of a public building, and (d) a dangerous condition of a public hospital. C.R.S. § 24-10-106(1)(a), (b), (c) and (e). In these situations, the public entity might be liable for the acts of the employee. In sum, state and local public health employees, including authorized volunteers, are not personally liable for actions they take within the scope of their employment to meet a public health emergency, unless the act causing injury is willful and wanton.

A third possibility for liability protection is found in the Colorado Disaster Emergency Act of 1992 (“Disaster Act”). Neither state employees nor GEEERC members are liable for claims based on the GEEERC’s advice to the Governor absent wanton or willful misconduct or willful disregard of the best interests of protecting public health. C.R.S. § 24-33.5-711.5(1). Any damages associated with such liability are capped at \$100,000 for an injury or damage suffered by one person or \$300,000 for an injury or damage suffered by three or more persons. When the Governor issues executive orders directing measures to combat an emergency epidemic, the Disaster Act provides immunity from civil liability for “public health workers” who completely comply in good faith with the executive orders. C.R.S. § 24-33.5-711.5(2). The Disaster Act also provides that a “hospital, physician, health insurer or managed healthcare organization, healthcare provider, public health worker, or emergency medical services provider” who completely complies in good faith with executive orders issued to combat an emergency epidemic shall be immune from civil liability. C.R.S. § 24-33.5-711.5(2). Thus, those practitioners acting at the direction of the state and in compliance with the executive order(s) should be immune from liability.

With respect to volunteers, three additional statutes provide some liability protection. C.R.S. § 24-33.5-824 provides protection for qualified volunteers, defined as a member of a volunteer organization that enters into a memorandum of understanding (MOU) with a county sheriff, local government, local emergency planning committee, or state agency pursuant to section 24-33.5-822. If the volunteer is called into service through their volunteer organization, they are entitled to the protections of the CGIA and some additional employment protections described in C.R.S. § 24-33.5-825 for public employees and § 24-33.5-826 for private employees. Article 29.3 of Title 25 of the Colorado Revised Statutes provides liability protections for volunteer health practitioners who are registered with a registration system that complies with C.R.S. § 12-29.3-105. This also applies to health practitioners who are licensed in another state and are registered with a compliant registration system. Liability for such volunteer healthcare practitioners may be impacted by C.R.S. § 13-21-115.5, which provides civil liability protection for a volunteer if he/she is protected by the federal Volunteer Protection Act of 1987, and any damages or injury were not caused by misconduct.

4. *Workers Compensation*

Workers compensation applies when the public health worker or volunteer is injured while performing public health duties. The Colorado Workers Compensation Act of 2016 (“Compensation Act”) defines “employee” to include, “Every person in the service of the state, or of any county, city, town, or ... of any public institution or administrative board thereof under any appointment per contract of hire, express or implied...” C.R.S. § 8-40-202(1)(a)(I)(A). In general, the Compensation Act requires employers to provide coverage for injuries that occur within the scope of employment, which would include any injury suffered in the course of performing actions to meet a public health emergency. Volunteers also will be considered employees for purposes of receiving workers’ compensation benefits in certain circumstances provided by the Compensation Act,

including volunteer disaster teams, volunteer ambulance teams and groups. See C.R.S. § 8-40-202(1)(a)(I)(A) and (1)(b). C.R.S. § 8-41-301 includes coverage for “mental impairment” as part of the workers compensation package as well to include mental health coverage.

Workers compensation coverage is in effect for public employees who perform duties within the scope and course of their employment during the disaster. State statute provides healthcare volunteers with state workers compensation benefits, if appropriated, in disasters to a “physician, healthcare provider, public health worker, or emergency medical service provider who is ordered by the governor or a member of the disaster emergency forces of this state to provide specific medical or public health services during and related to an emergency epidemic and who complies with such an order without pay or other consideration.” C.R.S. § 24-33.5-802(3).

5. *Privacy and Individual Liberty*

During an emergency, altered standards may also be necessary concerning privacy requirements and individual liberties. With respect to privacy, for example, the Health Insurance Portability and Accountability Act of 1996 (HIPAA) Privacy Rule, 45 C.F.R. Part 164, protects confidential patient information by requiring strict adherence to rules concerning when release of patient information is appropriate. HIPAA allows for the release of protected health information in certain circumstances generally related to treatment, payment, or healthcare operations. While CDPHE is not a covered entity and is authorized to receive protected health information as a public health authority, those submitting information that are covered entities must comply with HIPAA’s mandates. However, during an emergency, strict compliance with federal privacy requirements may not be possible prior to the necessity to share confidential patient information. The federal government demonstrated during Hurricane Katrina that it may exercise enforcement discretion if the HIPAA requirements were met “as soon as practicable,” rather than prior to the disclosure. See Office of Civil Rights, Department of Health and Human Services, Hurricane Katrina Bulletin #2: HIPAA Privacy Compliance Guidance and Enforcement Statement for Activities in Response to Hurricane Katrina (2005). When granted, section 1135 waivers related to HIPAA compliance apply only (1) in the emergency area and for the time period identified in the public health emergency declaration issued by the secretary of HHS; (2) to hospitals that have instituted a disaster protocol and apply to all patients at those hospitals; and (3) for up to 72 hours from the time the hospital implements its disaster protocol. When the declaration terminates, hospitals must comply with all privacy requirements for any patients still under their care, even if the 72-hour period has not elapsed since implementation of disaster protocols. See Department of Health and Human Services, Office of Civil Rights Bulletin, HIPAA Privacy in Emergency Situations (2014). Please note that HIPAA allows disclosures for treatment purposes, public health purposes, and certain disclosures to disaster relief organizations. See 45 CFR 164.510(b).

Traditional liberty interests may also be modified in deference to the need to abate harm during the emergency. Any decisions that impede upon the community’s liberties should be proportional to the need to protect the public’s health and should not exceed what is necessary to address the actual level of risk to or critical needs of the community. A common example of restraint against one’s liberty is the closing of public gathering places, i.e., social distancing, in an effort to stop the spread of disease. C.R.S. § 25-1-506(3)(b)(VII) and § 25-1.5-101(1)(a). The need to take this step must be measured against what other negative outcomes might occur solely based upon the closure.

6. *Procedures for Modification of Regulation*

Requests for modifications or suspensions of statutes and regulations from healthcare facilities will be submitted to the Colorado Department of Public Health and Environment for its review in conjunction with the GEEERC and recommendation to the Governor. If a request is recommended for approval, CDPHE will submit a waiver request to HHS if the requirement is federal or a proposed executive order to suspend a statute or rule, or emergency rulemaking to modify standards to the Governor for his/her signature. CDPHE may also request that the Governor preemptively issue executive orders before a request is received, to

protect the public health and safety. Additionally, the Governor may submit waiver requests to the federal government for waivers of federal requirements.

VI. *Concept of Operations*

A. *Framework for Incident Management*

This Crisis Standards of Care Plan is activated in an emergency event that is declared a disaster by the Governor of the State of Colorado, or his designee, and which impacts the provision of healthcare in such a way that usual standards of care quality become impossible to sustain. In such circumstances, individual healthcare facilities and organizations will manage their responses through their designated emergency operations plans and incident command structures. In turn, local healthcare providers, facilities and agencies will follow local processes to communicate with both county and state emergency operations centers as well as members of impacted healthcare coalitions to provide situational awareness regarding local response efforts and requests. Local disaster declarations may be necessary to support emergency management activities at the local level; but the Colorado Crisis Standards of Care are not activated without the Governor's declaration of emergency and a signed executive order activating the CSC Plan.

1. *Facility/Agency*

Healthcare facilities and agencies may be impacted by a catastrophic disaster before local and state agencies become aware of the event. This situation may require activation of emergency procedures at the facility to efficiently manage the event. The facility's emergency operations plan may include triage or other protocols for managing scarce resources.

Impacted facilities should coordinate within their local jurisdiction to utilize local resources, declare a local disaster, and to request a Governor's executive order for activation of crisis standards of care.

2. *Local Declaration of Emergency*

As a local jurisdiction assesses the impact of a catastrophic disaster, the jurisdiction may declare a local state of emergency. This declaration will facilitate utilization of local resources as well as reiterate the need for a state declaration of emergency and Governor's executive order. Declarations may allow access to emergency resources including funds which may be used to purchase scarce or dwindling resources. Additionally, a local declaration of emergency may activate the EOC and support staff to assist with an event. As a local jurisdiction works through managing an event, they should follow the ESF-8 resource ordering process or the State of Colorado Resource Mobilization Plan. Information regarding the ESF-8 Resource Ordering Process can be found in Appendix B. Resource Request Process.

Local jurisdictions will follow their normal protocols for declaring an emergency. The local jurisdiction will then make a request to CDPHE OEPR for the activation of the Crisis Standards of Care. Following a recommendation by the GEEERC, CDPHE will make a request directly or through the state emergency operations center for a Governor's executive order to activate crisis standards of care.

3. *State – Relaxing Regulations and Enacting Executive Orders*

During a catastrophic disaster, emergency management personnel, including public health and healthcare emergency managers, will recognize the need for Crisis Standards of Care. The request for utilization of the Crisis Standards of Care will be made by CDPHE or through the state emergency operations center to the Governor. The Governor will declare a state of emergency and issue an executive order activating the Crisis Standards of Care Plan to address the healthcare gaps resulting from the catastrophic disaster.

Table 2: CSC Activation Process

STEP 1:	Disaster Occurs or Escalates to Crisis Level
STEP 2:	Initial Discussion of Local Officials and CDPHE OEPR to Activate the GEEERC
STEP 3:	Decision Is Made by CDPHE OEPR to Activate the GEEERC
STEP 4:	GEEERC and Subject Matter Experts Convene and GEEERC Makes Recommendation to CDPHE to Request Utilization of CSC Plan
STEP 5:	CDPHE Requests Directly to Governor or through State Emergency Operations Center to Request CSC Activation
STEP 6:	Governor Approves Disaster Declaration for a Public Health Emergency with Associated Executive Orders for Execution including CSC activation
STEP 7:	Local Officials Implement CSC Plan
STEP 8:	Governor consults with GEEERC and CDPHE
STEP 9:	Notification of Deactivation of CSC
Step 10:	Deactivation of CSC

Table 3: CSC Activities

CDPHE OEPR Activities	• Convene GEEERC and SMEs for incident debriefing and discussion about next steps • Coordinate with healthcare coalitions and EOCs as appropriate for situational awareness • Distribute priorities and protocols to LPHAs, healthcare facilities, providers, and EMS • Notify other local, state, tribal and federal partners • Work with public information officers to distribute messaging about forthcoming CSC • Work with JIC/PIOs to ensure timely delivery of public messaging describing CSC implementation at healthcare facilities
Local Officials	• Maintain situational awareness within jurisdiction • Support local healthcare organizations and local public health in their efforts at the local level • Consider local disaster declarations and other supportive actions • Activate local DOCs/EOCs
GEEERC Activities	• Recommend priorities for allocation of medical resources • Recommend EMS, triage, and clinical protocols (e.g., ventilator use) (Additional clinical SMEs may need to be added to GEEERC) • Evaluate the effectiveness of protocols and priorities and availability of resources through the response • Identify threshold(s) for the suspension or rescinding of CSC and resumption of contingency or conventional care
Governor's Activities	• Declare Disaster Emergency • Issue Executive Order to Activate CSC

As the response to the catastrophic disaster transitions to the recovery phase, the need for crisis standards of care will be reduced. State and local agencies will coordinate to determine the point at which healthcare providers cease utilization of the crisis standards, and CDPHE will then request that the Governor terminate any executive orders authorizing crisis standards. This decision will be communicated to healthcare providers to ensure a definitive return to normal standards of care.

Table 4: CSC Direction, Control and Coordination

	State Level	Regional and County Level	Local and Facility Level
CSC Policy Groups • Protocols for EMS and healthcare • Priorities for allocating scarce resources – space, staff, and supplies	Governor’s Expert Emergency Epidemic Response Committee (GEEERC)	Locally Designated Policy Group	Clinical Care Committee
Public Health and Medical Response • Lead response for public health and medical services	State Health Department Operations Center (DOC)	County and Regional Health DOCs	Healthcare Facilities or Hospital Command Centers (HCCs)
Emergency Management • Lead response and recovery • Operational management and support	State Emergency Operations Center (SEOC)	County/Tribal EOCs	Municipal and Public Safety EOCs

B. Triggers

1. *Conventional – Contingency – Crisis*

Three levels of care are defined by the National Academy of Medicine and are the basis for determining likely levels of surge, resources, and staffing during a disaster. These levels are the basis for Crisis Standards of Care planning:

Conventional care: the demand for care is less than the supply of resources. Level of care is consistent with daily practices in the institution.

Contingency care: the demand for care surpasses conventional resources availability, but it is possible to maintain a functionally equivalent level of care quality by using contingency care strategies. The facility’s Emergency Operations Plan is activated.

Crisis care: the demand for care surpasses resource supply despite contingency care strategies. Normal quality standards of care cannot be maintained.

Table 5: Levels of Care Exist along a Continuum as Both Demand for Healthcare Services and Supply of Resources Change Over Time.

SITUATION	Conventional	Contingency	Crisis
SURGE STATUS	Healthcare facilities utilize normal bed capacity. Occasional and temporary surges of demand may occur that are temporary and may incur longer wait times for non-critical care as hospitals, ICUs, and emergency departments temporarily reach capacity.	Healthcare facilities have surged beyond maximum bed capacity. Emergency Operations Plans are in effect. Elective procedures delayed. Hospitals may be adding patients to occupied hospital rooms and non-patient care areas. Community healthcare facilities may be requested to surge. Alternate care sites may be opened.	Expanded capacity is still not sufficient to meet ongoing demand for care. Some patients needing care cannot be admitted to hospitals and instead will be sent home or to alternate care sites. Hospitals are adding patients to occupied hospital rooms and non-patient care areas. Community healthcare facilities are operating beyond normal scope of practice.
RESOURCE LEVEL	Occasional, limited resource shortages may occur, typically of non-critical supplies or medications with substitution as the most common resource sparing strategy.	Some resources are becoming scarce. Attempts at conservation, reuse, adaptation, and substitution may be performed.	Some or even many critical resources are unavailable, potentially including hospital beds, ventilators, and medications. Critical resources are re-allocated to help as many patients as possible.
STAFF	Usual staffing. Healthcare facility staff absenteeism is not a large problem.	Staff extension (increased patient/provider ratios, expanded scope of practice). Healthcare facility staff absenteeism may be a problem.	Staffing levels at critical shortage. Staff are operating outside normal scope of practice and greatly increased patient/provider ratios. Healthcare facility staff absenteeism may be greater than 30%.

2. Facility/Agency Triggers

The conventional indicators listed below represent normal levels of surge for most healthcare facilities. In general, if one or more contingency or crisis level indicators are true, then the healthcare facility may decide to activate contingency standards of care or follow the prescribed process to request crisis standards of care.

The indicators listed below provide guidance for hospitals and other healthcare facilities in determining the level of care during a disaster. These indicators should serve as triggers for activating facility-level plans and procedures and may also prompt resource requests to other healthcare facilities and county health departments.

Table 6: Conventional, Contingency, and Crisis Indicators for Healthcare

Conventional Indicators for Healthcare Facilities
• Usual patient care space fully occupied • Usual staff called in and utilized • Cached and usual supplies being used
Contingency Indicators for Healthcare Facilities
• Patient care areas re-purposed (e.g., PACU or monitored unit used for ICU-level care) • Staff extension in place (brief deferrals of non-emergency patient-care services, supervising broader groups of patients, changes in responsibilities and documentation, etc.) • Conservation, adaptation, and substitution of supplies with selective re-use of supplies for an individual patient • Hospital on diversion
Crisis Indicators for Healthcare Facilities
• Healthcare facility unsafe or closed • Non-patient care areas used for patient care • Trained staff unavailable or unable to care for the volume of patients • Critical supplies lacking • Re-allocation of life-sustaining resources • Patient transfer not possible or insufficient

3. *Local Triggers*

The activation of CSC starts at the local level. The following indicators below may be used by local officials to identify trigger points for declaring a local disaster or requesting the Governor's disaster declaration and implementation of crisis standards of care.

Table 7: Conventional, Contingency, and Crisis Indicators for Local Officials

Conventional Indicators for Counties
• One or more healthcare facilities are at or near capacity • Patient transfer may be impacted
Contingency Indicators for Counties
• One or more healthcare facilities initiate local resource requests for space, staff, and supplies • Medical countermeasure availability declining • One or more hospitals on diversion or damaged • Patient transfer limited between healthcare facilities
Crisis Indicators for Counties
• One or more healthcare facilities must use contingency standards of care CSC • Medical countermeasures depleted • Patient transfers insufficient or impossible, county-wide or regionally • Facility resource requests unfillable or undeliverable

Table 8: Conventional, Contingency, and Crisis Indicators for EMS

Conventional Indicators for EMS
• Public safety answering point/Public safety communication center at or near capacity • Standard response capability at or near capacity • Low acuity calls holding or response with single resource unit • Requests for mutual aid
Contingency Indicators for EMS
• Public safety answering point/Public safety communication center capacity fully utilized. Additional communications center staff called in. Incoming calls holding. • Demand surpasses standard response capability. Additional EMS staff called-in. Additional units staffed. • Deferred response for low acuity calls • Closest destination facilities on divert or not accessible • Require mutual aid or air medical to supplement local ambulance transport resources • Limits on staff hours of service suspended • Staff absenteeism adversely affects response capability • Local EOC activated
Crisis Indicators for EMS
• Public safety answering point/Public safety communication center overwhelmed. Incoming trunk lines fully utilized, callers get busy signal, 10 percent or more of calls abandoned • Response capability overwhelmed • No response to low acuity calls • Regional multiple casualty transport plans activated • Air medical, ambulance strike teams or other external resources required • Regional destination facilities on divert or not accessible • Staff absenteeism 30 percent or greater

4. *State-Level Triggers*

The indicators listed below will be used by the GEEERC and other state policy makers to determine the need for CSC. The GEEERC will recommend to CDPHE the precise trigger point for CSC.

Table 9: Conventional, Contingency, and Crisis Indicators for the State

Conventional Indicators for the State
• One or more counties/regions at capacity • Patient transfer may be impacted
Contingency Indicators for the State
• Local jurisdictions initiate resource requests • Medical countermeasure availability declining • One or more hospitals on diversion or damaged • Patient transfer is limited across all or part of state or with normal transfer patterns across state lines
Crisis Indicators for the State

- One or more counties/regions request state to implement crisis standards of care
- Medical countermeasures depleted
- Patient transfers insufficient or impossible statewide
- Local jurisdiction resource requests unfillable or undeliverable
- Multiple healthcare access points impacted

C. Notification and Activation

1. Facility/Agency

A facility or agency that recognizes the need for the implementation of crisis standards of care will notify officials of the local jurisdiction.

2. Local

Local officials will identify the need and make a request for a disaster declaration and will utilize the same process and mechanisms for communicating with CDPHE as any other emergency.

3. State

The GEEERC will coordinate with CDPHE to provide a recommendation to the Governor regarding the implementation of CSC.

Upon signature of an executive order activating these crisis standards of care, CDPHE will coordinate with state agencies to disseminate the executive order to local jurisdictions and agencies.

D. Deactivation of Crisis Standards of Care

Planning for deactivation should begin at the outset of activation of the CSC. The Governor's Office, based on a recommendation from the GEEERC will deactivate CSC by terminating the CSC executive order when healthcare facilities are no longer operating at a crisis level. The CSC may be deactivated across the entire state or for portions of the state depending on the pace of recovery.

The following procedures may be employed to ensure a coordinated deactivation of CSC standards across the state:

- Throughout the response, CDPHE, the GEEERC, and local officials will coordinate with healthcare facility staff to analyze situation reports (SitReps) and updates to determine the continued need for crisis-level care across the state.
- When it is anticipated that most healthcare facilities and jurisdictions will return to contingency-level care within 48 hours, CDPHE will send notice to statewide healthcare partners stating that "it is anticipated that CSC will be rescinded within 48 hours." This timeframe will allow healthcare facilities to prepare for the transition back to contingency surge, conventional surge, or normal operations, as appropriate. CDPHE, in consultation with the GEEERC, will issue Health Alerts and public messaging to prepare for CSC deactivation.

It is important to note that the deactivation of CSC does not stop emergency operations at the state, local, or facility level. Emergency operations and emergency declarations at a local or facility level may still be in place despite the deactivation of CSC. The recovery phase of any event will be managed according to existing plans and processes within Colorado and not separately under this plan. Behavioral health support may continue operations while other health and medical providers transition out of CSC activities.

Communication that the CSC has been deactivated will be sent to local, state and federal response partners by CDPHE.

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A. Colorado Medical Resources

CDPHE used existing information to estimate the number of healthcare workers and medical facilities as well as EMS personnel and transport agencies currently available in the state. In June 2003, Executive Order D013 03 was issued and mandated that all state agencies with the responsibility for the public's safety adopt the Governor's All-Hazards Emergency Management Regions for the purposes of emergency management and response. All sixty-four of Colorado's counties were divided into nine regions: North Central, Northeast, Northwest, San Luis Valley, South, South Central, Southeast, Southwest and West. See Figure 2 below. The one exception to this regionalization is EMS personnel and transport agencies that follow the Regional Emergency Medical and Trauma Advisory Council (RETAC) regions. See Figure 3 below. Healthcare workers and medical facilities were organized per the Governor's All-Hazards Emergency Management Regions and EMS personnel and transport agencies are organized by RETAC regions. Healthcare Coalitions in Colorado were reorganized in 2017 to match the Governor's All-Hazards Emergency Management Regions. See Figure 4 below.

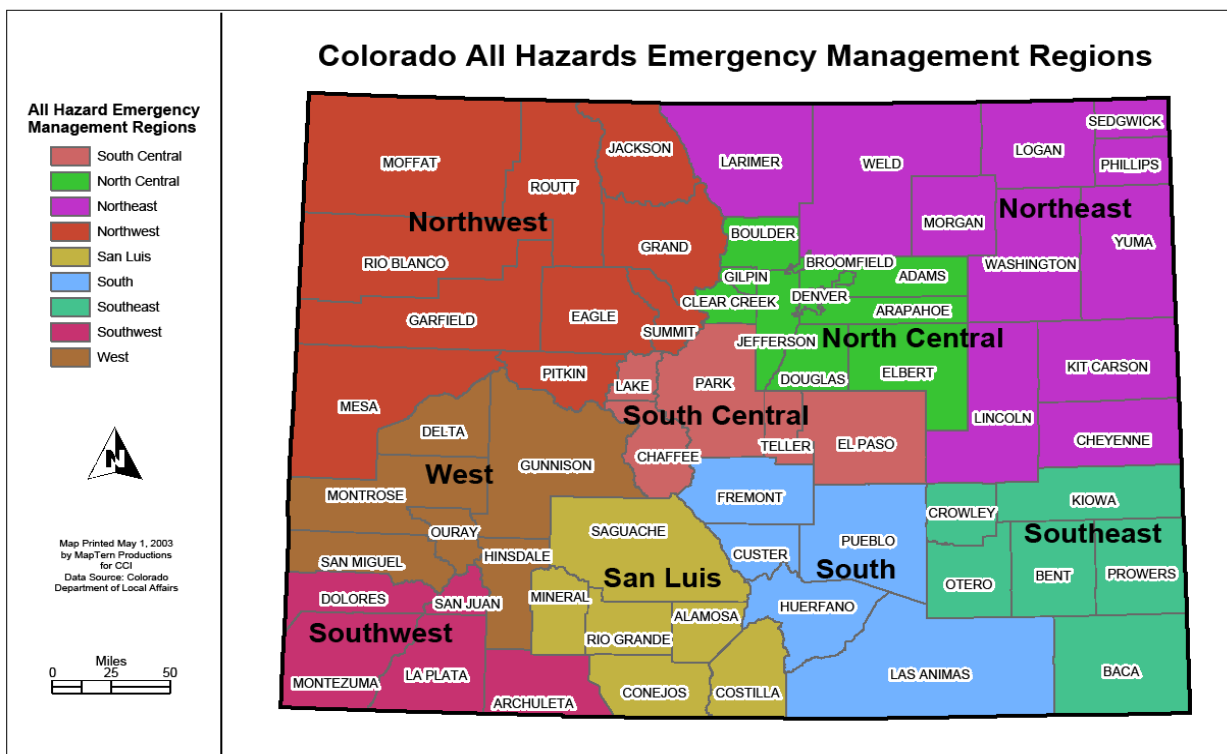
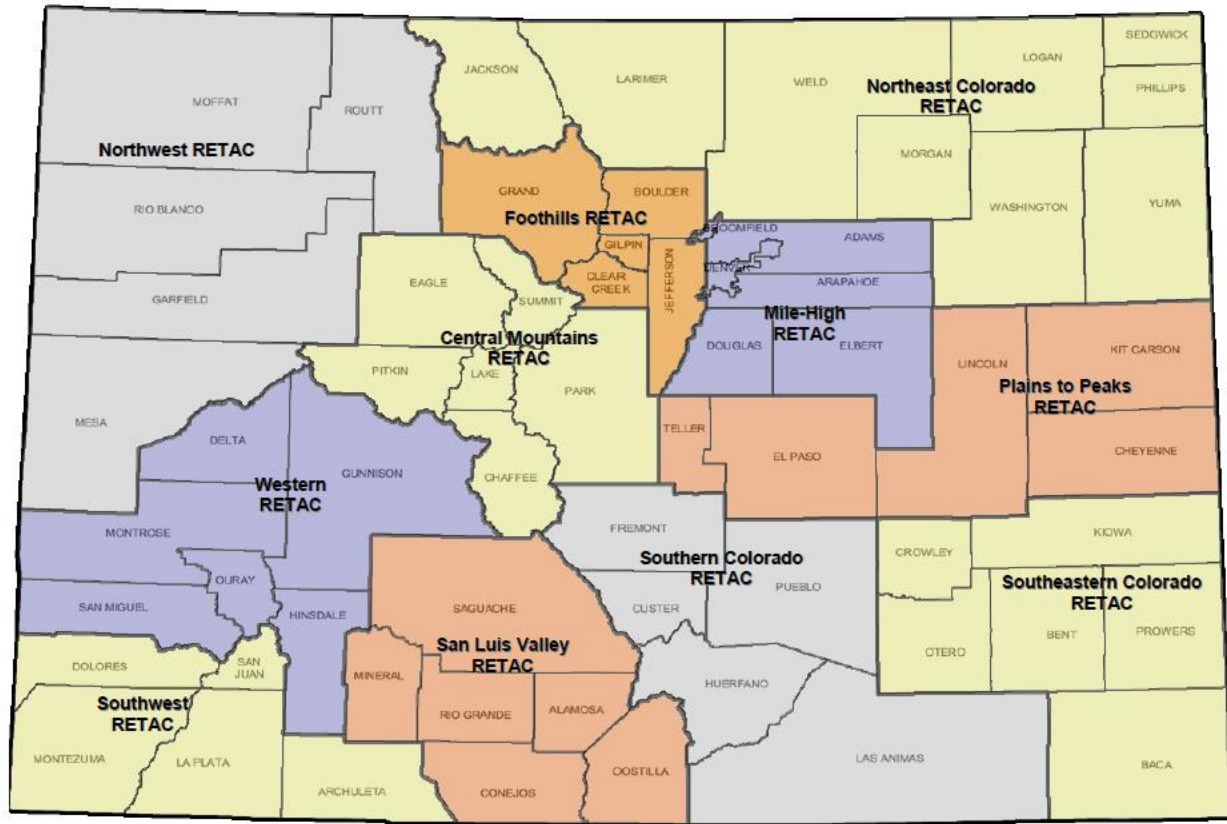
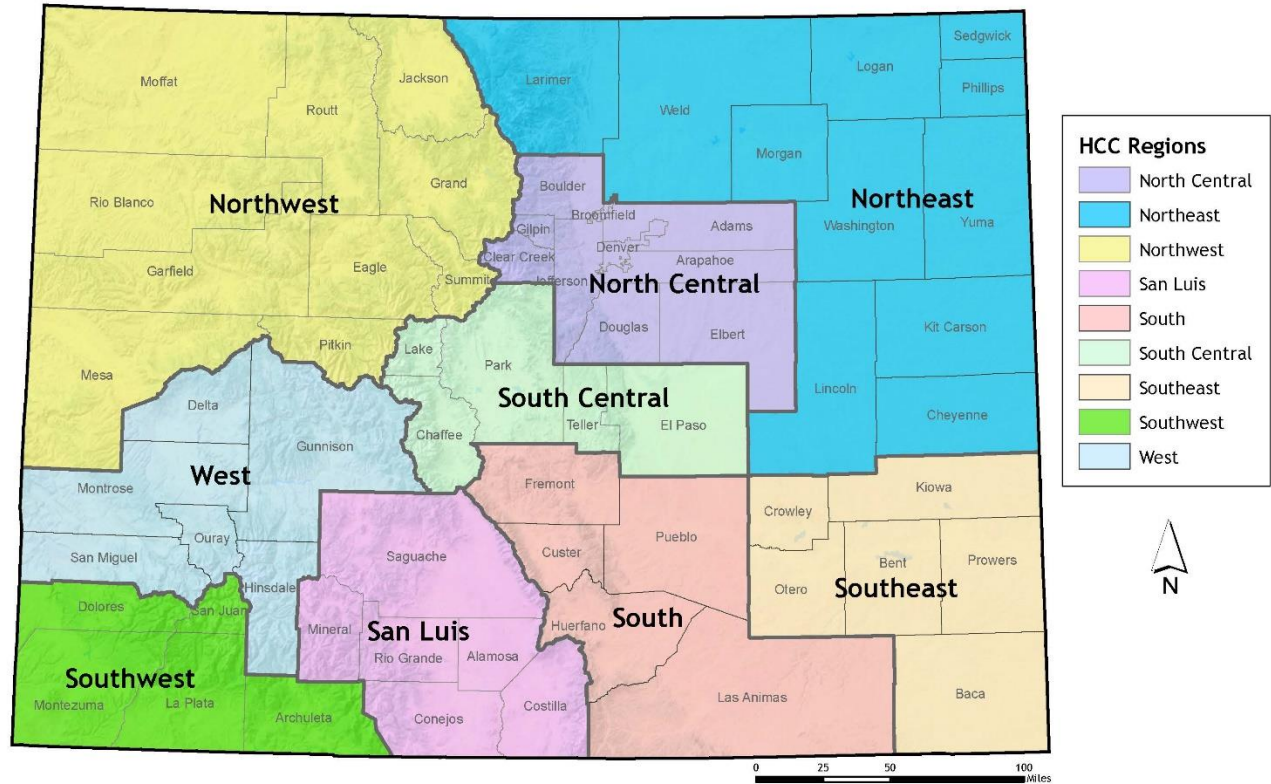


Figure 5: Colorado All Hazards Emergency Management Regions (Map Tern Productions, 2003)



Regional Emergency Medical and Trauma Advisory Councils

Figure 6: Regional Emergency and Trauma Advisory Council Regions (Colorado Department of Public Health and Environment, 2009, p. 19)



Colorado Health Care Coalitions (HCC)

For Additional Information Contact CDPHE OEPR

Map Prepared by CHED/GIS Unit | March 15, 2017



COLORADO
Department of Public
Health & Environment

Figure 7: Map of Colorado Health Care Coalitions (Colorado Department of Public Health and Environment, 2017)



B. Resource Request Process

Additional information can be found about the Colorado Division of Homeland Security and Emergency Management Resource Mobilization Plan at <https://www.colorado.gov/pacific/dhsem/resource-mobilization>.

C. List of Applicable Statutes and Regulations

1. Federal Statutes

a. Emergency acts.

42 U.S.C. § 68 – Stafford Disaster Relief and Emergency Assistance Act
 42 U.S.C. § 262a – Bioterrorism Preparedness and Response Act of 2002
 50 U.S.C. § 1601-1651 - National Emergencies Act

b. Liability statutes.

42 U.S.C. § 1395dd – Emergency Medical Treatment and Active Labor Act (EMTALA)
 42 U.S.C. § 14320b-5 – Section 1135, waiving requirements during national emergencies
 42 U.S.C. § 1320d-6 – Health Insurance Portability and Accountability Act, wrongful disclosure

2. State Statutes and Regulations

a. Supporting statutes.

C.R.S. § 24-33.5-701, *et seq.* – Colorado Disaster Emergency Act
 C.R.S. § 25-1-506 – County or district public health agencies
 C.R.S. § 25-1.5-101, *et seq.* – Powers and Duties of CDPHE

b. Liability statutes.

C.R.S. § 8-40-201 – Colorado Workers Compensation Act of 2016
 C.R.S. § 13-21-115.5 – Volunteer Service Act
 C.R.S. § 13-21-108 – Good Samaritan liability exemption
 C.R.S. § 13-64-101 – Health Care Availability Act
 C.R.S. § 24-10-101 – Colorado Governmental Immunity Act
 C.R.S. § 24-33.5-711.5 – GEEERC liability
 C.R.S. § 24-33.5-824 – Volunteers, provision of emergency services
 C.R.S. § 24-33.5-825 – Qualified volunteers, public employees
 C.R.S. § 24-33.5-826 – Qualified volunteers, private employees

c. EMS practice-based regulations.

6 CCR 1015-3, Chapter 2 - Rules Pertaining to EMS Practice and Medical Director Oversight
 6 CCR 1015-3, Chapter 2, Advanced EMTs, EMT Intermediates (EMT-I), and Paramedics

D. Executive Orders

0.0 - Declaring a State of Disaster Emergency due to a Public Health Emergency

1.0 - EMTALA

1.1 – EMTALA Hospital Option

2.0 – Procurement of Medicine/Vaccine

3.0 – Rapid Distribution of Medicine

3.1 – Rapid Distribution of Influenza Vaccine

3.2 – Rapid Distribution of Antiviral Medication

4.0 – Suspension of Physician/Nurse Licensure Statutes

5.0 – Suspension of PA/EMT Licensure Statutes

6.0 – Isolation and Quarantine

7.0 – Mental illness patient transfer/reception

8.0 – Suspension of death certificate/burial practice statutes

9.0 – Cancellation of public events and closure of public buildings

The Executive Order process and individual executive orders can be found in the CDPHE – All-Hazards Internal Emergency Response and Recovery Plan Annex Q: Executive Orders

E. Triage Strategies

The following triage strategies have been included as reference material. The decision of which triage algorithm should be used will depend on the situation and type of patients.

1. *START Mass Casualty Triage Algorithm*

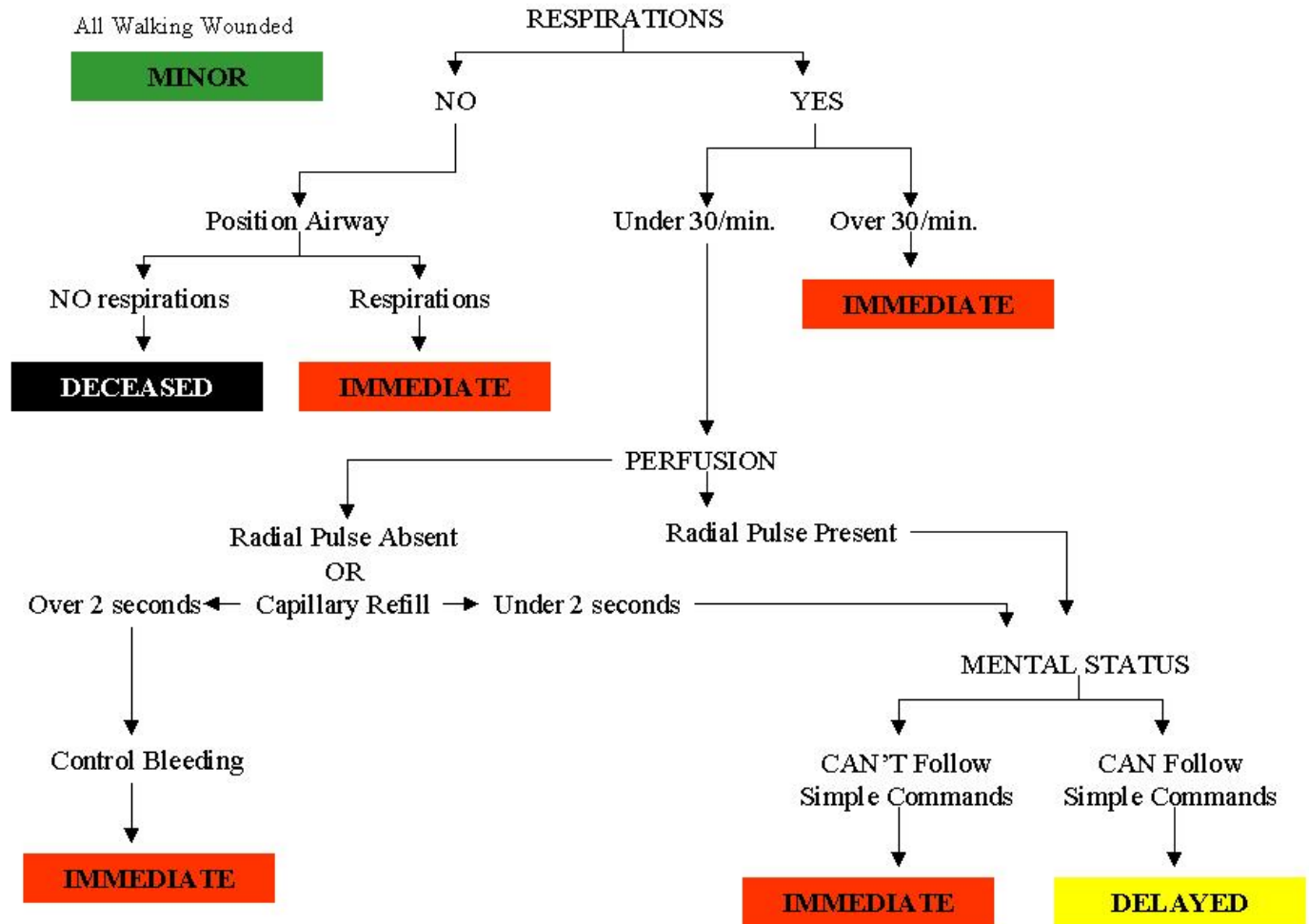


Figure 8: Detailed START Flowchart (Critical Illness and Trauma Foundation)

2. JumpSTART® Pediatric MCI Triage Algorithm

JumpSTART Pediatric MCI Triage®

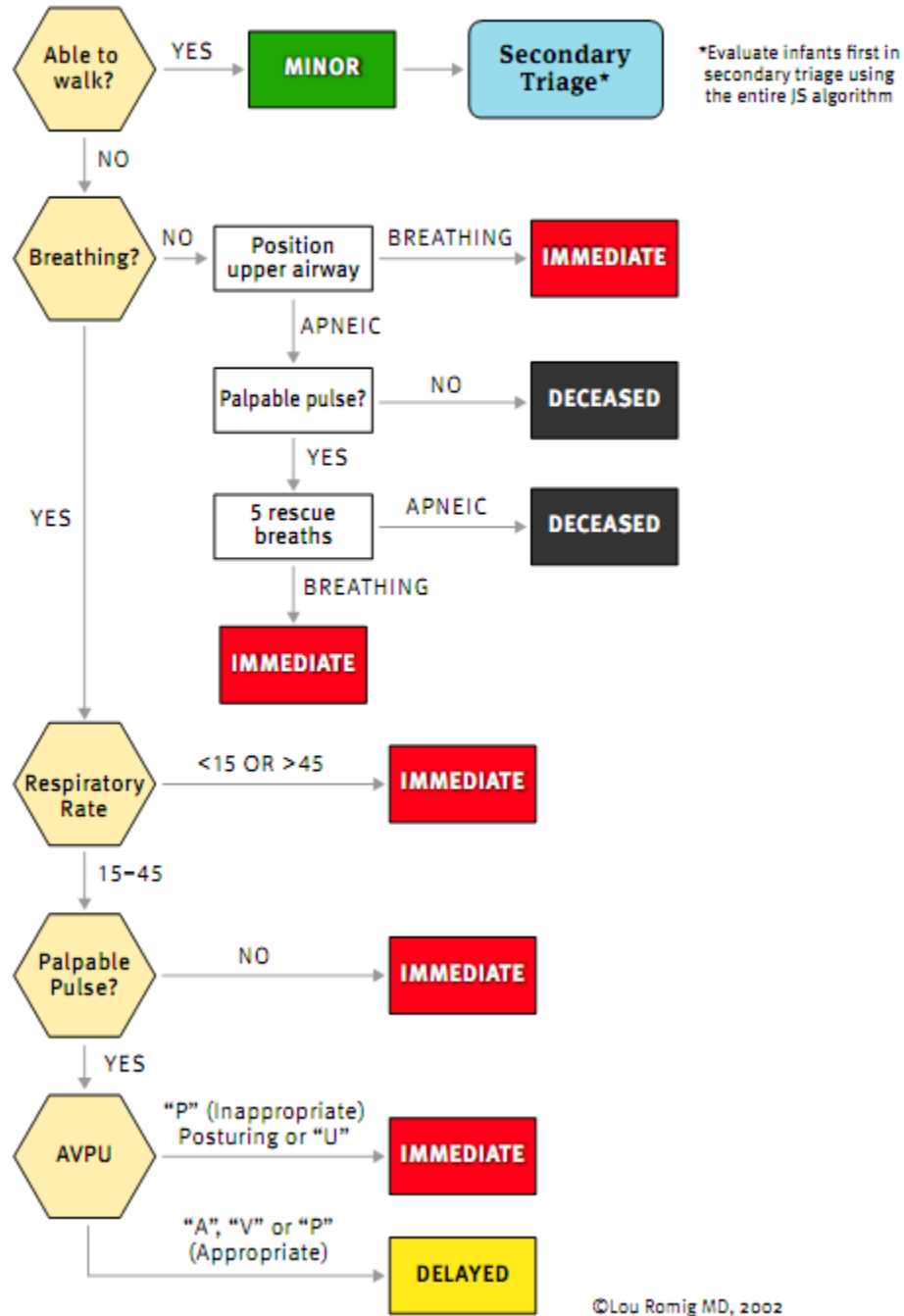


Figure 9: JumpSTART® Pediatric MCI Triage (Romig, 2002)

3. SALT Mass Casualty Triage Algorithm

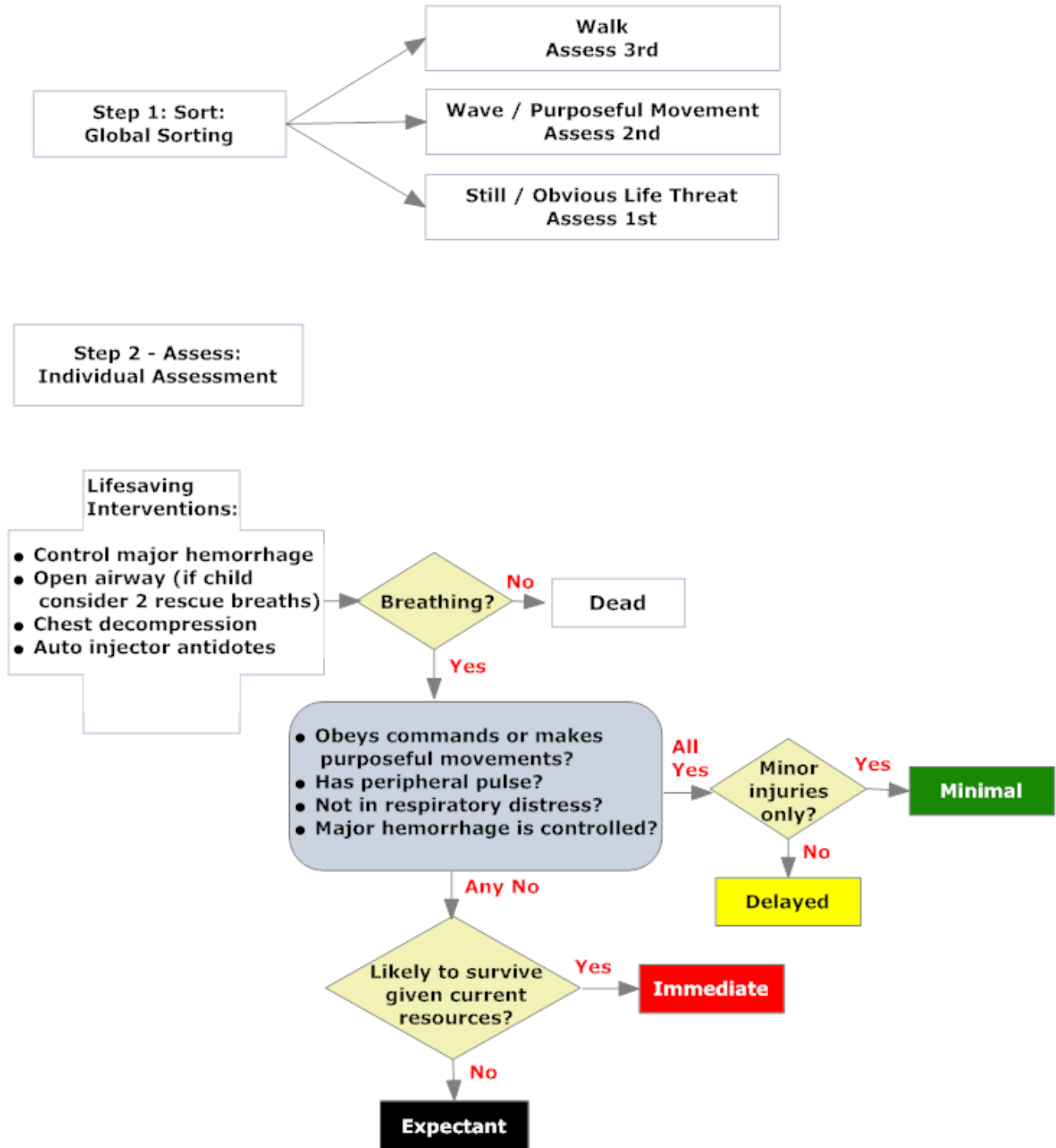


Figure 10: SALT Mass Casualty Triage Algorithm (Sort, Assess, Lifesaving Interventions, Treatment/Transport) (United States, 2011)

4. Triage Scoring System for Adult Disease Presentations

Table 10 - Triage Scoring System for Adult Infectious Disease Presentations (CDPHE Pandemic Influenza Plan, Attachment 5b, Colorado Department of Public Health and Environment, 2009, pp. 7)

Evaluate clinical criteria and score one point for each positive finding below:	
- Respiratory rate (RR) > 30 - Shock index >1 (Heart rate/Systolic BP) - O₂ Saturation < 90% (hypoxic) - Altered mental status (e.g., confusion) - Age ≥ 65	
Compute score:	
Score (Points)	Estimated Mortality (%)
0	<2
1	3-6
2	8-12
>3	25-32
Determine disposition:	
Score (Points)	<u>Disposition</u> <u>(Care Site)</u>
0	
Tolerates Oral Rehydration Therapy (ORT) Dehydrated, not tolerating ORT	Home Level C with IV hydration capability
1	
Age alone or Shock Index >1 due to dehydration (resolved with treatment) - Tolerates ORT - Not tolerating ORT Shock Index > 1 not resolved with hydration Hypoxic or RR > 30 Altered mental status (e.g. confusion)	Home or Level D Level C with IV hydration capability Level A or B Level B or C with oxygen Level A or B
2	
For patients < age 65: - Hypoxia and RR > 30 alone For patients ≥ age 65: - Hypoxia or RR > 30 alone - Shock Index >1 due to dehydration (resolved with treatment) All other patients with score = 2	Level B with oxygen Level B with oxygen Level B with IV hydration Level A
> 3	Level A

- Evaluate all patients for secondary bacterial Community Acquired Pneumonia (CAP) or other bacterial complications of influenza.
- If appropriate, institute antibiotics by oral route if possible. If unable to tolerate, consider transfer to facility capable of IV antibiotics.
- Screen for appropriateness of antiviral therapy as available per CDPHE recommendations.

5. Triage System for Pediatric Infectious Disease Presentations

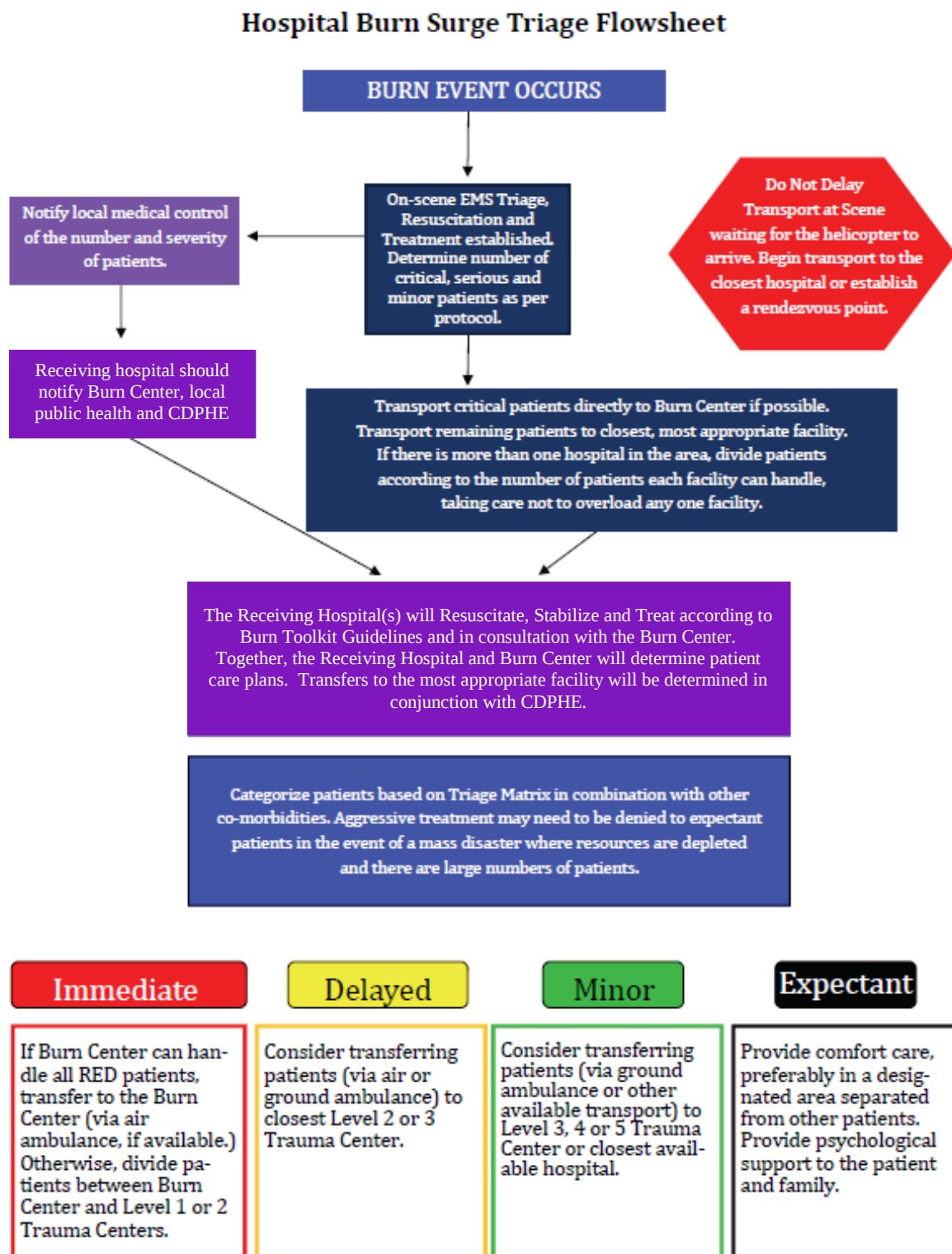
To date, no mass emergency pediatric triaging guidance exists; therefore, final disposition is determined based on severity of symptoms rather than expected mortality. The pediatric triage guidelines were developed using professional judgment and expertise and concepts adapted from the HHS Pandemic Influenza Plan. Pediatric patients are defined as persons less than 18 years of age.

Table 1: Triage System for Pediatric Infectious Disease Presentations (Colorado Department of Public Health and Environment, 2009, pp. 38-39)

Evaluate clinical criteria:			
• Abnormal breath sounds, Stridor • Tachypnea for age (see below) • Increase work of breathing (retractions, nasal flaring, head bobbing) or apnea • O₂ Saturation < 90% at 5,280 feet (hypoxic) or equivalent local values, cyanosis • Shock signs: delayed end organ perfusion (such as delayed capillary refill) plus tachycardia for age (see below) • Altered Mental Status • Age < 2 months			
Determine age-based respiratory rate (RR):			
Age Group	Normal RR (breaths/min.)	Mild-Moderate Tachypnea (breaths/min.)	Severe Tachypnea (breaths/min.)
Infant (<1year)	30-60	60-70	>70
Toddler (1-3 years)	24-40	40-50	>50
Preschooler (4-5 years)	22-34	35-45	>45
School age (6-12 years)	18-30	25-35	>35
Adolescent (13-18 years)	12-20	20-30	>30
Determine age-based heart rate (HR):			
Age Group	Normal HR (beats/min.)	Mild-Moderate Tachycardia (beats/min.)	Severe Tachycardia (beats/min.)
Infant (<1 year)	110-180	180-200	>200
Toddler (1-3 years)	100-150	150-170	>170
Preschooler (4-5 years)	60-140	140-160	>160
School age (6-12 years)	60-120	120-140	>140

Adolescent (13-18 years)	60-100	100-120	>120
Determine disposition:			
Severity of Symptoms		Disposition (Care Site)	
Mildly Ill			
- Alert, active - No stridor - Minimal to no retractions - RR normal to mild-moderate tachypnea - No hypoxia or cyanosis - No signs of shock - Feeding well, minimal to no signs of dehydration		Home or Level D with instructions	
Moderately Ill			
- Alert, consoled - Stridor with agitation, not at rest (comfortable) - Minimal to moderate retractions - Mild-moderate tachypnea - Hypoxia- not severe (pulse-oximetry 80-90% room air at 5,280 feet), no cyanosis - Mild tachycardia without signs of shock - Decreased feeding or mild dehydration		Level C with ORT or IV hydration or Level B with oxygen or IV hydration or Level A	
Severely Ill			
- Fussy, difficult to console, altered mentation - Stridor at rest - Moderate to severe retractions, nasal flaring, head bobbing - Severe tachypnea - Cyanosis or hypoxia (pulse-oximetry <80% room air at 5,280 feet) - Episodic apnea - Moderate to severe tachycardia and/or clinical signs of shock - Poor feeding, moderate to severe signs of dehydration - Symptoms and age < 2 months		Level A	
- Evaluate all patients for secondary bacterial CAP or other bacterial complications of influenza. - Children as opposed to adults can present with upper airway or croup like symptoms - All patients should have pulse-oximetry - Attempt nasal suction on all infants and young children with respiratory distress or decrease feeding - Attempt rehydration and initial antibiotics by oral method in the mildly or moderately ill child. Those that are severely ill or unable to tolerate oral antibiotics should be transferred to a facility capable of IV fluids and antibiotics - Screen for appropriateness of antiviral therapy as available per CDPHE recommendations.			

6. Hospital Burn Surge Triage Flowsheet
Figure 11 Hospital Burn Surge Triage Flowsheet





F. Scarce Resource Strategies from Minnesota Healthcare System Preparedness Program

The strategies in this section were adopted as part of this plan and adapted from the Minnesota Healthcare System Preparedness Program's "Strategies for Scarce Resource Situations"

PATIENT CARE **STRATEGIES FOR SCARCE RESOURCE SITUATIONS**

Table of Contents

Core Clinical Strategies for Scarce Resource Situations Core clinical categories are practices and resources that form the basis for medical and critical care.			Resource Reference and Triage Cards Resource cards address the unique system response issues required by specific patient groups during a major incident.		
Summary Card		Page ii	Renal Replacement Therapy Resource Cards	Section 8	Pages 1-4
Oxygen	Section 1	Pages 1-2	Burn Therapy Resource Cards	Section 9	Pages 1-6
Staffing	Section 2	Pages 1-2	Burn Therapy Triage Card	Section 9	Pages 7-8
Nutritional Support	Section 3	Pages 1-2	Pediatrics Resource Cards	Section 10	Pages 1-4
Medication Administration	Section 4	Pages 1-2	Pediatrics Triage Card	Section 10	Pages 5-6
Hemodynamic Support and IV Fluids	Section 5	Pages 1-2	Palliative Resource Cards	Section 11	Pages 1-10
Mechanical Ventilation / External Oxygenation	Section 6	Pages 1-2			
Blood Products	Section 7	Pages 1-2			

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

PATIENT CARE STRATEGIES FOR SCARCE RESOURCE SITUATIONS

Summary Card

Potential trigger events:	•Mass Casualty Incident (MCI) •Infrastructure damage/loss •Pandemic/Epidemic	•Supplier shortage •Recall/contamination of product •Isolation of facility due to access problems (flooding, etc.)
How to use this card set: 1. Recognize or anticipate resource shortfall 2. Implement appropriate incident management system and plans; assign subject matter experts (technical specialists) to problem 3. Determine degree of shortfall, expected demand, and duration; assess ability to obtain needed resources via local, regional, or national vendors or partners 4. Find category of resource on index 5. Refer to specific recommendations on card 6. Decide which strategies to implement and/or develop additional strategies appropriate for the facility and situation 7. Assure consistent regional approach by informing public health authorities and other facilities if contingency or crisis strategies will continue beyond 24h and no regional options exist for re-supply or patient transfer; activate regional scarce resource coordination plans as appropriate 8. Review strategies every operational period or as availability (supply/demand) changes		
Core strategies to be employed (generally in order of preference) during, or in anticipation of a scarce resource situation are: Prepare - pre-event actions taken to minimize resource scarcity (e.g., stockpiling of medications) Substitute - use an essentially equivalent device, drug, or personnel for one that would usually be available (e.g., morphine for fentanyl) Adapt – use a device, drug, or personnel that are not equivalent but that will provide sufficient care (e.g., anesthesia machine for mechanical ventilation) Conserve – use less of a resource by lowering dosage or changing utilization practices (e.g., minimizing use of oxygen driven nebulizers to conserve oxygen) Re-use – re-use (after appropriate disinfection / sterilization) items that would normally be single-use items Re-allocate – restrict or prioritize use of resources to those patients with a better prognosis or greater need		
Capacity Definitions:		
Conventional capacity – The spaces, staff, and supplies used are <i>consistent with daily practices</i> within the institution. These spaces and practices are used during a major mass casualty incident that triggers activation of the facility emergency operations plan.	Contingency capacity – The spaces, staff, and supplies used are not consistent with daily practices, but provide care to a standard that is <i>functionally equivalent</i> to usual patient care practices. These spaces or practices may be used temporarily during a major mass casualty incident or on a more sustained basis during a disaster (when the demands of the incident exceed community resources).	Crisis capacity – Adaptive spaces, staff, and supplies are not consistent with usual standards of care, but provide <i>sufficiency</i> of care in the setting of a catastrophic disaster (i.e., provide the best possible care to patients given the circumstances and resources available). Crisis capacity activation constitutes a significant adjustment to standards of care (Hick et al, 2009).
This card set is designed to facilitate a structured approach to resource shortfalls at a healthcare facility. It is a decision support tool and assumes that incident management is implemented and that key personnel are familiar with ethical frameworks and processes that underlie these decisions (for more information see Institute of Medicine 2012 Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response http://www.iom.edu/Reports/2012/Crisis-Standards-of-Care-A-Systems-Framework-for-Catastrophic-Disaster-Response.aspx and the Minnesota Pandemic Ethics Project - http://www.health.state.mn.us/divs/idepc/ethics/). Each facility will have to determine the most appropriate steps to take to address specific shortages. Prevent familiarization with the contents of this card set is recommended to aid with event preparedness and anticipation of specific resource shortfalls. The cards do not provide comprehensive guidance, addressing only basic common categories of medical care. Facility personnel may determine additional coping mechanisms for the specific situation in addition to those outlined on these cards. The content of this card set was developed by the Minnesota Department of Health (MDH) Science Advisory Team in conjunction with many subject matter experts whose input is greatly appreciated. This guidance does not represent the policy of MDH. Facilities and personnel implementing these strategies in crisis situations should assure communication of this to their healthcare and public health partners to assure the invocation of appropriate legal and regulatory protections in accord with State and Federal laws. This guidance may be updated or changed during an incident by the Science Advisory Team and MDH. The weblinks and resources listed are examples, and may not be the best sources of information available. Their listing does not imply endorsement by MDH. This guidance does not replace the judgment of the clinical staff and consideration of other relevant variables and options during an event.		

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

OXYGEN

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

RECOMMENDATIONS				Strategy	Conventional	Contingency	Crisis													
Inhaled Medications - Restrict the use of Small Volume Nebulizers when inhaler substitutes are available. - Restrict continuous nebulization therapy. - Minimize frequency through medication substitution that results in fewer treatments (6h-12h instead of 4h-6h applications).				Substitute & Conserve																
High-Flow Applications - Restrict the use of high-flow cannula systems as these can demand 12 to 40 LPM flows. - Restrict the use of simple and partial rebreathing masks to 10 LPM maximum. - Restrict use of Gas Injection Nebulizers as they generally require oxygen flows between 10 LPM and 75 LPM. - Eliminate the use of oxygen-powered venturi suction systems as they may consume 15 to 50 LPM.				Conserve																
Air-Oxygen Blenders - Eliminate the low-flow reference bleed occurring with any low-flow metered oxygen blender use. This can amount to an additional 12 LPM. Reserve air-oxygen blender use for mechanical ventilators using high-flow non-metered outlets. (These do not utilize reference bleeds). - Disconnect blenders when not in use.				Conserve																
Oxygen Conservation Devices - Use reservoir cannulas at 1/2 the flow setting of standard cannulas. - Replace simple and partial rebreather mask use with reservoir cannulas at flowrates of 6-10 LPM.				Substitute & Adapt																
Oxygen Concentrators if Electrical Power Is Present Use hospital-based or independent home medical equipment supplier oxygen concentrators if available to provide low-flow cannula oxygen for patients and preserve the primary oxygen supply for more critical applications.				Substitute & Conserve																
Monitor Use and Revise Clinical Targets - Employ oxygen titration protocols to optimize low or % to match targets for SPO2 or PaO2. - Minimize overall oxygen use by optimization of flow. - Discontinue oxygen at earliest possible time. <table><tr><td>Starting Example</td><td>Initiate O2</td><td>O2 Target</td><td rowspan="4">Note: Targets may be adjusted further downward depending on resources available, the patient's clinical presentation, or measured PaO2 determination.</td></tr><tr><td>Normal Lung Adults</td><td>SPO2 <90%</td><td>SPO2 90%</td></tr><tr><td>Infants & Peds</td><td>SPO2 <90%</td><td>SPO2 90-95%</td></tr><tr><td>Severe COPD History</td><td>SPO2 <85%</td><td>SPO2 90%</td></tr></table>				Starting Example	Initiate O2	O2 Target	Note: Targets may be adjusted further downward depending on resources available, the patient's clinical presentation, or measured PaO2 determination.	Normal Lung Adults	SPO2 <90%	SPO2 90%	Infants & Peds	SPO2 <90%	SPO2 90-95%	Severe COPD History	SPO2 <85%	SPO2 90%	Conserve			
Starting Example	Initiate O2	O2 Target	Note: Targets may be adjusted further downward depending on resources available, the patient's clinical presentation, or measured PaO2 determination.																	
Normal Lung Adults	SPO2 <90%	SPO2 90%																		
Infants & Peds	SPO2 <90%	SPO2 90-95%																		
Severe COPD History	SPO2 <85%	SPO2 90%																		
Expendable Oxygen Appliances Use terminal sterilization or high-level disinfection procedures for oxygen appliances, small & large-bore tubing, and ventilator circuits. Bleach concentrations of 1:10, high-level chemical disinfection, or irradiation may be suitable. Ethylene oxide gas sterilization is optimal, but requires a 12-hour aeration cycle to prevent ethylene chlorohydrin formation with polyvinyl chloride plastics.				Re-use																
Oxygen Re-Allocation Prioritize patients for oxygen administration during severe resource limitations.				Re-Allocate																

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

STAFFING

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Staff and Supply Planning - Assure facility has process and supporting policies for disaster credentialing and privileging - including degree of supervision - Encourage employee preparedness planning (www.ready.gov and other resources). - Cache adequate personal protective equipment (PPE) and support supplies. - Educate staff on institutional disaster response. - Educate staff on community, regional and state disaster plans and resources. - Develop facility plans addressing staff's family/pets or staff shelter needs.	Prepare			
Focus Staff Time on Core Clinical Duties - Minimize meetings and relieve administrative responsibilities not related to event. - Reduce documentation requirements. - Cohort patients to conserve PPE and reduce staff PPE donning/doffing time and frequency. - Restrict elective appointments and procedures.	Conserve			
Use Supplemental Staff - Bring in equally trained staff (burn or critical care nurses, Disaster Medical Assistance Team [DMAT], other health system or Federal sources). - Equally trained staff from administrative positions (nurse managers). - Adjust personnel work schedules (longer but less frequent shifts, etc.) if this will not result in skill/PPE compliance deterioration. - Use family members/lay volunteers to provide basic patient hygiene and feeding – releasing staff for other duties.	Substitute			
	Adapt			
Focus Staff Expertise on Core Clinical Needs - Personnel with specific critical skills (ventilator, burn management) should concentrate on those skills; specify job duties that can be safely performed by other medical professionals. - Have specialty staff oversee larger numbers of less-specialized staff and patients (for example, a critical care nurse oversees the intensive care issues of 9 patients while 3 medical/surgical nurses provide basic nursing care to 3 patients each). - Limit use of laboratory, radiographic, and other studies, to allow staff reassignment and resource conservation. - Reduce availability of non-critical laboratory, radiographic, and other studies.	Conserve			
Use Alternative Personnel to Minimize Changes to Standard of Care - Use less trained personnel with appropriate mentoring and just-in-time education (e.g., healthcare trainees or other health care workers, Medical Reserve Corps, retirees). - Use less trained personnel to take over portions of skilled staff workload for which they have been trained. - Provide just-in-time training for specific skills. - Cancel most sub-specialty appointments, endoscopies, etc. and divert staff to emergency duties including in-hospital or assisting public health at external clinics/screening/dispensing sites.	Substitute & Conserve			

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

NUTRITIONAL SUPPORT

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Food • Maintain hospital supply of inexpensive, simple to prepare, long-shelf life foodstuffs as contingency for at least 96 hours without resupply, with additional supplies according to hazard vulnerability analysis (e.g., grains, beans, powdered milk, powdered protein products, pasta, and rice). Access existing or devise new emergency/disaster menu plans. • Maintain hospital supply of at least 30 days of enteral and parenteral nutrition components and consider additional supplies based on institution-specific needs. Review vendor agreements and their contingencies for delivery and production, including alternate vendors. Note: A 30-day supply based on usual use may be significantly shortened by the demand of a disaster.	Prepare			
Water • Stock bottled water sufficient for drinking needs for at least 96 hours if feasible (for staff, patients and family/visitors), or assure access to drinking water apart from usual supply. Potential water sources include food and beverage distributors. • Ensure there is a mechanism in place to verify tap water is safe to drink. • Infants: assure adequate stocks of formula and encourage breastfeeding.	Prepare			
Staff /Family • Plan to feed additional staff, patients, and family members of staff /patients in select situations (ice storm as an example of a short-term incident, an epidemic as an example of a long-term incident).	Prepare			
Planning • Work with stakeholders to encourage home users of enteral and parenteral nutrition to have contingency plans and alternate delivery options. Home users of enteral nutrition typically receive delivery of 30 days supply and home users of parenteral nutrition typically receive a weekly supply. Anticipate receiving supply requests from home users during periods of shortage. Work with vendors regarding their plans for continuity of services and delivery. • Identify alternate sources of food supplies for the facility should prime vendors be unavailable (including restaurants – which may be closed during epidemics). Consider additional food supplies at hospitals that do not have food service management accounts. • Determine if policy on family provision of food to patients is in place, and what modifications might be needed or permitted in a disaster. • Liberalize diets and provide basic nutrients orally, if possible. Total parenteral nutrition (TPN) use should be limited and prioritized for neonatal and critically ill patients. • Non-clinical personnel serve meals and may assist preparation. • Follow or modify current facility guidelines for provision of food/feeding by family members of patients. • Anticipate and have a plan for the receipt of food donations. If donated food is accepted, it should be non-perishable, prepackaged, and in single serving portions. • Collaborate with pharmacy and nutrition services to identify patients appropriate to receive parenteral nutrition support vs. enteral nutrition. Access premixed TPN/PPN solutions from vendor if unable to compound. Refer to Centers for Disease Control (CDC) Fact Sheets and American Society for Parenteral and Enteral Nutrition (ASPEN) Guidelines. Substitute oral supplements for enteral nutrition products if needed. • Eliminate or modify special diets temporarily. • Use blenderized food and fluids for enteral feedings rather than enteral nutrition products if shortages occur. Examples: 1. The Oley Foundation: Making Your Own Food for Tube Feeding, 2. Klein, Marsha Dunn, and Suzanne Evans Morris. Homemade Blended Formula Handbook. Tucson: Mealtime Notions LLC, 2007.	Prepare			
	Substitute			
	Adapt			
	Substitute & Adapt			
	Adapt			

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

MEDICATION ADMINISTRATION

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

RECOMMENDATIONS	
Cache / Increase Supply Levels - Patients should have at least 30 days supply of home medications and obtain 90 day supply if pandemic, epidemic, or evacuation is imminent. - Examine formulary to determine commonly-used medications and classes that will be in immediate / high demand. - Increase supply levels or cache critical medications - particularly for low-cost items and analgesics. - Key examples include:	
Analgesia	morphine, other narcotic and non-narcotic (non-steroidals, acetaminophen) class - injectable and oral
Sedation	particularly benzodiazepine (lorazepam, midazolam, diazepam) injectables
Anti-infective	narrow and broad spectrum antibiotics for pneumonia, skin infections, open fractures, sepsis (e.g.: cephalosporins, quinolones, tetracyclines, macrolides, aminoglycosides, clindamycin, etc.), select antivirals
Pulmonary	metered dose inhalers (albuterol, inhaled steroids), oral steroids (dexamethasone, prednisone)
Behavioral Health	haloperidol, other injectable and oral anti-psychotics, common anti-depressants, anxiolytics
Other	sodium bicarbonate, paralytics, induction agents (etomidate, propofol), proparacaine/tetracaine, atropine, pralidoxime, epinephrine, local anesthetics, antiemetics, insulin, common oral antihypertensive and diabetes medications
Use Equivalent Medications Obtain medications from alternate supply sources (pharmaceutical representatives, pharmacy caches).	
Pulmonary	Metered dose inhalers instead of nebulized medications
Analgesia/ Sedation	- Consider lorazepam for propofol substitution (and other agents in short supply) - ICU analgesia/sedation drips Morphine 4-10mg IV load then 2mg/h and titrate / re-bolus as needed usual 3-20mg/h); lorazepam 2-8mg or midazolam 1-5mg IV load then 2-8mg/h drip
Anti-infective	- Examples: cephalosporins, gentamicin, clindamycin substitute for unavailable broad-spectrum antibiotic - Target therapy as soon as possible based upon organism identified.
Other	Beta blockers, diuretics, calcium channel blockers, ace inhibitors, anti-depressants, anti-infectives
Reduce Use During High Demand - Restrict use of certain classes if limited stocks likely to run out (restrict use of prophylactic / empiric antibiotics after low risk wounds, etc.). - Decrease dose; consider using smaller doses of medications in high demand / likely to run out (reduce doses of medications allowing blood pressure or glucose to run higher to ensure supply of medications adequate for anticipated duration of shortage). - Allow use of personal medications (inhalers, oral medications) in hospital. - Do without - consider impact if medications not taken during shortage (statins, etc.).	

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

MEDICATION ADMINISTRATION

STRATEGIES FOR SCARCE RESOURCE SITUATIONS (cont.)

RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Modify Medication Administration - Emphasize oral, nasogastric, subcutaneous routes of medication administration. - Administer medications by gravity drip rather than IV pump if needed: <i>IV drip rate calculation - drops / minute = amount to be infused x drip set / time (minutes) (drip set = q tts / mL - 60, 10, etc.).</i> - Rule of 6: pt wgt (kg) x 6 = mg drug to add to 100mL fluid = 1mcg / kg / min for each 1 mL / hour - Consider use of select medications beyond expiration date.* - Consider use of veterinary medications when alternative treatments are not available.*	Adapt			
	Adapt			
Restrict Allocation of Select Medications - Allocate limited stocks of medications with consideration of regional/state guidance and available epidemiological information (e.g.: anti-viral medications such as oseltamivir) - Allocate limited stock to support other re-allocation decisions (ventilator use, etc.).	Re-Allocate			
	Re-Allocate			

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

HEMODYNAMIC SUPPORT AND IV FLUIDS

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

RECOMMENDATIONS		Strategy	Conventional	Contingency	Crisis
Cache Additional Intravenous (IV) Cannulas, Tubing, Fluids, Medications, and Administration Supplies		Prepare			
Use Scheduled Dosing and Drip Dosing When Possible Reserve IV pump use for critical medications such as sedatives and hemodynamic support.		Conserve			
Minimize Invasive Monitoring - Substitute other assessments (e.g., clinical signs, ultrasound) of central venous pressure (CVP). - When required, assess CVP intermittently via manual methods using bedside saline manometer or transducer moved between multiple patients as needed, or by height of blood column in CVP line held vertically while patient supine.		Conserve			
Emphasize Oral Hydration Instead of IV Hydration When Possible Utilize appropriate oral rehydration solution Pediatric hydration - Oral rehydration solution: 1 liter water (5 cups) + 1 tsp salt + 8 tsp sugar, add flavor (e.g., ½ cup - Rehydration for moderate dehydration 50-100mL / kg over 2-4 hours Pediatric maintenance fluids: 4 mL/kg/h for # first 10kg of body weight (40 mL/h for 1st 10 kg) 2 mL/kg/h for second 10kg of body weight (20 mL/h for 2nd 10kg = 60 mL/h for 20kg child) 1 mL/kg/h for each kg over 20kg (example - 40 kg child = 60 mL/h plus 20 mL/h = 80 mL/h) Supplement for each diarrhea or emesis NOTE: Clinical (urine output, etc.) and laboratory (BUN, urine specific gravity) assessments and electrolyte correction are key components of fluid therapy and are not specifically addressed by these recommendations.		Substitute			
Provide Nasogastric Hydration Instead of IV Hydration When Practical - Patients with impediments to oral hydration may be successfully hydrated and maintained with nasogastric (NG) tubes. - For fluid support, 8-12F (pediatric: infant 3.5F, < 2yrs 5F) tubes are better tolerated than standard size tubes.		Substitute			
Substitute Epinephrine for Other Vasopressor Agents - For hemodynamically unstable patients who are adequately volume-resuscitated, consider adding 6mg epinephrine (6mL of 1:1000) to 1000mL NS on minidrip tubing and titrate to target blood pressure. - Epinephrine 1:1000 (1mg/mL) multi-dose vials available for drip use.		Substitute			
Re-use CVP, NG, and Other Supplies After Appropriate Sterilization / Disinfection - Cleaning for all devices should precede high-level disinfection or sterilization. - High-level disinfection for at least twenty minutes for devices in contact with body surfaces (including mucous membranes);glutaraldehyde, hydrogen peroxide 6%, or bleach (5.25%) diluted 1:20 (2500 ppm) are acceptable solutions. - NOTE: chlorine levels reduced if stored in polyethylene containers - double the bleach concentration to compensate). - Sterilize devices in contact with bloodstream (e.g., ethylene oxide sterilization for CVP catheters).		Re-use		(disinfection – NG, etc)	(sterilization – central line, etc)

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

HEMODYNAMIC SUPPORT AND IV FLUIDS

STRATEGIES FOR SCARCE RESOURCE SITUATIONS(cont.)

RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Intraosseous / Subcutaneous (Hypodermoclysis) Replacement Fluids - Consider as an option when alternative routes of fluid administration are impossible/unavailable - Intraosseous before percutaneous <u>Intraosseous</u> - Intraosseous infusion is not generally recommended for hydration purposes, but may be used until alternative routes are available. Intraosseous infusion requires pump or pressure bag. Rate of fluid delivery is often limited by pain of pressure within the marrow cavity. This may be reduced by pre-medication with lidocaine 0.5mg/kg slow IV push. <u>Hypodermoclysis</u> - Cannot correct more than moderate dehydration via this technique. - Many medications cannot be administered subcutaneously. - Common infusion sites: pectoral chest, abdomen, thighs, upper arms. - Common fluids: normal saline (NS), D5NS, D5 1/2 NS (Can add up to 20-40 mEq potassium if needed.) - Insert 21/24 gauge needle into subcutaneous tissue at a 45 degree angle, adjust drip rate to 1-2 mL per minute. (May use 2 sites simultaneously if needed.) - Maximal volume about 3 liters / day; requires site rotation. - Local swelling can be reduced with massage to area. - Hyaluronidase 150 units/liter facilitate fluid absorption but not required; may not decrease occurrence of local edema.	Substitute			
Consider Use of Veterinary and Other Alternative Sources for Intravenous Fluids and Administration Sets	Adapt			

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

MECHANICAL VENTILATION / EXTERNAL OXYGENATION

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis																																										
Increase Hospital Stocks of Ventilators and Ventilator Circuits, ECMO or bypass circuits	Prepare																																													
Access Alternative Sources for Ventilators / specialized equipment Obtain specialized equipment from vendors, healthcare partners, regional, state, or Federal stockpiles via usual emergency management processes and provide just-in-time training and quick reference materials for obtained equipment.	Substitute																																													
Decrease Demand for Ventilators - Increase threshold for intubation/ventilation. - Decrease elective procedures that require post-operative intubation. - Decrease elective procedures that utilize anesthesia machines. - Use non-invasive ventilatory support when possible.	Conserve																																													
Re-use Ventilator Circuits - Appropriate cleaning must precede sterilization. - If using gas (ethylene oxide) sterilization, allow full 12 hour aeration cycle to avoid accumulation of toxic byproducts on surface. - Use irradiation or other techniques as appropriate.	Re-use																																													
Use Alternative Respiratory Support Technologies - Use transport ventilators with appropriate alarms - especially for stable patients without complex ventilation requirements. - Use anesthesia machines for mechanical ventilation as appropriate/capable. - Use bi-level (BiPAP) equipment to provide mechanical ventilation. - Consider bag-valve ventilation as temporary measure while awaiting definitive solution/equipment (as appropriate to situation – extremely labor intensive and may consume large amounts of oxygen).	Adapt																																													
Assign Limited Ventilators to Patients Most Likely to Benefit if No Other Options Are Available STEP ONE: assess patient acuity using SOFA (see next page) scoring table and/or other parameters appropriate to the situation (agent-specific prognostic indicators, modifications based on agent involved).	Re-allocate																																													
<table><tr><th>ORGAN SYSTEM</th><th>SCORE = 0</th><th>1</th><th>2</th><th>3</th><th>4</th></tr><tr><td>RESPIRATORY PaO2 / FI02</td><td>> 400</td><td>≤ 400</td><td>≤ 300</td><td>≤200 with resp. Support</td><td>≤ 100 with resp. support</td></tr><tr><td>HEMATOLOGIC Platelets</td><td>> 150</td><td>≤ 150</td><td>≤ 100</td><td>≤ 50</td><td>≤ 20</td></tr><tr><td>HEPATIC Bilirubin (mg / dl)</td><td>< 1.2</td><td>1.2 – 1.9</td><td>2.0 – 5.9</td><td>6 – 11.9</td><td>≥ 12</td></tr><tr><td>CARDIOVASCULAR Hypotension</td><td>None</td><td>Mean Arterial Pressure < 70 mmHg</td><td>Dopamine ≤ 5 or any Dobutamine</td><td>Dopamine > 5 or Epi < 0.1 or Nor-Epi ≤ 0.1</td><td>Dopamine > 15 or Epi > 0.1 or Nor-Epi > 0.1</td></tr><tr><td>CENTRAL NERVOUS SYSTEM Glasgow Coma Score</td><td>15</td><td>13 - 14</td><td>10 - 12</td><td>6 - 9</td><td><6</td></tr><tr><td>RENAL Creatinine</td><td><1.2</td><td>1.2 - 1.9</td><td>2.0 - 3.4</td><td>3.5 - 4.9</td><td>≥5.0</td></tr></table>					ORGAN SYSTEM	SCORE = 0	1	2	3	4	RESPIRATORY PaO2 / FI02	> 400	≤ 400	≤ 300	≤200 with resp. Support	≤ 100 with resp. support	HEMATOLOGIC Platelets	> 150	≤ 150	≤ 100	≤ 50	≤ 20	HEPATIC Bilirubin (mg / dl)	< 1.2	1.2 – 1.9	2.0 – 5.9	6 – 11.9	≥ 12	CARDIOVASCULAR Hypotension	None	Mean Arterial Pressure < 70 mmHg	Dopamine ≤ 5 or any Dobutamine	Dopamine > 5 or Epi < 0.1 or Nor-Epi ≤ 0.1	Dopamine > 15 or Epi > 0.1 or Nor-Epi > 0.1	CENTRAL NERVOUS SYSTEM Glasgow Coma Score	15	13 - 14	10 - 12	6 - 9	<6	RENAL Creatinine	<1.2	1.2 - 1.9	2.0 - 3.4	3.5 - 4.9	≥5.0
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RESPIRATORY PaO2 / FI02					> 400	≤ 400	≤ 300	≤200 with resp. Support	≤ 100 with resp. support																																					
HEMATOLOGIC Platelets					> 150	≤ 150	≤ 100	≤ 50	≤ 20																																					
HEPATIC Bilirubin (mg / dl)					< 1.2	1.2 – 1.9	2.0 – 5.9	6 – 11.9	≥ 12																																					
CARDIOVASCULAR Hypotension					None	Mean Arterial Pressure < 70 mmHg	Dopamine ≤ 5 or any Dobutamine	Dopamine > 5 or Epi < 0.1 or Nor-Epi ≤ 0.1	Dopamine > 15 or Epi > 0.1 or Nor-Epi > 0.1																																					
CENTRAL NERVOUS SYSTEM Glasgow Coma Score					15	13 - 14	10 - 12	6 - 9	<6																																					
RENAL Creatinine	<1.2	1.2 - 1.9	2.0 - 3.4	3.5 - 4.9	≥5.0																																									

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

MECHANICAL VENTILATION / EXTERNAL OXYGENATION

STRATEGIES FOR SCARCE RESOURCE SITUATIONS (cont.)

RECOMMENDATIONS				Strategy	Crisis
STEP TWO: Compared to other patient(s) requiring and awaiting external ventilation/oxygenation, does this patient have significant differences in prognosis or resource utilization in one or more categories below that would justify re-allocation of the ventilator/unit? Factors listed in relative order of importance/weight. Injury/epidemiologic factors may have the highest predictive value in some cases and may also affect the predictive ability of the SOFA score.					
Criteria	Patient keeps resource 			Resource re-allocated	
1. Organ system function ^a	Low potential for death (SOFA score ≤ 7)	Intermediate potential for death (SOFA score 8-11)	High potential for death (SOFA score ≥12)		
2. Duration of benefit/prognosis	Good prognosis based upon epidemiology of specific disease/ injury.	Indeterminate/intermediate prognosis based upon epidemiology of specific disease/injury	Poor prognosis based upon epidemiology of specific disease / injury (e.g., pandemic influenza)		
	No severe underlying disease. ^b	Severe underlying disease with poor long-term prognosis and/or ongoing resource demand (e.g., home oxygen dependent, dialysis dependent) and unlikely to survive more than 1-2 years.	Severe underlying disease with poor short-term (e.g., <1 year) prognosis		
3. Duration of need	Short duration – flash pulmonary edema, chest trauma, other conditions anticipating < 3 days on ventilator	Moderate duration – e.g., pneumonia in healthy patient (estimate 3-7 days on ventilator)	Long duration – e.g., ARDS, particularly in setting of preexisting lung disease (estimate > 7 days on ventilator)		
4. Response to mechanical ventilation	Improving ventilatory parameters over time ^c	Stable ventilatory parameters over time	Worsening ventilatory parameters over time		
^a The Sequential Organ Failure Assessment (SOFA) score is the currently preferred assessment tool but other predictive models may be used depending on the situation / epidemiology. Note: SOFA scores were not designed to forecast mortality, and thus single or a few point difference between patients may not represent a 'substantial difference' in mortality, but larger differences and trends can be extremely helpful in determining resource assignment.					
^b Examples of underlying diseases that predict poor short-term survival include (but are not limited to): 1. Congestive heart failure with ejection fraction < 25% (or persistent ischemia unresponsive to therapy or non-reversible ischemia with pulmonary edema) 2. Severe chronic lung disease including pulmonary fibrosis, cystic fibrosis, obstructive or restrictive diseases requiring continuous home oxygen use prior to onset of acute illness 3. Central nervous system, solid organ, or hematopoietic malignancy with poor prognosis for recovery 4. Cirrhosis with ascites, history of variceal bleeding, fixed coagulopathy or encephalopathy 5. Acute hepatic failure with hyperammonemia					
^c Changes in Oxygenation Index over time may provide comparative data, though of uncertain prognostic significance. OI = MAWP x FiO2 / PaO2 where: OI = oxygenation index, MAWP= Mean Airway Pressure, FiO2 = inspired oxygen concentration, PaO2 = arterial oxygen pressure (May be estimated from oxygen dissociation curve if blood gas unavailable.)					
STEP THREE: Re-allocate ventilator/resource only if patient presenting with respiratory failure has significantly better chance of survival/benefit as compared to patient currently receiving ventilation. Follow additional regional and state/federal guidance and institutional processes for scarce resource situations.					

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

BLOOD PRODUCTS

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

Category	RECOMMENDATIONS	Healthcare Facility	Blood Center	Strategy	Conventional	Contingency	Crisis
All Blood Products	• Increase donations if required, and consider local increase in frozen reserves • Increase O positive levels • Consider maintaining a frozen blood reserve if severe shortage • Increase recruitment for specific product needs		√	Prepare			
	• Consider adjustments to donor HGB/HCT eligibility		√	Adapt			
	• Relax travel deferrals for possible malaria and BSE (bovine spongiform encephalitis)*		√	Prepare			
Packed Red Blood Cells	• Use cell-saver and auto-transfusion to degree possible	√		Re-use			
	• Limit O negative use to women of child-bearing age • Use O positive in emergent transfusion in males or non-child bearing females to conserve O negative	√		Conserve			
	• Change donations from whole blood to 2x RBC apheresis collection if specific shortage of PRBCs		√	Adapt			
	• More aggressive crystalloid resuscitation prior to transfusion in shortage situations (blood substitutes may play future role)	√		Conserve			
	• Long-term shortage, collect autologous blood pre-operatively and consider cross-over transfusion	√		Conserve			
	• Enforce lower hemoglobin triggers for transfusion (for example, HGB 7)	√		Conserve			
	• Consider limiting high-consumption elective surgeries (select cardiac, orthopedic, etc)	√		Conserve			
	• Consider use of erythropoietin (EPO) for chronic anemia in appropriate patients	√		Adapt			
	• Further limit PRBC use, if needed, to active bleeding states, consider subsequent restrictions including transfusion only for end-organ damage, then to shock states only	√		Re-allocate			
	• Consider Minimum Qualifications for Survival (MQS) limits on use of PRBCs (for example, only initiate for patients that will require < 6 units PRBCs and/or consider stopping transfusion when > 6 units utilized). Specific MQS limits should reflect available resources at facility.	√		Re-allocate			
	• Reduce or waive usual 56 day inter-donation period* based upon pre-donation hemoglobin		√	Adapt			

	Reduce weight restrictions for 2x RBC apheresis donations according to instruments used and medical director guidance*	√	Adapt			
Fresh Frozen Plasma	Though not true substitute, consider use of fibrinolysis inhibitors or other modalities to reverse coagulopathic states (tranexamic acid, aminocaproic acid, activated coagulation factor use, or other appropriate therapies)	√	Substitute			
	Consider reduction in red cell : FFP ratios in massive transfusion protocols in consultation with blood bank medical staff	√	Conserve			
	No anticipatory use of FFP in hemorrhage without documented coagulopathy	√	Conserve			
	Obtain FDA variance to exceed 24 collections per year for critical types*	√	Adapt			

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

BLOOD PRODUCTS

STRATEGIES FOR SCARCE RESOURCE SITUATIONS (cont.)

Category	RECOMMENDATIONS	Healthcare Facility	Blood Center	Strategy	Conventional	Contingency	Crisis
Platelets	Through not true substitute, consider use of desmopressin (DDAVP) to stimulate improved platelet performance in renal and hepatic failure patients	√		Substitute			
	May use leukoreduced whole blood pooled platelets (and, if required, consider non-leukoreduced whole blood pooled platelets)		√	Adapt	Leukoreduced		Non-leukoreduced
	Convert less needed ABO Whole Blood to Apheresis		√	Adapt			
	Transfuse platelets only for active bleeding, further restrict to life-threatening bleeding if required by situation	√		Conserve			
	No prophylactic use of platelets	√		Conserve			
	Accept female platelet donors without HLA antibody screen		√	Adapt			
	Accept female donors for pooled and stored platelets		√	Adapt			
	Apply for variance of 7 day outdate requirement*		√	Adapt			
	Consider a 24 hr hold until the culture is obtained and immediate release for both Pool and Apheresis		√	Adapt			
	Obtain FDA variance to allow new Pool and Store sites to ship across state lines*		√	Adapt			
	Reduce pool sizes to platelets from 3 whole blood donations		√	Adapt			

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

RENAL REPLACEMENT THERAPY

REGIONAL RESOURCE CARD

Resource cards are intended to provide incident-specific tactics and planning information to supplement the general strategy cards. They are organized according to the 'CO-S-TR' framework of incident response planning.

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Command, Control, Communication, Coordination	General Preparedness Information Compared to other critical care interventions, hemodialysis offers equipment availability, expansion capacity, and care coordination that greatly reduces the risk of contingency and crisis care, at least in our geographic area. Disaster dialysis challenges generally result from: 1. Lack of clean water sources (each hemodialysis requires about 160 liters ultra-clean water) 2. Relocation of dialysis-dependent patients to a new area (evacuation of nursing homes, "flood zones, etc.) 3. Increase in patients requiring dialysis (crush syndrome, unusual infections) <u>Outpatient</u> • Primary providers are DaVita and Fresenius – both have extensive contingency plans to increase capacity and relocate patients (including toll-free numbers to access dialysis services) • Renal Networks (multi-state renal planning, quality, and emergency preparedness) has database of all dialysis patients in the state/region and assists coordination activities <u>Inpatient</u> • Most facilities lease inpatient services via contract with above or other agencies; some have own nurses and program – plans should account for contingency use of alternate services / leasing services <u>Patient preparedness</u> • Patients should have a disaster plan – including specific foods set aside for up to 72h. Note that shelters are unlikely to have foods conducive to renal dietary needs (low sodium, etc.) Shortage of Renal Replacement Therapy (RRT) Resources • Affected facility should contact involved/affected dialysis provider companies and organizations as expert consultants	Prepare			
	Relocated Patients Requiring Outpatient Dialysis • Contact usual outpatient provider network to schedule at new facility – refer patients to 'hotlines' as needed Excess Patients Requiring Dialysis • Transfer patients to other facilities capable of providing dialysis • Consider moving patients to facilities with in-house water purification if water quality is an issue for multiple inpatients requiring dialysis • Consider moving other inpatient or outpatient dialysis staff and equipment to facilities requiring increased dialysis capacity	Substitute			
Space		Adapt			

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

RENAL REPLACEMENT THERAPY REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Supplies	Water Supply - Quantify water-purifying machines available for bedside dialysis machines - Identify facilities providing high-volume services that purify their own water and pipe to specific rooms in the dialysis unit, intensive care, etc. - Identify water-purifying and dialysis machines to be obtained through lease agreements Water Contamination - Consider alternate sources of highly purified water - Consider transferring stable inpatients to outpatient dialysis centers for dialysis treatments and vice versa - Consider use of National Guard water reserves and purification equipment – but must assure adequate purity for dialysis (potable is NOT sufficiently clean) Power Outage or Shortage - Consider transferring stable inpatients to outpatient dialysis centers for dialysis treatments and vice versa - Consider transferring inpatients to other hospitals - Consider transfer of outpatients to other facilities for care until issue resolved Dialysis Catheters, Machines, Reverse Osmosis Machines, and/or Other Supply Shortages Note: Dialysis catheters and tubing are inexpensive, relatively interchangeable, and supplied by several manufacturers - Stock adequate dialysis tubing sets and venous access catheters (Quinton, etc.) for at least one month's usual use - Identify provider network and other sources of supplies and machines - Transfer machines/supplies between outpatient centers and hospitals, or between hospitals	Prepare			
		Prepare			
		Substitute			
		Adapt			
		Substitute			
		Adapt			
		Substitute			
Staff	Dialysis Staff Shortages² - Non-dialysis nursing staff to take on "routine" elements of dialysis nursing (e.g., taking VS, monitoring respiratory and hemodynamic status, etc.) - Dialysis nursing staff to supervise non-dialysis nursing staff providing some dialysis functions - Outpatient dialysis techs may be used to supervise dialysis runs if provider deficit is critical issue (would be unlikely aside from potentially in pandemic or other situation affecting staff)	Substitute			
		Adapt			
Special	Community Planning Medical needs of re-located renal failure patients are substantial; planning on community level should incorporate their medication and dietary needs during evacuation and sheltering activities.	Prepare			
Triage	Insufficient Resources Available for All Patients Requiring Dialysis - Change dialysis from 'scheduled' to 'as needed' based on clinical and laboratory findings (particularly hyperkalemia and impairment of respiration) – parameters may change based on demand for resources - Conceivable (but extraordinary, given outpatient dialysis machine resources) situations may occur where resources are insufficient to the point that some patients may not be able to receive dialysis (for example pandemic when demand nationwide exceeds available resources) – access to dialysis should be considered as part of critical care intervention prioritization (see Mechanical Ventilation Strategies for Scarce Resource Situations)	Conserve			
		Re-allocate			



¹The major national dialysis corporations have extensive experience contending with disasters; their input during any anticipated or actual incident is imperative to optimize the best patient care.

²See Staffing in the Core Clinical Strategies for Scarce Resource Situations card set.

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

BURN TREATMENT REGIONAL RESOURCE CARD

Resource cards are intended to provide incident-specific tactics and planning information to supplement the general strategy cards. They are organized according to the 'CO-S-TR' framework of incident response planning.

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Command, Control, Communication, Coordination	General Preparedness Information - This cardset is specifically designed to address supplies and needs during the first 24 hours of care - Capacity and burn expertise may be available at: - American Burn Association verified burn centers - Burn units - Burn surge facilities - Burn casualties must be stabilized at the receiving hospital and then transferred to a burn center. Burn casualties should initially be transported to the highest level of burn/trauma care that is available in the area. - Mass burn incidents are unusual but must be anticipated. The ability of non-burn center hospitals to stabilize successfully and initially treat victims is critical to successful response. All hospitals should plan for incidents considering their relative size and role in the community - In a mass burn incident, burn consultation resources will be provided. Resource contacts may be outside of the state, because staff will be occupied with patient care and transfer activities	Prepare			
	Space Maximal use of burn beds at ABA burn centers, burn units and burn surge facilities	Adapt			
	Expand burn units into other ICU spaces at those hospitals	Conserve			
Space	- Transfer non-burn ICU patients out of burn centers, as necessary - Cohort overflow at institutions close to burn centers - Forward movement to regional burn centers in adjoining states as required to assure appropriate ongoing care - National Disaster Medical System (NDMS) patient movement may be required in massive incidents. In such an event, a burn transfer coordination point will be designated and contact information circulated to hospitals	Adapt			

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

BURN TREATMENT REGIONAL RESOURCE CARD

Category		RESOURCE and RECOMMENDATIONS				Strategy	Conventional	Contingency	Crisis
Supplies	Typical Planning Numbers	<u>Hospital Outpatient Supply Planning</u>				Prepare Increase Supply 			

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

BURN TREATMENT REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Staff	Staff - Strongly consider pre-incident training on care of major burns for physician and nursing staff; have quick-reference cards/materials available for burn stabilization - Identify staff with prior burn treatment experience (e.g., military) - Plan for just-in-time training for non-burn nursing and physician staff reinforcing key points of burn patient care (including importance of adequate fluid resuscitation, urine output parameters, principles of analgesia, etc.) - Consider sending burn-trained RN/MD to affected center to assist with triage and initial management if staffing allows. - Burn nurses and physicians provide burn/dressing related care only; other ICU and floor nursing and physician staff provide supportive care. Adjust burn nurse staffing patterns as needed. <i>See Staffing Strategies for Scarce Resource Situations</i> sheet for further considerations - Consider just-in-time training on dressing changes, wound care and monitoring – especially at non-burn centers - The State may work to set up a 'hotline' and/or telemedicine or other virtual means by which non-burn centers may easily consult with burn experts - National Disaster Medical System (NDMS) personnel and other supplemental staff may be required	Prepare			
		Adapt			
		Adapt			
		Conserve			
		Adapt Substitute			
Special	Special Considerations Consider availability of resources for: - Airway/inhalational injury – extra airway management supplies, bag-valve assemblies, etc. - Pediatric age-appropriate intravenous, intraosseous access devices, medication dosing guides - Consider carbon monoxide or cyanide poisoning if closed space smoke exposure – consult Poison Control Center* - Inhalational exposure – aggressive, early airway management for inhalational injuries - Electrical – high incidence of rhabdomyolysis and internal injuries – increase fluid resuscitation, add bicarbonate to intravenous fluids to alkalinize urine, monitor serum bicarbonate, creatinine, and creatine kinase - Chemical and radiologic – consider need for specific therapies - consult Poison Control Center* - Consider need for decontamination - consult Poison Control Center* - Psychological support for patients, their families and staff (Do not under-estimate the increased stress and psychological impact of a burn incident, particularly a mass casualty incident, on health care providers.) * Poison Control Center 1-800-222-1222	Prepare			



Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

BURN TREATMENT REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Triage	Critical Burns – Transfer to Burn Center As Soon As Possible • See Burn Triage Card • Regardless of the extent of burn involvement, palliation of pain should be considered a priority.	Conserve			

If large number of casualties and very severe burns, triage may have to be implemented based on knowledge of percent burn, age and underlying health issues, combined trauma or other conditions (such as severe inhalational injury). Initially, full support should be provided to as many patients as possible. **A triage table may contribute to decisions made by burn surgeons but should NOT substitute for a more global assessment of patient prognosis.**

(Tiered Triage Chart adapted from 2016 ABA Recommendations)

Categorize patients based on Triage Decision Table in combination with other comorbidities and in collaboration with State Burn Coordinating Center.

Age, in years	Percent TBSA burn size									
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	≥ 90
0-1.9										
2-4										
5-19	Outpatient			Delayed			Immediate			
20-29										
30-39										
40-49										
50-59										
60-69					Low survival, may opt for expectant management					
≥ 70										

Definitions:

Outpatient/Green: outpatient treatment and returned to duty/home. These are patients who are ambulatory, alert and oriented and have no life- or limb-threatening injuries. (Note: These “walking wounded” may initially refuse care at the scene, then present at the local hospital for treatment compromising capability assessments).

Delayed/ Yellow: less urgent than immediate, but still potential for life or limb threatening issues. These patients are not in danger of going into immediate

Re-
Allocate



	cardiac or respiratory arrest. Treatment may be temporarily delayed in order to care for more critical patients. Immediate /Red: immediate treatment needed to save life, limb, or sight (highest priority). These patients have a higher probability of survival with immediate treatment. Low Survival/ Expectant/Gray: poor prognosis even with treatment (lowest priority). Treatment may need to be denied to patients with severe injuries who, under more favorable circumstances, are theoretically salvageable. In this way, the greatest number of patients benefit from the limited care available.				
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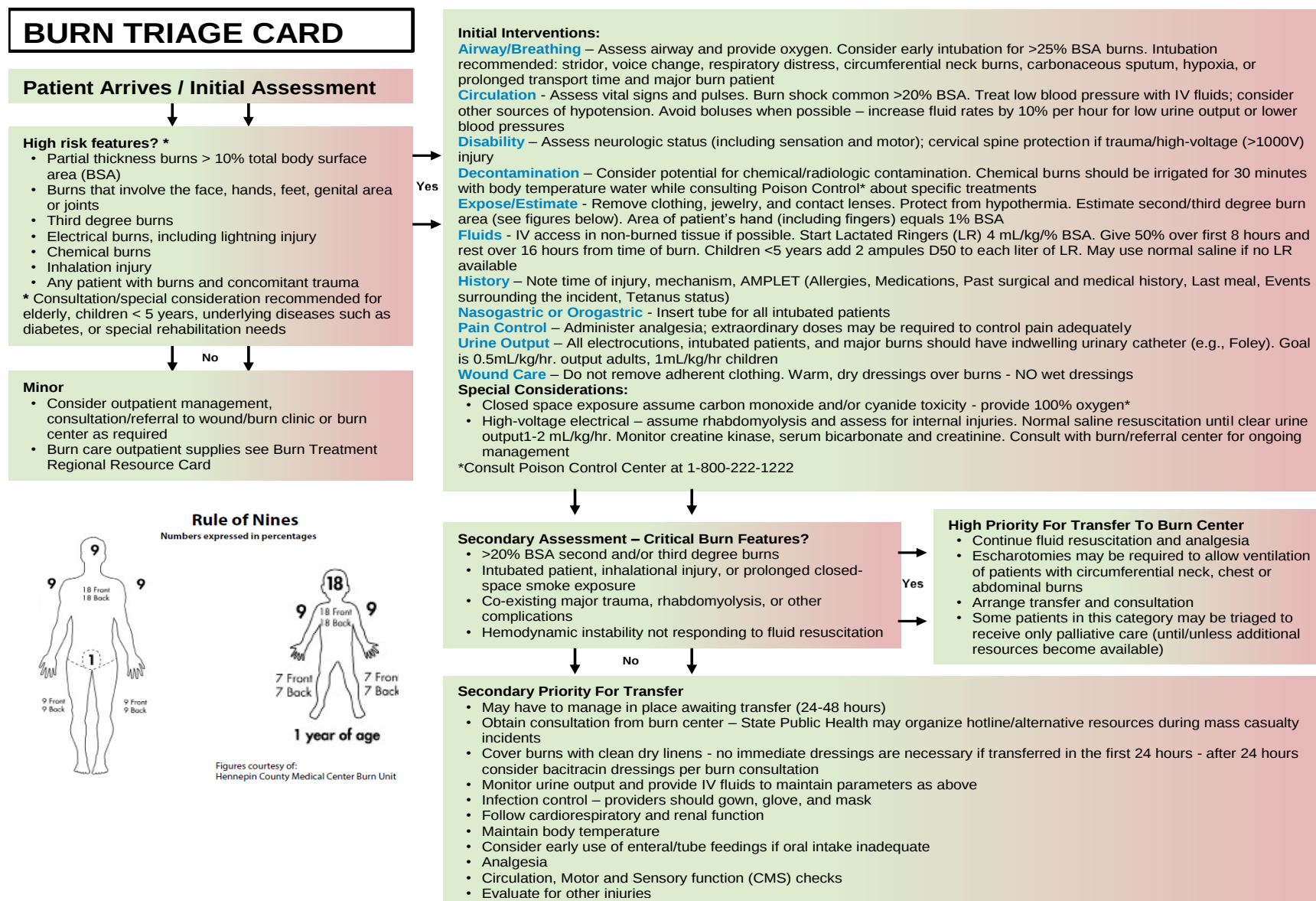


Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

BURN TREATMENT REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Treatment	Treatment Provide stabilizing burn care (airway, fluid management, analgesia, etc. – see Burn Triage Card with initial priorities, wound care, and nursing care). After stabilizing care, assess need for transfer to burn center. In a mass burn incident, assure coordination with Regional Hospital Resource Center, which will help to prioritize transportation and manage logistics. Patients may have to be held for 1-2 days at non-burn centers awaiting transfer in some cases.	Adapt			
Transport	Transport - Initial dressings should be dry, sterile dressing if transfer planned. If transfer will be delayed, adaptic dressings may be applied in consultation with burn center. - In consultation with burn specialist, arrange air medical transport or ground transport as appropriate - Obtain consultation with burn experts for ongoing care and triage/transportation prioritization if immediate transportation/referral is not possible - Plan for oxygen, fluids, and analgesia requirements during transport - Consider need for airway intervention prior to transport - Multi-agency coordination center may be used to help prioritize use of transportation assets - Consider use of Mass Casualty Incident (MCI) buses for large numbers of patients being transferred - Regional transfer may be required	Prepare			
		Adapt			

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.



Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

PEDIATRICS

REGIONAL RESOURCE CARD

Resource cards are intended to provide incident-specific tactics and planning information to supplement the general strategy cards. They are organized according to the 'CO-S-TR' framework of incident response planning.

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Command, Control, Communication, Coordination	Planning and response considerations: Tertiary centers with inpatient pediatric, trauma and PICU capability can provide consultation and transfer support based on patient needs. The following centers can provide real-time consultation in support of pediatric critical care when transfer is difficult or not possible or when highly specialized services (e.g. ECMO) are anticipated to be needed. - Pediatric patients will have to be stabilized (and in some cases treated, for 24 to 48 hours) at initial receiving hospital in major incident – all facilities must be prepared for pediatric cases - Facility procedures for patient tracking, unaccompanied minors, and release of minors to family/caregivers - Smaller incidents – facility-to-facility coordination - Coordinate transfers of patients to concentrate as many pediatric patients as possible at, or close to, pediatric centers (concentrate those less than 5 years of age and critically ill at children's hospitals) - Statewide incident impact - State may facilitate patient and resource distribution - Statewide consultation/referral hotline may be initiated as needed	Prepare			
Space	Space: - Use maximal beds on pediatric unit and at pediatric centers noted above - Prioritize transfer of children < 8 years of age to pediatric specialty centers - Surge to non-pediatric, age-appropriate units within hospital - Distribute non-critical and older pediatric patients from overwhelmed pediatric centers to other accepting facilities - Expand acute outpatient care for the minimally injured/ill - Forward movement to regional pediatric centers in adjoining states as required to assure appropriate ongoing care – in coordination with National Disaster Medical System (NDMS) patient movement for catastrophic incident (unlikely to only affect pediatric portion of population)	Adapt			
		Conserve			
		Substitute			

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

PEDIATRICS

REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis																													
Supplies	Outpatient Supply Planning: - Consider expansion of outpatient pediatric-specific supplies (e.g., crutches, pediatric-specific forms of analgesics at facility to support discharged patients) Inpatient Supply Planning: - Institutions should prepare based on role in community - As a minimum, recommend each facility be prepared to care for the number of victims listed in the table below, based on their designated trauma level. <table><tr><th rowspan="2">Inpatient Type</th><th colspan="4">Trauma Designation</th></tr><tr><th>Level I</th><th>Level II</th><th>Level III</th><th>Level IV</th></tr><tr><td>Critical Injuries < age 8 yrs</td><td>8</td><td>6</td><td>4</td><td>2</td></tr><tr><td>Moderate Injuries < age 18 yrs</td><td>20</td><td>15</td><td>10</td><td>5</td></tr><tr><td>Minor Injuries < age 18 yrs</td><td>20</td><td>15</td><td>10</td><td>5</td></tr><tr><td>Infants < age 1 yr</td><td>4</td><td>3</td><td>2</td><td>1</td></tr></table>	Inpatient Type	Trauma Designation				Level I	Level II	Level III	Level IV	Critical Injuries < age 8 yrs	8	6	4	2	Moderate Injuries < age 18 yrs	20	15	10	5	Minor Injuries < age 18 yrs	20	15	10	5	Infants < age 1 yr	4	3	2	1	Prepare			
	Inpatient Type		Trauma Designation																															
Level I		Level II	Level III	Level IV																														
Critical Injuries < age 8 yrs	8	6	4	2																														
Moderate Injuries < age 18 yrs	20	15	10	5																														
Minor Injuries < age 18 yrs	20	15	10	5																														
Infants < age 1 yr	4	3	2	1																														
The American Academy of Pediatrics/American College of Emergency Physicians recommended equipment list is the basis for planning, with emphasis on: - Airway equipment sufficient for number and age of victim - Vascular access equipment, including adequate quantity of intravenous cannulas and intraosseous needles - References, charts, or other systems for size/weight-based equipment and drug dosing (reference book, wall charts, Broselow tape, or similar) - External warming devices (such as Bair-hugger™) - State trauma system guidelines also identify pediatric equipment expectations																																		

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

PEDIATRICS

REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Staff	Staff: - Pre-incident pediatric medical/trauma critical care training should be conducted for physician and nursing staff expected to provide emergency care. Consider courses such as Advanced Pediatric Life Support, Pediatric Advanced Life Support - Staff that do not regularly provide pediatric emergency care but could be called upon in a disaster should receive pre-incident training and orientation to facility equipment. Scenario-based or other training (simulation and other brief, frequent training) is highly recommended - Just-in-time training may be required in certain situations for non-pediatric nursing and physician staff reinforcing key points of pediatric or incident-specific patient care (including pediatric assessment triage, importance of fluid management, urine output parameters, principles of analgesia, etc.) - In a major incident, adjust pediatric physician and nurse staffing patterns as needed to provide supervision of key aspects of pediatric care. See <i>Staffing Strategies for Scarce Resource Situations</i> for further consideration; for example, have critical care staff supervise care at a higher level, delegating many bedside duties to other providers - The State may work with in-state and adjacent state experts to set up 'hotline' to provide consultation to non-pediatric centers caring for pediatric patients (for example during pandemic) - National Disaster Medical System and/or other supplemental staff may be required to work in facilities (see <i>Staffing Strategies for Scarce Resource Situations</i>)	Prepare			
		Adapt			
		Conserve Adapt Substitute			
Special	Consider availability of resources for: - Social work/ family support - Psychological support for children, their families and staff (do not under-estimate the increased stress and psychological impact of a pediatric incident, particularly a mass casualty incident, on healthcare providers) - Discharge support and planning, particularly for rehabilitation and other specialty follow-up - Patient tracking and patient safety, particularly for unaccompanied minors (e.g. banding system to identify children and guardians) - Family / caregiver accommodations	Prepare			
Triage	Consider early transfer to a facility providing pediatric intensive care services for: - Progressing respiratory symptoms/hypoxia - Shock, or need for ongoing resuscitation - Critical trauma, including neurotrauma according to usual trauma triage criteria - Patients with concomitant burns should be transferred to burn centers - Patients with complex underlying medical conditions may require consultation or special triage considerations	Conserve			

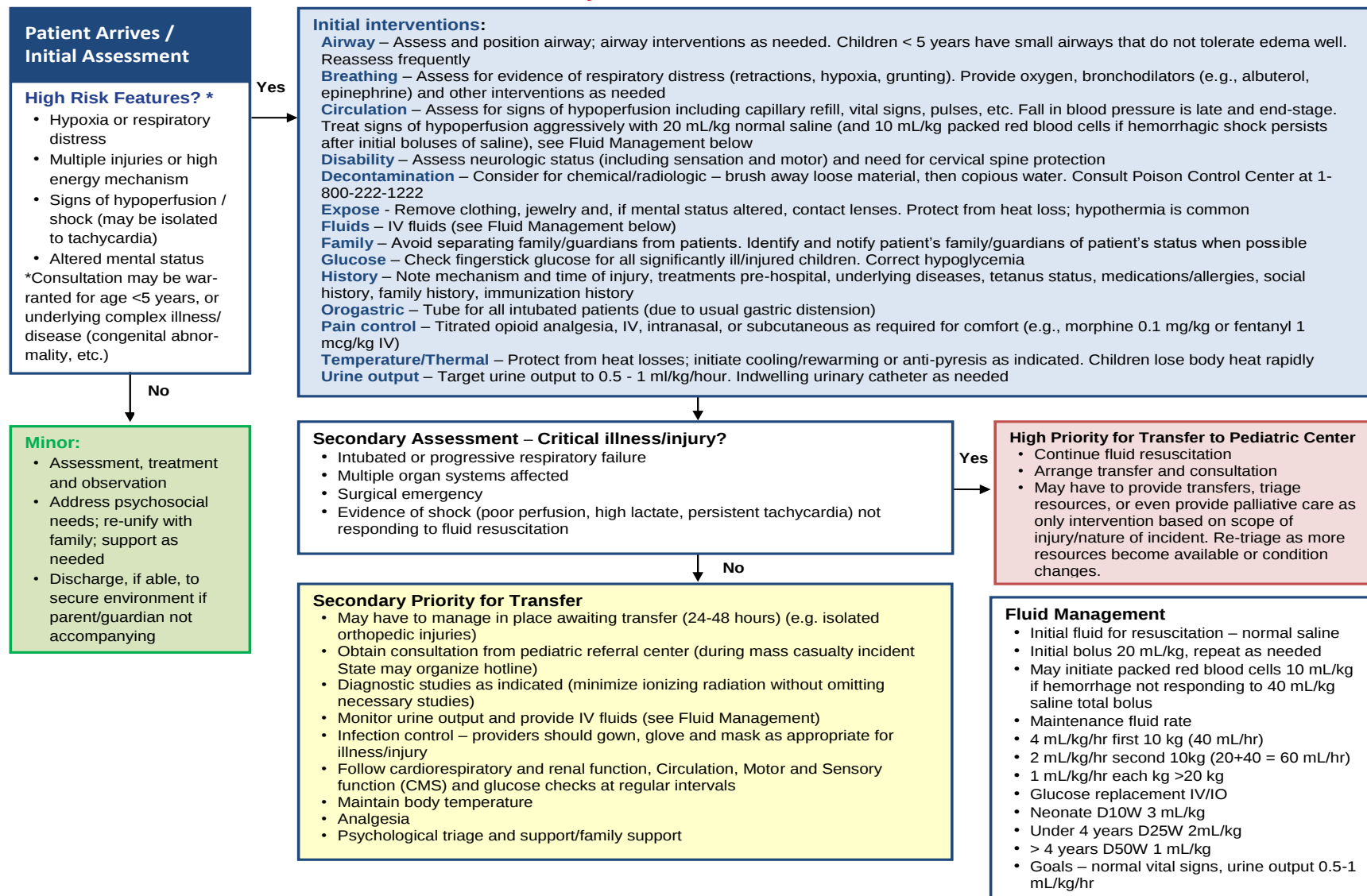
PEDIATRICS

REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Treatment	Provide stabilizing care (airway, fluid management, analgesia, etc.) – see Pediatric Triage Card for initial priorities Special Considerations: - Airway/Breathing and Circulation (ABCs) are still critical – do not deviate from usual trauma/critical care priorities due to size/age/behavior concerns - Pediatric airways are small; there is little room between partial and complete obstruction - Age and height-based estimations are NOT always accurate – always be prepared with a range of equipment sizes, especially for airway interventions - Assess skin color, capillary refill and heart rate for signs of poor perfusion. Hypotension is a late sign of shock in pediatric patients - Typically, pediatric patients respond to treatments more quickly than adults. Reassess them frequently and alter treatments to lift the response - Monitor for signs of pain and treat pediatric patients with analgesics via weight-based guidelines, then titrate to effect. Pediatric pain is often inadequately treated - Hypoglycemia and hypothermia are very common –anticipate, prevent, and correct as necessary - Monitor IV fluids carefully to control volume delivered in smaller patients (e.g., IV pumps or buretrols) - Double-check medication doses with team members, especially with medication drips as significant errors are common. DO NOT exceed maximum adult dose - Assessment may be difficult due to age-related and communication-related issues – history from the family/caregivers may be critical - Do not separate the child from family/guardian if at all possible - Medical alert bracelets and care plans should be sought for all children	Prepare			
Transportation	After stabilizing care, assess need for transfer: - Plan for oxygen, fluids, and analgesia requirements in transport - Consider need for airway intervention prior to transport - Consider plans for caregivers/family transportation - A mass casualty incident may affect more than one facility requiring coordination with regional healthcare coalitions to prioritize transportation and manage logistics via Multi-Agency Coordination - Regional transfer coordination may be required in major disasters and may involve appropriate State and Federal (NDMS) resources in certain situations (such as pandemic, major mass casualty incident) patients may have to receive care in non-pediatric centers - Ensure that targeted medical record information (including name, allergies, medications given, current medications, age and family contact information) is always with patient - Arrange transport via air medical transport as appropriate – if multiple institutions affected coordinate with regional healthcare coalition and/or multi-agency coordination system	Prepare Adapt			

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

PEDIATRIC TRIAGE CARD For Mass Casualty Situations



Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

PALLIATIVE CARE

REGIONAL RESOURCE CARD

Resource cards are intended to provide incident-specific tactics and planning information to supplement the general strategy cards. They are organized according to the 'CO-S-TR' framework of incident response planning.

Orientation to Specialty and Goals:

NOTE:

This card provides a focused description of palliative care management principles in disaster situations. These principles are relevant to all patients, as well as those who may receive palliative care as their only intervention due to demand on the healthcare system relative to their prognosis.

Specialty Description:

Palliative care has a goal of providing the best possible quality of life for people facing the pain and stress of a serious, but not necessarily terminal, medical condition. It can be appropriate for patients of any age and at any stage of an illness - from diagnosis on - and can be provided along with treatments for the medical condition.

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Principles of Palliative Care:

- **Palliative care should be provided to ALL patients.**
- In a subset of patients, it may be the only care that is able to be provided due to the patient's prognosis and available resources
- Focuses on human contact and comfort in addition to medical care
- Increases the physical and mental well-being of the patient
- Is not abandonment or euthanasia, and does not aim to hasten death (though in some cases, the doses required to relieve severe symptoms may indirectly contribute to the dying process; however, this meets the ethical criteria for the double-effect principle where indirect harm is permissible in the service of a greater good.
- Relieves symptoms and provides physical comfort measures such as control of pain, nausea, dyspnea, temperature regulation, and positioning.
- Assures respectful care, reassurance, and emotional and social support as possible

Disaster Considerations:

- Symptom support should be maintained in hospital and non-hospital environments – this will involve planning by outpatient entities such as hospice care, pharmacies, medical equipment providers as well as inpatient entities such as palliative care programs
- For existing hospice patients, the spectrum of care should be defined
- For those designated to receive only palliative care key considerations are:
 - ◊ Expected survival - hours, days, or weeks – this helps to guide needs, referrals, and resources
 - ◊ Required interventions – this helps guide location of care and support planning
 - ◊ Basis for designation – if the decision for palliative care is based on the lack of a single resource, there must be a plan for re-assessment if the patient's condition improves or more resources become available (i.e., would they qualify to receive additional treatment if more resources become available and how are they contacted/monitored) - see triage tree below
- Home health and other agencies will need to prioritize services relative to hospice patients during a disaster (as this can have significant impact on patient/family/agency planning)
- Supportive measures should be offered that maintain comfort, but do not prolong the dying process
 - ◊ If death is inevitable, there may be no point in providing intravenous fluids
 - ◊ **If death is not certain, other forms of support may be very reasonable as other resources become available**

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

PALLIATIVE CARE REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Communications and Coordination	Communications and Coordination: • Close coordination between hospitals, home care agencies, and public health is required prior to and during disasters in which increased home care and at-home palliative and hospice services are expected • Communications, including printed materials and a mechanism for ongoing situational awareness, are required during contingency and crisis events – this may involve conference calls or other means of keeping stakeholder agencies informed and up-to-date • In major disasters requiring proactive triage to palliative care only, the State may provide additional guidance and incident-specific resources, which may include a hotline for advice and consultation about palliative care issues. Additional resources for families providing home care would also need to be made available by local and state public health and major healthcare systems Communications with Families and Patients: • Review advance care planning in the context of the current situation – proxy designations, advance directives, Physician Orders for Life-Sustaining Treatment (POLST) forms. • Interventions able to be offered may not fulfill all of the preferences expressed in those directives • Describe palliative support as a quality of life and aggressive symptom management framework that is not related to hastening death or euthanasia • Incorporate relevant cultural variables into palliative care plans • Proactively provide families and patients with up-to-date information on the resources in shortage and any relevant triage criteria/processes being used, as well as any necessary infection prevention measures • Explain the basis of triage decisions and any re-assessment or potential options. Re-frame goals of care with patient and family • Maintain hope despite changes in treatment/goals - factors that often decrease hope include feeling de-valued, abandoned or isolated (“there is nothing more that can be done”), lack of direction and goals, and unrelieved pain and discomfort	Prepare Adapt			

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

PALLIATIVE CARE REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Space	Inpatient Space: In crisis situations there may be a large number of patients that are receiving palliative care only – cohorted spaces may be an option for these patients. These areas should be: • Comfortable – the maximal physical comfort should be provided to patients and families and the environment and equipment should be as comfortable as possible given the resources available • Private – as much privacy as possible should be planned for the patients and families Outpatient Space: Facilities should have plans in place with home healthcare agencies as well as plans for family provision of palliative care. This may include: • Home care/hospice agencies should prioritize services to those with the most limited support or more intensive support needs during a disaster (e.g., prioritize services to those requiring intravenous fluids or medications, oxygen, or other high-intensity therapies - if these can be maintained during the disaster) • Phone banks and other indirect support services for families and patients Transitions: • When inpatients are receiving palliative care as their only treatment, they must be cared for in a space appropriate to their remaining life expectancy (i.e., patients with hours to live would not be moved, and patients with days or weeks remaining would be moved to another inpatient area or to home/outpatient care) • Access to pre-printed information for families guiding them in the provision of comfort care including: ◊ Analgesia and other medication dosing per physician or other instructions ◊ General information about prevention of decubitus ulcers and maintenance of comfort ◊ The dying process, what to expect, and what to plan for ◊ Resources that the family can use in case of questions or problems • Assure that appropriate infection prevention precautions are accounted for (e.g. droplet precautions)	<i>Adapt</i> <i>Conserve Adapt</i> <i>Substitute Adapt Conserve</i>			
Supplies	Supplies: There is no substitute for pre-event stockpiling of medications to treat key symptoms. Every disaster will require significant quantities of analgesics. The availability of adequate pain and symptom relief should be a key area of disaster planning. Inpatient and Outpatient: Anticipate the need for additional stocks of medications to provide analgesia and symptom relief for all patients. Inexpensive but critical medications to stockpile include: • Oral non-opioid analgesics (also valuable as anti-pyretics) • Opioid analgesics • Benzodiazepines • Anti-psychotics • Anti-emetics • Steroids • Diuretics Outpatient pharmacies should anticipate the need for increased supplies of these agents and support palliative care dosing of these agents that may be in excess of usual recommendations. • Avoid stockpiling or hoarding in the setting of increased demand.	<i>Prepare</i> <i>Adapt</i>			

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

PALLIATIVE CARE REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Staff	Staff: - Physician and nursing staff expected to provide disaster palliative care should receive pre-incident palliative care training - Staff that do not regularly provide palliative care, but could be called upon in a disaster, should receive pre-incident training and orientation to facility resources - The facility should identify subject matter experts within their facility/area and obtain their input into palliative care planning. During a response, these experts can provide input on strategies and tactics, as well as provide overall clinical guidance and expertise	Prepare			
	- Faith-based and other community resources for non-clinical support may be critical assets for those receiving care at home - Spiritual resources should be made available to both patient and family if desired and feasible - Just-in-time training should be provided to nursing and physician staff as required to acquaint them with palliative care priorities, medication dosing, and other issues	Conserve Adapt Substitute			
	- Hospice agencies should have plans to adjust staff roles and triage services provided in response to increased demand - In case palliative care areas are activated, support these areas with staff that are comfortable with medication administration that can be supervised by staff with more experience. Precise recommendations on staffing are difficult as the needs of the patients can vary greatly, but every attempt should be made to provide adequate personnel to meet the comfort needs of patients – this may involve tiered use of professional and non-professional staff - Additional staff may have to be drawn from other institutions or fields, or from the Medical Reserve Corps (e.g., to provide broader support to homecare). These staff will also require just-in-time training - Regionally, palliative care teams that can support a facility in crisis or support additional outpatient care may be advantageous	Conserve Adapt Substitute			
Special	Special: When triage to 'palliative care only' in disasters is not by patient choice, management of expectations and transitions is critical to the physical and mental well-being of patient, family, and providers. - Consider availability of resources for: - Social work/family resources - Spiritual support - Psychological support for patients and their families - Discharge and/or death support and planning - Family/caregiver accommodation - Psychological support for staff	Prepare			

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

PALLIATIVE CARE REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Triage	Triage: - The need for palliative care should be anticipated in all disaster scenarios - Triage decisions may be required in minutes (multiple burn victims), over hours (many trauma victims), or over days or weeks (pandemic) - When it is clear that the volume of patients and current level of resources will require prioritizing some patients to palliative care only, triage criteria should be developed whenever possible and a formal triage team put in place (proactive measures may not be possible in the early phase of an incident, but should be implemented as soon as possible) - Location for palliative care should be optimized given the constraints of the incident – patients may be triaged to home, to other facilities, to inpatient units, or to other locations - Triage is dynamic. As resources allow, it is critical to re-triage patients so that they may receive resources that have become available. Predicted prognosis does not equate with actual outcome in many cases. (See triage tree below) Triage Tree - Resource-dependent palliative care considerations <pre> graph TD A[Actively dying or certain to die?] -- Yes --> B[Provide palliative care only; minimize interventions that 'prolong death'] A -- No --> C[Poor prognosis relative to others in need?] C -- Yes --> D[Does demand limit all resources or just select resources (ventilators, select medications)?] C -- No --> E[Provide all available resources, including symptom management] D -- All --> B D -- Select --> F[Provide resources that are available to improve prognosis] B --> G[Re-assess prognosis of ALL patients at regular intervals; optimize symptom management] E --> G F --> G G --> A </pre>	Conserve			
		Re-allocate			
		Adapt			

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

PALLIATIVE CARE REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Treatment	Treatment: Provide Symptomatic Management: • Do not under-estimate the psychological impact on patients, caregivers and family of these situations. All of these persons may require medical and non-medical treatment for anxiety, grief, complicated grief, post-traumatic stress disorder and mental health issues due to the stress of these events • Treatment with appropriate doses of medication is important – see the opiate dosing references below as an example, but after initial doses, titrate to appropriate symptom relief as required, rather than to any specific recommended dose of medication • Adapt with the medications and resources that are available General Pain Management: • ‘WHO ladder’ for pain relief ◊ For mild pain (unless contraindicated) use aspirin, acetaminophen or non-steroidal anti-inflammatory agents ◊ If pain persists (mild to moderate) add oxycodone, hydrocodone, or similar oral opioids ◊ If pain is not controlled, increase the opioid dose (may consider oral hydromorphone or morphine) ◊ Add adjuvant medications to medication regimen as possible/needed to reduce opioid requirements • The patient’s report of pain is the standard assessment tool to gauge if the pain management regime is adequate • Pediatric and unresponsive/non-verbal patients require alternate methods of assessment of non-verbal cues of distress • Numerical distress or visual/analog scales can provide standardized assessment • Adjuvant medical (anti-depressants, etc.) and non-medical treatments (acupuncture, etc.) may be valuable – expert consultation should be obtained in disasters where a longer timeframe allows these treatments to be implemented • Provision of non-medical comforts (company, quiet environment or music, pillows, etc.) is a critical component of palliative care and should be optimized according to patient needs Opioid Management Principles for Disaster Situations: • Oral morphine is the standard opioid from which potencies and conversion ratios are based for most other opioid medication • Opioids can be given by almost every possible route – oral, sublingual, intravenous, intranasal, intramuscular, rectal, or subcutaneous • Pain equivalence tables can vary. Incomplete cross tolerance exists when converting between different opioids – consider dose reductions of 25 – 50% for initial doses when switching drugs (depending on clinical circumstances)	Prepare Adapt			

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

PALLIATIVE CARE REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
	• Opioids typically do not have ceiling effects for analgesia. Limitations are usually related to side effects or intolerances • Patients with sustained-release opioid needs usually require short-acting opioid for breakthrough pain as well as for dose-finding for long-acting opioid dose adjustments. Short-acting breakthrough dose should typically be 10 - 15 % of total 24 hour daily requirement of the sustained-release opioid • When dosing with opioids, remember common side effects and treat accordingly (e.g., constipation, nausea, pruritis, confusion, sedation). Respiratory depression is a rare event related to opioid dosing and usually occurs in the context of multiple drug class utilization, and other underlying chronic clinical conditions • Fentanyl transdermal patches require good adipose stores to be effective, as the real physiologic reservoir is underlying adipose tissue. If patients are thin, think of other opioid options • Best opioids to consider in the face of renal insufficiency include methadone, fentanyl, and dilaudid • Breakthrough dose: 1/3 to ½ of the twelve hour dose or 10-15 % of the 24 hour dose (if >3 breakthrough doses per 24 hr period consistently required, consider reiteration of dose) • Titrating dosage, may use the following guideline: (Pain scores from 1-10 with 10 being worst imaginable) Pain > 7 Increase dose by 50% to 100% Pain 4 – 7 Increase dose by 25% to 50% Pain < 4 Increase dose by 25% if indicated/desired • Once a patient has 2 or fewer breakthrough doses and a steady state of medication has been reached, then a continuous release equianalgesic opioid may be initiated. Always start with an instant release before switching to continuous release. Note that continuous release opioids do not have mg/mg equivalence -e.g. a patient requiring 60mg of morphine elixir each day would not be started on 60mg of MS Contin as an equivalent dose • Switch from fixed combination acetaminophen/opioids to a single entity opioid when acetaminophen dose > 3000 - 4000 mg / day or as weight appropriate • Avoid fixed dose combination analgesics in pediatric patients when possible to allow more effective titration and avoid excess acetaminophen dosing • Consider use of methadone where available particularly for outpatient management of pain	Prepare Adapt			
Tracking	Tracking: • Assure that patients referred to home care (formally or informally) are tracked by public health and the appropriate agencies	Prepare			

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

PALLIATIVE CARE REGIONAL RESOURCE CARD

Key Symptoms and Treatments:

Symptom	Pharmacologic Options	Additional Strategies
Pain	See 'WHO ladder'	Integrative therapies, acupuncture, hypnosis, interventional techniques, music therapy, heat/cold therapy, supportive caring
Dyspnea	Opioids and oxygen are standard therapy, additional agents of benefit may include benzodiazepines, bronchodilators, and nebulized furosemide (20 mg IV solution with 3 mL normal saline every 4 hours as needed)	Treat underlying cause, oxygen, direct air from fan onto face; integrative therapies, hypnosis.
Nausea	Serotonin antagonists (ondansetron), substance P antagonists (aprepitant), dopamine antagonists (prochlorperazine), butyrophenones (haloperidol), corticosteroids, benzodiazepines, atypical antipsychotics (olanzapine), cannabinoids, anti-histamines (meclizine), anticholinergics (scopolamine), substituted benzamide (metoclopramide)	Treat underlying cause; consider interventional options depending on underlying cause (e.g., small bowel obstruction consider nasogastric tube), integrative therapies, hypnosis, acupuncture, music therapy, supportive caring. Consider constipation as possible etiology if on chronic opioids.
Anxiety	Benzodiazepines, atypical antipsychotics, cannabinoids, anti-depressants	Treat underlying cause, spiritual support, supportive caring, integrative therapies, hypnosis, relaxation techniques, music therapy
Agitation / Delirium	Haloperidol, atypical antipsychotics, sedatives	Provide quiet, dark environment, hydration, support sleep hygiene, minimize stimulation, consider calming soft music Identify specific underlying cause if possible: • Benzodiazepine paradoxical agitation - consider discontinuing • Opioid neurotoxicity - consider opioid rotation • Steroid psychosis - consider dose change or elimination • Opioid withdrawal - consider tapering doses
Constipation	Docusate sodium, sennosides, polyethylene glycol, lactulose, magnesium citrate, bisacodyl, glycerine, enemas	Treat underlying conditions, hydration, consider subcutaneous methylnaltrexone for chronic opioid-induced constipation – ensure no mechanical obstruction re: risk of perforation (risk higher in patients on steroids)
Diarrhea	Loperamide 2 mg tablets if not contraindicated. Other interventions according to cause	Treat underlying conditions, hydration, consider subcutaneous methylnaltrexone for chronic opioid-induced constipation – ensure no mechanical obstruction re: risk of perforation (risk higher in patients on steroids)
Diarrhea	Loperamide 2 mg tablets if not contraindicated. Other interventions according to cause.	Determine underlying cause and potential therapies
Secretion control	Sublingual atropine; 1% eye drops 2-3 drops every 3-4 hours as needed; glycopyrrolate (IV 0.4 mg every 4-6 hours, oral 2 mg every 8 hours or appropriate weight-based dose); scopolamine patch	Education for family regarding: death rattle, reposition in bed, very gentle suction +/-, mouth care
Skin breakdown /protection		Treat underlying cause, gentle repositioning, supportive pads, air mattress, specialty beds
Active dying	Aggressive supportive care depending needs. Do not 'prolong dying process' with on-going therapies such as transfusions, IV fluids, artificial nutrition, antibiotics. Stop medications that have no bearing on symptom support management. Focus on the 'patient as person' – not on clinical indicators. Oxygen does not offer symptom benefit for actively dying patients and oxygen delivery devices can be uncomfortable and cause sensations of claustrophobia.	Supportive care of family, education about dying process, spiritual support, psychosocial support, company, listening, storytelling, silence, companionship. Discontinue monitors and vital signs documentation.

Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

PALLIATIVE CARE REGIONAL RESOURCE CARD

DOSE CONVERSION TABLE FOR SELECTED OPIOIDS

(Consider dose reduction between opioid in view of incomplete cross tolerance)

Hydromorphone IV (mg / day)	Hydromorphone PO (mg/day)	Morphine IV (mg/day)	Morphine PO (mg/day)	Fentanyl* Transdermal (mcg/hr)	Oxycodone PO (mg/day)
2.5	12.5	17	50	25	30
5	25	33	100	50	65
7.5	37.5	50	150	75	100
10	50	67	200	100	130
12.5	62.5	83	250	125	165
15	75	100	300	150	200
17.5	87.5	117	350	175	230
20	100	133	400	200	265
22.5	112.5	150	450	225	300
25	125	167	500	250	330
27.5	137.5	183	550	275	360
30	150	200	600	300	400

* Transdermal Fentanyl absorption and response may vary depending on amount of adipose tissue present (i.e. better absorbed in patients with more adipose tissue, worse absorption in thin patients). Also, consider dose reduction (e.g. 25%) if transitioning from transdermal patch to oral opioid equivalent

G. Clinical Considerations

Table 12: Allocation of Resources along the Care Capability Continuum (Crisis Standards of Care, IOM, pp.1-41, 2012)

	Conventional	Contingency	Crisis
SPACE	Usual patient care space fully used	Patient care areas (PACU, monitored units for ICU-level care)*	Facility damaged/unsafe or non-patient care areas (classrooms, etc.) used for patient care
STAFF	Usual staff called in and utilized	Staff extension (brief deferrals of non-emergency service, supervision of broader group of patients, change in responsibilities documentations, etc.)	Trained staff unavailable or unable to adequately care for volume of patients even with extension techniques
SUPPLIES	Cached and usual supplies used	Conservation, adaptation, and substitution of supplies with occasional re-use of select supplies	Critical supplies lacking, possible re-allocation of life-sustaining resources
STANDARDS OF CARE	Usual care	Functionally equivalent care	Crisis standards of care

Note: ICU – Intensive Care Unit, PACU – Post Anesthesia Care Unit

1. *Emergency Medical Services*

The entire EMS system will have a major response role during a disaster. EMS providers will need to adapt practices and standards of care to address the most difficult circumstances.

a) *Triage*

Triage is commonly defined as the first assessment prior to medical intervention. A variety of triage systems have been developed for use in emergencies and disasters. Triage protocols to be considered during a disaster in the State of Colorado include:

- START for adults,
- JumpSTART® for pediatric patients,
- SALT, and
- the Colorado Triage Guidelines during Pandemic Influenza

See Appendix E for algorithms of Triage Strategies.

b) *Expanded Scopes of Practice and Services*

EMS Providers. In Colorado, all levels of EMS providers are certified to practice by CDPHE. Permissible medical acts and medications are governed by state rules. See 6 CCR 1015-3, Chapter 2. In the event of a Governor's disaster declaration and implementation of CSC, an executive order will provide guidance on any modification to the permissible medical acts.

c) *Resource Utilization*

In planning for a catastrophic emergency, the EMS system, including medical direction, should plan to maximize personnel use and may consider employing options such as

- extended shifts,
- non-medical drivers,
- one-person response vehicles for patient evaluation per established local or regional protocols, and
- use of non-traditional transport vehicles (vans, buses) to maximize transport capability.

Such plans could be deployed on a local or regional level. Shortages of emergency response vehicles and staffing during a prolonged public health emergency will likely result in the temporary inability of the EMS system to serve some portions of the state.

2. *Hospital and Acute Care Facilities*

a) *CSC Triage Process*

Under Crisis Standards of Care, the focus of medical care will shift from the individual patient to promoting the use of limited resources, i.e. the greatest good for the greatest number. Resources are directed to patients for whom treatment will most likely be lifesaving and whose functional outcome will most likely improve with treatment.

This approach may represent a significant change in how patients are cared for and treated. Development of a facility based CSC Triage process is strongly recommended. The use of Crisis Triage Officers (CTOs) and/or a Crisis Triage Officer Team (CTOT), as identified in the IOM Crisis Standards of Care Guidance, may be useful in some facilities and if used should be included in a facility's Emergency Operations Plan (EOP). The CSC triage process should be developed based on concepts of disaster operations specific to the incident, and should include representatives with extensive hospital experience. During an incident in which Crisis Standards are implemented, this process will assist in making resource allocation decisions for individual patients.

The CSC process should consider three components:

A. Inclusion criteria: These criteria attempt to identify patients who may be more likely to benefit from admission to critical care and primarily focuses on respiratory failure.

B. Exclusion criteria: Patients meet exclusion criteria when they have a very high risk of death or little likelihood of long-term survival, and a correspondingly low likelihood to benefit from critical care resources. This includes life-limiting illnesses, such as end-stage congestive heart failure, end-stage COPD, and terminal liver disease or cancer. Another category of exclusion criteria includes patients who may benefit from critical care, but would require intense use of resources and prolonged care that cannot be justified during a multi-casualty event or pandemic.

C. Criteria for withdrawal of critical care

(1) *Adult Inclusion and Exclusion Criteria*

Inclusion Criteria: Patients being considered for critical care have one of the following:

(1) Requirement for invasive ventilatory support

- a) Refractory hypoxemia ($\text{SpO}_2 < 90\%$ on non-rebreather mask or $\text{FIO}_2 > 0.85$) or Respiratory acidosis ($\text{pH} < 7.2$).
- b) Clinical evidence of impending respiratory failure.
- c) Inability to protect or maintain airway.

(2) Hypotension* with clinical evidence of shock**

- a) Refractory to volume resuscitation, and requiring vasopressor or inotrope support that cannot be managed in a ward setting.

*Hypotension = Systolic BP <90 mm Hg or relative hypotension

**Clinical Evidence of Shock = Altered level of consciousness, decreased urine output, or other evidence of end-stage organ failure.

MAP = mean arterial pressure in mm Hg (diastolic + 1/3(systolic - diastolic))

dop= dopamine in micrograms/kg/min

epi = epinephrine in micrograms/kg/min

Exclusion Criteria: A patient may be considered for exclusion from admission or transfer to critical care, depending on available resources, if any of the following is present and is deemed to impact short-term survival:

PRE-EXISTING CONDITIONS

- (1) Severe and irreversible chronic neurologic condition with persistent coma or vegetative state.
- (2) Known severe dementia medically treated and requiring assistance with activities of daily living.
- (3) Advanced untreatable neuromuscular disease (such as Amyotrophic Lateral Sclerosis [ALS] or end-stage Multiple Sclerosis [MS]) requiring assistance with activities of daily living or requiring chronic ventilatory support.
- (4) Incurable metastatic malignant disease.
- (5) End-stage organ failure meeting the following criteria:
 - Heart: NEW YORK HEART ASSOCIATION (NYHA) FUNCTIONAL CLASSIFICATION SYSTEM Class III or IV (g).
 - Lung (any of the following):
 - Chronic Obstructive Pulmonary Disease (COPD) with Forced Expiratory Volume in one second (FEV1) < 25% predicted baseline, PaO2 <55 mm Hg, or severe secondary pulmonary hypertension.
 - Cystic fibrosis with post-bronchodilator FEV1 <30% or baseline PaO2 <55 mm Hg.
 - Pulmonary fibrosis with Vital Capacity (VC) or Total Lung Capacity (TLC) < 60% predicted, baseline PaO2 <55 mm Hg, or severe secondary pulmonary hypertension.
 - Primary pulmonary hypertension with NYHA class III or IV heart failure (g), right atrial pressure >10 mm Hg, or mean pulmonary arterial pressure >50 mm Hg.
 - Liver: PUGH SCORE >7 (h), when available. Includes bili, albumin, International Normalized Ratio (INR), ascites, encephalopathy.

ACUTE CONDITIONS

- (6) Acute severe neurologic event with minimal chance of functional neurologic recovery (physician judgment). Includes traumatic brain injury, severe hemorrhagic stroke, and intracranial hemorrhage.
- (7) Severe acute trauma with a REVISED TRAUMA SCORE <2

Table 13: Revised Trauma Score (Champion HR et al, 1989)

Glasgow Coma Scale (GCS)	Systolic Blood Pressure (SBP)	Respiratory Rate (RR)	Coded Value
13-15	>89	10-29	4
9-12	76-89	>29	3
6-8	50-75	6-9	2
4-5	1-49	1-5	1
3	0	0	0

- (8) Severe burns with <50% anticipated survival (patients identified as “Low” or worse on the TRIAGE DECISION TABLE FOR BURN VICTIMS in Appendix D-6. Burns not requiring critical care resources may be cared for at the local facility (e.g., burns that might have been transferred to Burn Center under normal circumstances).
- (9) Cardiac arrest without easily identifiable AND reversible cause (e.g. tension pneumothorax, witnessed arrest in shockable rhythm). Consider NOT initiating aggressive resuscitation in patients with low likelihood of recovery (e.g. traumatic cardiac arrest, un-witnessed cardiac arrest).
- (10) Age: >90 years
- (11) Any patient that has six or more organs failing at any time.

(2) Criteria for Withdrawal of Critical Care and Patient Prioritization

If after application of the inclusion and exclusion criteria, there is still a greater demand for critical resources than there is supply of those resources, the CTO or CTOT should consider the severity of acute and/or chronic illness, prognosis, and projected duration of resources needed, in making a final determination on allocation of scarce resources. If, despite aggressive care, a patient is doing worse and has a low likelihood of a good outcome as indicated through the application of an assessment tool as described below, care is best reallocated to another patient.

The best available objective measure for the prioritizing of admitted patients is the Modified Sequential Organ Failure Assessment (MSOFA) score and daily MSOFA trend. All patients receiving critical care resources should be reassessed at 48 and 120 hours. If a patient has a MSOFA greater than 8 for greater than 5 days, and with flat or rising trend or if a patient ever has a MSOFA score of 15 or higher or any other exclusion criteria, they should be considered for withdrawal from ongoing critical care. MSOFA should be a strong determinant in prioritization and withdrawal of care, in particular when ranking patients based on clinical assessment is less certain.

Table 14: Sequential Organ Failure Assessment (SOFA) Score (Grissom et al, 2010)

Organ System	0	1	2	3	4
Respiratory PaO ₂ /FiO ₂ , mmHg	>400	≤400	≤300	≤200	≤100
Coagulation Platelets x10 ³ /μL	>150	≤150	≤100	≤50	≤20
Liver Bilirubin, mg/dL	<1.2	1.2-1.9	2.0-5.9	6.0-11.9	>12.0
Cardiovascular, hypotension	No hypo- tension	MAP <70 mm Hg	dopamine≤5 or dobutamine any dose	dopamine>5 epinephrine≤0.1 norepinephrine≤0.1	dopamine>15 epinephrine>0.1 norepinephrine>0.1
Central Nervous System Glasgow Coma Score	15	13-14	10-12	6-9	<6

Organ System	0	1	2	3	4
Renal, Creatinine mg/dL urine output mL/d	<1.2	1.2-1.9	2.0-3.4	3.5-4.9 or urine <500 mL/d	>5.0 or urine <200 mL/d

Table 15: Modified Sequential Organ Failure Assessment (MSOFA) Score (Grissom et al., 2010)

Organ System	0	1	2	3	4
Respiratory SpO2/FiO2	>400	≤400	≤315	≤235	≤150
Liver	No scleral icterus or jaundice			Scleral icterus or jaundice	
Cardiovascular, hypotension	No hypo- tension	MAP <70 mm Hg	dopamine ≤5 or dobutamine any dose	dopamine >5 epinephrine ≤0.1 norepinephrine ≤0.1	dopamine >15 epinephrine >0.1 norepinephrine >0.1
Central Nervous System Glasgow Coma Score	15	13-14	10-12	6-9	<6
Renal, Creatinine mg/dL	<1.2	1.2-1.9	2.0-3.4	3.5-4.9	>5.0

MAP=mean arterial pressure; dopamine, dobutamine, epinephrine, and norepinephrine doses in micrograms per kilogram per minute

3. *Out of Hospital Care Providers*

Upon the Governor's disaster declaration and implementation of CSC, many healthcare access points across the state will need to adapt their practices to the overwhelming number of patients seeking care. Ideally, the most acutely injured or ill patients will be routed to a hospital, and lower acuity patients will seek care in out-of-hospital settings. See Section V- Introduction Subsection C - Scope of the Plan above.

CDPHE will work with GEEERC to support healthcare operations in out-of-hospital settings. Out of hospital care will be an important part of the CSC response. In addition, out of hospital providers have resources, including staff, equipment, supplies, etc., which may be reallocated. The out-of-hospital providers may access resources and guidance from local, state, and federal authorities through their local emergency management agency. These providers are encouraged to engage with their healthcare coalition to better understand how to integrate with the healthcare emergency preparedness activities of their community.

Information will be provided by state and county PH through a variety of methods including HAN

During a CSC situation alternate sites may be opened to provide triage, treatment, or short stay care to address the needs of the event and reduce the strain on hospitals and other healthcare systems. Out-of-hospital providers may be asked to support these sites by providing staff, resources, equipment, or supplies. The requests will be made through existing emergency management processes from local and state public health, local and state emergency management, and healthcare coalitions.

Local public health, local emergency management, and healthcare coalitions will further support the coordination of mental health support during a CSC activation.

The specific medical skills, infrastructure and equipment available to out-of-hospital providers will be considered by CDPHE and GEEERC during a CSC response.

- Medical skills—may be utilized in their usual practice environment; in alternate care systems/ assignments (e.g., serving as members of an MRC, answering patient hotlines); and perhaps even in their neighborhood/community settings.
- Infrastructure—practice environments may be adjusted to help meet the demands of an overwhelming incident. For example, clinic functions may be:
 - Expanded—using expanded hours, modifying care practices, and adjusting schedules to accommodate increased acute care (and deferring elective appointments), clinics can “surge” to accommodate additional patients;
 - Repurposed—outpatient infrastructure may be repurposed during an incident as, for example, when a subspecialty clinic adjusts its hours or closes to enable the space to be used for acute care; and
- Referral and Routing—outpatient providers will stay informed of existing healthcare access points and can refer or route patients to higher acuity care as appropriate during a CSC response (Hanfling et al., 2012).

4. *Specialty Patient Populations*

a) *Pediatrics*

Treatment decisions under CSC conditions can become much more complicated and challenging when involving pediatric patients. Expectations of society regarding medical care for children, involvement of parents and caregivers, and the unique needs of young patients can make adherence to the established CSC guidelines more difficult.

(1) *Pediatric (Patients Age 14 or less) Inclusion and Exclusion Criteria*

Inclusion and Exclusion Criteria for pediatric patients differ in important ways from the criteria for adults and are listed below.

Inclusion Criteria

- Applies to all patients except those infants not yet discharged from the NICU.
- Patients must have NO Exclusion Criteria and at least one of the following Inclusion Criteria:
 - (1) Requirement for invasive ventilatory support
 - a) Refractory hypoxemia ($SpO_2 < 90\%$ on non-rebreather mask or $FIO_2 > 0.85$)
 - b) Respiratory acidosis ($pH < 7.2$).
 - c) Clinical evidence of impending respiratory failure.
 - d) Inability to protect or maintain airway.
 - (2) Hypotension* with clinical evidence of shock**
Refractory to volume resuscitation, and requiring vasopressor or inotrope support that cannot be managed in a ward setting.

*Hypotension = Systolic BP:

- Patients age $>10 = < 90$ mm Hg,
- Patients ages 1 to 10 = $< 70 + (2 \times \text{age in years})$
- Infants < 1 year old = <60
- relative hypotension

****Clinical Evidence of Shock** = Altered level of consciousness, decreased urine output, or other evidence of end-stage organ failure.

Exclusion Criteria

A patient may be considered for exclusion from admission or transfer to critical care, depending on available resources, if any of the following is present:

- (1) Persistent Coma or vegetative state,
- (2) Severe acute trauma with a REVISED TRAUMA SCORE <2 . See Table 13 Revised Trauma Score.
- (3) Severe burns with $<50\%$ anticipated survival (patients identified as “Low” or worse on the TRIAGE DECISION TABLE FOR BURN VICTIMS in Appendix E-6. Burns not requiring critical care resources may be cared for at the local facility (e.g., burns that might have been transferred to a Burn Center under normal circumstances).
- (4) Cardiac arrest not responsive to Pediatric Advanced Life Support (PALS) or Pediatric Education for Prehospital Professionals (PEPP) interventions within 20-30 minutes
- (5) Short anticipated duration of benefit, e.g., any underlying condition with $> 80\%$ mortality rate at 18 to 24 months:
 - Known chromosomal abnormalities such as Trisomy 13 or 18
 - Known metabolic diseases such as Zellweger syndrome
 - Spinal muscular atrophy (SMA) type 1
 - Progressive neuromuscular disorder, e.g. muscular dystrophy and myopathy, with inability to sit unaided or ambulate when such abilities would be developmentally appropriate based on age
 - Cystic fibrosis with post-bronchodilator FEV₁, $<30\%$ or baseline PaO₂, <55 mm HG
 - Severe end-stage pulmonary hypertension

Other Considerations

- Newborns with low survivability ($< 20\%$) even after lengthy critical care stays (e.g. extreme preterm infants with very low birth weights) may undergo routine Neonatal Resuscitation Program (NRP); however, these newborns would not be candidates for continued aggressive resuscitation and ICU support, to include prolonged intubation and ventilator support.
- The use of Extracorporeal Membrane Oxygenation (ECMO) will be decided on an individual basis by the Crisis Triage Officer (with input from the attending physician, and NICU Specialist) based on prognosis, suspected duration of ECMO run, and availability of personnel and other resources. Patients should have an estimated survival of $>70\%$ with an estimated ECMO run of $<7-10$ days.

b) Palliative and Comfort Care

Palliative care patients are defined as individuals who may benefit from available curative therapies. Comfort care patients are defined as individuals for whom curative therapies are futile, given available resources. See Minnesota Palliative Care Resource Card in Appendix F.

c) *Burn*

In catastrophic disasters, burn patients may overwhelm burn care resources, especially at burn centers. Although burn patients should be transferred to an appropriate burn center as soon as possible, the extent of the incident and the availability of burn care resources may be limited. It may be necessary for burn patients to be cared for at facilities that do not typically provide burn care to stabilize and treat burn patients until the transfer to a burn center is possible. If at all possible, burn patients requiring hospitalization should be transported to a Burn Center, because the Burn Center provides critical care as well as rehabilitation and follow-up care.

A Hospital Burn Surge Triage Flowsheet is available in Appendix E-6.

d) *Behavioral Health*

(1) *Individuals with Behavioral Illness*

Upon implementation of CSC, CDPHE and DHS/OBH will consult with GEEERC regarding any modifications that are necessary to attempt to meet the needs of the people with serious mental illness (SMI), serious emotional disorders (SED) and substance use disorders (SUD). Due to the current shortage of behavioral healthcare workers there will potentially be a significant impact on the overall availability of resources for behavioral healthcare within the state. The GEEERC must consider both the ongoing treatment needs of the SMI population, as well as additional emotional and behavioral issues this group may experience as a result of the disaster.

Community mental health centers have developed disaster plans which will facilitate the provision of mental health resources and support. Local public health, local emergency management, and healthcare coalitions will further support the coordination of mental health support during a CSC activation.

H. Acronym Glossary

AEMT – Advanced Emergency Medical Technician
 AHRQ – Agency for Healthcare Research and Quality
 ALS – Amyotrophic Lateral Sclerosis
 APCO – Association of Public Safety Officials, Inc.
 BiPAP – Bilevel Positive Airway Pressure
 BP – Blood Pressure
 C.R.S. – Colorado Revised Statute
 CAAS – Commission on Accreditation of Ambulance Services
 CAP – Community Acquired Pneumonia
 CBN - Colorado Board of Nursing
 CDPHE – Colorado Department of Public Health and Environment
 CGIA – Colorado Governmental Immunity Act
 CHIP – Colorado Health Insurance Plan
 CMS – The Centers for Medicare and Medicaid Services
 COPD – Chronic Obstructive Pulmonary Disease
 CSC – Crisis Standards of Care
 CTO – Crisis Triage Officer
 CTOT – Crisis Triage Officer Team
 DMAT – Disaster Medical Assistance Team
 DOC – Department Operations Center
 DOD – Department of Defense
 Dop – Dopamine
 ECMO – Extracorporeal Membrane Oxygenation
 EMD – Emergency Medical Dispatcher
 EMS – Emergency Medical Services
 EMT – Emergency Medical Technician
 EMTALA – Emergency Medical Treatment and Active Labor Act of 1986
 EMT-I – Emergency Medical Technician Intermediate
 EO – Executive Order
 EOC – Emergency Operations Center
 EOP – Emergency Operations Plan
 Epi – Epinephrine
 ESAR-VIP – Emergency System for Advance Registration of Volunteer Health Professionals
 FEV1 – Forced Expiratory Volume in 1 Second
 FIO₂ – Fraction of Inspired Oxygen
 GEEERC – Governor’s Expert Emergency Epidemic Response Committee
 HHS – Health and Human Services
 HICS – Hospital Incident Command System
 HIPAA – Health Insurance Portability and Accountability Act of 1996
 ICS – Incident Command System
 ICU – Intensive Care Unit
 INR – International Normalized Ratio
 IV – Intravenous
 MAP – Mean Arterial Pressure
 MRC – Medical Reserve Corps
 MS – Multiple Sclerosis

MSOFA – Modified Sequential Organ Failure Assessment
NICU – Neonatal Intensive Care Unit
NRP – Neonatal Resuscitation Program
NYHA – New York Heart Association
ORT – Oral Rehydration Therapy
PA – Physician Assistant
PACU – Post-Anesthesia Care Unit
PALS – Pediatric Advanced Life Support
PEPP – Pediatric Education for Prehospital Professionals
PFA – Psychological First Aid
PPE – Personal Protective Equipment
PSA – Primary Service Area
PSAP – Public Safety Answering Point
RETAC – Regional Emergency Medical and Trauma Advisory Council
RN – Registered Nurse
SALT – Sort, Assess, Lifesaving Interventions, Treatment/Transport
SED – Serious Emotional Disorder
SEOC – State Emergency Operations Center
SitRep – Situation Report
SMA – Spinal Muscular Atrophy
SMI – Serious Mental Illness
SOFA – Sequential Organ Failure Assessment
START – Simple Triage and Rapid Treatment
SUD – Substance Use Disorder
TLC – Total Lung Capacity
U.S.C. – United States Code
VC – Vital Capacity

I. Standardized Hospital Bed Definitions

Bed definitions currently in use vary among systems and even among hospitals. This poses a challenge for organizations needing to track bed availability during a public health emergency. Standardized hospital bed definitions provide uniform terminology so hospital systems and emergency responders seeking beds are speaking the same language. To address this, federally mandated, standardized definitions have been developed by the Agency for Healthcare Research and Quality (AHRQ) for the U.S. Department of Health and Human Services – Health Resources and Services Administration.

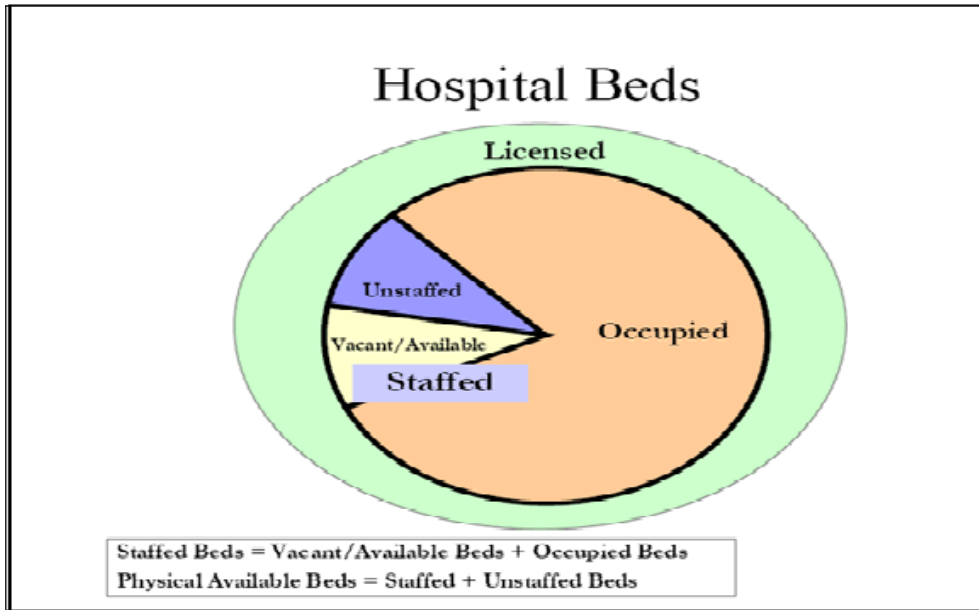


Figure 12: Licensed Hospital Beds (Colorado Department of Public Health and Environment, 2009, pp. 67)

- **Licensed Beds:** The maximum number of beds for which a hospital holds a license to operate. Many hospitals do not operate all of the beds for which they are licensed.
- **Physically Available Beds:** Beds that are licensed, physically set up, and available for use. These are beds regularly maintained in the hospital for the use of patients, which furnish accommodations with supporting services (such as food, laundry, and housekeeping). These beds may or may not be staffed but are physically available.
 - **Unstaffed Beds:** Beds that are licensed and physically available and have no current staff on hand to attend to a patient who would occupy the bed.
 - **Staffed Beds:** Beds that are licensed and physically available for which staff is on hand to attend to the patient who occupies the bed. Staffed beds include those that are occupied and those that are vacant.
 - **Occupied Beds:** Beds that are licensed, physically available, staffed, and occupied by a patient.
 - **Vacant/Available Beds:** Beds that are vacant and to which patients can be transported immediately. These must include supporting space, equipment, medical material, ancillary and support services, and staff to operate under normal circumstances. These beds are licensed, physically available, and have staff on hand to attend to the patient who occupies the bed.

A description of the types of beds to be reported to the HAVBED project includes the following:

- **Adult Intensive Care Unit (ICU):** beds that can support critically ill/injured patients, including ventilator support.
- **Medical/Surgical:** also thought of as "Ward" beds.
- **Burn:** thought of as Burn ICU beds, either approved by the American Burn Association or self-designated. (These beds are NOT to be included in other ICU bed counts.)
- **Pediatric ICU:** as for Adult ICU, but for patients 17 years and younger.
- **Pediatrics:** "Ward Medical/Surgical" beds for patients 17 and younger.
- **Psychiatric:** "ward" beds on a closed/locked psychiatric unit or ward beds where a sitter will attend the patient.
- **Negative Pressure/Isolation:** Beds provided with negative airflow, providing respiratory isolation.
Note: This value may represent available beds included in the counts of other types.
- **Operating Rooms:** An operating room that is equipped and staffed and could be made available for patient care in a short period of time.

For the purposes of estimating institutional surge capability in dealing with patient disposition during a large mass casualty incident, the following bed availability estimates also be reported for each of the bed types described above:

- **24 hr Beds Available:** This value represents an informed estimate as to how many vacant (staffed, unoccupied) beds for each bed type above the current number that could be made available within 24 hours. This would include created institutional surge beds as well as beds made available by discharging/transferring patients.
- **72 hr Beds Available:** This value represents an informed estimate as to how many vacant (staffed, unoccupied) beds for each bed type above the current number that could be made available within 72 hours. This would include created institutional surge beds as well as beds made available by discharging/transferring patients.

Through use of these standardized definitions of bed statuses, bed types and estimates of future bed availability, there will be greater consistency amongst hospitals in reporting their bed availability information. The following hospital characteristics should also be reported as data elements for the HAVBED project:

- **Emergency Department Status:**
Open—Accepting patients by ambulance.
Closed—Not accepting patients by ambulance.
N/A—Not Applicable (Hospital does not have an ED).
- **Mass Decontamination Facility Availability:**
Available— The institution has chemical/biological/radiological multiple patient decontamination capability.
Not Available— The institution is unable to provide chemical/biological/radiological patient decontamination.
- **Ventilators:**
Available: The number of ventilators that are present in the institution but are currently not in use and could be supported by currently available staff (Colorado Department of Public Health and Environment, 2009, pp. 67-68).