

*CDPHE All Hazards Internal Emergency Response
and Recovery Plan*

*ANNEX B: Colorado Crisis
Standards of Care Plan
January 4, 2020*

Last amended November 29, 2021



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, Jared Polis, 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 _____ 2020.

Jared Polis 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)

Jill Hunsaker Ryan, MPH
Executive Director
Colorado Department of Public Health and Environment

Signature Date



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III. Acknowledgements

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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.

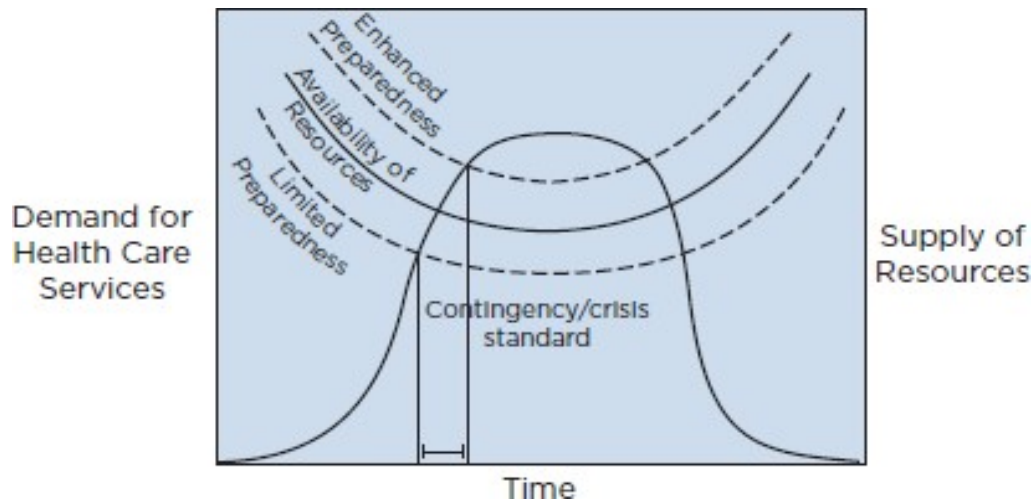


Figure 1: Demand for healthcare services and supply of resources as a function of time after disaster onset, taking into account care capacity as a function of time (Hanfling, Aletevovgt, Viswanathan, & Gostin, 2012, pp. 42)

- 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 Statutes*

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 and criminal liability for hospitals, physicians, health insurers or managed care organizations, health care providers, public health workers, and emergency medical service providers in certain circumstances. C.R.S. § 24-33.5-711.5(2). An entity is immune from civil or criminal liability for any action taken to comply with the executive orders regarding the disaster emergency as long as it in good faith complies completely with those orders. 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. These crisis standards of care should be authorized by the Governor by executive order and activated by the Chief Medical Officer as described in section VI.C.3 before being implemented by practitioners.

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	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• 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 <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • Usual patient care space fully occupied • Usual staff called in and utilized • Cached and usual supplies being used
Contingency Indicators for Healthcare Facilities
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • One or more healthcare facilities are at or near capacity • Patient transfer may be impacted
Contingency Indicators for Counties
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • One or more counties/regions at capacity • Patient transfer may be impacted
Contingency Indicators for the State
<ul style="list-style-type: none"> • 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. If the Governor adopts the recommendation of the GEEERC, the Governor may authorize activation of these crisis standards of care by the Chief Medical Officer through executive order. Once authorized and activated, these crisis standards of care may be implemented pursuant to the executive order.

Upon signature of an executive order authorizing activation of this plan, and signature of the Chief Medical Officer activating these crisis standards of care, CDPHE will coordinate with state agencies to disseminate the executive order and activation to local jurisdictions and agencies.

When a county, region, healthcare provider, healthcare facility or other healthcare entity enters a crisis level of care, as defined section B, it may adopt the relevant crisis standard of care described in this plan. Any entity that is entering a crisis level of care, and adopting a crisis standard of care, should notify CDPHE.

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.

Once a county, region, healthcare provider, healthcare facility or other healthcare entity's level of care returns to a contingency or conventional level of care, that entity must return to conventional standards of care. An entity that previously adopted a crisis standard of care should notify CDPHE when it returns to conventional standards of care.

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.

E. Modification of Crisis Standards of Care While Activated

Managing the COVID-19 pandemic disaster emergency may require rapid adjustments to these crisis standards of care. Once this plan is authorized through executive order and activated by the Chief Medical Officer, these crisis standards of care may be modified while they are activated. To do so, the GEEERC may recommend any modification to these crisis standards of care, including modifying or terminating an existing standard or adding a new standard. The Chief Medical Officer is authorized to adopt the GEEERC's recommendations if he or she concurs with them. Upon adoption of the GEEERC's recommendation by the Chief Medical Officer, the modification shall become part of these crisis standards of care with the full force and effect of the rest of this plan, its authorization, and its activation.



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.

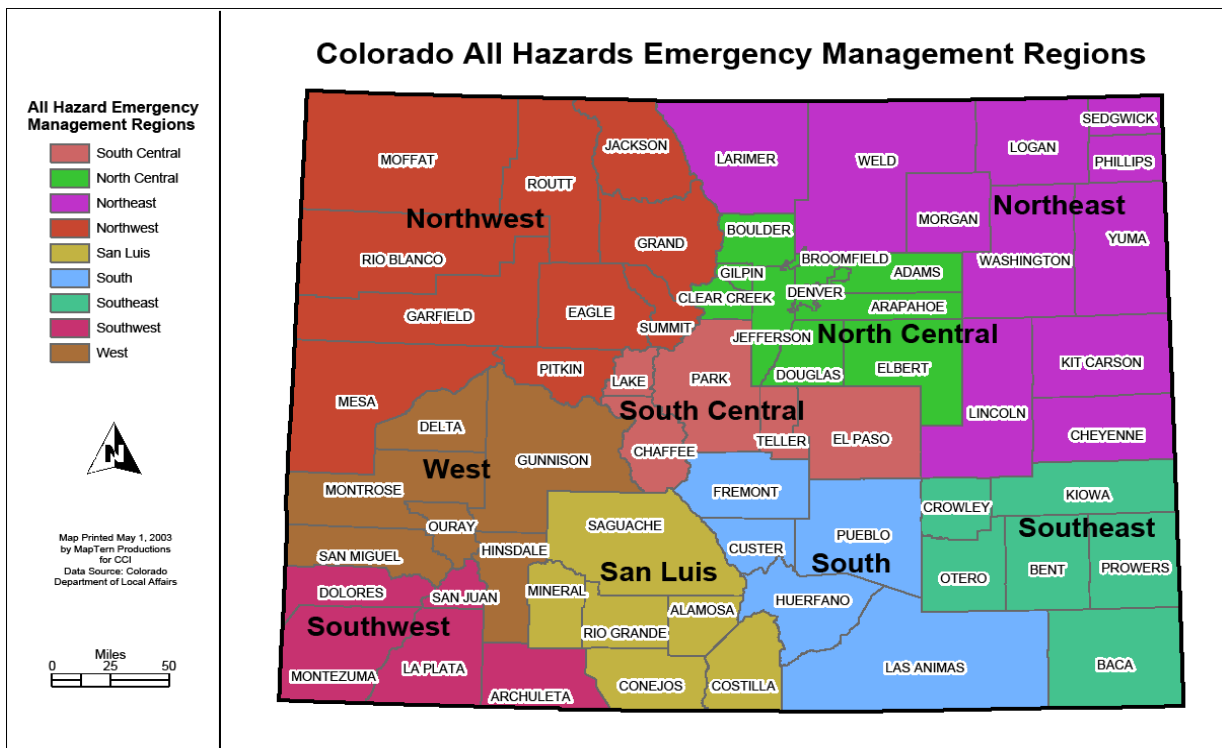
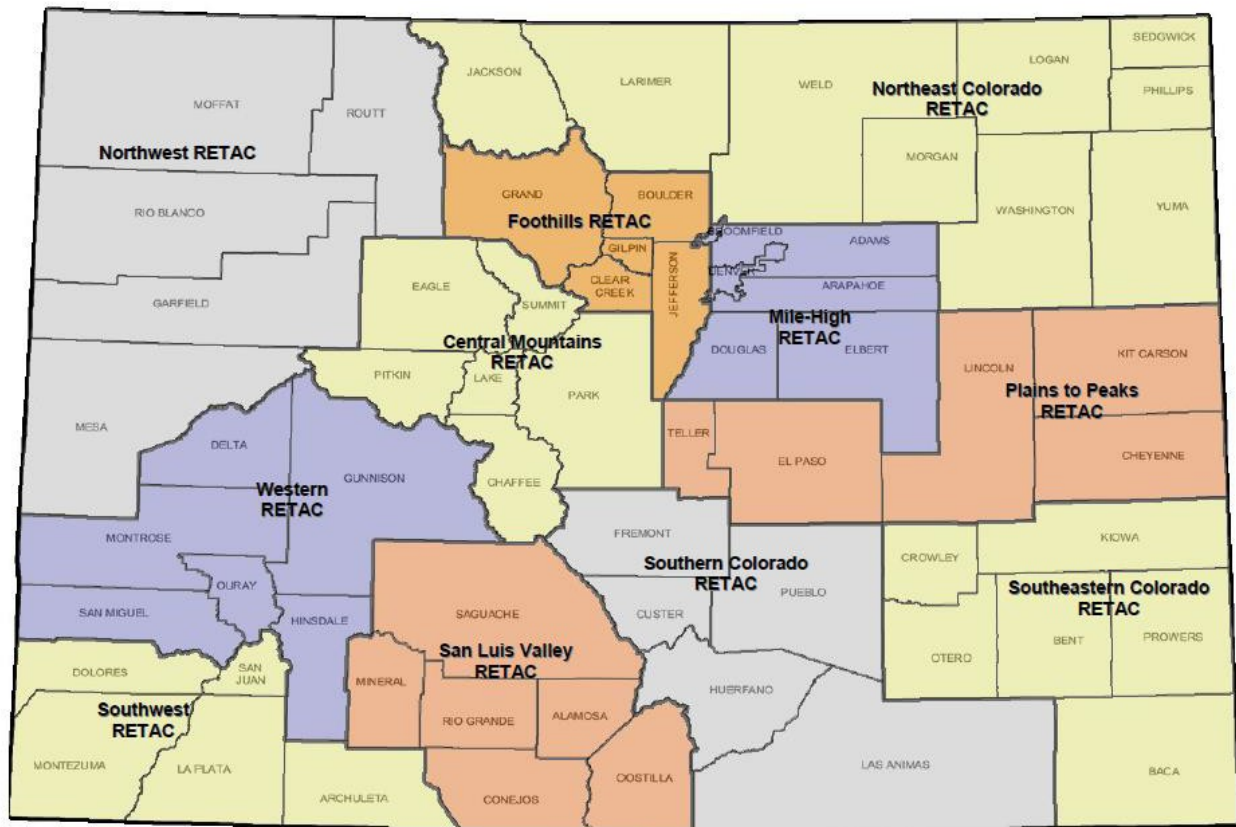
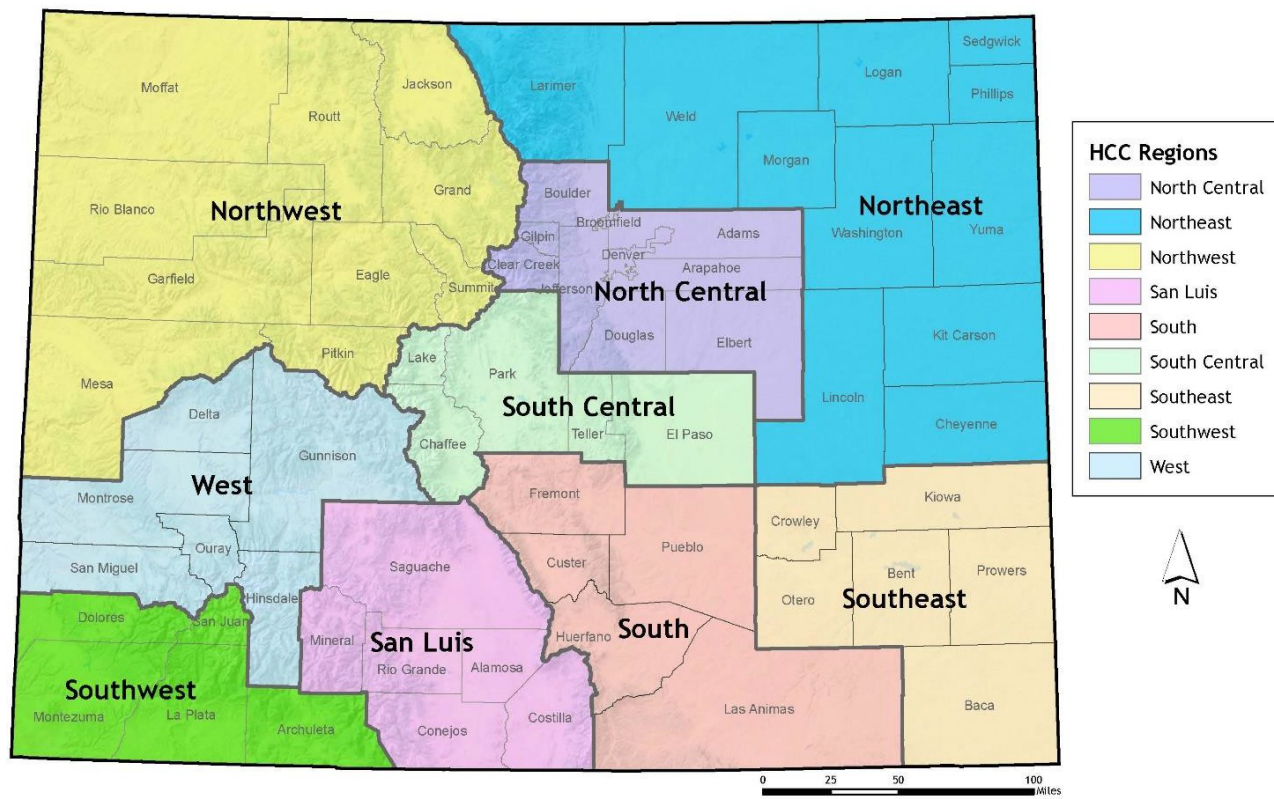


Figure 5: Colorado All Hazards Emergency Management Regions (Map Tern Productions, 2003)



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



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

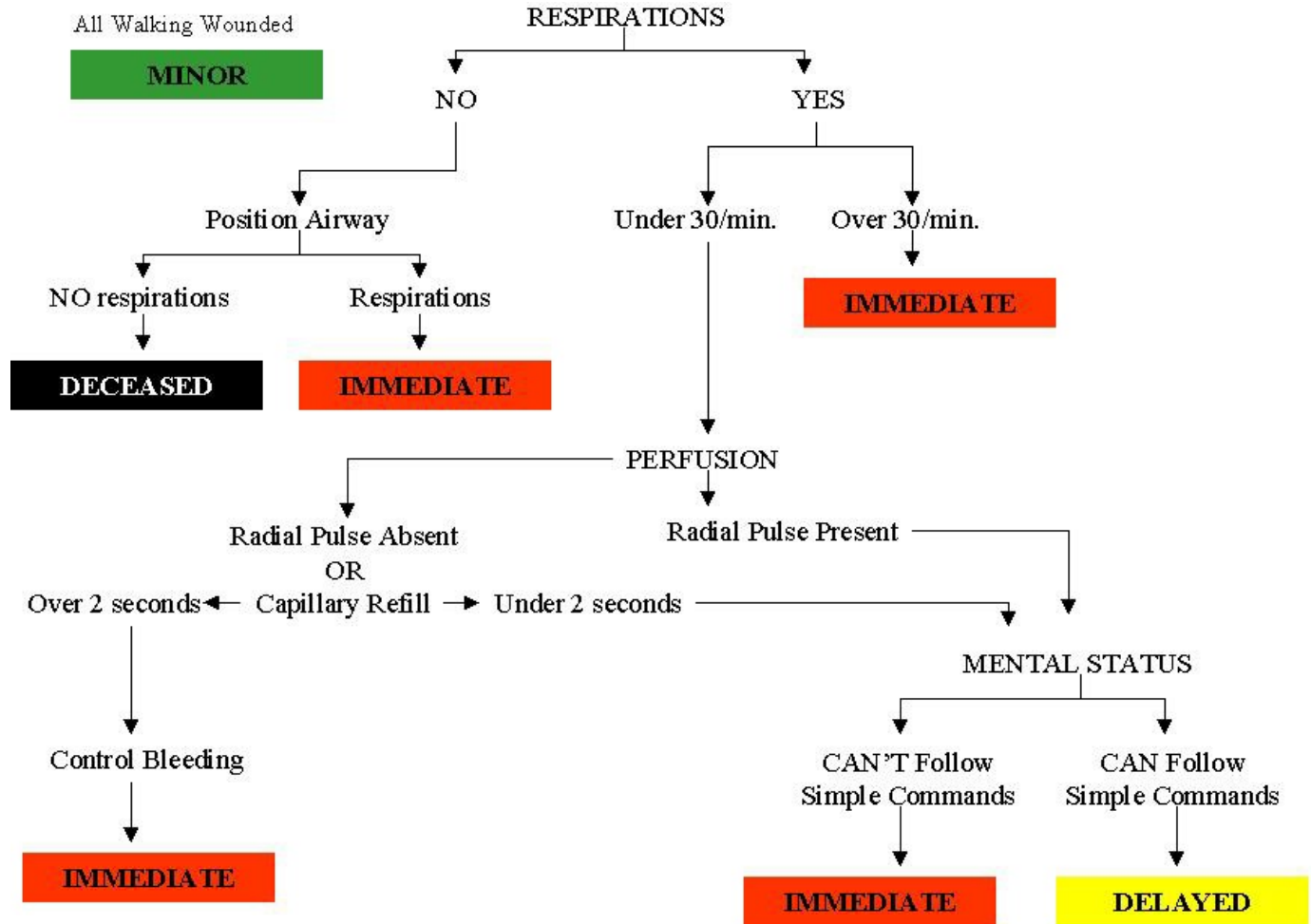


Figure 8: Detailed START Flowchart (Critical Illness and Trauma Foundation)

2. JumpSTART® Pediatric MCI Triage Algorithm

JumpSTART Pediatric MCI Triage®

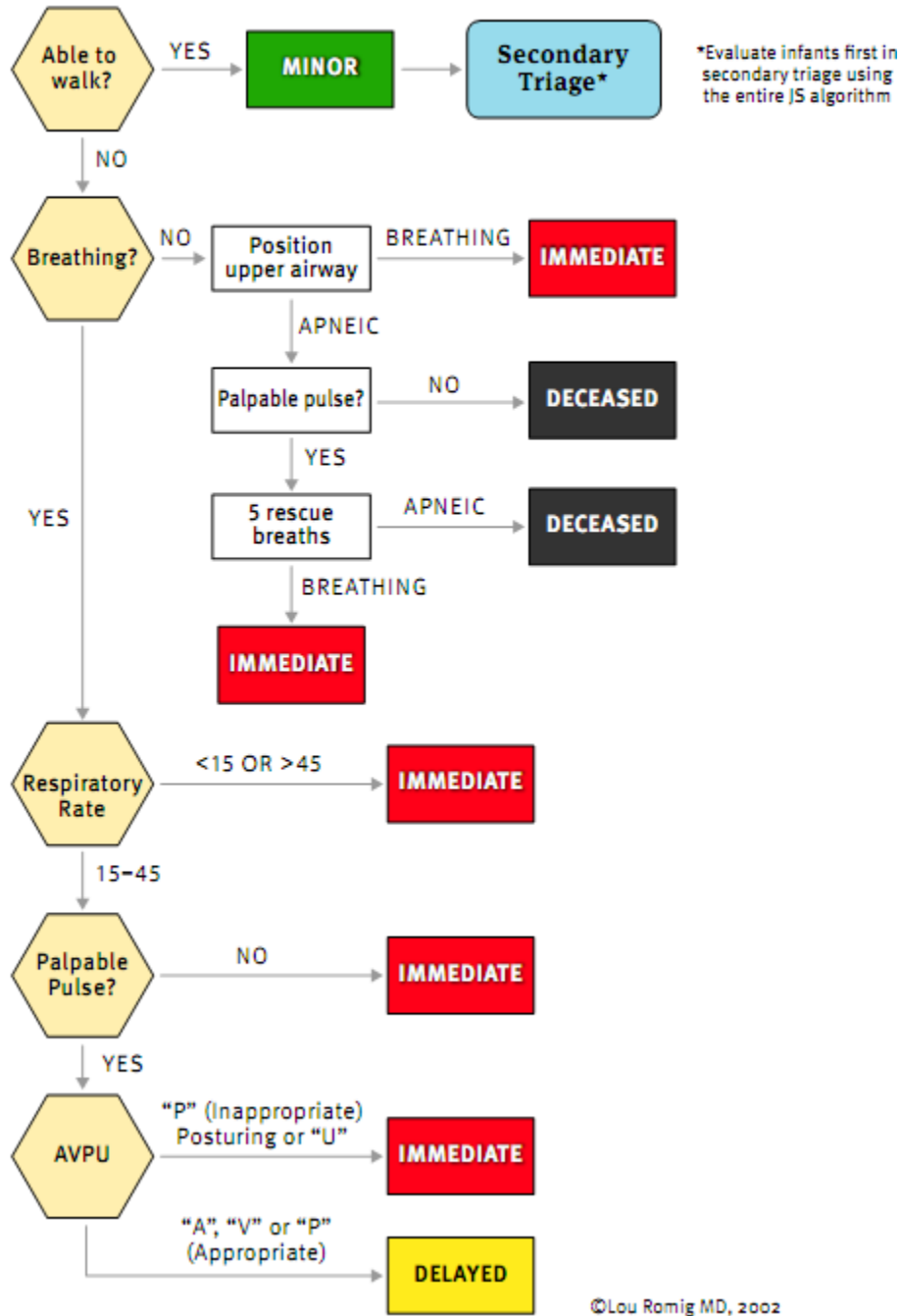


Figure 9: JumpSTART® Pediatric MCI Triage (Romig, 2002)

3. SALT Mass Casualty Triage Algorithm

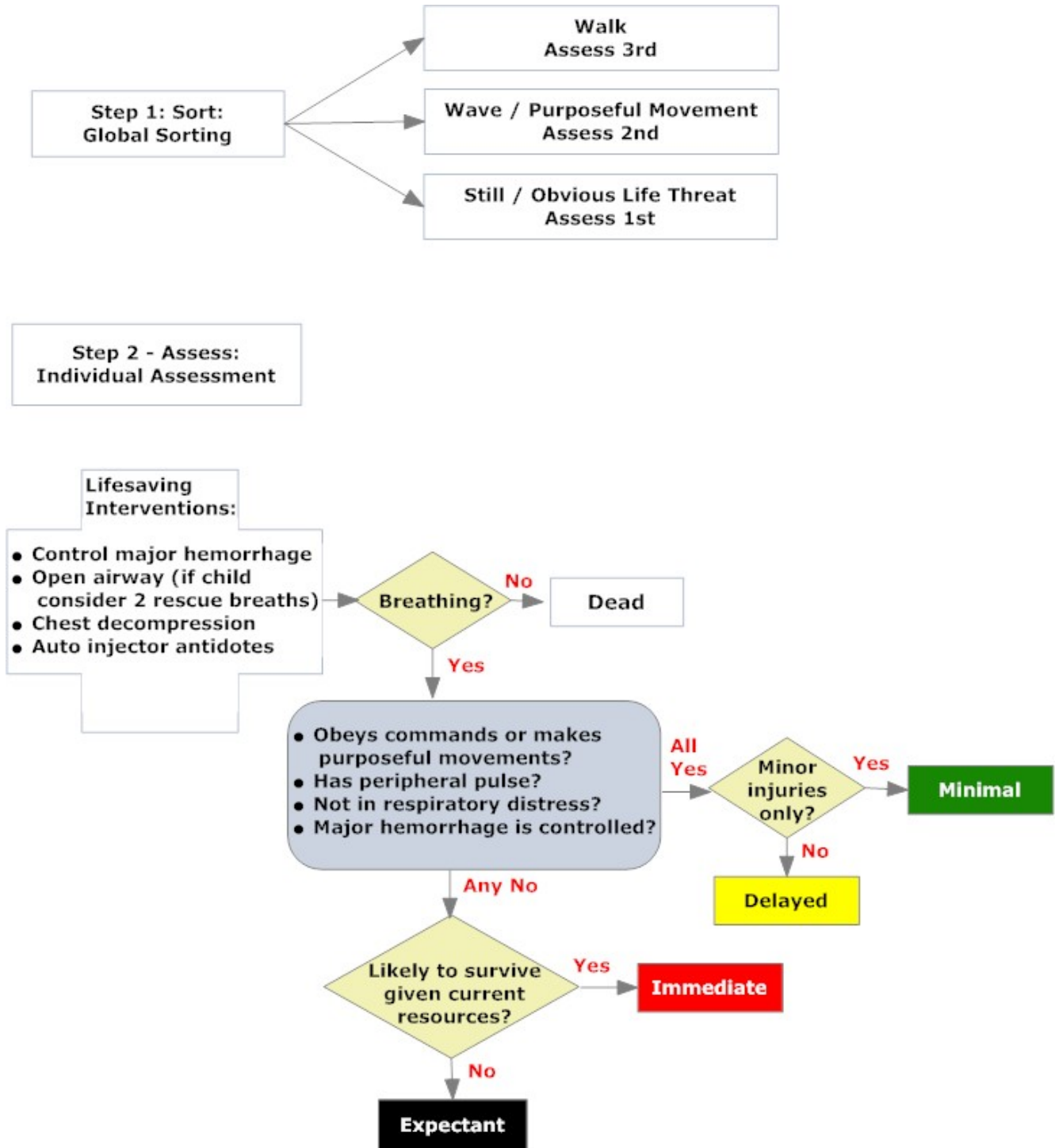


Figure 10: SALT Mass Casualty Triage Algorithm (Sort, Assess, Lifesaving Interventions, Treatment/Transport) (United States, 2011)

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:	
<ul style="list-style-type: none"> • 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:	
<i>Score (Points)</i>	<i>Estimated Mortality (%)</i>
0	<2
1	3-6
2	8-12
>3	25-32
Determine disposition:	
<i>Score (Points)</i>	<i><u>Disposition (Care Site)</u></i>
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) <ul style="list-style-type: none"> ○ Tolerates ORT ○ Not tolerating ORT 	Home or Level D Level C with IV hydration capability
Shock Index > 1 not resolved with hydration Hypoxic or RR > 30 Altered mental status (e.g. confusion)	Level A or B Level B or C with oxygen Level A or B
2	
For patients < age 65: <ul style="list-style-type: none"> ○ Hypoxia and RR > 30 alone For patients ≥ age 65: <ul style="list-style-type: none"> ○ 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)

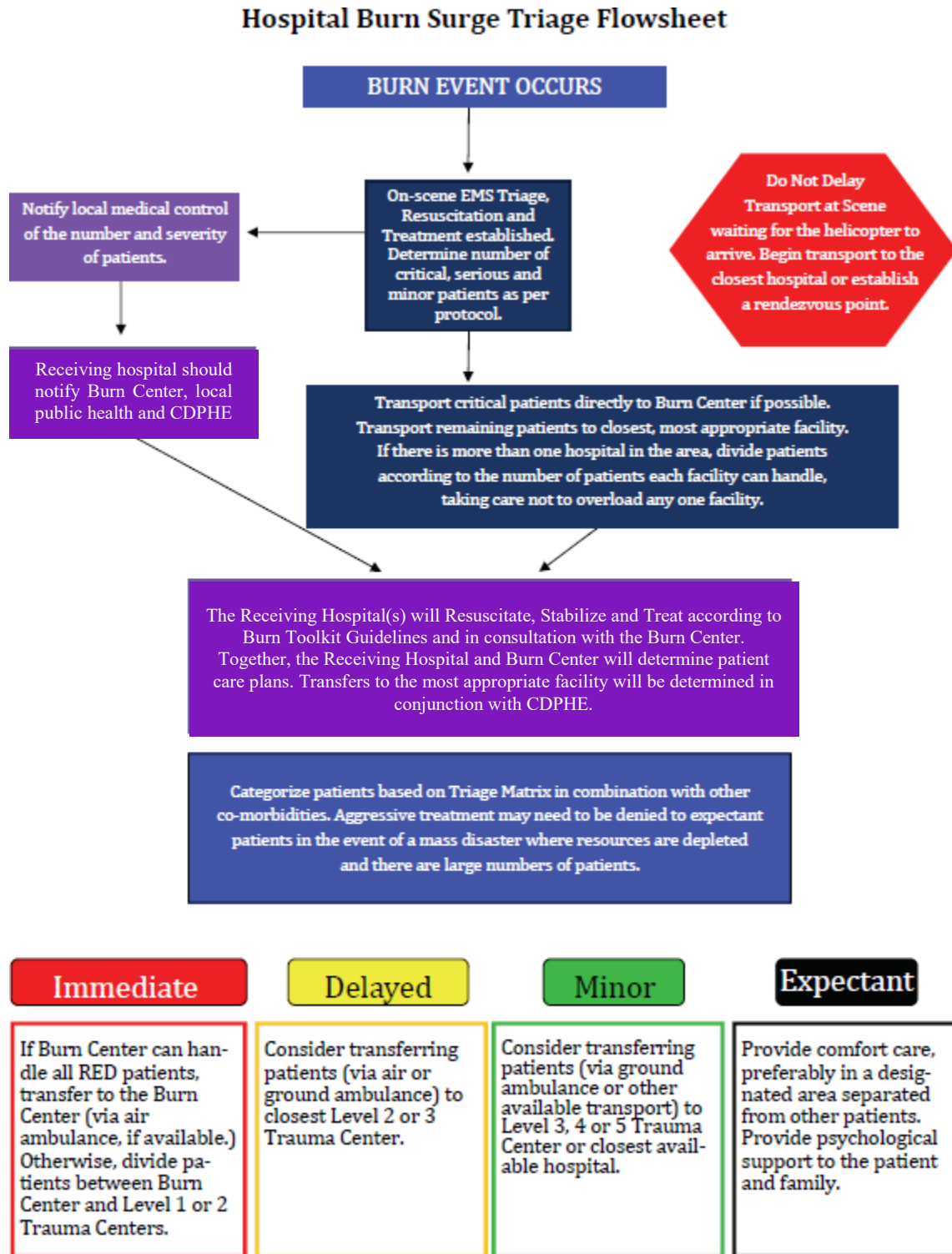
Evaluate clinical criteria:			
<ul style="list-style-type: none"> • Abnormal breath sounds, Stridor <ul style="list-style-type: none"> • Tachypnea for age (see below) • Increase work of breathing (retractions, nasal flaring, head bobbing) or apnea • O₂ Saturation < 90% at 5,280 feet (hypoxic) or equivalent local values, cyanosis • Shock signs: delayed end organ perfusion (such as delayed capillary refill) plus tachycardia for age(see below) <ul style="list-style-type: none"> • 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			
<ul style="list-style-type: none"> • 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			
<ul style="list-style-type: none"> • Alert, consoled • Stridor with agitation, not at rest (comfortable) <ul style="list-style-type: none"> • Minimal to moderate retractions • Mild-moderate tachypnea • Hypoxia- not severe (pulse-oximetry 80-90% room air at 5,280 feet), no cyanosis <ul style="list-style-type: none"> • 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			
<ul style="list-style-type: none"> • Fussy, difficult to console, altered mentation <ul style="list-style-type: none"> • Stridor at rest • Moderate to severe retractions, nasal flaring, head bobbing <ul style="list-style-type: none"> • Severe tachypnea • Cyanosis or hypoxia (pulse-oximetry <80% room air at 5,280 feet) <ul style="list-style-type: none"> • Episodic apnea • Moderate to severe tachycardia and/or clinical signs of shock • Poor feeding, moderate to severe signs of dehydration <ul style="list-style-type: none"> • Symptoms and age < 2 months 		Level A	
<ul style="list-style-type: none"> • Evaluate all patients for secondary bacterial CAP or other bacterial complications of influenza. <ul style="list-style-type: none"> • Children as opposed to adults can present with upper airway or croup like symptoms <ul style="list-style-type: none"> • 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:		<ul style="list-style-type: none"> •Mass Casualty Incident (MCI) •Infrastructure damage/loss •Pandemic/Epidemic 	<ul style="list-style-type: none"> •Supplier shortage •Recall/contamination of product •Isolation of facility due to access problems (flooding, etc.)
How to use this card set:			
<ol style="list-style-type: none"> 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:			
<p>Prepare - pre-event actions taken to minimize resource scarcity (e.g., stockpiling of medications)</p> <p>Substitute - use an essentially equivalent device, drug, or personnel for one that would usually be available (e.g., morphine for fentanyl)</p> <p>Adapt - use a device, drug, or personnel that are not equivalent but that will provide sufficient care (e.g., anesthesia machine for mechanical ventilation)</p> <p>Conserve - use less of a resource by lowering dosage or changing utilization practices (e.g., minimizing use of oxygen driven nebulizers to conserve oxygen)</p> <p>Re-use - re-use (after appropriate disinfection / sterilization) items that would normally be single-use items</p> <p>Re-allocate - restrict or prioritize use of resources to those patients with a better prognosis or greater need</p>			
Capacity Definitions:			
<p>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.</p>	<p>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).</p>	<p>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).</p>	
<p>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.</p>			
<p>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.</p>			



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 <ul style="list-style-type: none"> 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). 	<i>Substitute & Conserve</i>																			
High-Flow Applications <ul style="list-style-type: none"> 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. 	<i>Conserve</i>																			
Air-Oxygen Blenders <ul style="list-style-type: none"> 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. 	<i>Conserve</i>																			
Oxygen Conservation Devices <ul style="list-style-type: none"> 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. 	<i>Substitute & Adapt</i>																			
Oxygen Concentrators if Electrical Power Is Present <ul style="list-style-type: none"> 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. 	<i>Substitute & Conserve</i>																			
Monitor Use and Revise Clinical Targets <ul style="list-style-type: none"> 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 border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Starting Example</td> <td style="width: 20%;">Initiate O2</td> <td style="width: 20%;">O2 Target</td> <td style="width: 40%;">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> <td></td> </tr> <tr> <td>Infants & Peds</td> <td>SPO2 <90%</td> <td>SPO2 90-95%</td> <td></td> </tr> <tr> <td>Severe COPD History</td> <td>SPO2 <85%</td> <td>SPO2 90%</td> <td></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%		<i>Conserve</i>			
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 <ul style="list-style-type: none"> 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. 	<i>Re-use</i>																			
Oxygen Re-Allocation <ul style="list-style-type: none"> Prioritize patients for oxygen administration during severe resource limitations. 	<i>Re-Allocate</i>																			



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

STAFFING

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
<p>Staff and Supply Planning</p> <ul style="list-style-type: none"> 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. 	<i>Prepare</i>			
<p>Focus Staff Time on Core Clinical Duties</p> <ul style="list-style-type: none"> 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. 	<i>Conserve</i>			
<p>Use Supplemental Staff</p> <ul style="list-style-type: none"> 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. 	<i>Substitute</i>			
	<i>Adapt</i>			
<p>Focus Staff Expertise on Core Clinical Needs</p> <ul style="list-style-type: none"> 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. 	<i>Conserve</i>			
<p>Use Alternative Personnel to Minimize Changes to Standard of Care</p> <ul style="list-style-type: none"> 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. 	<i>Substitute & Conserve</i>			



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

NUTRITIONAL SUPPORT

STRATEGIES FOR SCARCE RESOURCE SITUATIONS

RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
<p>Food</p> <ul style="list-style-type: none"> • 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. 	<i>Prepare</i>			
<p>Water</p> <ul style="list-style-type: none"> • 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. 	<i>Prepare</i>			
<p>Staff /Family</p> <ul style="list-style-type: none"> • 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). 	<i>Prepare</i>			
<p>Planning</p> <ul style="list-style-type: none"> • 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. <p>Examples:</p> <ol style="list-style-type: none"> 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. 	<i>Prepare</i>			
	<i>Substitute</i>			
	<i>Adapt</i>			
	<i>Substitute & Adapt</i>			
<i>Adapt</i>				



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 <ul style="list-style-type: none"> 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 = qtts / 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 <ul style="list-style-type: none"> 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	<i>Prepare</i>							
Use Scheduled Dosing and Drip Dosing When Possible <ul style="list-style-type: none"> Reserve IV pump use for critical medications such as sedatives and hemodynamic support. 	<i>Conserve</i>							
Minimize Invasive Monitoring <ul style="list-style-type: none"> 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. 	<i>Conserve</i>							
Emphasize Oral Hydration Instead of IV Hydration When Possible <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;">Utilize appropriate oral rehydration solution</td> <td style="padding: 5px;"> <ul style="list-style-type: none"> 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 </td> </tr> <tr> <td style="padding: 5px;">Pediatric hydration</td> <td style="padding: 5px;"> Pediatric maintenance fluids: <ul style="list-style-type: none"> 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 </td> </tr> </table> <p>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.</p>	Utilize appropriate oral rehydration solution	<ul style="list-style-type: none"> 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 hydration	Pediatric maintenance fluids: <ul style="list-style-type: none"> 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	<i>Substitute</i>			
Utilize appropriate oral rehydration solution	<ul style="list-style-type: none"> 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 							
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Provide Nasogastric Hydration Instead of IV Hydration When Practical <ul style="list-style-type: none"> 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. 	<i>Substitute</i>							
Substitute Epinephrine for Other Vasopressor Agents <ul style="list-style-type: none"> 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. 	<i>Substitute</i>							
Re-use CVP, NG, and Other Supplies After Appropriate Sterilization / Disinfection <ul style="list-style-type: none"> 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). 	<i>Re-use</i>		(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
<p>Intraosseous / Subcutaneous (Hypodermoclysis) Replacement Fluids</p> <ul style="list-style-type: none"> Consider as an option when alternative routes of fluid administration are impossible/unavailable Intraosseous before percutaneous <p><u>Intraosseous</u></p> <ul style="list-style-type: none"> 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. <p><u>Hypodermoclysis</u></p> <ul style="list-style-type: none"> 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. 	<i>Substitute</i>			
<p>Consider Use of Veterinary and Other Alternative Sources for Intravenous Fluids and Administration Sets</p>	<i>Adapt</i>			



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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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). <table border="1" data-bbox="199 987 1356 1401"> <thead> <tr> <th>ORGAN SYSTEM</th> <th>SCORE = 0</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>RESPIRATORY PaO₂ / FI_{O2}</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> </tbody> </table>	ORGAN SYSTEM	SCORE = 0	1	2	3	4	RESPIRATORY PaO ₂ / FI _{O2}	> 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	Re-allocate			
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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
<p>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.</p>				
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	Improving ventilatory parameters	Stable ventilatory parameters over	Worsening ventilatory parameters	
<p>^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.</p> <p>^b Examples of underlying diseases that predict poor short-term survival include (but are not limited to):</p> <ol style="list-style-type: none"> 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 <p>^c Changes in Oxygenation Index over time may provide comparative data, though of uncertain prognostic significance.</p> <p>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.)</p>				

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	<ul style="list-style-type: none"> 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			
	<ul style="list-style-type: none"> Consider adjustments to donor HGB/HCT eligibility 		√	Adapt			
	<ul style="list-style-type: none"> Relax travel deferrals for possible malaria and BSE (bovine spongiform encephalitis)* 		√	Prepare			
Packed Red Blood Cells	<ul style="list-style-type: none"> Use cell-saver and auto-transfusion to degree possible 	√		Re-use			
	<ul style="list-style-type: none"> 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			
	<ul style="list-style-type: none"> Change donations from whole blood to 2x RBC apheresis collection if specific shortage of PRBCs 		√	Adapt			
	<ul style="list-style-type: none"> More aggressive crystalloid resuscitation prior to transfusion in shortage situations (blood substitutes may play future role) 	√		Conserve			
	<ul style="list-style-type: none"> Long-term shortage, collect autologous blood pre-operatively and consider cross-over transfusion 	√		Conserve			
	<ul style="list-style-type: none"> Enforce lower hemoglobin triggers for transfusion (for example, HGB 7) 	√		Conserve			
	<ul style="list-style-type: none"> Consider limiting high-consumption elective surgeries (select cardiac, orthopedic, etc) 	√		Conserve			
	<ul style="list-style-type: none"> Consider use of erythropoietin (EPO) for chronic anemia in appropriate patients 	√		Adapt			
	<ul style="list-style-type: none"> 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			
	<ul style="list-style-type: none"> 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			
<ul style="list-style-type: none"> Reduce or waive usual 56 day inter-donation period* based upon pre-donation hemoglobin 		√	Adapt				



	<ul style="list-style-type: none"> Reduce weight restrictions for 2x RBC apheresis donations according to instruments used and medical director guidance* 		√	Adapt			
Fresh Frozen Plasma	<ul style="list-style-type: none"> 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			
	<ul style="list-style-type: none"> Consider reduction in red cell : FFP ratios in massive transfusion protocols in consultation with blood bank medical staff 	√		Conserve			
	<ul style="list-style-type: none"> No anticipatory use of FFP in hemorrhage without documented coagulopathy 	√		Conserve			
	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Through not true substitute, consider use of desmopressin (DDAVP) to stimulate improved platelet performance in renal and hepatic failure patients 	√		Substitute			
	<ul style="list-style-type: none"> May use leukoreduced whole blood pooled platelets (and, if required, consider non-leukoreduced whole blood pooled platelets) 		√	Adapt	Leukoreduced		Non-leukoreduced
	<ul style="list-style-type: none"> Convert less needed ABO Whole Blood to Apheresis 		√	Adapt			
	<ul style="list-style-type: none"> Transfuse platelets only for active bleeding, further restrict to life-threatening bleeding if required by situation 	√		Conserve			
	<ul style="list-style-type: none"> No prophylactic use of platelets 	√		Conserve			
	<ul style="list-style-type: none"> Accept female platelet donors without HLA antibody screen 		√	Adapt			
	<ul style="list-style-type: none"> Accept female donors for pooled and stored platelets 		√	Adapt			
	<ul style="list-style-type: none"> Apply for variance of 7 day outdate requirement* 		√	Adapt			
	<ul style="list-style-type: none"> Consider a 24 hr hold until the culture is obtained and immediate release for both Pool and Apheresis 		√	Adapt			
	<ul style="list-style-type: none"> Obtain FDA variance to allow new Pool and Store sites to ship across state lines* 		√	Adapt			
<ul style="list-style-type: none"> 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	<p>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.</p> <p>Disaster dialysis challenges generally result from:</p> <ol style="list-style-type: none"> 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) <p><u>Outpatient</u></p> <ul style="list-style-type: none"> • 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 <p><u>Inpatient</u></p> <ul style="list-style-type: none"> • 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 <p><u>Patient preparedness</u></p> <ul style="list-style-type: none"> • 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.) <p>Shortage of Renal Replacement Therapy (RRT) Resources</p> <ul style="list-style-type: none"> • Affected facility should contact involved/affected dialysis provider companies and organizations as expert consultants 	Prepare			
	Space	<p>Relocated Patients Requiring Outpatient Dialysis</p> <ul style="list-style-type: none"> • Contact usual outpatient provider network to schedule at new facility – refer patients to 'hotlines' as needed <p>Excess Patients Requiring Dialysis</p> <ul style="list-style-type: none"> • 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		
			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	<p>Water Supply</p> <ul style="list-style-type: none"> 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 <p>Water Contamination</p> <ul style="list-style-type: none"> 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) <p>Power Outage or Shortage</p> <ul style="list-style-type: none"> 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 <p>Dialysis Catheters, Machines, Reverse Osmosis Machines, and/or Other Supply Shortages</p> <p>Note: Dialysis catheters and tubing are inexpensive, relatively interchangeable, and supplied by several manufacturers</p> <ul style="list-style-type: none"> 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			
		Prepare Substitute			
Staff	<p>Dialysis Staff Shortages²</p> <ul style="list-style-type: none"> 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	<p>Community Planning</p> <ul style="list-style-type: none"> 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	<p>Insufficient Resources Available for All Patients Requiring Dialysis</p> <ul style="list-style-type: none"> 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	<p>General Preparedness Information</p> <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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	<p>Space</p> <ul style="list-style-type: none"> Maximal use of burn beds at ABA burn centers, burn units and burn surge facilities 	Adapt			
	<ul style="list-style-type: none"> Expand burn units into other ICU spaces at those hospitals 	Conserve			
	<ul style="list-style-type: none"> 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	<p>Hospital Outpatient Supply Planning</p> <table border="1"> <thead> <tr> <th>Center Type</th> <th>Burn Center</th> <th>Level I & II Trauma Centers</th> <th>Level III & IV Trauma Centers</th> </tr> </thead> <tbody> <tr> <td>Number of Outpatients</td> <td>100</td> <td>50</td> <td>25</td> </tr> </tbody> </table> <p>Outpatient clinics and urgent care centers may also cache appropriate supplies for their location and patient population.</p> <p>Suggested supplies per patient for first 72 hours (amounts needed will vary) include:</p> <ul style="list-style-type: none"> • 5 - 8 cm x 18 cm (3 x 7 inch) sheets petroleum-impregnated gauze (e.g., Adaptic) • 4 - 10 cm (4 inch) rolls of stretchable roller gauze (e.g., Kerlix); variety of sizes suggested • 2 - 120 g (4 oz) tube bacitracin • 30 tablets of ibuprofen 800 mg and stock liquid form for pediatric use • 50 – opioid analgesic tablets (50 tablets for 5 day supply if 1-2 tablets every 4 to 6 hours); also stock pediatric alternatives • Assume half of all patients will require tetanus boosters • Especially in smaller communities, outpatient/pharmacy resources may be limited. Assess and plan for up to 72 hours without re-supply 	Center Type	Burn Center	Level I & II Trauma Centers	Level III & IV Trauma Centers	Number of Outpatients	100	50	25	<p>Prepare Increase Supply</p> <p>Adapt</p>			
	Center Type	Burn Center	Level I & II Trauma Centers	Level III & IV Trauma Centers									
Number of Outpatients	100	50	25										
<p>Inpatient Supply Planning</p> <p>Institutions should prepare based on role in community. In contingency/crisis situation, emphasis moves away from silver-impregnated dressings (expensive to stockpile) to bacitracin/petrolatum-impregnated dressings (e.g. Adaptic). If transfer is possible within the first 24 hours, simple dry sterile sheets or dressings are appropriate - see Burn Triage Card for further information.</p> <table border="1"> <thead> <tr> <th>Center Type</th> <th>Burn Center</th> <th>Level I & II Trauma Centers</th> <th>Level III & IV Trauma Centers</th> </tr> </thead> <tbody> <tr> <td>Number of Inpatients</td> <td>50</td> <td>100</td> <td>5</td> </tr> </tbody> </table> <p>Consider stocking, or having plans to obtain supplies sufficient for 2-3 days of care. Estimated usage of supplies per 24 hours per patient is below.</p> <ul style="list-style-type: none"> • 15 - 8 cm x 18 cm (3 x 7 inch) sheets petroleum gauze (about 50 % of total body surface area (BSA) normal body mass patient - use as average for major burn patient) • 2 - bacitracin 120 g (4 oz) tubes (or 1 lb. jar for 2 victims) • 10 rolls of 10 cm (4 inch) stretchable roller gauze, such as Kerlix • 2 - 5 cm (2 inch) rolls stretchable roller gauze (e.g., Kerlix) for fingers/toes/small area wrapping - can cut 4 inch in half also • Morphine (or equivalent) 10 mg/hour x 24 hours = (roughly) 250mg/day/patient • Massive doses of opioid analgesia and anxiolytics may be required by burn patients (including any patients that are only receiving palliative care) • 1 tetanus booster per 2 patients • IV fluid - for example from Parkland formula 4mL/kg x 50% BSA = 14 liters of fluid. Lactated Ringers usually preferred, but saline acceptable • 1 - central line (including 20% pediatric sizes) 	Center Type	Burn Center	Level I & II Trauma Centers	Level III & IV Trauma Centers	Number of Inpatients	50	100	5	<p>Prepare Increase Supply</p> <p>Adapt</p>				
Center Type	Burn Center	Level I & II Trauma Centers	Level III & IV Trauma Centers										
Number of Inpatients	50	100	5										



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	<p>Staff</p> <ul style="list-style-type: none"> • 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 	<p><i>Prepare</i></p> <p><i>Adapt</i></p> <p><i>Adapt</i></p> <p><i>Conserve</i></p> <p><i>Adapt</i></p> <p><i>Substitute</i></p>			
Special	<p>Special Considerations Consider availability of resources for:</p> <ul style="list-style-type: none"> • 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.) <p>* Poison Control Center 1-800-222-1222</p>	<p><i>Prepare</i></p>			



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 <ul style="list-style-type: none">• 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.**

Re-
Allocate

(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	Green	Green	Yellow	Yellow	Yellow	Red	Red	Red	Grey	Grey
2-4	Green	Green	Yellow	Yellow	Yellow	Red	Red	Red	Grey	Grey
5-19	Outpatient		Delayed			Yellow	Immediate		Grey	Grey
20-29	Green	Green	Yellow	Yellow	Yellow	Red	Red	Red	Grey	Grey
30-39	Green	Green	Yellow	Yellow	Red	Red	Red	Grey	Grey	Grey
40-49	Green	Green	Yellow	Red	Red	Red	Red	Grey	Grey	Grey
50-59	Green	Green	Yellow	Red	Red	Grey	Grey	Grey	Grey	Grey
60-69	Green	Yellow	Red	Red	Low survival, may opt for expectant management					
≥ 70	Green	Red	Grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey

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



	<p>cardiac or respiratory arrest. Treatment may be temporarily delayed in order to care for more critical patients.</p> <p>Immediate /Red: immediate treatment needed to save life, limb, or sight (highest priority). These patients have a higher probability of survival with immediate treatment.</p> <p>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.</p>				
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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	<p>Treatment Provide stabilizing burn care (airway, fluid management, analgesia, etc. – see Burn Triage Card with initial priorities, wound care, and nursing care).</p> <p>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.</p>	Adapt	Green	Yellow	Red
			White		
Transport	<p>Transport</p> <ul style="list-style-type: none"> 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	Green	Yellow	Red
		Adapt	White		

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

BURN TRIAGE CARD

Patient Arrives / Initial Assessment

High risk features? *

- Partial thickness burns > 10% total body surface area (BSA)
 - Burns that involve the face, hands, feet, genital area or joints
 - Third degree burns
 - Electrical burns, including lightning injury
 - Chemical burns
 - Inhalation injury
 - Any patient with burns and concomitant trauma
- * Consultation/special consideration recommended for elderly, children < 5 years, underlying diseases such as diabetes, or special rehabilitation needs

No

Minor

- Consider outpatient management, consultation/referral to wound/burn clinic or burn center as required
- Burn care outpatient supplies see Burn Treatment Regional Resource Card

Initial Interventions:

- Airway/Breathing** – Assess airway and provide oxygen. Consider early intubation for >25% BSA burns. Intubation recommended: stridor, voice change, respiratory distress, circumferential neck burns, carbonaceous sputum, hypoxia, or prolonged transport time and major burn patient
 - Circulation** - Assess vital signs and pulses. Burn shock common >20% BSA. Treat low blood pressure with IV fluids; consider other sources of hypotension. Avoid boluses when possible – increase fluid rates by 10% per hour for low urine output or lower blood pressures
 - Disability** – Assess neurologic status (including sensation and motor); cervical spine protection if trauma/high-voltage (>1000V) injury
 - Decontamination** – Consider potential for chemical/radiologic contamination. Chemical burns should be irrigated for 30 minutes with body temperature water while consulting Poison Control* about specific treatments
 - Expose/Estimate** - Remove clothing, jewelry, and contact lenses. Protect from hypothermia. Estimate second/third degree burn area (see figures below). Area of patient's hand (including fingers) equals 1% BSA
 - Fluids** - IV access in non-burned tissue if possible. Start Lactated Ringers (LR) 4 mL/kg/% BSA. Give 50% over first 8 hours and rest over 16 hours from time of burn. Children <5 years add 2 ampules D50 to each liter of LR. May use normal saline if no LR available
 - History** – Note time of injury, mechanism, AMPLET (Allergies, Medications, Past surgical and medical history, Last meal, Events surrounding the incident, Tetanus status)
 - Nasogastric or Orogastric** - Insert tube for all intubated patients
 - Pain Control** – Administer analgesia; extraordinary doses may be required to control pain adequately
 - Urine Output** – All electrocutions, intubated patients, and major burns should have indwelling urinary catheter (e.g., Foley). Goal is 0.5mL/kg/hr. output adults, 1mL/kg/hr children
 - Wound Care** – Do not remove adherent clothing. Warm, dry dressings over burns - NO wet dressings
- Special Considerations:**
- Closed space exposure assume carbon monoxide and/or cyanide toxicity - provide 100% oxygen*
 - High-voltage electrical – assume rhabdomyolysis and assess for internal injuries. Normal saline resuscitation until clear urine output 1-2 mL/kg/hr. Monitor creatine kinase, serum bicarbonate and creatinine. Consult with burn/referral center for ongoing management
- *Consult Poison Control Center at 1-800-222-1222

Secondary Assessment – Critical Burn Features?

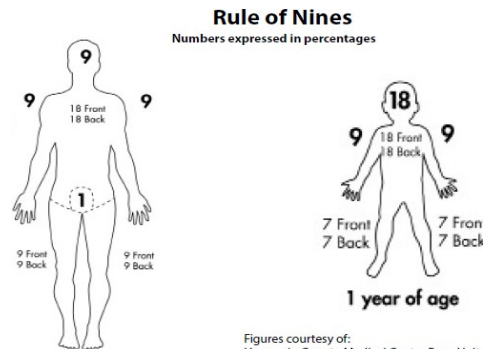
- >20% BSA second and/or third degree burns
- Intubated patient, inhalational injury, or prolonged closed-space smoke exposure
- Co-existing major trauma, rhabdomyolysis, or other complications
- Hemodynamic instability not responding to fluid resuscitation

High Priority For Transfer To Burn Center

- Continue fluid resuscitation and analgesia
- Escharotomies may be required to allow ventilation of patients with circumferential neck, chest or abdominal burns
- Arrange transfer and consultation
- Some patients in this category may be triaged to receive only palliative care (until/unless additional resources become available)

Secondary Priority For Transfer

- May have to manage in place awaiting transfer (24-48 hours)
- Obtain consultation from burn center – State Public Health may organize hotline/alternative resources during mass casualty incidents
- Cover burns with clean dry linens - no immediate dressings are necessary if transferred in the first 24 hours - after 24 hours consider bacitracin dressings per burn consultation
- Monitor urine output and provide IV fluids to maintain parameters as above
- Infection control – providers should gown, glove, and mask
- Follow cardiorespiratory and renal function
- Maintain body temperature
- Consider early use of enteral/tube feedings if oral intake inadequate
- Analgesia
- Circulation, Motor and Sensory function (CMS) checks
- Evaluate for other injuries





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	<p>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.</p> <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • State may facilitate patient and resource distribution • Statewide consultation/referral hotline may be initiated as needed 	Prepare			
Space	<p>Space:</p> <ul style="list-style-type: none"> • 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	<p>Outpatient Supply Planning:</p> <ul style="list-style-type: none"> Consider expansion of outpatient pediatric-specific supplies (e.g., crutches, pediatric-specific forms of analgesics at facility to support discharged patients) <p>Inpatient Supply Planning:</p> <ul style="list-style-type: none"> 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 border="1"> <thead> <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> </thead> <tbody> <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> </tbody> </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																															
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Infants < age 1 yr	4	3	2	1																														
<p>The American Academy of Pediatrics/American College of Emergency Physicians recommended equipment list is the basis for planning, with emphasis on:</p> <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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			



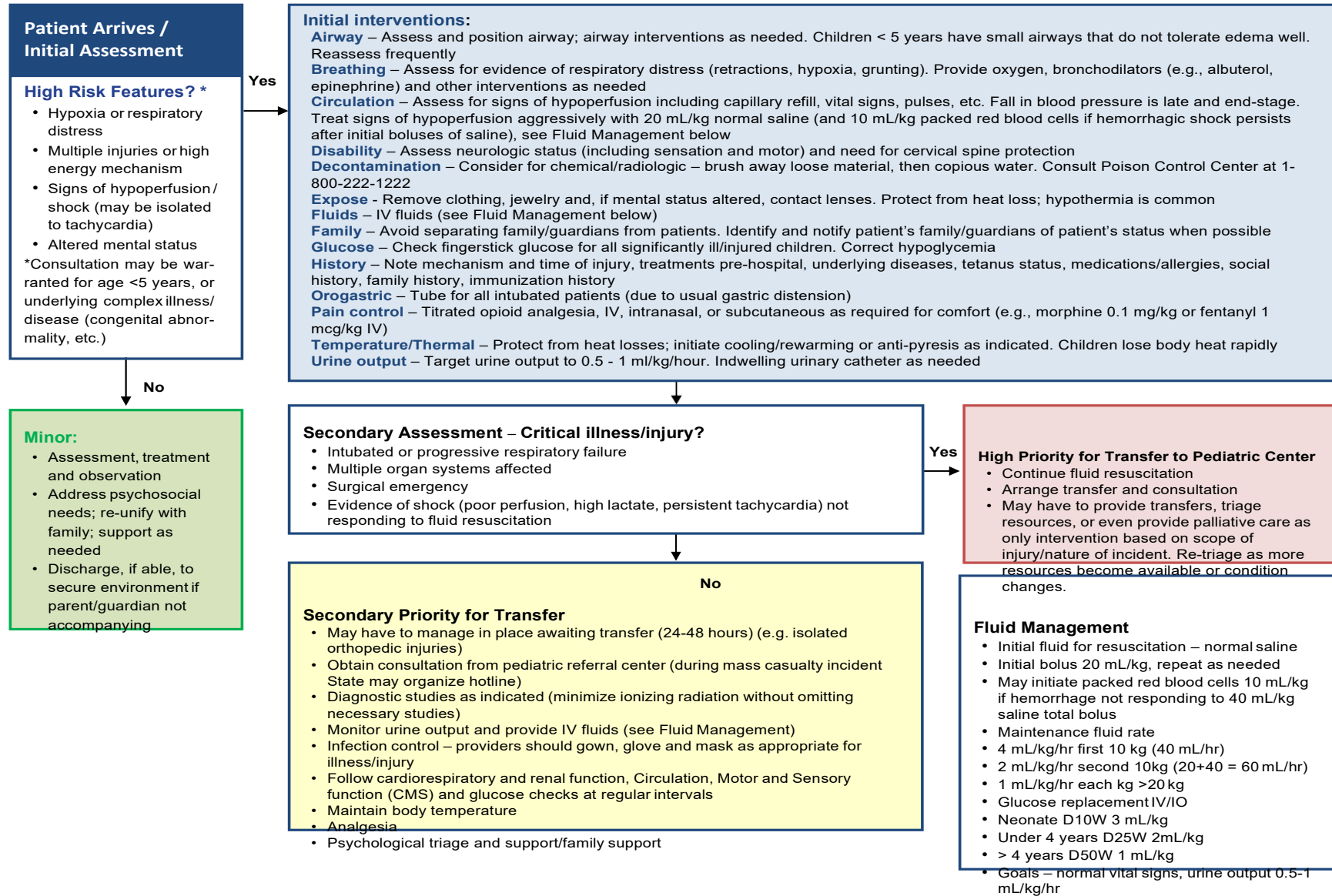
Adapted from Minnesota Healthcare System Preparedness Program Strategies for Scarce Resource Situations.

PEDIATRICS REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Treatment	<p>Provide stabilizing care (airway, fluid management, analgesia, etc.) – see Pediatric Triage Card for initial priorities</p> <p>Special Considerations:</p> <ul style="list-style-type: none"> • 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	<p>After stabilizing care, assess need for transfer:</p> <ul style="list-style-type: none"> • 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 	<p>Prepare</p> <p>Adapt</p>			

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.					
Index:					
Planning Resources	Page 11-2	Staff	Page 11-5	Tracking	Page 11-8
Communications and Coordination	Pages 11-2 & 11-3	Special	Page 11-5	Key Symptoms and Treatments	Page 11-9
Space	Page 11-4	Triage	Page 11-6	Dose Conversion Table for Selected Opioids	Page 11-10
Supplies	Page 11-4	Treatment	Pages 11-7 & 11-8		
Principles of Palliative Care:					
<ul style="list-style-type: none"> • 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:					
<ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ◊ 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 <ul style="list-style-type: none"> ◊ 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 					



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PALLIATIVE CARE REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Communications and Coordination	<p>Communications and Coordination:</p> <ul style="list-style-type: none"> • 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 <p>Communications with Families and Patients:</p> <ul style="list-style-type: none"> • 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			



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PALLIATIVE CARE REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Space	<p>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:</p> <ul style="list-style-type: none"> • 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 <p>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:</p> <ul style="list-style-type: none"> • 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 <p>Transitions:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ◇ 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) 	<p><i>Adapt</i></p> <p><i>Conserve Adapt</i></p> <p><i>Substitute Adapt Conserve</i></p>			
Supplies	<p>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.</p> <p>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:</p> <ul style="list-style-type: none"> • Oral non-opioid analgesics (also valuable as anti-pyretics) • Opioid analgesics • Benzodiazepines • Anti-psychotics • Anti-emetics • Steroids • Diuretics <p>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.</p> <ul style="list-style-type: none"> • Avoid stockpiling or hoarding in the setting of increased demand. 	<p><i>Prepare</i></p> <p><i>Adapt</i></p>			



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PALLIATIVE CARE REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Staff	<p>Staff:</p> <ul style="list-style-type: none"> 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			
	<ul style="list-style-type: none"> 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			
	<ul style="list-style-type: none"> 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	<p>Special:</p> <p>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.</p> <ul style="list-style-type: none"> Consider availability of resources for: <ul style="list-style-type: none"> 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			

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PALLIATIVE CARE REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Triage	<p>Triage:</p> <ul style="list-style-type: none"> 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) 	Conserve			
		Re-allocate			
		Adapt			
	<p style="text-align: center;">Triage Tree - Resource-dependent palliative care considerations</p> <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] F --> G E --> G G --> A </pre>				



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PALLIATIVE CARE REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis
Treatment	<p>Treatment: Provide Symptomatic Management:</p> <ul style="list-style-type: none"> • 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 <p>General Pain Management:</p> <ul style="list-style-type: none"> • ‘WHO ladder’ for pain relief <ul style="list-style-type: none"> ◊ 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 <p>Opioid Management Principles for Disaster Situations:</p> <ul style="list-style-type: none"> • 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) 	<p>Prepare</p> <p>Adapt</p>			



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PALLIATIVE CARE REGIONAL RESOURCE CARD

Category	RESOURCE and RECOMMENDATIONS	Strategy	Conventional	Contingency	Crisis						
	<ul style="list-style-type: none"> 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 1/2 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) <table border="0" style="margin-left: 40px;"> <tr> <td>Pain > 7</td> <td>Increase dose by 50% to 100%</td> </tr> <tr> <td>Pain 4 – 7</td> <td>Increase dose by 25% to 50%</td> </tr> <tr> <td>Pain < 4</td> <td>Increase dose by 25% if indicated/desired</td> </tr> </table> 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 	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	<p>Prepare</p> <p>Adapt</p>			
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										
Tracking	<p>Tracking:</p> <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> • 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; glycopyrolate (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.



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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

Emergency Medical Services (EMS) are an essential part of the continuum of health care that is often initiated by a call to a public safety answering point or dispatch center. The need for emergency medical care is determined by trained personnel who receive such a call and dispatch appropriate EMS responders to triage, treat, and transport the patient(s) to an appropriate health care facility, where definitive care is provided. This continuum of care is provided through a coordinated and integrated emergency health care system with trained and equipped personnel at dispatch centers, ambulance agencies, hospitals, and specialty care centers (trauma, burn, pediatrics).¹

This emergency health care system will be stressed to its limits during a mass casualty incident, pandemic or other multiple patient incident, requiring all components of the system to implement contingency measures to manage the surge in medical demand.

Upon appropriate declaration of such an emergency by appropriate state authorities, crisis standards of care (CSC) may be implemented to best manage the influx of patients. These CSC will, on necessity, involve the EMS system and require modifications to the usual procedures and protocol utilized.

DEPENDING UPON THE RESOURCES AVAILABLE IN A GIVEN COMMUNITY AND EMS RESPONSE SYSTEM, SOME OR ALL OF THE FOLLOWING MEASURES MAY BE IMPLEMENTED:

Public Safety Answering Points (PSAP) and Call Centers (performing emergency medical dispatch (EMD))



- During a pandemic, perform caller inquiries/focused screening on callers for symptoms related to the infecting agent, as approved by the system medical director
 - The query process should never supersede the provision of pre-arrival instructions to the caller when immediate lifesaving interventions (e.g., CPR) are indicated.
 - COVID-19:
 - Identify symptoms of fever with cough, sore throat, shortness of breath or diarrhea.
 - Ask patient if they are under investigation or have tested positive for COVID-19.
- Screening for suspected highly infectious pathogens varies significantly depending upon the high-risk agent involved and often involves questioning patients about recent travel to endemic areas and presenting signs and symptoms.
 - If there is widespread community transmission of disease in the area served by the PSAP, travel questioning may be deferred.
 - The timeframe for these conditions varies:
 - 14 days for Middle East Respiratory Syndrome (MERS)
 - 21 days for Ebola Virus Disease (EVD)
 - 14-21 days for COVID-19
- Utilize a triage screening algorithm to ensure that response capability is preserved for severely ill or injured patients and protocols developed to identify patients for delayed, alternate or non-response, including but not limited to nurse advice lines, telehealth, or mobile integrated health services.
- If persons under investigation for a highly infectious disease are known to public health, it may be beneficial for public health to notify public safety to enter a temporary note on their address in the computer-aided dispatch system to alert 911 responders to the potential for illness/exposure.
 - This is a local decision dependent on the systems and policies in the community and the note should be removed once the infectious period has passed.
- Information obtained suggesting an infectious disease process should be given to dispatchers to relay to responding agencies.

Non-EMD PSAPs:

- When information is volunteered by the caller indicating the patient may have a fever, cough, sore throat, shortness of breath or diarrhea advise responders to don PPE.
 - This should be done in accordance with local PSAP policies and should not delay EMS dispatch.

Dispatch Centers:

- Send only essential resources to calls for assistance or consider staging additional resources near-by but away from the scene.
- Consider restricting assignment to ambulance only if no life-threatening symptoms (chest pain, difficulty breathing, altered mental status) present in order to decrease first responder exposure.
- Adjust resource assignments (e.g., police only on reported vehicle crash until non-ambulatory injuries confirmed).
- Auto-answer and caller deferral to information/prescribing/nurse advice lines for non-emergency situations.
- Recommend private transport when appropriate with consideration for transport to non-traditional or non-emergency receiving facilities during surge times.
- Deferral of selected 911 requests for service as approved by the system medical director.



- If, during the EMD caller interrogation process, it appears that the patient may have symptoms of a suspected infectious agent, provide scripted alerts to all responding EMS units.
- Recommend that ambulatory patients meet the responding EMS service outside of their residence if their condition allows and the environment is safe.
- Consider implementation of a telehealth process to allow for direct EMS communication with the patient.

EMS Agencies:

- Change in staffing/crew configuration (i.e. one EMS certified or licensed provider and one non-medical driver).
- Expand “left at scene” discretion/guidelines as approved by the system medical director.
- Consider establishing a process for patient follow-up, and if indicated, instructions for self-care at home.
- Non-hospital destinations for appropriate patients
- Alternate response strategies
 - “Jump car” to assess patient and need for ambulance transport
 - Community paramedic

EMS Responders:

- First responders recognizing a potentially infectious patient should notify dispatch/communications center to assure that responding EMS personnel are prepared to implement appropriate infection prevention and control measures.
- Regardless of dispatch information, EMS personnel should be vigilant for travel history and signs and symptoms of communicable disease (e.g., fever, cough, gastrointestinal complaints) and use standard precautions and add appropriate transmission-based infection control precautions whenever history or exam findings warrant.
- Implement strict standard and transmission-based precautions based on the current known high-risk infection threat and the patient’s clinical information to avoid exposure to potentially infectious bodily fluids, droplets, and particles.
- Avoid direct contact with a patient who may have a serious communicable disease until appropriate PPE is donned (see PPE Section below).
 - Similar precautions should be maintained around close contacts or household members of the patient.
- When not performing direct patient physical assessment, maintain a distance of at least six feet to provide protection from transmission of many diseases.
- Attempt to limit close contact with patient to as short a time as possible when performing the patient assessment and examination.
- Patients or their caregivers may find responders wearing high levels of PPE such as hood, suits, and respirators alarming. Communicating with and calming anxious patients may be more challenging due to PPE as well. Responders should be mindful of this and be prepared to reassure patients and to address their distress and fear.
- Limit the number of EMS providers making contact with a potentially infectious patient to the minimum required to perform tasks safely.
 - Non-essential providers on scene should wait outside of the patient treatment area or outside of the residence or building.
- Conduct initial assessment and interview at least 6 feet away.
 - Maintain this similar distance from the patient’s close contacts, household members, and bystanders.
- Confirm patient’s existing MOST form, DNR/DNI wishes, or advance directives.



Recommended Personal Protective Equipment (PPE) for COVID-19:

EMS clinicians who will directly care for a patient with possible or known COVID-19 infection or who will be in the patient care compartment with the patient should follow standard precautions and use PPE below:

- N-95 or higher-level respirator or facemask (if a respirator is not available)
- Eye protection (i.e., goggles or disposable face shield that fully covers the front and sides of the face).
- Personal eyeglasses and contact lenses are NOT considered adequate eye protection.
- Gloves
- Gown (if shortage, prioritize use for aerosol-generating procedures, or high-contact patient care)
- Full standard uniform to include long sleeve shirt and long pants underneath the PPE ensemble.

Drivers

- If providing direct patient care (e.g., moving patients onto stretchers), they should wear all recommended PPE
 - After completing patient care and before entering the driver's compartment, the driver should remove and dispose of PPE and perform hand hygiene to avoid soiling the compartment.
- The vehicle operator should wear a NIOSH-approved, fit-tested N95 respirator if the patient compartment and cab cannot be isolated.

For EMS clinicians present for or performing the following aerosol-generating procedures, an N-95 or higher-level respirator, instead of a facemask, should be worn in addition to the other PPE described above:

- bag valve mask (BVM) ventilation,
- oropharyngeal suctioning,
- airway management - if active management is required, airway interventions should be limited to procedures such as supraglottic airway, laryngoscopy, or RSI. When available, video laryngoscopy is the preferred method for intubation.
 - For COVID-19
 - avoid multiple endotracheal intubation attempts and nasotracheal intubation
 - consider a supraglottic airway (SGA) device for short transport situations.
 - Endotracheal intubation, if needed, should be accomplished using RSI and is preferred for long transport or air-medical transport.
 - Non-pharmacologically assisted endotracheal intubation should be avoided with COVID-19
- nebulizer treatment (avoid with COVID-19 – consider metered dose inhaler with spacer or intramuscular epinephrine for severe wheezing),
- continuous positive airway pressure (CPAP), (avoid use with COVID-19)
- bi-phasic positive airway pressure (BiPAP), (avoid use with COVID-19) or resuscitation involving emergency intubation or CPR.

Transport Destination:

- Transport only the most severe cases
 - Refer other to an appropriate treatment facility or follow-up service.
- Change to “closest hospital” transportation or “batch” transports
- Transport destinations may be adjusted to allow transport to clinics, surgery centers, urgent care centers, or other alternate sites of care in addition to hospitals.
- Hospital Diversion:

- It is recognized that a pandemic places significant demand and stress on the services and capabilities of receiving hospitals. As a result, hospitals may request that ambulances divert patients away from impacted facilities to more distant facilities, which may be problematic and negatively affect EMS operations. It is essential that EMS maintain emergency response capability and there not be an expectation that EMS transport patients to distant locations and impair local EMS response. The hospital community must recognize that as hospital capacity decreases in a community, the ability to divert ambulances to other facilities must also decrease. Instead, patients should be transported to the local hospital, triaged in the hospital as to medical care needs and requirements, and, depending on hospital capacity and patient condition and triage status, either discharged, admitted to the local hospital, or secondarily transferred to alternative hospital facilities or care sites.
- **Criteria for consideration for no-transport**
 - Age <60 years old
 - History of viral syndrome (e.g. fever, cough, nasal/chest congestion, sore throat, body aches)
 - Vital Signs
 - Respiratory Rate between 8 and 20 bpm or upper limit of age based normal
 - Pulse oximetry >90%
 - Heart rate <110 or upper limit of age based normal
 - Systolic Blood Pressure >90 or age based lower limit of normal
 - Absence of high-risk medical history including: respiratory disease (asthma, COPD), active cancer, diabetes, morbid obesity, heart disease (CAD, CHF), neuromuscular disorders, immunocompromised
 - Patient (or guardian) demonstrates medical decision-making capacity, ability to communicate understanding of risks and benefits or no transport, and agrees with no-transport recommendation
 - Absence of shortness of breath, respiratory distress, syncope, cyanosis, diaphoresis, chest pain (other than mild with coughing), or otherwise concerning finding on assessment
 - If ALL above criteria are met, consideration for recommending NOT to transport the patient to the emergency department.
 - Discuss non-transport and recommended self-quarantine with script: “Based on your age, medical history, and our assessment, a COVID-19 test may be appropriate, but the risks from emergent transport by ambulance to the emergency department likely outweigh the benefits. In order to limit exposures, would you be comfortable with us providing you alternative information regarding home care and recommendations?”
 - Ensure proper support system in place to allow for calling of 911 if condition changes
 - Suitability Assessment for HomeCare
 - Appropriate caregivers are available, if needed
 - The patient is competent and consents to non-transport
 - There is a separate bedroom where the patient can recover without sharing immediate space with others
 - Access to food, water, and other necessities
 - There are no household members at high risk of complications
 - Transport if patient does not meet criteria or requests transport

Medical Care On-Scene and During Transport

- Limit the number of EMS providers making patient contact to the minimum required to perform tasks safely.
 - Hold additional resources in staging area, outside the building or residence, or outside of the primary assessment and treatment area.
- If patient is conscious and able to follow instructions, interview the patient for the nature of the call to 9-1-1. If the call nature is suspicious for any infectious illness, toss a surgical mask to them from 6 or more feet away and instruct patient to apply.
 - If patient is unable to follow instructions for whatever reason, place a surgical mask on a patient with likely infectious cough to limit droplet generation or any patient where there is known community spread.
- Advise patients to cover their nose and mouth when coughing or sneezing
 - Use tissues to contain respiratory secretions and, after use, dispose them in the nearest waste receptacle;
 - Perform hand hygiene after having contact with respiratory secretions and contaminated objects or materials.
- Apply strict criteria for the use of scarce equipment.
 - Keep nonessential equipment away from the patient, so as to minimize contamination on the scene and in the ambulance.
- Only perform potentially aerosol-producing procedures as described above if absolutely necessary and cannot be postponed until hospital arrival.
 - Discontinue these procedures before entering receiving facility or confirm with receiving facility if facility entry will be allowed with on-going procedure.
- If active management is required, airway interventions should be limited, as much as possible, to procedures such as supraglottic airway, video laryngoscopy, or RSI.
 - For COVID-19:
 - If clinically indicated and available, rapid sequence intubation (RSI) should be considered for patients requiring definitive airway management to avoid aerosol production from coughing and is preferred for long transport or air-medical transport.
 - consider a supraglottic airway (SGA) device for short transport situations.
 - Naso-tracheal tube placement should be avoided.
 - avoid multiple endotracheal intubation attempts
 - Anticipate rapid oxygen desaturation
- Intubated patients should be ventilated with a bag-valve device or ventilator with a HEPA filter on the exhalation port.
- Notify the receiving hospital of the impending arrival of the patient to allow time for preparation to receive.
- Family members and other contacts of patients, other than parents of minors, with possible COVID-19 should not ride in the transport vehicle to reduce the risk of transmission, absent extreme circumstances.
- During transport:
 - The patient compartment exhaust vent should be on high and the driver compartment should be isolated from the patient compartment if possible.
 - The driver compartment ventilation fan should be set to high without recirculation.
 - If a vehicle without an isolated driver compartment and ventilation must be used, open the outside air vents in the driver area and turn on the rear exhaust ventilation fans to the highest setting. This will create a negative pressure gradient in the patient area.
- Consider protocol changes as follows:
 - Implement treat on-scene and release as appropriate



- Expanded no transport of patients without serious illness or injury
 - Refer to appropriate follow-up care where available. (ex. Community paramedics, private home health service.)
- Discontinue certain life-saving treatment efforts
 - Patients with known poor survival should be pronounced in the field rather than have efforts at resuscitation that would place providers in danger.
 - Patients in cardiac arrest with an initial rhythm of asystole
 - Patients in non-traumatic cardiac arrest with an initial rhythm of PEA
 - Patients in cardiac arrest with an initial rhythm of ventricular fibrillation should have limited efforts at resuscitation including CPR, electrical defibrillation and ACLS drugs. If no ROSC, contact medical control for possible termination order.

Cardiac Arrest in a Patient with Suspected or Known COVID-19 Crisis Standards of Care^A

- Applies to patients in cardiac arrest with known previous symptoms of respiratory illness and fever or known COVID-19.
- Personal Protective Equipment
 - Standard, contact, and droplet precautions
 - CPR and assisting ventilations are aerosolizing procedures. N95 masks or equivalent are required.
 - **Do not perform CPR without the appropriate PPE and respiratory precautions in place.**
- Treatment
 - Airway interventions should be limited to procedures such as supraglottic airway, video laryngoscopy, or RSI.
 - When CPR is being performed, only necessary personnel should be next to the patient.
 - Other personnel should distance themselves from the patient when not performing interventions.
 - Consider field pronouncement for:
 - Patients in cardiac arrest with an initial rhythm of asystole
 - Patients in non-traumatic cardiac arrest with an initial rhythm of PEA
 - Patients in cardiac arrest with an initial rhythm of ventricular fibrillation should have limited efforts at resuscitation including CPR, electrical defibrillation and ACLS drugs.
 - If no return of spontaneous circulation (ROSC), contact medical control for possible termination orders.
 - Patients in continuous cardiac arrest **WILL NOT BE TRANSPORTED.**
 - ROSC should be sustained (continued palpable pulse and systolic BP \geq 60 mmHg for >5 minutes) **BEFORE** moving the patient to the patient compartment of a vehicle for transport.
- For witnessed arrest inside the patient care compartment:
 - If single provider is with patient in patient compartment:
 - Pull vehicle to the side of the road in a discrete location and perform resuscitation using full PPE, with doors OPEN to maximize compartment ventilation.

^A Adapted from Michigan EMERGENCY SPECIAL OPERATIONS
CARDIAC ARREST IN A PATIENT WITH SUSPECTED COVID-19 CRISIS STANDARDS OF CARE
https://www.michigan.gov/documents/mdhhs/10.21_nCoV_Resuscitation_Final_3.23.2020_684791_7.pdf



- Call for additional resources to assist as needed.
 - If (or once) adequate personnel and resources are available, may proceed to nearest hospital.
 - Provide verbal presentation to ED staff prior to entering the facility to obtain field pronouncement, thus saving PPE and staff resources for a non-viable patient.
 - If patient has mechanical CPR device in place and has lost ROSC, the device may be resumed with continued transport to the hospital, as long as all personnel in the patient compartment have sufficient respiratory PPE in place.
- For cardiac arrest during inter-facility transfer where patient demise was expected:
 - Consider ceasing any interventions and divert to nearby facility
 - Provide verbal presentation to ED staff prior to entering the facility to obtain field pronouncement, thus saving PPE and staff resources for a non-viable patient.

CSC Triggers and Actions:

EMS agencies ideally should consider developing a matrix such as that shown below describing triggers and actions to be taken during Conventional, Contingency, and Crisis Conditions. See IOM example on next several pages.

	Conventional	Contingency	Crisis (Usually requires emergency declaration)
Dispatch			
Response			
Patient Assessment			
Transportation			

The example below is taken from the EMS Volume of the “Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response”, Institute of Medicine of the National Academies, 2012.

TABLE 6-1
Potential EMS Response Adaptations Under Conventional, Contingency, and Crisis Conditions^a

	Conventional	Contingency	Crisis ^b
Dispatch	<ul style="list-style-type: none"> Consider initial auto-answer during times of high call volume for medical emergencies 	<ul style="list-style-type: none"> Prioritize calls according to potential threat to life; “pend” apparently non-life-threatening calls (note this requires a medically trained dispatcher, not available at many public safety answering points [PSAPs]) 	<ul style="list-style-type: none"> Decline response to calls without evident potential threat to life (also requires a medically trained dispatcher)
Response	<ul style="list-style-type: none"> Modify resource assignments (e.g., only fire/rescue dispatched to motor vehicle crashes unless EMS are clearly required, single-agency EMS responses if fire agencies are overtaxed) Seek mutual-aid assistance from surrounding areas 	<ul style="list-style-type: none"> Modify resource assignments to a greater extent Change EMS assignments to closest available unit rather than advanced life support (ALS)/basic life support (BLS) Consider staffing configuration changes (e.g., from two paramedics to one paramedic plus one emergency medical technician [EMT]-B) Consider requests for disaster assistance 	<ul style="list-style-type: none"> Request EMS units from emergency management (if possible) Consider use of National Guard ambulances or other assets Utilize scheduled BLS providers to answer emergency calls Change staffing to one medical provider, one driver Further modify resource assignments as possible Attempt no resuscitation of cardiac arrests (except ventricular fibrillation [VF] witnessed by EMS)
Patient assessment	<ul style="list-style-type: none"> Allow patients with very minor injuries to use their own transportation 	<ul style="list-style-type: none"> Encourage patients with minor injury/illness to use their own transportation 	<ul style="list-style-type: none"> Assess patients and decline to transport those without significant injury/illness (according to guidance from EMS medical director)
Transportation	<ul style="list-style-type: none"> Transport patients to the closest appropriate facility (rather than the facility of the patient’s choice) 	<ul style="list-style-type: none"> Consider batched transports—answer subsequent call(s) before transporting stable patients to the hospital 	<ul style="list-style-type: none"> Decline transports as above; employ batch transports as needed

^a EMS volumes will fluctuate significantly over time; thus, conventional, contingency, and crisis conditions may all occur in a single operational period. Dispatchers must therefore have excellent situational awareness of resources and deployment of personnel to provide the best service possible at a given time and have practice in managing these scenarios.

^b Crisis adaptations often require state or at least city declarations of emergency, as well as relief from usual staffing and response requirements of the state (often through a governor’s emergency order).

On the next several pages, The Institute of Medicine in its’ publication titled “Crisis Standards of Care: A Toolkit for Indicators and Triggers” published the following tables as an examples of potential indicators that would trigger changes in EMS delivery.

TABLE 7-1
Example Emergency Medical Services (EMS) Indicators, Triggers, and Tactics for Transitions Along the Continuum of Care

Indicator Category	Contingency	Crisis	Return Toward Conventional
Scope of the event	Minor or major disaster	Catastrophic	Approaching resolution
Surveillance data	<p>Indicators:</p> <ul style="list-style-type: none"> Increased patient encounters by EMS Increased emergency department and/or hospital census Reports of increased cases of influenza Reports of an earthquake with potential of additional aftershocks <p>Triggers:</p> <ul style="list-style-type: none"> Significantly elevated number of dispatch requests Significantly increased patient care encounters with similar signs and symptoms or high patient acuity Significantly increased data registry entries from state or regional electronic prehospital patient care record systems <p>Tactics:</p> <ul style="list-style-type: none"> Advise local health officials (or, as applicable, base station or online medical direction) of the observed increase in activity or increased incidence of patients with similar signs and symptoms Establish incident command for EMS and advise the emergency care system stakeholders of this action command Provide incident command with frequent reports and ongoing trends using surveillance data Engage regional and state surveillance systems to follow trends and expanse of the mass casualty incident or pandemic Engage mutual aid partners as required 	<p>Indicators:</p> <ul style="list-style-type: none"> Patient care demands exceed the available EMS resources, including mutual aid Patient care demands exceed the available hospital resources Confirmation of increased virulence of the strain of influenza Surveillance data are impacted due to overwhelmed health care providers, public health, or collapse of data entry systems The incidence of illness and injury continues to escalate despite mitigation measures <p>Crisis Triggers:</p> <ul style="list-style-type: none"> Multiple hospitals closed to EMS Mutual aid partners not able to answer calls involving potential life threats <p>Tactics:</p> <ul style="list-style-type: none"> Maximize alternative avenues of data collection and submission (verbal, paper, or estimated reports) Continue to advise local health officials (or, as applicable, base station or online medical direction) of the observed increase in activity or increased incidence of patients with similar signs and symptoms Work with mutual aid agencies to revise and/or implement call triage 	<p>Indicators:</p> <ul style="list-style-type: none"> Stabilization or decrease in patient encounters by EMS Stabilization or decrease in emergency department and/or hospital census Stabilization or decrease in the reports of cases of influenza Decreasing frequency of earthquake aftershocks <p>Triggers:</p> <ul style="list-style-type: none"> Stabilization or decrease in the number of dispatch requests Stabilization or decrease in calls with similar signs and symptoms or high patient acuity calls <p>Tactics:</p> <ul style="list-style-type: none"> Monitor the surveillance data for resurgence or continued mitigation Continue to advise local health officials (or, as applicable, base station or online medical direction) of the observed increase in activity or increased incidence of patients with similar signs and symptoms

TABLE 7-1
Continued

Indicator Category	Contingency	Crisis	Return Toward Conventional
Community and communications infrastructure	<p>Indicators:</p> <ul style="list-style-type: none"> Compromised communications (911, public safety) systems Reports of widespread road or structural damage Increased calls or ambulatory presentation of patients to EMS agencies seeking medical advice or treatment Inaccurate information from unreliable sources circulating within the community <p>Triggers:</p> <ul style="list-style-type: none"> >20% increase in emergency medical dispatch or medical advice hotlines An increase in rumors and inaccurate information within the lay population, media, and social networking sites <p>Tactics:</p> <ul style="list-style-type: none"> Initiate community education regarding selective emergency medical dispatch (EMD) and EMS triage and transport measures Engage with media outlets to disseminate information on mitigation measures Work with emergency management and crews in the field to obtain situational awareness regarding access and damage reports Consider partnering to establish nurse call triage lines to mitigate requests for EMS transport 	<p>Indicators:</p> <ul style="list-style-type: none"> Emergency medical dispatch overwhelmed by call volumes and unable to answer all calls 911 system compromised Media reports that incite increased anxiety Operational or structural collapse of the communication centers Inaccurate information is in the forefront <p>Crisis Triggers:</p> <ul style="list-style-type: none"> Inability of high-acuity patients to access the emergency response system Patient tracking mechanisms and systems are overwhelmed <p>Tactics:</p> <ul style="list-style-type: none"> Use prerecorded messaging to filter calls that require direct emergency medical dispatch staff contact Maximize frequent use of emergency broadcast system and media outlets Implement call triage models to target highest priority calls for response 	<p>Indicators:</p> <ul style="list-style-type: none"> Stabilization or decrease in calls to emergency medical dispatch Stabilization or decrease in calls to medical advice hotlines Communication systems, networks, and physical infrastructure returning to baseline functional state <p>Triggers:</p> <ul style="list-style-type: none"> The number of requests to emergency medical dispatch and for EMS are returning to baseline levels <p>Tactics:</p> <ul style="list-style-type: none"> Continue to provide the community with information regarding the status of the event Continue to educate and encourage the community to engage in mitigation measures Revise dispatch and transport protocols to normalize operations
Staff <i>(Refer also to the worker functional capacity table in Toolkit Part 1 [Table 3-1])</i>	<p>Indicators:</p> <ul style="list-style-type: none"> Members of the EMD and EMS workforce unable to report for duty due to impassable roads, incapacitated personal vehicles, or other direct effects Members of the EMD and EMS workforce within the at-risk population for influenza Members of the EMD and EMS workforce unable to report for duty due to illness, injury, or physical entrapment in residences 	<p>Indicators:</p> <ul style="list-style-type: none"> Overwhelming number of patient with insufficient staff to meet the demand for triage, treatment, and transport Significant portion of the emergency medical dispatch and EMS workforce is sustaining physical fatigue due to extended work shifts and incident stress Significant number of the EMD and EMS workforce are affected as disaster victims or incapacitated by the disaster and are unavailable to respond 	<p>Indicators:</p> <ul style="list-style-type: none"> Approaching normal baseline levels of staffing Return to normal shift level and staffing Some emergency medical dispatch and EMS personnel may elect to remain off duty due to family obligations <p>Triggers:</p> <ul style="list-style-type: none"> The number of emergency medical dispatch and EMS personnel reporting for duty is starting to stabilize Recovery of EMS personnel from illness and/or injury

Triggers:

- EMS crews are at or approaching minimal staffing
- Loss of 10% or more of the workforce

Tactics:

- Use mutual aid staffing resources
- Prioritize dispatch calls according to potential threat to life, placing non-life threatening calls on a pending status (requires medically trained emergency medical dispatch)
- Reduce staffing requirement from two advanced life support (ALS) providers to one ALS and one basic life support (BLS) provider
- Change ambulance assignments according to closest available units instead of BLS/ALS capability
- Activate non-EMS dispatch protocols in emergency medical dispatch centers and advise patients with minor injuries or illnesses to use their own transportation
- Activate non-transport protocols and disaster triage guidelines for EMS agencies
- Use 211 nurse call centers for triage
- Respond to critical or urgent calls followed by batched transport of stable patients to health care facilities
- Encourage mitigation measures, e.g., mass vaccination, within EMD and EMS workforce
- Transport essential EMS and emergency medical dispatch workers to the workplace via National Guard or other agency
- Provide support to families of EMS and emergency medical dispatch personnel to facilitate the maintenance of the workforce
- Change shift length

- EMS and medical personnel are becoming victims of criminal activity by individuals seeking medications, medical supplies, vaccinations, and expedited treatment or transport

Crisis Triggers:

- Unable to maintain staffing for EMS units
- Staff overwhelmed by number of patients who need care
- Mutual aid staffing resources have been exhausted

Tactics:

- Direct emergency medical dispatch to decline response to calls without evidence of threat to life (requires medically trained EMD)
- Mandatory use of disaster triage guidelines
- Direct EMS to decline transport of assessed patients without significant injury or illness (upon guidance from EMS medical direction)
- Limit resuscitation attempts to witnessed cardiac arrests
- Reduce staffing for ambulances to one EMS provider (upon guidance from EMS medical direction)
- Request additional EMS units through the local emergency operations center (EOC)
- Use public and private mass transportation resources for patients with minor injuries or illnesses
- Integrate transportation resources from out of state and through the Emergency Management Assistance Compact or National Disaster Medical System
- Secure federal, state, regional, and local EMS staffing resources and non-EMS staffing resources (e.g., National Guard)
- Provide appropriate security for EMS crews

Tactics:

- Direct emergency medical dispatch to use initial automated answering systems during spikes of high call volume for medical emergencies, but revert to answering all calls when able
- Initiate a gradual return to normal triage, patient treatment, and transport guidelines
- Initiate a gradual transition to normal staffing levels, work shifts, and sleep cycles
- Initiate plan for reduction and relief of mutual aid resources
- Continue to encourage or require mitigation measures (personal protective equipment [PPE], hand washing, vaccination, etc.)
- Encourage timely engagement in stress management and personal resilience resources

Indicator Category	Contingency	Crisis	Return Toward Conventional
Space/Infrastructure	<p>Indicators:</p> <ul style="list-style-type: none"> • Evacuation routes are becoming crowded • The general public is unable to access timely care in clinics or emergency department • Multiple emergency department and emergency care centers are going on diversion due to overwhelmed capacity • Roads and bridges have collapsed or become structurally unstable <p>Triggers:</p> <ul style="list-style-type: none"> • More than 20-30% of the emergency departments, emergency care centers, and public health clinics have requested additional medical staff or are on diversion • There is a trend within the general public electing not to comply with emergency declaration mitigation directives (e.g., shelter in place, evacuation, driving restrictions) <p>Tactics:</p> <ul style="list-style-type: none"> • Activate and open all alternative care sites, and support these with EMS resources as possible • Activate alternate transport destination and non-transport protocols for emergency medical dispatch and EMS personnel • Encourage the general public to comply with emergency declaration directives, engaging law enforcement assistance if necessary 	<p>Indicators:</p> <ul style="list-style-type: none"> • Overwhelming number of patients exceeds the ambulances available • Transport destinations are overwhelmed and do not have the capacity to accept additional patients • Law enforcement resources are overwhelmed or limited • Evacuation routes are no longer passable • The virulence of a biologic agent has increased compared to prior projections • Structural damage to the physical plant of emergency medical dispatch, EMS, or EOC that hampers or incapacitates their operational status • Structural damage to the physical plant of health care facilities that hampers or incapacitates their operational status • Air ambulances are grounded due to weather <p>Crisis Triggers:</p> <ul style="list-style-type: none"> • No available ground ambulances for transport • Mutual aid for additional vehicles is exhausted <p>Tactics:</p> <ul style="list-style-type: none"> • Establish casualty collection points • Use treat and release protocols • Universal use of non-EMS dispatch and non-transport protocols • Use mass transport vehicles (e.g., buses) to transport patients with minor injuries • Use disaster triage guidelines • Designate ambulance transport solely for moderately/seriously ill or injured patients • Use alternative vehicles (e.g., aircraft if weather conditions permit, all terrain vehicles, motorcycles, bicycles, watercraft) to access moderately or severely ill or injured patients when routes of travel that are conducive to ambulances are no longer passable 	<p>Indicators:</p> <ul style="list-style-type: none"> • The demand for available ambulances with patient need is better aligned • Roadways are beginning to have reduced volume • Emergency departments and emergency care centers are beginning to accept patients • Structural damage to transport destinations is no longer affecting operational status <p>Triggers:</p> <ul style="list-style-type: none"> • A reduction in health care facilities that are on diversion • Reliable routes of transport have been established for emergency and public safety vehicles <p>Tactics:</p> <ul style="list-style-type: none"> • Continue operational support of alternate transport sites until emergency department and emergency care center report improved flow of inpatients and outpatients • Initiate a gradual transition to conventional transport destinations

Supplies

Indicators:

- EMS agencies report increased use of PPE, medical supplies, medications, or airway management equipment
- Manufacturers of PPE, medical supplies, vaccines, medications, or ventilators report decreased stock available
- Fuel shortages reported

Triggers:

- The available PPE is less than what is needed for the EMS workforce
- The use of medical supplies, medications, vaccines, and antidotes begins to exceed their replacement

Tactics:

- Conservation of PPE
- Conservation of supplies
- Provide medications and vaccinations to designated at-risk populations
- Determine alternate vendors and sources of supplies

Indicators:

- EMS reports inadequate or depleted supply of PPE, medical supplies, medications, or airway management equipment
- Manufacturers of PPE, medical supplies, vaccines, medications, or ventilators report insufficient or depleted stock
- Manufacturers of disaster supplies and recovery equipment report factory closures and/or halted production due to loss of workforce

Crisis Triggers:

- PPE is no longer available
- Vaccinations, medications, or antidotes are depleted to the point that equivalent treatment cannot be provided
- Hospitals can no longer provide supplies or medications to restock ambulances

Tactics:

- Activate crisis standards of care prehospital patient care protocols
- Secure federal, state, regional, and local emergency response assets

Indicators:

- Demand for PPE for EMS personnel is subsiding
- Demand for medical supplies or airway management equipment is reduced
- Manufacturers of PPE, medical supplies, medications, or airway management equipment report improving product availability

Triggers:

- Incident command is receiving reduced requests for additional PPE and medical supplies from EMS personnel
- Emergency departments, emergency care facilities, and hospitals have reduced requests for medications, antidotes, vaccinations, and ventilators
- Manufacturers of disaster supplies and recovery equipment report a return to production

Tactics:

- Assess the current status of the supplies of medications, medical equipment, and PPE
- Request a limited volume of PPE and supplies to prepare for a potential resurgence and to begin replenishing the normal stock of supplies
- Adjust supply allocation guidance toward normal



2. Hospital and Acute Care Facilities

I. Introduction

The Institute of Medicine defined “Crisis Standards of Care” as “a substantial change in usual healthcare operations and the level of care it is possible to deliver, which is made necessary by a pervasive (e.g., pandemic influenza) or catastrophic (e.g., earthquake, hurricane) event.”¹ Situations in which demand for certain resources exceeds the supply, either due to limitations of equipment such as hospital beds or ventilators or shortages related to healthcare staffing, constitute a crisis where patients may receive care that substantially deviates from the standard prior to the crisis. In such situations, a crisis standard of care (CSC) becomes the new standard for patient care. CSC constitutes a continuum with the final *extreme* step being rationing of scarce resources. In this document, a broad framework to guide CSC decision-making is presented. It is not possible to anticipate every scarce resource or every triage pathway that could occur in a crisis situation. The framework presented should guide consistent, fair, equitable, and transparent decision-making with the specifics details tailored to demands of a given crisis. This document combines the CSC guidelines focused on ventilator and critical care triage protocols originally approved by the Governor’s Expert Emergency Epidemic Response Committee (GEEERC) on April 5, 2020 (revised December 10, 2020) with a broader framework focused on all areas of crisis-related decision-making.² This document is driven by challenges faced during the COVID-19 pandemic but the guidelines will have broader applicability to other types of crises that Colorado may encounter in the future.

At the beginning of the COVID-19 pandemic, there very real possibility of demand for critical care resources such as intensive care unit (ICU) beds and ventilators exceeding supply and the need to potentially ration resources emerged. Subsequent COVID-19 surges have highlighted limited capacity in emergency departments, general hospital beds, different types of dialysis, medications, oxygen delivery systems other than ventilators, etc. Staffing shortages sit at the center of several of these issues. Given widespread threats to the healthcare system and the fact that different hospitals are experiencing different shortages, Colorado needs a generalized framework for hospital-based triage (i.e. allocating certain resources to one patient while denying them to another) that can guide everything from hospital admissions to ventilator triage. All triage systems for CSC are meant for the *extreme situation* in which the number of sick individuals far exceeds the health system’s resources and difficult decisions must be made as to who receives certain types of care. It is not possible to create a scoring system for every different area of potential shortage. As such, this document presents a general CSC framework by which any number of resources could be triaged and presents a very detailed approach to ICU bed and ventilator triage all while recognizing the fluid nature of CSC within and between hospitals.

II. Core Principles

The CSC framework is based on strong ethical principles. Should there be a declaration of CSC in Colorado, the goal would be to maintain equity within and between hospitals. The following key ethical principles serve as the foundation for this CSC framework.

1. Crisis-related decisions and hospital-based triage systems for CSC need to be transparent, consistent, equitable, respectful, and fair to ALL individuals regardless of the resource or service that is being triaged.
2. To the best of a hospital or healthcare system’s ability, the clinical care team (e.g., physician, nurse, respiratory therapist) should not be required to make triage decisions for their own patients. In rural areas with relatively few care providers, establishing a triage team with no

- clinical ties to potentially affected patients may be difficult but efforts should be made to identify an objective triage team if possible.
3. A framework for hospital-based triage should be implemented across the state to reduce variation within and between institutions in Colorado.
 4. NO categorical exclusionary criteria based on factors clinically and ethically irrelevant to the triage process (e.g. age, race, ethnicity, ability to pay, disability status, national origin, primary language, immigration status, sexual orientation, gender identity, HIV status, religion, veteran status, “VIP” status, housing status, income, or criminal history) will be used to make triage decisions.
 5. Triage frameworks should employ multiple clinically relevant considerations but should not use any single categorical exclusionary criteria, such as age or specific comorbidities, regardless of which resource is scarce.
 6. Triage implies the rationing of resources, never care. Patients who are triaged such that they do not receive a given resource (e.g. do not receive a ventilator if needed) should receive optimal care within the triage framework and within a hospital’s ability, including expert palliative care if appropriate and available. In healthcare, we never ration care but the care received may be different or limited during times of crisis.
 7. Triage processes should be applied to ALL patients, not just those with COVID-19.
 8. Triage decisions should focus on short and near-term outcomes (<1 year). Decisions made about long-term survival are less accurate and more likely to bias against older adults, those with disabilities, and under-represented minorities.

III. Before Crisis Standards of Care are Implemented

Prior to a declaration of CSC, the care of all individuals should follow practice standards that existed prior to the current pandemic. In the period prior to and during CSC, all efforts must be made to determine a patient’s goals of care prior to the need for CSC. It is critical to know whether a given patient wants to be admitted to a hospital or receive aggressive critical care interventions such as ICU admission or mechanical ventilation. For a patient with decision-making capacity, the individual’s preferences to refuse hospitalization, life support (such as mechanical ventilation), and resuscitative efforts should be respected regardless of CSC. In current circumstances, ALL hospitalized patients should be asked about Advance Directives (ADs), goals of care, and strongly encouraged to appoint a proxy decision-maker (e.g. medical durable power of attorney (MDPOA)). Patients in nursing homes, skilled nursing facilities, and other long-term care settings should also be asked about ADs, and encouraged to appoint a proxy who is aware of their wishes regarding hospitalization and critical care. These actions can help prevent the healthcare system from being overwhelmed with patients who would not want hospitalization or critical care interventions.

Prior to a declaration of CSC, decisions regarding withholding CPR or intubation and mechanical ventilation should be based on usual standards of care, including any institutional policies on non-beneficial care. Blanket do-not-resuscitate orders are not appropriate. However, even under normal circumstances, no CPR or intubation should take place without use of adequate personal protective equipment (PPE), as these are high-risk activities for exposure; this holds true even if donning PPE will delay the initiation of CPR.

Alternations to Emergency Medical Services (EMS) and use of PPE before or during a crisis are addressed in separate CSCs for EMS and PPE approved by the GEEERC on April 5, 2020.^{3,4}

IV. Crisis Standards of Care as a Continuum

Crisis is a continuum with formal triage (allocating resources to some patients and not others) as the last step in crisis management (**Figure 1**). During a crisis, multiple interventions should be implemented prior to implementing triage protocols, and this entire continuum constitutes the crisis. The steps described below are not necessarily in chronological order. Different crises may entail a

different sequence of events and may require additional considerations.

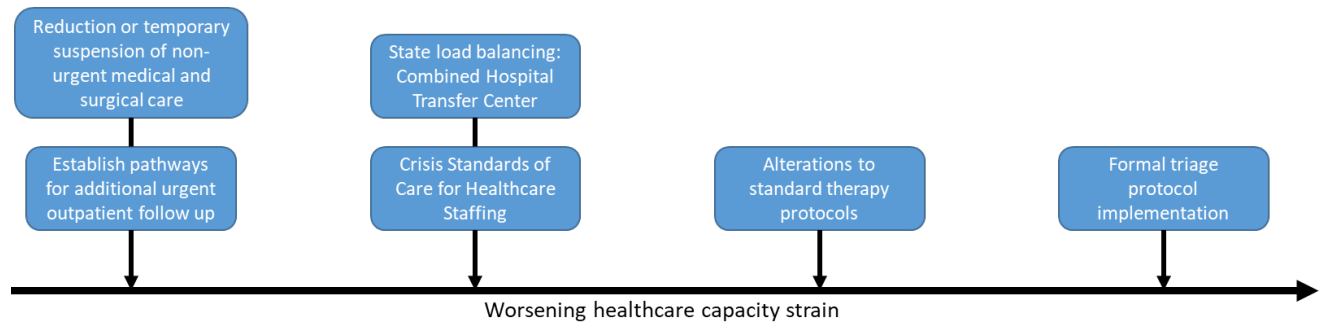


Figure 1: Crisis Continuum

1. Reduction or Temporary Suspension of Non-Urgent Medical or Surgical Care: Reduction and/or temporary suspension of non-urgent surgical procedures should be considered in a crisis situation prior to enacting formal triage processes. Reductions or temporary suspension of certain non-urgent procedures or medical care can free additional healthcare workers, PPE, and hospital resources to address the crisis. Prior to rationing of hospital-based care, hospitals and the state must consider reduction or temporary suspension of non-urgent surgical procedures. In more extreme situations, non-urgent medical visits could also be reduced to maximize staffing in hospitals. These decisions may be made at the institutional level based on resource availability but could be mandated by the State.
2. Establish Pathways for Additional Urgent Outpatient Follow Up: In a crisis, patients may be triaged to a partial or limited emergency department evaluation, triaged to not be admitted to the hospital, or to an earlier than standard hospital discharge. Healthcare institutions should establish pathways for more urgent outpatient follow up to accommodate the ongoing healthcare needs of these patients regardless of the ability to pay or insurance status. There are several examples of systems that can provide more robust outpatient care for patients that may otherwise needed to have been admitted and other institutions may want to adapt some of these principles as well as systems for remote patient monitoring and home-based care.⁵⁻⁹ Regulations related to telemedicine (including mental health services), including reflexive licensing and credentialing across state lines, should be waived during a crisis to augment rapid outpatient services. Part of safer discharges is access to durable medical equipment (DME) (e.g. supplemental oxygen) if needed. Institutions and the State should ensure adequate access to DME to facilitate outpatient care regardless of ability to pay. Hospitalization solely due to an inability to pay for supplemental oxygen is an inappropriate allocation of scarce resources particularly during a crisis.
3. Activation of CSC for Healthcare Staffing: Hospital staffing shortages, especially of nurses and respiratory therapists, has emerged as a key resource limitation. Staffing shortages have impacted resource and bed availability, straining hospital capacity. In multiple settings, nurses are caring for more patients than would be considered acceptable prior to the current crisis. Higher nurse to patient ratios than standard such as >2:1 ratios in the ICU and >1:1 ratios for continuous dialysis may impact patient safety and expose hospital staff to potential liability and threats to licensure. In 2020, the GEEERC approved CSC for Healthcare Staffing that provided descriptions of the staffing problem, potential innovative staffing solutions, and additional liability protections to healthcare workers acting in good faith to care for as many patients as is possible during a crisis.¹⁰ Activation of CSC for Healthcare Staffing should occur in tandem or prior to activation of hospital CSC due to the highly interconnected nature of staffing and other resource limitations.
4. Activation and Escalation of the Colorado Combined Hospital Transfer Center (CHTC): The CHTC is designed to ensure patients can be transferred across hospitals when bed availability or

services are scarce (i.e. load-balancing). CHTC Tier 3, the most expansive level of activation, involves load-balancing across the entire State through a central command structure. On October 31, 2021, Executive Order (D 2021 135) authorized CDPHE to manage hospital transfers across the entire state. This includes mandating some hospitals to transfer patients, some to accept patients, and waives requirements for patient consent in this process. Maximizing utilization of every available bed across the state is a critical step prior to the institution of hospital triage and should be considered prior to full implementation of hospital triage protocols.

5. Alterations to Standard Therapy Before Full Triage. Prior to activation of formal triage processes (i.e. withholding some potentially-beneficial services from certain patients), other alterations to standard care may be considered to stretch resources. Dialysis is one example of a scarce resource that may need to be altered prior to triaging patients to not receive any dialysis treatment. In the early phases of a crisis, routine outpatient dialysis sessions may be shortened or spaced further apart (e.g. twice weekly instead of three times a week) to expand dialysis capacity, accommodate demand, and potentially to redeploy some staff to inpatient settings. Additionally, for continuous dialysis in ICU settings, patients may be cycled (12 hours on, 12 hours off) to limit the number of hours or shifts in which a patient receives 1:1 nursing care. Similarly, some therapies that are typically provided in ICU settings may be provided on general medical wards in order to increase ICU capacity (e.g. insulin drips for mild to moderate DKA). These alterations reflect significant degradations in the quality of care the system can deliver and are a form of CSC. As such, they should be eligible for crisis-related legal and liability protections.

V. The Triage Team

Triage decisions to allocate certain resources to some patients while denying them to others should ideally not be made by the clinical team caring for a patient. Rather, an objective triage team without clinical ties to the patient should make triage decisions for a hospital if resources allow. If possible, a CSC Triage Team, should ideally consist of (1) an expert on ethics or palliative care, (2) an attending physician familiar with critical care (e.g. hospitalist or critical care physician), (3) a representative of nursing staff, and (4) a representative of the hospital's leadership with a triage team leader or triage officer (TO) being identified by institutional leadership. Some institutions may choose to augment their triage team membership (e.g. a nephrologist for dialysis related decisions) while others may not have sufficient staff to create a full triage team or one whose members have no clinical ties to patients for whom triage decisions are being made. This framework describes the ideal triage team but acknowledges that some institutional variation will occur based on resources and staffing available. Triage teams should be available at all times for consultation. Regardless of the constitution of an institutional or system-wide triage team, decisions should abide by the framework's core ethical principles.

The CSC Triage Team will:

1. Assist hospital leadership in determining algorithms to identify patients that would be least likely to be harmed by receiving outpatient rather than inpatient therapy.
2. Provide real-time consultations to services in need of triage decision-making where pre-determined algorithms do not provide sufficient insight or guidance including emergent decisions related to ICU bed or ventilator needs.
3. Assign CSC Triage Scores (see Section X) to patients. Patients with lower CSC Triage Scores have higher expected survival and should receive higher priority for scarce critical care resources.
4. Determine the "CSC Triage Score Cutoff" based on the available critical care resources (such as ventilators or ICU beds) for that day. CSC Triage Scores less than the triage score cutoff would



receive critical care interventions such as a ventilator whereas scores that are equal to or higher may not.

5. Be the lead in any discussion about re-allocating critical care resources such as continuous dialysis, ventilators, or ICU beds. The final decision for removal of ventilator support will reside with the CSC Triage Team (unless ventilation or life support is requested to be removed by the patient or proxy or is removed using institutional non-beneficial care or futility policies).

While the triage team is meant to address most forms of triage, they may not need to deliberate on every decision in certain situations. For example, many hospitals have trained staff that can perform a medical screening exam (MSE) and make appropriate triage decisions (discharge, urgent care, full emergency department evaluation). Alternatively, some institutions may institute protocols to identify patients with common conditions with low risk of deterioration or need for re-evaluation. Numerous scoring systems exist to identify low-risk patients with some common conditions such as pneumonia (CURB-65, Pneumonia Severity Index (PSI)) or chest pain (HEART score). Hospitals could create algorithms to discharge patients with these conditions and scores indicating lower risk of deterioration from the emergency department whereas under usual standards of care they would have been admitted to the hospital.

Similar systems could identify patients admitted to the hospital for whom early discharge may be possible. In such situations, triage teams would not need to make every decision but would be available for consultation for difficult cases, borderline cases, cases in which clinicians make a decision not consistent with established algorithms, or, more broadly, cases of concern for which pre-defined algorithms have not been established. Algorithms should not be used for denial of critical care services such as ventilators. These clinical algorithms will be institution specific given resource and staff variation between hospitals. Triage decisions should be communicated to patients by the clinical team or triage team as determined by each hospital.

When making triage decisions, the triage team should ideally be blinded to factors such as race, ethnicity, primary language, religion, insurance status, ability to pay, housing status, VIP status, etc. *if appropriate*. When deciding which patient should receive a ventilator or be admitted to a critical care bed, demographic and socioeconomic factors should not affect triage decision-making. However, when a patient is triaged to receive an alternate level of care based on an assessment that they are the least likely to be harmed, some socioeconomic factors might be clinically relevant. Housing status, insurance, access to outpatient care, and ability to pay for outpatient therapies (e.g. supplemental oxygen) may be highly relevant to whether a patient can be more safely triaged to outpatient care. These socioeconomic factors should be considered for decisions where a patient is triaged to outpatient with a safe-enough discharge.

CSC related decisions are complex and can be psychologically stressful. To the best extent possible, triage teams should practice triage cases that range from identifying which patients may be eligible for a safe-enough discharge to which patient should receive a ventilator. Additionally, institutions should establish programs for psychological support for triage team members.

VI. Potential Areas of Triage Under Crisis Standards of Care

Triage during crisis implies that some patients will receive higher priority for certain resources while other patients will receive lower priority. Depending on the crisis, multiple resources may be scarce and the specific resources that need to be triaged during a crisis may evolve over time. Some examples of resources that may need to be triaged during a crisis include ([Appendix A](#)):

1. As emergency departments become overwhelmed with patient influx, their ability to provide care to all patients may be limited. Triage-type decisions could be made about which patients require emergency department evaluation beyond a MSE and those who could reasonably follow up with an outpatient provider.



2. Triage decisions could be made about which patients may benefit the most or be harmed the least from a transfer to another institution if transfer capabilities are limited. Similarly, a hospital with empty beds may make triage type decisions based on the likelihood that a specific patient would benefit from a hospital transfer if the institution has more transfer requests than beds available. In most situations, the CHTC should allocate patients to avoid these types of triage decisions but it is possible they may occur during a crisis.
3. Triage decisions may be required to decide which patients should be admitted to a hospital and which patients should be triaged to outpatient services.
4. If ICU beds become a scarce resource during a crisis, careful triage decisions may be required to determine which patients are most likely to benefit from critical care resources and which patients may be least likely to be harmed by not receiving critical care resources.
5. Oxygen and oxygen delivery systems (e.g. heated high flow oxygen, non-invasive ventilators, and invasive mechanical ventilators) are critical hospital resources for which demand may exceed supply during a crisis such as the COVID-19 pandemic. Difficult triage decisions about which patients should be prioritized for these life-saving therapies may be required during a crisis.
6. Multiple hospitals have seen a severe strain on renal replacement therapy including intermittent hemodialysis and various forms of continuous dialysis related to shortages in machines and staff trained per standard protocols (e.g. 1:1 nursing for continuous dialysis). Triage decisions may be necessary to allocate renal replacement therapies.
7. Medication shortages for may occur during a crisis and triage decisions may be necessary to determine which patient should receive which type of medication.¹¹
8. Hospital capacity may be adversely affected by patients who have completed some degree of medical treatment and are awaiting a safe enough discharge plan. This may include patients awaiting transfer to another facility (e.g. skilled nursing facilities, long-term acute care hospitals, hospice, etc.). Triage decisions may be required to facilitate rapid patient discharges after completion of an appropriate degree of medical therapy.

This list presents several examples of non-ventilator and non-critical care triage but does not enumerate every possible type of triage decision that may be necessary in a crisis situation. A general CSC framework can guide potential triage decisions that cannot currently be anticipated.

VII. General Triage Framework for Hospitals

No scoring system can be designed for all potential resources that may require triage and different considerations may be required for different types of triage. Therefore, a general triage framework is necessary and specific clinical scoring systems may be included for specific types of triage (e.g. ventilator or ICU bed triage). In making triage decisions of any type, the following core questions should be asked:

1. How likely is a patient to survive without the resource being considered?
2. How likely is a patient to not need readmission or re-evaluation without the resource considered?
3. How likely is a patient to survive even if they do receive the resource being considered?
4. Does a patient have realistic access to an alternate care pathway if they are triaged to it (e.g. outpatient care including follow-up, equipment/supplies, and medications)?

These core questions may not be answerable in some situations but should guide triage decisions and should inform the scoring systems and considerations of re-allocation. Triage of general hospital resources such as hospital admission and triage of critical care resources such as ventilators sit at

different ends of the triage spectrum (Figure 2). When attempting to identify individuals who could be discharged earlier or could receive outpatient rather than inpatient care, the goal is to identify lower-risk patients who would be less likely to suffer harm if they did not receive a resource such as admission. These patients will be those most likely to recover even in the absence of a hospital

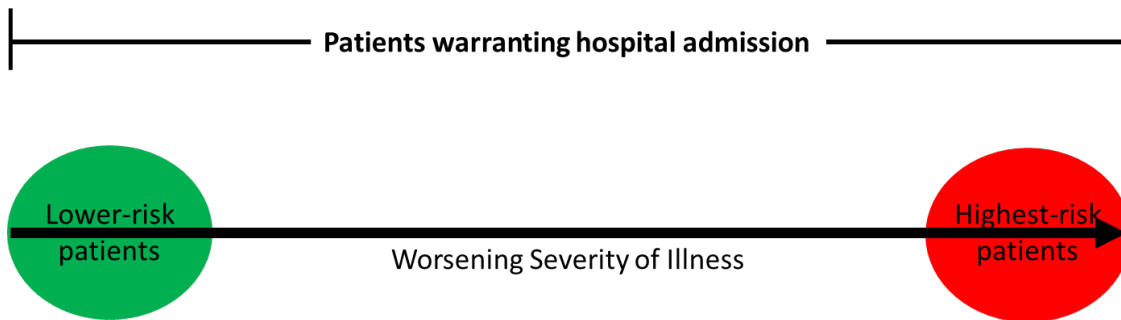
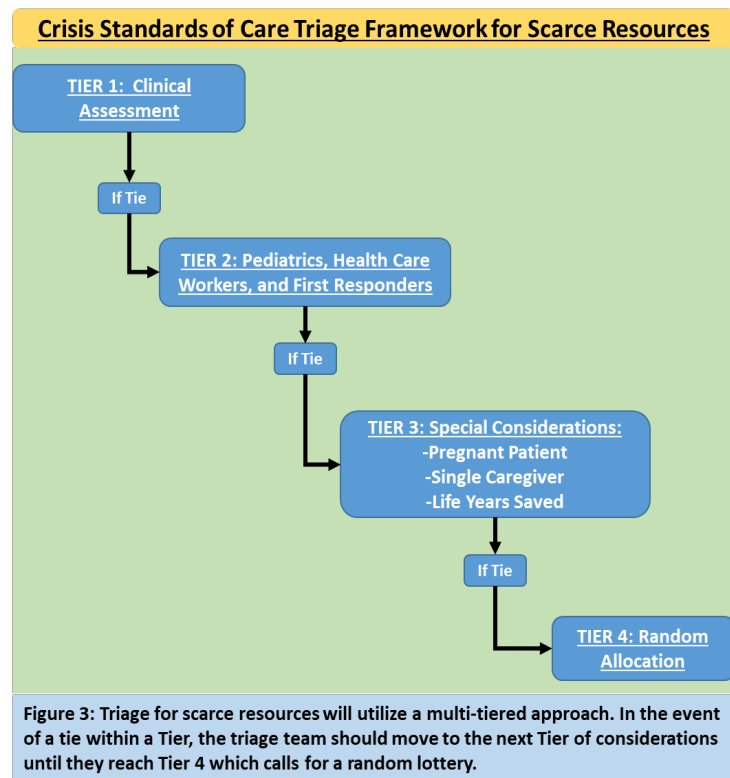


Figure 2: Spectrum of Triage. The goal of the Crisis Standards of Care framework would be to identify the lowest patients for possible outpatient care instead of hospitalization and the highest risk patients who would be unlikely to benefit from critical care resources.

resource. For example, a patient who is evaluated for pneumonia and deemed to be lower-risk for complications or deterioration based on an accepted scoring approach may be triaged to outpatient care rather than inpatient admission. However, to be triaged to outpatient care, a patient must have

access to outpatient services. Without access to outpatient care, the patient with low-risk pneumonia may actually receive higher priority for hospital admission than someone who has outpatient support and access to visiting nurse services if needed. Depending on the diagnosis, older adults and those with disabilities may also receive higher priority for hospital admission if they were predicted to have higher risk of poor outcomes associated with outpatient care. Similarly, consideration must be given to the potential for a patient to have ongoing hospital needs. A patient with severe pain may have high predicted survival but may be at high risk of multiple emergency department evaluations and therefore might reasonably be prioritized for admission to reduce the impact on other areas of the healthcare system. Allocating critical care and organ-support resources, such as ventilators, sits at the opposite end



of the triage spectrum, focusing on identifying patients who would be least likely to survive even if they were to receive a scarce critical care resource.

VIII. Multi-Tiered Approach To Scarce Resource Allocation

Tier One: Clinical Considerations

These four core questions (Section VII) represent a clinical assessment by identifying patients who



are predicted to either be least harmed by not receiving a resource or be least likely to benefit even with a given resource. This clinical assessment and the use of clinical prediction scoring systems (see below) constitute **Tier One** of a multi-tiered approach to triage. In situations where clinical factors alone are unable to inform final triage decisions (i.e. a tie on clinical factors), a multi-tiered approach (**Figure 3**) should be used.

Tier Two: Pediatrics, Healthcare Workers, and First Responders as Tiebreakers

Society places a special emphasis on the survival of children as the most extreme extension of the life-cycle principle of life years saved. Pediatric patients (≥ 1 and ≤ 17 years of age) are a special consideration. Given the societal worth ascribed to children and the life-cycle principle, we recommend that pediatric patients be given priority for a scarce resource in Tier Two should there be a tie in Tier One (i.e. clinical assessments are roughly equivalent). Neonatal patients are a separate special consideration and consultation with a neonatal critical care specialist should guide any neonatal ICU triage decision.

Healthcare workers^A and first responders (EMS, firefighters, and law enforcement including correctional officers) have the potential to save and protect other lives should they recover (multiplier effect) and they are at increased risk of exposure to a potentially lethal infection by virtue of being on the front lines of the COVID-19 response. Healthcare workers and first responders with a role in the COVID-19 response should be prioritized for scarce resources over other individuals if all have equivalent clinical considerations (Tier One).

Tier Three: Special Considerations as Tiebreakers

Based on expert and community engagement, several other factors should be considered when a patient has a tie for both Tier One and Two. In no particular order these include:

- Essential workers – Essential workers with direct interaction with the public (e.g. grocery store workers, teachers and school staff, childcare workers, public transportation workers, etc.) or who work in high density environments with evidence of high transmission rates (e.g. meat packing workers, agricultural workers, etc.) are at increased risk of exposure due to the essential function they provide to society.^B There is also ample evidence that front-line essential workers have over representation of members of communities of color which exacerbates healthcare inequities experienced in the pandemic. Therefore, these front-line workers should receive some consideration as a Tier Three tie-breaker from the perspective of reciprocity and equity. Not all essential workers should receive this consideration. It should be reserved specifically for those essential workers with increased risk of exposure to COVID-19 directly through their work.
- Pregnancy – priority for a scarce resource may be given to a patient with a confirmed pregnancy over a non-pregnant patient.

^AWe recommend that “healthcare workers” be defined as any individual who has a direct role in caring for patients with COVID-19 in a healthcare setting. This would broadly include physicians, advanced practice providers, nurses, medical assistants, respiratory therapists, medical technicians, chaplains, phlebotomists, housekeepers, etc. if they work in a COVID-19 areas. Each institution should carefully decide how they want to define healthcare workers and use a consistent definition throughout a crisis.

^BThere is no strict rigid definition of essential worker that would qualify as a Tier 3 tie-breaker. Importantly, not all essential workers fall into this prioritization category. Essential workers who do not interact with the public (e.g. those that can work remotely or work in a private office setting) should not receive prioritization. The principle of reciprocity dictates that only those essential workers with interaction with the public (e.g. grocery store workers, public transportation personnel, teachers and school staff, childcare workers, etc.) and those who work in high density settings should receive consideration. Each triage team will have to interpret this category individually but could use Colorado’s COVID-19 vaccination plan for guidance.

(https://drive.google.com/file/d/1LRUAZxfr_jR756_O41jnVsG7Lu4l-5gg/view)



- Life Years Saved - priority for a scarce resource where the focus is on survival (e.g. ventilators) can be given to a patient with more near and intermediate (1-5 years) predicted survival. The life-years principle is NOT a categorical age exclusion criterion as a 35 year old and 70 year old patient *could* have similar 1-year survival predictions. The life-years saved principle is the place where more disease-specific prediction models *could* be used to provide greater insight on near and intermediate-term mortality (1-5 years).^A For example, even with the same clinical assessment (Tier One), some consideration may be given to a 35 year old patient with no comorbidities over an 80 year old with metastatic pancreatic cancer. Similarly, a 70 year old with no comorbidities may receive consideration over a 40 year old with end stage liver disease with an extremely high Model for End-Stage Liver Disease (MELD) score. This concept should not be used for triage decisions not related to survival (e.g. hospital admission).
- Multiplier Effect - priority for a scarce resource may be given to patients who are the sole caregiver to a dependent child or dependent adult when the focus of triage decision-making is predicted survival (e.g. ventilator triage).

Each institutional CSC Triage Team will have to decide how they wish to prioritize Tier Three considerations but consistency across cases, accurate and complete record keeping and transparency in the decision-making process are required.

Tier Four. Random Allocation as Tiebreaker

In the event of a tie for the first three tiers, random allocation should be used to decide which patient should receive a scarce resource.

For any type of triage, patients triaged to not receive a given resource should still be provided with the best available *alternate care pathway*. Patients with respiratory failure needing a ventilator would have a very high likelihood of death within hours to maybe days if they were triaged to not receive a ventilator. As such, patients triaged to not receive a ventilator should receive the best palliative care available at that time. When considering triage strategies for resources other than ventilators, the outcome of not receiving a resource differs based on the nature of the illness. Patients triaged to not receive other resources such as hospital admission or dialysis may be less likely to suffer imminent death. Therefore, triage plans must be accompanied by plans to provide *alternate care pathways* (e.g. outpatient care to those triaged not to be admitted) to those triaged to not receive a given resource.

IX. Examples of Approaches to Potential Triage

In this section, multiple examples of approaches to different types of triage are presented. All examples reflect clinical assessments of patients either through scoring systems or through more qualitative assessments. In the event that clinical assessments (Tier One) fail to differentiate patients for triage, triage teams should use the multi-tiered approach to allocating resources.

Early Patient Discharge

Even in crisis situations, patients require “safe-enough” discharge plans. Early discharge decisions should not be based on gender, race, ethnicity, or other demographic factors beyond those that might affect a patient’s access to care. Several forms of early patient discharge should be considered in crisis situations to augment hospital capacity.

1. Near completion of medical therapies. In conventional times, patients may be kept in the hospital until they return to baseline. During crisis, some patients may need to be identified who could have a safe-enough discharge with appropriate oral therapies (or IV therapies if home nursing resources are available) and outpatient evaluation. Several scoring systems have

^ASome of examples of disease specific models include the Modified End-Stage Liver Disease (MELD) score, BODE Index for COPD, cancer survival curves, etc. could be used for specific patients. The use of disease-specific models is a suggestion is not mandatory but can be used by triage teams.

been developed to predict 30-day readmission, deterioration, and mortality based on clinical characteristics at the time of hospital discharge including the HOSPITAL^A, LACE^B, and NEWS-2^C scores ([Appendix B](#)).¹²⁻¹⁸ While no score is 100% accurate, using a composite of these markers (e.g. HOSPITAL <10, LACE <4 and NEWS-2<4), while ensuring adequate access to DME, medications, and follow up, may be able to identify patients at lower risk for readmission or poor outcomes with earlier than standard discharge. Thresholds for early discharge may change during a crisis as capacity and resource availability changes. Patients who are triaged to an earlier discharge should be counseled that they may return to the hospital for worsening symptoms.

2. Transferring patients. A key factor straining capacity in many hospitals is patients without a safe-enough discharge plan. These patients often include those awaiting alternative levels of care (e.g. skilled nursing facilities, long-term acute care hospitals, hospice, etc.) but lack the ability to pay or the appropriate insurance status to be accepted to facilities with capacity. Discharging patients could be facilitated by the CHTC by sending low acuity patients to smaller hospitals with capacity or State mandates to non-acute care settings (e.g. skilled nursing facilities) to accept patients regardless of ability to pay in order to off-load inpatient settings. Capacity and staffing levels in these alternate facilities must be considered.
3. Alternate care sites. In extreme situations, CSC would allow hospitals to utilize additional space that may not be licensed for inpatient care, such as auditoriums, conference rooms, outside settings with tents, or hotels to care for patients including those awaiting discharge.
4. Special Situations: There are several situations in which patients remain in the hospital to complete certain therapies not because of medical needs but because of other perceived risks. For example, patients with intravenous (IV) drug abuse who need prolonged IV antibiotics may be kept in the hospital due to concerns about risks associated with discharging such a patient with IV access. In crisis situations, hospitals may accept greater risk tolerance to alleviate strain on hospital capacity and create discharge plans that attempt to reduce risk to the patient but allow for outpatient care.

Emergency Department Triage

The federal Emergency Medical Treatment and Labor Act (EMTALA) establishes certain requirements for emergency department evaluations. While parts of EMTALA have been waived during the COVID-19 crisis, its guiding principles of providing fair and equitable care regardless of the ability to pay remain key to providing healthcare. If CSC are activated, any triage protocol related to emergency department evaluations must ensure that EMTALA guidelines in place at the time are followed. While several types of emergency department triage may need to be employed, below are two examples with possible frameworks.

1. Medical screening exams (MSE). EMTALA requires that patients presenting to an emergency department receive a MSE by a trained staff member. Hospitals may enact criteria by which patients may be triaged out of the emergency department if the MSE meets certain criteria and if appropriate follow up care is available. Some examples may be patients who present for prescription refills or musculoskeletal pain without changes in vital signs, etc. Depending on partial EMTALA waivers in place at the time of a crisis, MSEs may also be performed in offsite locations to decompress emergency departments.
2. Hospital admission vs outpatient care. A key decision in emergency departments is whether or not to admit patients to the hospital. In crisis situations, patients who would normally be admitted to the hospital may need to be triaged to outpatient or alternate care. These decisions are often complex and rarely rest on a single laboratory value or vital sign and may require more nuanced and case-specific decision-making. However, for several common conditions,

^A <https://www.mdcalc.com/hospital-score-readmissions>

^B <https://www.mdcalc.com/lace-index-readmission>

^C <https://www.mdcalc.com/national-early-warning-score-news-2>

validated scores exist that can identify lower-risk patients (e.g. the Pneumonia Severity Index (PSI) and CURB-65 for pneumonia, the Pulmonary Embolism Severity Index (PESI) for pulmonary embolisms, and the TIMI and HEART score for chest pain) ([Appendix C](#)).¹⁹⁻³² During crisis times, the threshold for admission to a hospital may need to be raised (i.e. accept greater risk-tolerance due to the crisis). During crisis times, algorithms could be implemented to identify lower-risk patients for outpatient care rather than inpatient admission to streamline discharge decisions. Thresholds for admission may change during a crisis as capacity and resource availability changes. For conditions with no scoring system, such as COVID-19, triage teams will need to make individualized decisions based on the severity of illness at presentation, capacity for home-based care, and the ability of the patient to seek follow up care. Some hospitals may choose to develop a simplified color coding system similar to other triage protocols (red = high risk, yellow = intermediate risk, green = low risk) to guide more rapid decision-making. Discharges during a crisis should focus on withholding inpatient services from the lowest-risk patients. Patients who are triaged to be discharged from the emergency department should be counseled that they may return to the hospital for worsening symptoms.

Triage for Patients in Need of Critical Care Services

Different hospitals have different criteria for the severity of illness and diagnoses that warrant admission to an ICU. In hospitals with fewer resources a moderately ill patient may be admitted to an ICU whereas the same patient may be admitted to the floor in large hospitals with more capacity for providing higher levels of care in a general medical or surgical ward. Some forms of critical care triage may include the following.

1. Marginal critical care patients: Marginal critical care patients are those who would traditionally be admitted to critical care settings but are not in need of full critical care organ support therapies. Some examples are patients requiring low levels of heated high flow oxygen therapy, non-invasive ventilation with low risk of intubation, DKA in need of an insulin drip, hypertensive urgency, etc. Marginal patients might be viewed as less likely to benefit from an ICU bed and could be triaged to a stepdown unit or even to a general medical floor to provide similar treatments. Prior to activation of hospital CSCs, hospital and nursing administration in each institution must determine what care could reasonably be provided outside of an ICU during crisis times (e.g. insulin drips, high flow oxygen, etc) with careful consideration of additional strain on nursing and respiratory therapy staff.
2. Patients in need of ventilators and/or full critical care support. Patients in need of full critical care support are those who would die without immediate initiation of critical care services (e.g. mechanical ventilation, multiple vasopressors, etc). Some but not all of these patients will require a ventilator. Triage for these patients should be based on CSC Triage Score (or similar scoring system) outlined below and in the original hospital CSC guidelines.² Patients who are triaged to not receive full critical care support might be considered for treatment as a marginal patient (i.e. limited critical care resources outside of an ICU such as single non-titratable vasoactive medications) if resources are available and if there is a likely survival benefit to such treatment. If a patient is triaged to a lower level of care than they otherwise would typically receive, they should be re-evaluated as resources change in the hospital.

Triage for Hospital Transfers

With strained capacity throughout the state, some hospitals may not be able to accept all patients in need of transfer. In such situations, similar principles should guide transfer-related triage.

1. Triage at the level of the CHTC. In a crisis, the CHTC should operate at Tier 3. Should the number of transfer requests exceed the availability within the State, triage at the level of CHTC may be necessary. The CHTC should establish its own triage team and a decision-making

process to adjudicate which patients are more likely to benefit from hospital transfer or least likely to suffer harm as a result of not being transferred. This process may involve use of the CSC triage score. Consideration may also be given to patients with highly specific needs such as pregnant patients in need of a hospital neonatal intensive care unit or a pediatric patient in need of a pediatric intensive care unit. The CHTC is a collaboration between the Colorado Hospital Association, Colorado hospitals, and the State and final decisions about a CHTC triage team will rest with these authorities.

2. Hospital-level decisions. Individual hospitals and health systems should have a common approach to hospital transfers that may be supplanted by mandates from the CHTC. Hospital-level triage teams should use the same CSC triage algorithms for critical care triage but may set alternate cut off scores when considering ICU, stepdown, and floor capacity. Triage teams should focus on assessing which patients are most likely to benefit from hospital transfer, least likely to be harmed from not being transferred to another hospital, or least likely to be harmed from being transferred to a lower level of care. Disease specific prediction models could aid in the decision-making.

In various crisis, parts of EMTALA that govern hospital transfers may be altered or waived. Any policies or plans related to triage of hospital transfers during a crisis should still respect the EMTALA regulations active at that time.

Special Cases: Dialysis As An Example

Dialysis has emerged as a resource that has become strained in many hospitals at multiple points during the pandemic. The problem stems from a combination of shortages of trained staff (especially for continuous dialysis in ICU settings) as well as shortages of hemodialysis machines. Alternative staffing models with CSC for Healthcare Staffing can address some of the shortages. However, situations may arise where dialysis resources may need to be rationed. These decisions should also be made by the triage team. The indications for dialysis, urgency, and potential for recovery are highly diverse so a single algorithm that can identify the patient most likely to benefit from dialysis or least likely to be harmed if dialysis were to be withheld does not exist.

1. Non-beneficial care: In some patients, despite having an indication for emergent dialysis, dialysis may represent non-beneficial care. For example, patients with refractory acidosis due to multi-system organ failure and shock have an indication for emergent dialysis. However, the likelihood of benefit is minimal unless the cause of the multi-system organ failure is readily reversible. Additionally, emergent dialysis for hepatorenal syndrome related to decompensated cirrhosis is unlikely to change a patient's trajectory. In such cases, dialysis would be non-beneficial care and should not be offered.³³ Needing chronic intermittent hemodialysis as an outpatient does not constitute non-beneficial care. Patients who are triaged to not receive dialysis based on a view of non-beneficial care should be viewed the same as those triaged not to receive a ventilator as the risk of imminent death is extremely high. In such situations, immediate palliative care should be considered including obligatory do-not-resuscitate orders and comfort measures.
2. Intensity and Duration: Triage teams could consider prioritizing patients in need of short-term dialysis who would otherwise be at extremely high risk of imminent death. For example, a patient presenting with severe hyperkalemia or toxic ingestion (both of which could be rapidly reversible) may be at extremely high risk of death without dialysis but may only need a short duration of dialysis to ensure survival. However, patients requiring outpatient hemodialysis should not be excluded solely based on their outpatient needs. Considerations around duration should focus on the intensity of treatment that would be required in an ICU (e.g. needing continuous dialysis with no pathway to transition to intermittent dialysis as an outpatient). Concepts of intensity and duration may be applied to other conditions but should not be affected by ability to pay.

3. Short-term survival. Barring other considerations, dialysis capabilities should be offered to those with a greater chance at short-term survival. Multiple scoring systems exist that have some predictive value for 30-day or ICU mortality based on severity of acute illness such as the APACHE IV^A, SOFA^B, or SAPS-2^C scores.³⁴⁻⁴¹ In the absence of an otherwise terminal illness, triage teams could use predictors of short-term mortality to allocate resources such as dialysis. Such systems should be consistent and reproducible.
4. Re-allocation for treatment failure in ICU settings. Dialysis is a situation in which re-allocation for treatment failure should be considered similar to ventilator triage. While there is no specific timeframe for deriving benefit from dialysis especially as outpatient dialysis is a viable option for patients who otherwise recover, some consideration could be given to patients that have shown no improvement despite dialysis treatments in ICU settings. Triage teams should consider treatment failure and re-allocation of resources when needed.

In this section multiple different types of triage have been presented. It is not possible to predict which resources will need to be triaged in every crisis. The order in which resources are triaged will be dictated by the nature of a given crisis and not all types of triage will be necessary during a crisis. However, every attempt should be made to implement triage decisions that first decompress hospital systems and ICUs by identifying lower-risk patients who may be able to receive treatment in an alternate location (e.g. outpatient care or a moderately critically ill patient receiving care on a general medical ward). Triage of resources where there alternative is a high likelihood of death (e.g. triage of ventilators) should be the last step when implementing triage protocols under CSC.

X. Crisis Standards of Care Triage Score for Ventilators and ICU Beds

Unlike many other areas of crisis-related triage, triage for ventilators and for ICU beds is focused on identifying the patient least likely to benefit from a critical care resources which typically the highest predicted mortality regardless of the critical care intervention. Triage of ventilators and ICU beds is often viewed as the most extreme form of triage as those who do not receive these resources often die and warrants special consideration within the overall CSC framework. Triage of ventilators and ICU beds requires the greatest consistency across and within an institution. Whereas approaches presented in Section VIII to reduce hospital strain by discharging some patients early or not admitting them to the hospital are mostly guidelines with no specific scoring system recommended. For ventilators and full ICU resources, a scoring system predicting short (30-day) and near-term (1-year) mortality should be used. No perfect scoring system exists, so the development and implementation of any triage score should use the best-available clinical information at the time. The recommended Colorado CSC Triage Score combines an objective measure of acuity of illness and short-term mortality (Sequential Organ Failure Assessment (SOFA^B), [Appendix D](#)) with an objective measure of near-term mortality (modified Charlson Comorbidity Score (mCCI), [Appendix E](#)).^{34,36,42-46} Some institutions with access to more advanced resources may augment the recommended scoring system but new scores should be internally validated prior to use and be based on the same ethical principles. The aim is that the CSC Triage Score should combine the likelihood of surviving days/weeks with the likelihood of surviving 1 year. A recommended CSC Triage Scoring system that combines SOFA with mCCI is described below:

TABLE 1					
Purpose	Specification	Point System ^A			
		0	1	2	3

^A <https://intensivecarenetwork.com/Calculators/Files/Apache4.html>

^B <https://www.mdcalc.com/sequential-organ-failure-assessment-sofa-score>

^C <https://www.mdcalc.com/simplified-acute-physiology-score-saps-ii>



Likelihood of surviving days/weeks if given critical care resources	SOFA score ^B : Validated measure of acute survival	X	1-5	6-9	10-12	>12
Likelihood of surviving 1 year if given critical care resources	Modified Charlson Comorbidity Index Score ^C : Validated measure of 1-year survival	0	1-2	3-5	6-7	≥8

^ACSC Triage Scores range from 1-8. Persons with lower CSC Triage Scores have better short and near-term survival and would be given higher priority to receive scarce resources in a crisis situation.

^BSOFA = Sequential Organ Failure Assessment, see [Appendix D](#) for calculation. A Modified Pediatric SOFA ([Appendix G](#)) or PELOD-2 ([Appendix H](#)) score can be used for patients ≥1 and ≤17 years old.

^CSee [Appendix E](#) for Modified Charlson Comorbidity Index calculation.

The CSC Triage Score is the sum of the assigned points from the SOFA score and the assigned points from the mCCI.^A A patient with a SOFA score of 9 and a mCCI score of 7 would have a CSC Triage Score of 5 (2+3). The CSC Triage Score ranges from 1-8 with lower numbers indicating higher likelihood of survival and therefore higher prioritization for receiving critical care resources. Higher numbers indicate patients with lower likelihood of survival despite critical care interventions. Again, the CSC Triage Score estimates both short-term and near-term mortality. An alternative scoring system based on the same ethical principles can be found in [Appendix F](#). Each institution should adopt a specific scoring system based on these guidelines to ensure transparency and consistency.

For pediatric patients ≥1 and ≤17 years, the Modified Pediatric SOFA (MPSOFA) score ([Appendix G](#)) or Pediatric Logistic Organ Dysfunction Score ([Appendix H](#)) could be used instead of the adult SOFA score.^{47,48} A similar CSC Triage point allocation scheme should be used with the MPSOFA or the PELODS-2. Consultation with pediatric specialists and pediatric intensivists should be considered if triaging pediatric patients for critical care resources becomes necessary. Specific scoring systems and approaches to triaging of neonatal patients (infants <12 months) is beyond the scope of the state guidelines. Neonatal critical care specialists should be consulted if triage decisions for neonates becomes necessary.

What constitutes a tie in the CSC Triage Score for Tier One will depend on the heterogeneity of the patient population at a given institution. Individual institutions can define a tie as the same CSC Triage Score or +/- 1 point difference. If a tie occurs or a patient has a tie with the CSC Cutoff Score (see below), Tier Two, Three, and Four considerations should be used.

In situations outside of the ICU, the CSC Triage Score should not be used as the sole assessment for allocation of non-critical scarce resources (e.g. hospital admission). Decisions about hospital admissions or early patient discharges are often not focused on survival but rather identifying the patient least likely to be harmed by triage rather than survival.

XI. Triage Process for Ventilators and ICU Beds

For core critical care resources like critical care beds and ventilators, each institution must determine its minimum operating capacity (MOC) number, which is the absolute minimum number of a resource (e.g. ventilators) needed to continue core operations. For example, some hospitals may reserve a ventilator for trauma, another for emergency C-sections and another for the transportation of patients. Hospitals may decide to use alternative ventilators for this purpose (e.g. anesthesia machines or some NIV machines). Level One trauma centers may keep a trauma bed open in their

^AVisit <https://redcap.nihealth.org/redcap/surveys/?s=KXJCAJ9XP9> for an online calculator for the CSC Triage Score in Table 1



surgical ICU. If the MOC is reached, hospitals should consider re-allocation of resources to maintain the MOC for critical care resources.

CSC Cutoff Score: A core process in triaging patients for scarce critical care resources is determining the CSC Cutoff Score for a given day. In some situations, patients will arrive over time and the CSC Triage Team will not be deciding on resource allocation for two patients at the same time. Rather, triage decisions will have to be made based on what the anticipated need for the day (e.g. a very sick person may not receive a scarce resource if many more patients who are less sick are anticipated later in the day). Patients with a CSC Triage Score lower than the CSC Cutoff Score would receive a scarce resource. Patients with a CSC Triage Score equivalent to the CSC Cutoff Score be evaluated based on Tier Two-Four considerations. Those with a CSC Triage Score higher than the CSC Cutoff Score would be triaged to an alternative care plan. For ventilator triage, the CSC Cutoff Score should be based on an assessment of the number of available ventilators over the course of the day and the anticipated need based on recent trends for the hospital plus the MOC. This requires detailed situational awareness and communication between the CSC Triage Team, institutional incident command team, and the clinical team who would have the most knowledge about anticipated extubations. The CSC Triage Team will then be the final group that determines the CSC Cutoff Score for the day. As more information becomes available (e.g. there are more extubations on a given day) the CSC Triage Team can then update the score as needed. See [Appendix I](#) for examples of determining the CSC Cutoff Score while recognizing that there is no single approach to determining the cutoff score.

Types of Triage: In the setting of hospital CSC for critical care resources, there are 3 time points at which triage might need to take place (Emergent, Prospective, and Re-Allocation). For this section, we will focus on the example of ventilators, but the framework should apply to any scarce critical care resource.

1. **Emergent Triage ([Appendix J](#)):** Emergent triage addresses patients for whom generating a CSC Triage Score is not possible prior to a decision to administer treatment. These patients could be “found down” by emergency medical services, patients who present to the ED in extremis, out of hospital or ED cardiac arrest, severe trauma, or acute decompensation or cardiac arrest of a hospitalized patient who does not have a pre-existing CSC Triage Score (e.g., recently admitted, otherwise stable, or observation patients). For these patients healthcare workers should provide all appropriate treatment including intubation, mechanical ventilation or bag valve mask ventilation through the endotracheal tube, as examples. The CSC Triage Team should be notified immediately and provide an assessment as soon as possible. If the patient has a CSC Triage Score lower than the current triage cutoff, the critical care intervention should continue. However, if the patient has a CSC Triage Score higher than the cutoff, the CSC Triage Team should decide to discontinue mechanical ventilation or transition the patient to a partial ventilator system (see below). In very specific situations, such as severe non-survivable brain injury, massive burns, etc. the CSC Triage Team or the emergency physicians can decide to terminate resuscitative efforts without a triage score. Additionally, in the rare circumstance where an extremely rapid triage decision is required, a qualified emergency physician may calculate and act on a CSC Triage Score in the absence of the triage team. Such action would require that the emergency physician has situational awareness of the CSC Cutoff Score, resources available, resources that are strained, etc. in order to make an appropriate triage decision. In the event that an emergency physician makes a triage decision, the CSC Triage Team should still be notified and the process documented.
2. **Prospective Triage ([Appendix K](#))** Prospective triage involves calculating a daily CSC Triage Score for a set group of patients at the time of admission and recalculating that score on a daily basis. For resources like ventilator allocation, this would likely require calculating a CSC Triage Score for patients deemed at risk of needing mechanical ventilation. Other physicians or care providers may also identify other patients at high risk of decompensation who should be

assigned a daily CSC Triage Score. In such a situation, the medical team would notify the CSC Triage Team to assign the patient a CSC Triage Score. In order to reduce the need for emergent triage, patients in a critical care setting or receiving a high degree of oxygen support should have the CSC Triage Score assessed daily by the Triage Team to ensure that up to date information is available if the patient were to decompensate. If possible, the system (e.g. SOFA + mCCI) should be automated once an assessment of comorbidity status is made. Should a patient be triaged not to receive a ventilator but additional resources become available, a reassessment should occur.

3. **Re-Allocation Triage ([Appendix L](#)):** In the setting of activated hospital CSC, patients may reach a point where they have shown a failure to improve or are progressively worsening. If a sufficient therapeutic trial has been completed (based on the specific disease the patient has) or the patient shows progressive deterioration despite appropriate medical therapy and there is a need for the scarce resource (e.g., a ventilator or ICU bed), the CSC Triage Team will determine if removal/transition of that resource in favor a patient with a lower CSC Triage Score is warranted. See below for specifics related to ventilators.

Additional Considerations for Ventilator Triage

- **Ventilator Type** – For COVID-19 induced acute respiratory failure, the optimal and standard treatment is intubation and use of a fully functional critical care ventilator (“full ventilator”). *Routine use of any alternative ventilators including NIV, anesthesia machines, and disposable respirators (“partial ventilators”) due to insufficient full ventilators, will be an indicator that hospital CSC may need to be declared by the State.* Within the framework of the CSC Triage Scoring process, an individual with the lowest CSC Triage Score would receive the scarce resource that would otherwise be considered the usual standard of care (i.e. full ventilator). A patient with a higher CSC Triage Score may be considered for a partial ventilator or the partial ventilators could be reserved for the re-allocation process. If the institution is at or below its MOC for ventilators, early palliative care discussions should be initiated.
- **Splitting Ventilators** - As of March 26, 2020 the use of a single ventilator for multiple patients has been discouraged by experts in a joint statement from the Society of Critical Care Medicine (SCCM), American Association for Respiratory Care (AARC), American Society of Anesthesiologists (ASA), Anesthesia Patient Safety Foundation (ASPF), American Association of Critical-Care Nurses (AACN), and American College of Chest Physicians (CHEST).⁴⁹ Should CSC be enacted, each institution and CSC Triage Team will need to weigh the feasibility and safety of multiple patients on each ventilator for their institution while recognizing most major organizations discourage the use of a single ventilator for more than 1 patient. While it is functionally feasible to place more than 1 patient on a single ventilator, there are many technical, staffing, and ethical considerations. From an ethical perspective, patients placed on the same ventilator should have similar CSC Triage Scores and be at similar points in the trajectory of their illness. Multiple patients on a single ventilator involves weighing suboptimal care for 2+ patients vs optimal care for 1 patient and no critical care for others.

Re-Allocation of Ventilators ([Appendix L](#))

If ventilator scarcity reaches the point of a declaration of hospital CSC, consideration must be given to patients who have failed a therapeutic trial. There is no uniform definition of treatment failure as it is specific to each condition. Based on experiences around the world, the majority of patients with COVID-19 associated respiratory failure require mechanical ventilation for prolonged periods, often longer than 12 days.^{50,51} Some patients that require longer periods of mechanical ventilation can recover, but there is clear evidence that the chances of successfully coming off a ventilator and surviving decreases the longer someone is on a ventilator.⁵²⁻⁵⁵ If re-allocation is required, all intubated patients should receive a new CSC Triage Score and an assessment of therapeutic failure (e.g. prolonged duration of ventilation without improvement or progressive multi-system organ failure). Patients with non-COVID-19 disease should also be considered for re-allocation but the



definition of an appropriate therapeutic trial will vary by disease. The CSC Triage Team must then decide which patients, if any, should be considered for re-allocation. Re-allocation may mean removal from the ventilator with a transition to palliative care. However, if all full ventilators have been utilized but partial ventilators (e.g. NIV ventilator or disposable resuscitators) are available, re-allocation could mean transitioning the patient whose respiratory failure has stabilized to a partial ventilator for an additional period of possible recovery. The full ventilator should be used for patients with lower CSC Triage Scores who have a higher likelihood of survival and receiving benefit from full critical care resources. If the institution is at or below its MOC, then re-allocation of a ventilator would mean transitioning a patient who has failed treatment to palliative care.

CSC Triage Scores and the following data should be considered by the CSC Triage Team for re-allocation decisions:

1. **Duration of mechanical ventilation.** Average duration of mechanical ventilation varies based on the cause of respiratory failure. Some conditions like COPD exacerbations tend to require shorter periods of mechanical ventilation. However, patients with COVID-19 have been shown to require extended periods of mechanical ventilation prior to improvement. Given the prolonged needs for ventilation for COVID-19 patients, even among those who recover, we recommend that re-allocation of ventilators for patients with COVID-19 only be considered after 14-21 days of mechanical ventilation. For non-COVID conditions, the clinical team must provide insight as to whether a patient has completed an adequate therapeutic trial for that disease process. If a patient is progressively worsening despite maximal ventilator support, consideration for re-allocation can be made earlier based on the CSC Triage Team's assessment.
2. **Trajectory of illness.** Intubated patients who are worsening, such as those with progressive multi-system organ failure (MSOF) (shock, acute renal failure, etc), and not improving with appropriate therapy may be considered for re-allocation.
3. **Intensity of Resource Utilization.** Some patients on a ventilator require significantly higher levels of care than other patients receiving mechanical ventilation. For example, patients on continuous renal replacement therapy or extracorporeal membrane oxygenation (ECMO) often require a single nurse assigned to a single patient. For ECMO, even more personnel are directly assigned to a single patient. If re-allocation is required, the intensity of resource utilization combined with trajectory of illness should be considered.

These decisions will require collaboration between the CSC Triage Team and the Clinical Team. **Given the potential for re-allocation of scarce resources during a pandemic, which is very different from usual critical care, the concept of a time-limited therapeutic trial should be introduced to patients/surrogates early in the course of mechanical ventilation.**

If a decision is made to re-allocate (remove) a ventilator from a patient who has failed treatment, the decision must be communicated to the patient's proxy or medical durable power of attorney (MDPOA). If the proxy or MDPOA wishes to discuss this decision with a dedicated Communication Team or a designated member of hospital administration (see Section VII), all efforts must be made to facilitate this conversation. However, given the speed with which the CSC Triage Team needs to make decisions and potentially re-allocate resources, a lengthy formalized appeals process may not be practical. The family can request a reconsideration, but, within the framework of CSC, the CSC Triage Team will retain the final decision.

XII. Cardiopulmonary Resuscitation (CPR) Guidance

CPR presents multiple issues during the current COVID-19 pandemic and other crises that may involve infectious agents (e.g. influenza pandemic). In COVID-19 patients, CPR has the potential to increase viral exposure to healthcare workers and utilizes a large amount of PPE. Prior to the declaration of hospital CSC, current practice standards should be maintained. Patients who wish to



receive resuscitation efforts with CPR should receive it except in accordance with institutional non-beneficial care or futility policies. *Even under CSC, unilateral declarations to withhold CPR for any group of patients (e.g. all COVID-19 patients) are inappropriate.* Rather, there are specific issues regarding CPR that should be considered. First, adequate PPE must be available to protect healthcare workers. After a CSC declaration, we recommend the following cardiac arrest guidelines:

1. For all patients, every effort **MUST** be made to understand and respect ADs prior to cardiac arrest. Cardiac arrest procedures should not be initiated if they are not wanted by the patient/surrogate.
2. **CPR should not be performed if adequate PPE is unavailable.** In view of wide community transmission, this standard should apply to all patients, not just those known to have COVID-19.
3. Emergent presentations (such as to the ED in cardiac arrest) should adhere to the normal standards and indications for resuscitation if proper PPE is available.
4. For cardiac arrests, a restricted code team should enter the room with appropriate PPE including N95 or equivalent masks and eye coverings. A proposed reduced code team could consist of 2 physicians capable of airway management, 1 respiratory therapist, and 2 RNs. The recorder, pharmacist, and other chest compression rotators should wait outside of the room with the door closed and communication by phone.
5. All code carts and airway carts should contain a HEPA/viral filter that can be attached to the bag valve mask to prevent aerosolization of viral particles when bagging through the endotracheal tube. The filter should be attached between the tube and the bag valve mask. We do not recommend a HEPA filter be placed with every bag valve mask as that could quickly deplete a limited resource.
6. For patients who are already intubated, the risk of exposure to healthcare workers is reduced but not zero. A major risk of exposure would occur if the endotracheal tube is disconnected from the ventilator and attached to bag valve mask as is typically done during a code situation. Several steps can be taken to minimize this risk. A clamp can be placed on the endotracheal tube to seal it, after which the ventilator circuit is disconnected and a bag valve mask is attached with a HEPA/viral filter. Once the bag valve mask is attached, the clamp would be removed. A second option would be to use manual breaths from the ventilator (run by the RT) during CPR. A third option would be to allow normal ventilation from the ventilator but increasing the pressure trigger to prevent the delivery of spontaneous ventilations during chest compressions. For any process that uses the ventilator, careful attention must be given to prevent any disconnection in the circuit.

In summary, in the event of a declaration of hospital CSC, ethical standards, resource availability, and likelihood of survival will affect decisions on emergent resuscitation including CPR. These standards should apply to all patients, not just COVID-19 patients.

1. Not performing CPR is justified if the risk to healthcare workers is too high. In the setting of the COVID-19 pandemic, this standard will likely focus on the availability of sufficient PPE. If adequate PPE is not available, healthcare workers may consider delaying CPR until adequate PPE is available.
2. Not performing CPR is justified if CPR is physiologically futile and death is imminent. The CSC/Clinical Team could consider a unilateral DNR for patients with refractory shock, refractory hypoxia, or worsening multi-system organ failure despite appropriate support.
3. The Clinical Team/CSC Triage Team could consider an informed assent approach for DNR orders for critically ill patients based on severity of illness and premonitory status.
4. CPR should not be performed if there are insufficient resources such as healthcare workers, ICU beds, or ventilators. For patients who are triaged to not receive a ventilator, not receive dialysis, not receive an ICU bed, or are triaged to have their ventilator re-allocated due to treatment failure, withholding CPR (i.e. issuing an obligatory DNR order) is appropriate.



Specifically, if a ventilator or an ICU bed is not available and a patient were triaged to not receive those treatments, then performing CPR would be futile.

XIII: Communication

If CSC are declared, the medical team should make patients and families aware of the declaration as early as possible in the admissions process and if possible, prior to admission to an ICU. The Colorado Hospital Association has resources to answer patient and family questions about CSC.^A If hospital or ICU volume reaches capacity, institutions may consider forming triage communication teams, comprising care providers with expertise in communicating bad news who are not “on-service,” such as palliative care, ethics, and ICU attendings who are off service. This team should be available to support the bedside Clinical Team and should communicate triage related decisions to families. This communication strategy will need to be collaborative between the communication team, the CSC Triage Team and the Clinical Team, to ensure the communication team has sufficient clinical information. In institutions that do not have the resources for a separate communication team, the Clinical Team should communicate triage decisions to the patient and family.

Triage decisions may not strictly follow a clinician’s or patient’s preference. They are enacted only in the time of crisis. However, at all times patients and surrogates should be treated with respect and compassion regardless of CSC triage decisions. Whenever a decision that a patient will not receive a resource that is in shortage needs to be made without patient consent, assent should be sought. Refusal of assent will not change the triage decision but the opportunity to assent should be offered if time and resources allow.

XIV. Documentation, Monitoring, and After Action Reporting

Throughout the COVID-19 pandemic, equity issues have been of significant concern across the healthcare system. Underrepresented minorities have suffered significantly higher case-rates, hospitalizations, and deaths compared to other demographics. Disparities have also been seen among individuals experiencing homelessness and individuals with disabilities. None of these demographic characteristics should be used in the allocation of scarce critical care resources such as ventilators. However, social support, capacity for care at home, access to rapid outpatient evaluations and outpatient treatments (e.g. medications and supplemental oxygen), etc. may be important when making triage decisions to discharge patients home rather than admit them to the hospital (e.g. can this patient be monitored at home safely and can they get supplemental oxygen). All healthcare decisions are at risk for implicit and explicit bias. Therefore, crisis algorithms should ideally be determined and documented by hospitals prior to implementation of triage protocols to ensure fairness and transparency. Triage team deliberations and decisions need to be documented with clear indications as to what factors contributed to a final triage decision. Additionally, careful monitoring of the impact of triage processes on vulnerable populations must occur in real time. After action reviews should be conducted internally to evaluate any potential biases or inequities that may have been exacerbated by certain aspects of the triage process. Only by conducting thorough evaluations of the implementation of CSC during an actual crisis can current protocols be improved to address future crises.

XV. Legal Protections

This document outlines processes that can be implemented during a crisis to either stretch resources or allocate certain resources to some patients while others receive alternate care pathways. CSC implies broadened liability protections to providers and facilities that cannot be fully outlined in this guiding document. In a crisis, healthcare workers will need to make difficult choices

^Ahttps://cha.com/wp-content/uploads/2020/04/CHA.196-CSC-Handout_Families.pdf

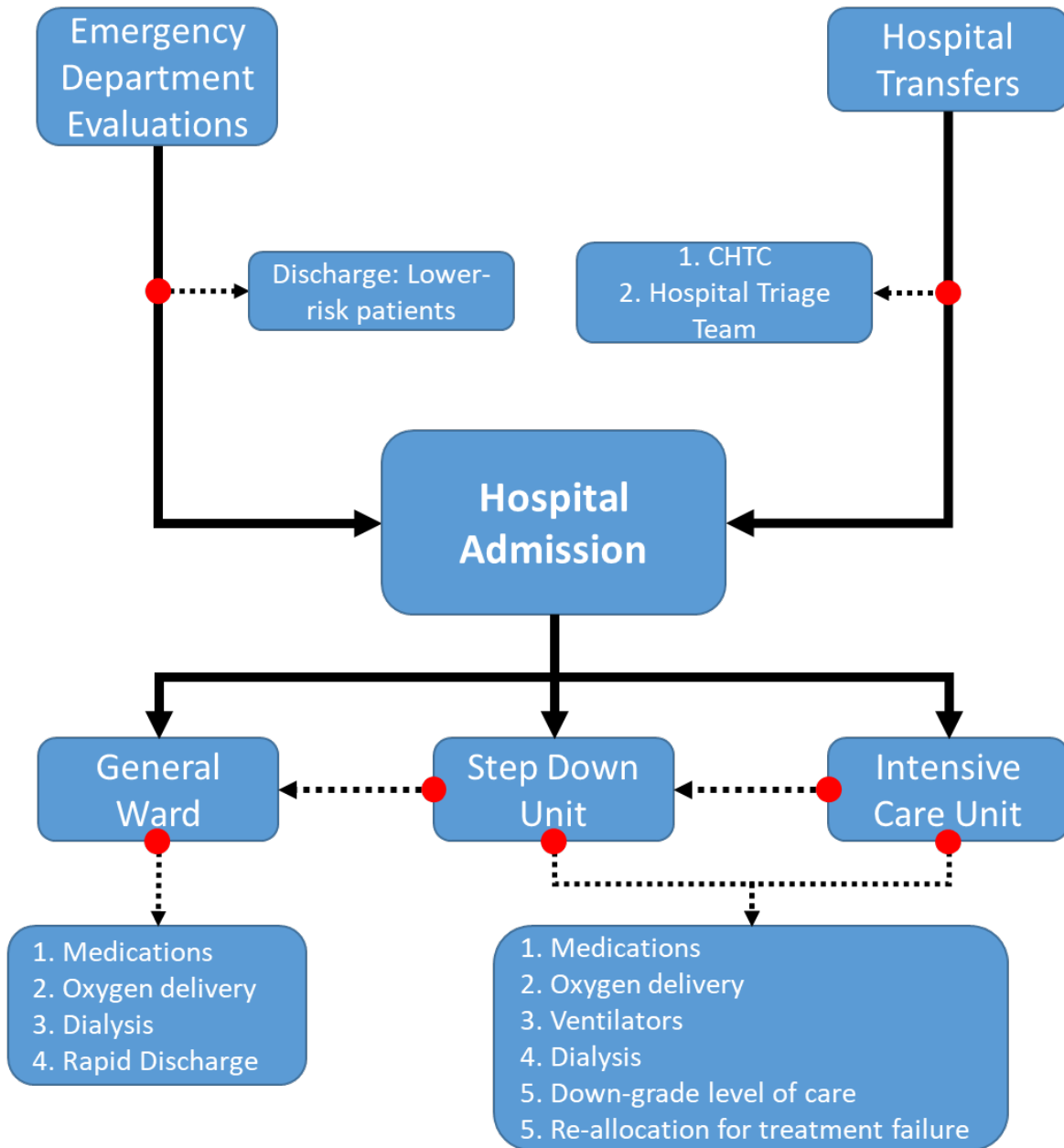


about how to stretch or allocate scarce resources which will often necessitate a degradation to the quality of care when not in crisis. Whether the decision affects emergency department, hospital, or ICU evaluation/admission/transfer or allocation of oxygen delivery devices, dialysis, or ventilators, healthcare workers should have broad liability and licensure protections in the absence of gross negligence. Additionally, careful collaboration with the State and CDPHE will likely be required to determine which areas of triage are allowable within the frame of EMTALA. Executive orders that authorize CSC should address liability protections for triage decisions made during a crisis.

XVI. Summary

The COVID-19 pandemic has highlighted multiple potential resource limitations in crisis situations. Rationing of resources such that some individuals do not receive potentially life-saving services is the last step in a crisis situation. Prior to formal triage protocols being enacted, multiple pre-cursor steps should be taken including load-balancing across institutions, reducing non-urgent surgical procedures, CSC for staffing, and creating alternate care pathways to stretch resources. When such early triage decisions need to be made, specific scoring systems for every resource that may be scarce are not possible. Moreover, hospitals and health systems will experience the crisis in slightly different ways. Therefore, these broad guidelines, driven by core ethical principles, should guide triage team decision-making.

Appendix A: Areas for Potential Hospital-Based Crisis Triage



This schematic presents several potential areas of hospital triage. Solid black lines represent patient and treatment pathways. Red circles and dotted lines represent potential triage pathways. MSE and full emergency department evaluation may result in triaging low-risk patients to outpatient care. Hospital transfers may be triaged based on availability either at the level of the CHTC or individual hospitals. Patients admitted to a specific level of hospital care may be triaged to a lower level of care (i.e. “down-graded”). Several hospital resources may also be triaged including ventilators, medications, dialysis, etc. Finally, low-risk patients may be identified for early discharge while high-risk patients in the ICU may be evaluated for re-allocation in the setting of treatment failure. This schematic DOES NOT indicate the order in which different areas of triage should be enacted. The implementation order will be dictated by the specific resources that are scarce at a given moment. Abbreviations: MSE – medical screening exam. CHTC – Combined Hospital Transfer Center



Appendix B: Clinical Scores to Assess Patient Discharge Potential for Inpatients

Several scores have been developed to identify patients who could be discharged from inpatient status with low-risk of deterioration as an outpatient. Several of these scores are presented below. Inclusion of these scores does not represent endorsement or mandates to use them during a crisis but offers a pathway to identify low-risk patients. Individual hospitals will need to determine whether to use any score and how to apply them.

HOSPITAL^A Score¹²⁻¹⁵

Prediction for 30-day readmission

Clinical Factor	Points
Hemoglobin ≥12 g/dL <12 g/dL	0 +1
Discharged from Oncology Service	+2
Sodium at discharge ≥135 mEq/L <135 mEq/L	0 +1
Procedure of any type performed during hospital stay	+1
Index admission type Elective Urgent/Emergent	0 +1
Length of Stay (days) <5 days ≥5 days	0 +2

Interpretation

Total Points	Risk Category	Risk of potentially avoidable 30-day readmission
0-4	Low	5.8%
5-6	Intermediate	12.0%
≥7	High	22.8%

^A <https://www.mdcalc.com/hospital-score-readmissions>



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LACE^A Score^{14,16}

Prediction for 30-day readmission or death

Clinical Factor	Points
Length of Stay	
1 day	+1
2 days	+2
3 days	+3
4-6 days	+4
7-13 ays	+5
≥14 days	+7
Acute/emergent admission	+3
Charlson Comorbidity Index ^B	
0 points	0
1 point	+1
2 points	+2
3 points	+3
≥4 points	+5
Number of ED visits within 6 months	
0	0
1	+1
2	+2
3	+3
≥4	+4

Interpretation

Total Points	Risk Category	Risk of potentially avoidable 30-day readmission
0-4	Low	
5-9	Intermediate	
≥9	High	>15.0%

^A <https://www.mdcalc.com/lace-index-readmission>

^B <https://www.mdcalc.com/charlson-comorbidity-index-cci>



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NEWS-2^A Score^{17,18}

Clinical Factor	Points
Respiratory rate (breaths per minute)	
≤8 bpm	+3
9-11	+1
12-20	0
21-24	+2
≥25	+3
On supplemental oxygen	+2
SpO2 <u>WITHOUT</u> hypercapnic respiratory failure*	
≤91%	+3
92-93%	+2
94-95%	+1
≥96%	0
SpO2 <u>WITH</u> hypercapnic respiratory failure*	
≤83%	+3
84-85%	+2
86-87%	+1
88-92%, ≥93% on room air	0
93-94% on supplemental oxygen	+1
95-96% on supplemental oxygen	+2
≥97% on supplemental oxygen	+3
Temperature (degrees Celsius)	
≤35.0	+3
35.1-36.0	+1
36.1-38.0	0
38.1-39.0	+1
≥39.1	+2
Systolic BP (mmHg)	
≤90	+3
91-100	+2
101-110	+1
111-219	0
≥220	+3
Pulse, beats per minute	
≤40	+3
41-50	+1
51-90	0
91-110	+1
111-130	+2
≥131	+3
Consciousness	
Alert	0
New-onset confusion/agitation, decreased responsiveness or unresponsive	+3

*Choose 1 SpO2 scale based on the presence or absence of hypercapnic respiratory failure

Interpretation

^A <https://www.mdcalc.com/national-early-warning-score-news-2>



COLORADO

Total Points	Risk Category
0-4	Low
5-6 or score of 3 in any individual parameter	Intermediate
≥ 7	High



Appendix C: Clinical Scoring Systems to Assess Disease Severity and Potential for Deterioration

Several scores have been developed to identify low risk patients presenting for common conditions such as pneumonia, pulmonary embolism, chest pain, and trauma. These scores could be implemented in emergency departments to create a standard threshold for admission or triage to discharge in conjunction with considerations about access to outpatient care. Several scores for common conditions are presented below. Inclusion of these scores does not represent endorsement or mandates to use them during a crisis but offers a pathway to identify low-risk patients. Individual hospitals will need to determine whether to use any score and how to apply them. This list is not exhaustive and multiple other clinical scoring systems exist.

CURB-65^A for Pneumonia (not developed for COVID-19 pneumonia)^{19,22}

Predicts 30-day mortality

Clinical Factor	Points
Confusion	+1
BUN > 19 mg/dL (>7 mmol/L)	+1
Respiratory rate \geq 30	+1
Systolic BP <90 mmHg OR Diastolic BP \leq 60 mmHg	+1
Age \geq 65	+1

Interpretation

Total Points	Classification	Predicted 30-day mortality
0	Low risk	0.6%
1	Low risk	2.7%
2	Intermediate, possible closely supervised home treatment	6.8%
3	Severe pneumonia	14.0%
4 or 5	Severe pneumonia	27.8%

^A <https://www.mdcalc.com/curb-65-score-pneumonia-severity>



COLORADO

Pneumonia Severity Index (PSI)^A (not designed for COVID-19 pneumonia)^{19,56}

Predicts 30-day mortality

Clinical Factor	Points
Age* Men: Points = Age Women: Points = Age – 10	
Nursing home resident	+10
Cancer	+30
History of liver disease	+20
History of heart failure	+10
History of cerebrovascular disease	+10
History of renal disease	+10
Altered mental status	+20
Respiratory rate ≥ 30	+20
Systolic BP < 90 mmHg	+20
Temperature < 35 C or > 39.9 C	+15
Pulse ≥ 125 bpm	+10
pH < 7.35	+30
BUN ≥ 30 mg/dL (11 mmol/L)	+20
Sodium < 130 mEq/L	+20
Glucose ≥ 250 mg/dL	+10
Hematocrit $< 30\%$	+10
Partial pressure of oxygen < 60 mmHg	+10
Pleural effusion on chest x-ray	+10

*Points related to age based on gender

Interpretation

Total Points	Classification	Predicted 30-day mortality
None from comorbidities, exam findings, or lab values	Low risk	0.1-0.4%
≤ 70	Low risk	0.6-0.7%
71-90	Low risk	0.9-2.8%
91-130	Moderate	8.2-12.5%
> 130	High	27.0-31.1%

^A <https://www.mdcalc.com/psi-port-score-pneumonia-severity-index-cap>



COLORADO

Pulmonary Embolism Severity Index^A (PESI)^{25,26,57}

Predicts 30-day outcomes from pulmonary embolism

Clinical Factor	Points
Age* Men: Points = Age + 10 Women: Points = Age	
History of cancer	+30
History of heart failure	+10
History of chronic lung disease	+10
Pulse \geq 110 bpm	+20
Systolic BP <100 mmHg	+30
Respiratory rate \geq 30	+20
Temperature < 36 C	+20
Altered mental status	+60
Oxygen saturation < 90%	+20

*Points related to age based on gender

Interpretation

Total Points	Classification	Predicted 30-day mortality
0-65	Very low risk	0.0-1.6%
66-85	Low risk	1.7-3.5%
86-105	Intermediate risk	3.2-7.1%
106-125	High risk	4.0-11.4%
\geq 125	Very high risk	10.0-24.5%

^A <https://www.mdcalc.com/pulmonary-embolism-severity-index-pesi>



COLORADO

HEART Score^A for Major Cardiac Events^{15,30,32}

Predicts 6-week risk of major adverse cardiac events. Not applicable to patient with EKG demonstrating ST elevations

Clinical Factor	Points
History	
Slightly suspicious	0
Moderate suspicious	+1
Highly suspicious	+2
EKG	
Normal	0
Non-specific repolarization abnormality	+1
Left ventricular hypertrophy	+1
Left bundle branch block	+1
Significant ST deviation not due to LBBB, LVH or digoxin	+2
Age	
<45	0
45-64	+1
≥65	+2
Risk factors for heart disease	
No risk factors	0
1-2 risk factors	+1
≥3 risk factors or personal history of atherosclerotic disease	+2
Initial troponin	
≤ normal limit	0
1-3x normal limit	+1
>3x normal limit	+2

Interpretation

Total Points	Classification	Risk of Major Adverse Cardiac Event within 6 weeks
0-3	Low	0.9-1.7%
4-6	Intermediate	12.0-16.6%
≥7	High	50-65%

^A <https://www.mdcalc.com/heart-score-major-cardiac-events>



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BAP-65^A Score for Acute Exacerbations of COPD^{58,59}

Predicts in-hospital mortality and need for mechanical ventilation within 48 hours for patients who do not present with respiratory failure. BAP-65 was not validated in patients <40 years of age.

Clinical Factor	Points
BUN \geq 25 mg/dL	+1
Altered mental status	+1
Pulse \geq 109 bpm	+1

Interpretation

BAP Score	Age	Class	In hospital mortality	Need for MV within 48 hours
0	<65	I	0.3%	0.3%
0	\geq 65	II	1.0%	0.2%
1	Any age	III	2.2%	1.2%
2	Any age	IV	6.4%	5.5%
3	Any age	V	14.1%	12.4%

^A <https://www.mdcalc.com/bap-65-score-acute-exacerbation-copd>



Injury Severity Score^A (ISS) for Trauma^{60,61}

Rate only the most severe injury from each of 6 body systems. Use of the ISS should not delay initial trauma management.

Body System	Severity
Head and neck	0 – No injury
Face	1 – Minor injury
Chest	2 – Moderate injury
Abdomen	3 – Serious injury
Extremity including pelvis	4 – Severe injury
External	5 – Critical injury
	6 – Unsurvivable injury

Calculation:

Identify 3 body systems with most severe injury (highest score) then

$$\text{ISS} = (\text{Body System 1})^2 + (\text{Body System 2})^2 + (\text{Body System 3})^2$$

Maximum score is 75. If any body system is labeled as 6, ISS is automatically set at 75.

^A <https://www.mdcalc.com/injury-severity-score-iss>



Appendix D: Adult SOFA Score^{34-36,42,62,63}

Adult SOFA Score (≥18 years)^A

Variables	POINTS				
	0	1	2	3	4
Respiratory P _a O ₂ /FiO ₂ , mmHg OR S _p O ₂ /FiO ₂ ^a	>400	≤400	≤300	≤200 ^B	≤100 ^b
Coagulation Platelets x 10 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 ^c	No Hypotension	MAP<70 mm Hg	Norepinephrine ≤0.03 Dopamine ≤ 5 OR Dobutamine any dose	Norepinephrine ≤0.1 OR Epinephrine ≤0.1 OR Dopamine >5	Dopamine ≥15 OR Epinephrine >0.1 OR Norepinephrine >0.1
Central Nervous System Glasgow Coma Scale	15	13-14	10-12	6-9	<6
Renal Creatinine, mg/dL OR UOP (mL/day)	<1.2	1.2-1.9	2.0-3.4	3.5-4.9 OR UOP<500	>5 OR UOP <200

Abbreviations: P_aO₂ - partial pressure of oxygen in the arterioles, FiO₂ - fraction of inspired oxygen, S_pO₂ - peripheral oxygen saturation. MAP - mean arterial pressure, UOP - urine output

^aCutoffs adapted from the modified SOFA (MSOFA) score^{35,63}

^bWith mechanical ventilation or other form of artificial ventilation

^cOn vasopressor for at least 1 hour. Doses are given as μg/kg/min

Adult Predicted Mortality

Initial Adult SOFA Score	30-Day Mortality
0-1	0.0%
2-3	6.4%
4-5	20.2%
6-7	21.5%
8-9	33.3%
10-11	50.0%

^A<https://www.mdcalc.com/sequential-organ-failure-assessment-sofa-score>



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12-14	95.2%
>14	95.2%



Appendix E: Modified Charlson Comorbidity Index^{a,43-45}

Variable	Score
Age	
<50	+0
50-59	+1
60-69	+2
70-79	+3
≥80	+4
Chronic Heart Failure ^b	+2
Dementia ^c	+2
Chronic Pulmonary Disease ^d	+1
Connective Tissue Disease ^e	+1
Liver Disease ^f	
Mild	+2
Moderate or Severe	+4
Diabetes Mellitus with Chronic Complications ^g	+1
Hemiplegia/Paraplegia due to CVA ^h	+2
Renal Disease ⁱ	+1
Metastatic Solid Tumor ^j	+6
Any active malignancy including leukemia/lymphoma ^k	+2
AIDS ^l	+4

Abbreviations: CVA – cerebrovascular accident, AIDS – acquired immunodeficiency syndrome. mCCI – modified Charlson Comorbidity Index. NYHA – New York Heart Association. LVEF – left ventricular ejection fraction. FEV1 – forced expiratory volume in the first second. TLC – total lung capacity.

^aThe committee has modified the definitions of the comorbidities in the mCCI to identify severity of a specific comorbidity that would be more strongly associated with 1-year mortality. The modifications likely increase the specificity of the mCCI in predicting 1-year mortality.

^bNYHA Class III or IV symptoms, LVEF <45%, of mean pulmonary artery pressure >25 mmHg on right heart catheterization.

^cChronic cognitive deficit requiring assistance with instrumental activities of daily living / activities of daily living.

^dAny pulmonary disease requiring chronic supplemental oxygen therapy, FEV1<40% predicted, TLC <60% predicted. History of intubations related to underlying lung disease in prior 12 months

^eInherited or autoimmune process such as systemic lupus erythematosus, rheumatoid arthritis, scleroderma, mixed connective tissue disease, etc.

^fSevere=cirrhosis, portal hypertension, history of variceal bleeding. Moderate=cirrhosis, portal hypertension, Mild=chronic hepatitis or cirrhosis without portal hypertension

^gInsulin dependence for Type 2 diabetes (not Type 1 diabetes). Presence of neuropathy, retinopathy, nephropathy in any patient with diabetes.



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^hHemiplegia specifically related to an ischemic stroke or hemorrhage. Congenital or trauma related hemi/paraplegia would not be considered.

ⁱModerate to severe renal disease could include serum Creatinine ≥ 3 mg/dL, uremic syndrome, dialysis after a kidney transplant

^jExcludes non-melanomatous skin cancers and in situ cervical carcinoma.

^kCML, CLL, AML, ALL, polycythemia vera, non-Hodgkin's lymphoma, Hodgkin's lymphoma, multiple myeloma, Waldenstrom's Macroglobulinemia (active disease undergoing therapy or s/p bone marrow transplant),

^lAIDS: Current CD4 count < 200 , Opportunistic infection in the last 1 month, active AIDS defining illness such as Kaposi's Sarcoma



Appendix F: Alternative Crisis Standards of Care Triage Scoring Systems^{64,65}

Purpose	Specification	Point System ^A				
		0	1	2	3	4
Likelihood of surviving days/weeks if given critical care resources	SOFA score ^B : Validated measure of acute survival	X	1-5	6-9	10-12	>12
Likelihood of surviving 1 year if given critical care resources	Prognosis for near-term (1-year) survival after hospital discharge	No comorbidities that increase likelihood of death within 1-year		Moderate likelihood of death within 1-year despite treatment of acute illness		High likelihood of death within 1-year despite treatment of acute illness

^ACSC Triage Scores range from 1-8. Persons with lower CSC Triage Scores have better short and near-term survival and would be given higher priority to receive scarce resources in a crisis situation.

^BSOFA= Sequential Organ Failure Assessment (See Appendix D)



Appendix G: Modified Pediatric SOFA Score⁴⁷

Modified Pediatric SOFA (≤ 17 years of age)

Variables	POINTS				
	0	1	2	3	4
Respiratory P _a O ₂ /FiO ₂ , mmHg OR S _p O ₂ /FiO ₂	≥ 400 ≥ 292	300-399 264-291	200-299 221-264	100-199 ^A 148-220 ^A	<100 ^A <148 ^A
Coagulation Platelets x 10 ³ / μ L	≥ 150	100-149	50-99	20-49	<20
Liver Bilirubin, mg/dL	<1.2	1.2-1.9	2.0-5.9	6.0-11.9	>12.0
MAP by age group or vasoactive infusion, mmHg or μg/kg/min^B <1 mo 1-11 mo 12-23 mo 24-59 mo 60-143 mo 144-216 mo >216 mo	≥ 46 ≥ 55 ≥ 60 ≥ 62 ≥ 65 ≥ 67 ≥ 70	<46 <55 <60 <62 <65 <67 <70	Norepinephrine ≤ 0.03 Dopamine ≤ 5 OR dobutamine any dose	Dopamine >5 OR Epinephrine ≤ 0.1 OR Norepinephrine ≤ 0.1	Dopamine ≥ 15 OR Epinephrine >0.1 OR Norepinephrine >0.1
Central Nervous System Glasgow Coma Scale ^C	15	13-14	10-12	6-9	<6
Renal, Creatinine by age group, mg/dL <1 mo 1-11 mo 12-23 mo 24-59 mo 60-143 mo 144-216 mo >216 mo	<0.8 <0.3 <0.4 <0.6 <0.7 <1.0 <1.2	0.8-0.9 0.3-0.4 0.4-0.5 0.6-0.8 0.7-1.0 1.0-1.6 1.2-1.9	1.0-1.1 0.5-0.7 0.6-1.0 0.9-1.5 1.1-1.7 1.7-2.8 2.0-3.4	1.2-1.5 0.8-1.1 1.1-1.4 1.6-2.2 1.8-2.5 2.9-4.1 3.5-4.9	≥ 1.6 ≥ 1.2 ≥ 1.5 ≥ 2.3 ≥ 2.6 ≥ 4.2 ≥ 5.0

Abbreviations: P_aO₂ - partial pressure of oxygen in the arterioles, FiO₂ - fraction of inspired oxygen, MAP - mean arterial pressure

^AWith mechanical ventilation or other form of artificial ventilation

^BMAP was used for scores 0 and 1, vasoactive infusions were used for scores 2-4. The maximum continuous vasoactive infusion was



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administered for at least 1 hour.

^cCalculated using the pediatric scale.



Appendix H: Pediatric Logistic Organ Dysfunction 2 Score (PELOD-2)⁴⁸

Organ Dysfunctions and Variables	0	1	2	3	4	5	6
Neurologic^A							
Glasgow Coma Scale	≥11	5-10			3-4		
Pupillary reaction	Both Reactive					Both Fixed	
Cardiovascular							
Lactate (mmol/L)	<5.0	5.0-10.9			≥11.0		
MAP (mm Hg)							
<1 mo	≥46		31-45	17-30			≤16
1-11 mo	≥55		39-54	25-38			≤24
12-23 mo	≥60		44-59	31-43			≤30
24-59 mo	≥62		46-61	32-44			≤31
60-142 mo	≥65		49-64	36-48			≤35
>144 mo	≥67		52-66	38-51			≤37
Renal							
Creatinine (mg/dL)							
<1 mo	≤0.78		≥0.79				
1-11 mo	≤0.25		≥0.26				
12-23 mo	≤0.39		≥0.40				
24-59 mo	≤0.57		≥0.58				
60-142 mo	≤0.67		≥0.67				
>144 mo	≤1.04		≥1.05				
Respiratory							
P_aO₂/FiO₂	≥61		≤60				
P_aCO₂	≤58	59-94		≥95			
Invasive ventilation	No			Yes			
Hematologic							
WBC (x10³/μL)	>2		≤2				
Platelets (x 10³/μL)	≥142	77-141	≤76				

Abbreviations: MAP – mean arterial blood pressure. Mo – month. P_aO₂ – partial pressure of oxygen (mmHg). FiO₂ – fraction of inspired oxygen. P_aCO₂ – partial pressure of carbon dioxide (mmHg). WBC – white blood cells.

^AIf the patient is sedated record the estimated Glasgow Coma Score before sedation. Assess only patients with known or suspected acute central nervous system disease. Nonreactive pupils must be >3mm. Do not assess pupil response after iatrogenic pupillary dilation.



Appendix I: An Example of Calculating the Crisis Standards of Care Triage Score Cutoff

Determining the CSC Triage Score Cutoff is a difficult inexact process. In calculating the triage cutoff, the CSC Triage Team must have total situational awareness of the minimum operating capacity (MOC) for the institution, anticipated need for resources, anticipated availability for resources, and the average acuity of patients presenting over the previous days. The number of ventilators needed for the day would be the MOC + the anticipated need for ventilators for the day. The number of ventilators available for the day would be the number of ventilators not in use and functional at the beginning of the day + the number of ventilators expected to become available through extubations. This number will shift over the course of the day as patients already on a ventilator are weaned and potentially extubated. This requires close communication between the CSC Triage Team, the clinical team, and the incident command team at every institution. The CSC Triage Score Cutoff would then be based on the gap between the need and availability, taking into account the average CSC Triage Score for those intubated in recent days. At the same time as the CSC Triage Score Cutoff is being calculated, a daily assessment of individuals already on a ventilator should occur to determine if any patients would be appropriate for consideration of re-allocation of the need exceeds the availability.

Example 1:

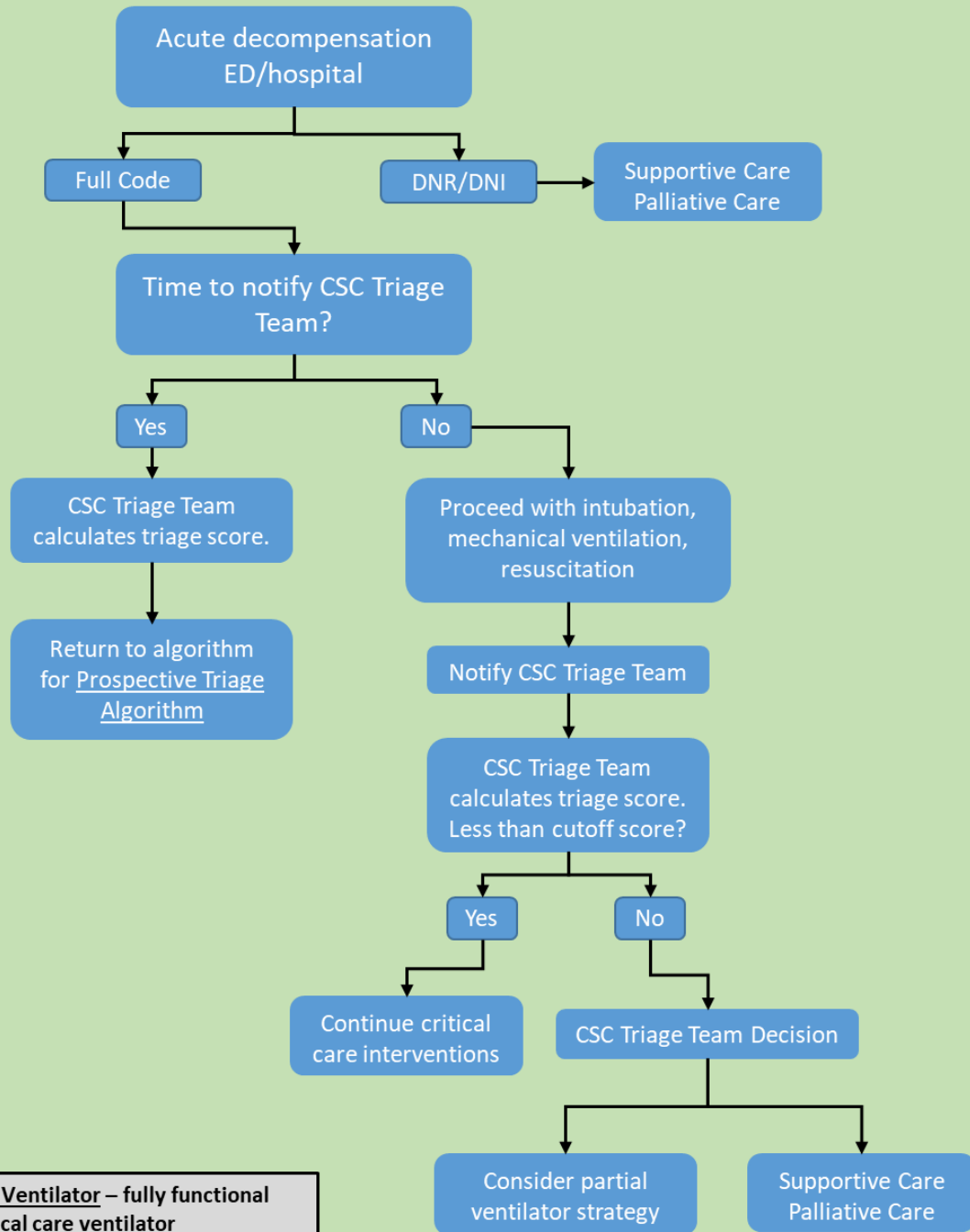
Minimum Operating Capacity	2
Average Number of Patients Intubated Per Day in Last 3 days	4
Number of Critical Care Ventilators Available	4
Number of Critical Care Ventilators Expected to Become Available	3
Average CSC Triage Score of Patients at Time of Intubation in last 3 Days	4

In this scenario, the ventilator need for the day is anticipated to be 6 (MOC 2 + Average intubations/day 4 = 6). The anticipated availability for the day would 7 ventilators (available 4 + expected to become available 3 = 7). Therefore, there is an anticipated surplus of 1 ventilator for the day even after accounting for the MOC. If the rates for intubation are stable or slightly increasing, a CSC Triage Score cutoff could be set at 5 as the average CSC Triage Score for patients placed on a ventilator in previous days was 4. Patients with a score of 5 and above (much sicker than those presenting in the prior 3 days) would either be triaged to a less standard ventilator. At the same time as the cutoff is determined, an assessment should be made of all those already on a ventilator to determine if any patients would be eligible for re-allocation should the need for ventilators be higher than anticipated.

Example 2:

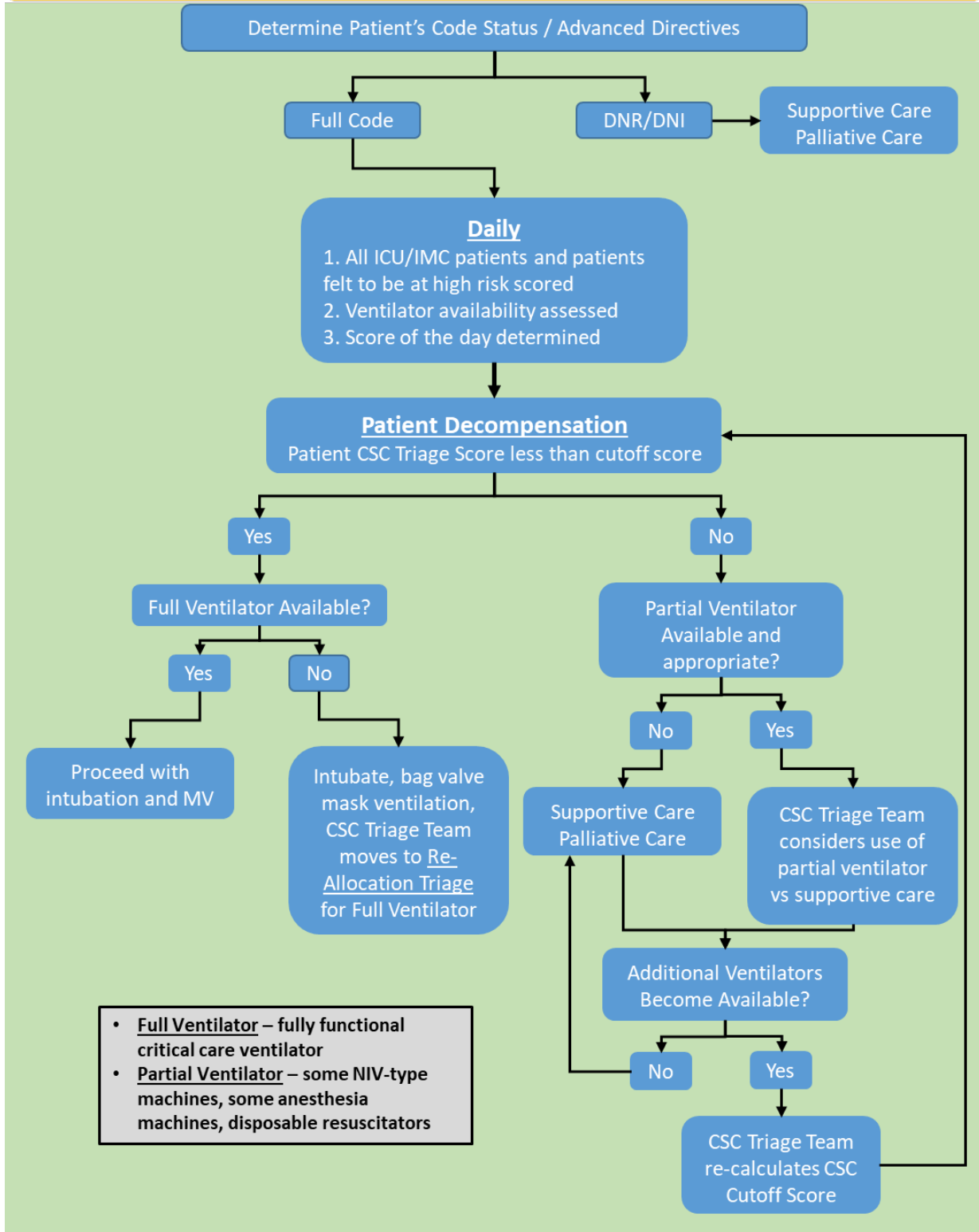
Minimum Operating Capacity	2
Average Number of Patients Intubated Per Day in Last 3 days	4
Number of Critical Care Ventilators Available	2
Number of Critical Care Ventilators Expected to Become Available	1

Appendix J: Crisis Standards of Care: Emergent Triage Process

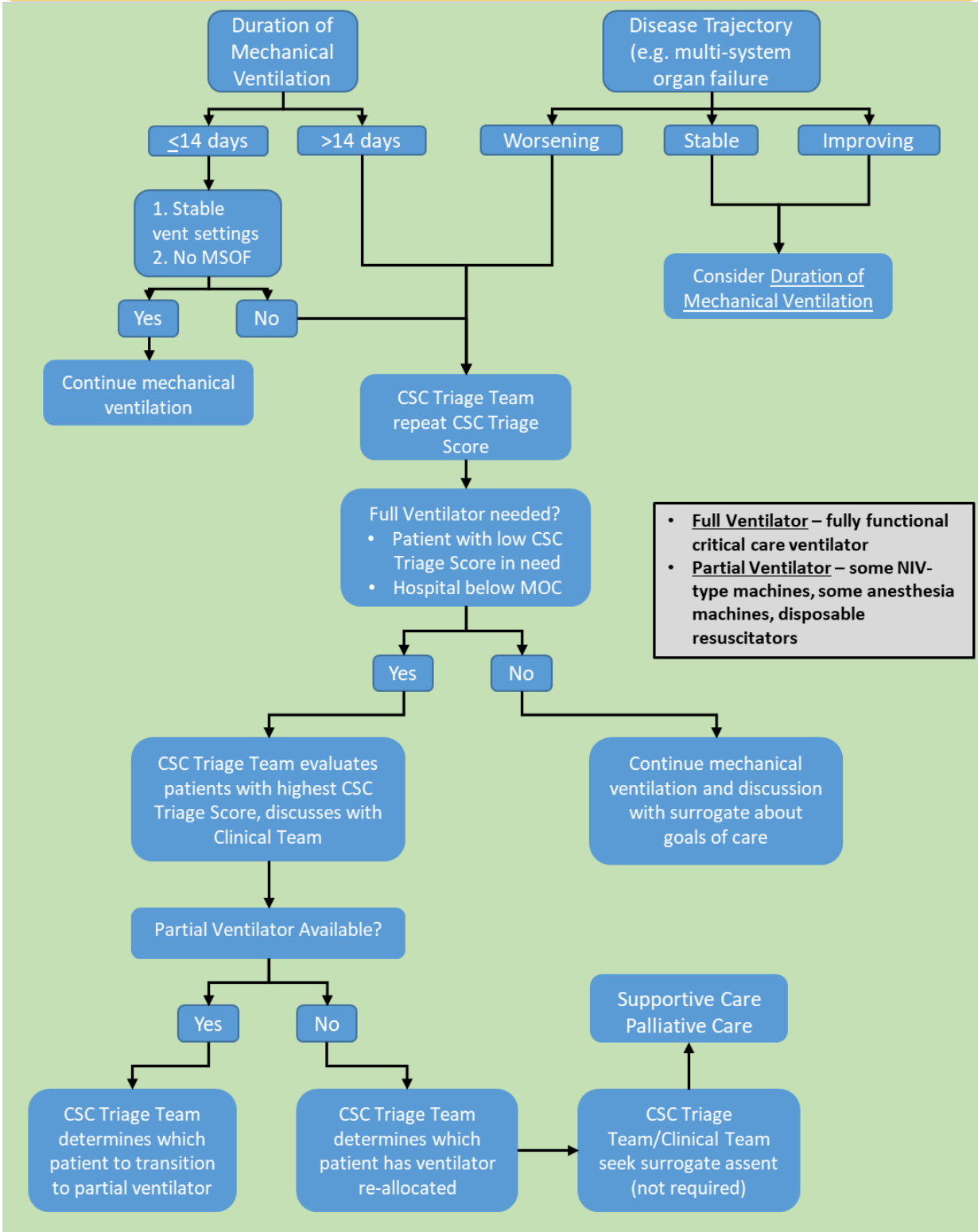


- **Full Ventilator** – fully functional critical care ventilator
- **Partial Ventilator** – some NIV-type machines, some anesthesia machines, disposable resuscitators

Appendix K: Crisis Standards of Care: Prospective Triage Process



Appendix L: Crisis Standards of Care: Re-Allocation Triage





Appendix M: Contributing Experts

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^aParticipated in drafting of the first Crisis Standards of Care for Hospital Triage focusing on ventilators first approved by the GEEERC on April 5, 2020.

^bParticipated in drafting of the broader Crisis Standards of Care framework in November 2021.

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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*

Pediatric considerations are now addressed in section 2 of this Appendix.

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.



5. *Personal Protective Equipment*

Crisis Standards of Care Plan

Appendix G.5 Personal Protective Equipment

Sufficient and appropriate personal protective equipment (PPE) is critical to ensuring the safety of healthcare workers and first responders. In the setting of an infectious pandemic, PPE can become a scarce resource. However, it can be difficult to determine crisis standards of care (CSC) for PPE given significant variations from day to day and from institution to institution. Even without CSC, healthcare workers and first responders are not obligated to provide care or medical screening if doing so places them in danger. While strict guidelines for different levels of PPE are not possible given variations in availability, we recognize that should sufficient and appropriate PPE not be available, healthcare workers may have to change their practices to ensure their own safety. For novel coronavirus 2019 (COVID-19) specifically, this may first affect aerosolizing or aerosol-inducing procedures such as laryngoscopy, bronchoscopy, endoscopy, intubation, etc. which require higher levels of PPE. If CSC for PPE is specifically declared, further mandates as described below may be required. For purposes of this analysis, this document has largely incorporated guidance on use of PPE during crisis situations from the Centers for Disease Control and Prevention (CDC).²⁴

This document offers a series of strategies or options to optimize supplies of disposable N95 filtering facepiece respirators (commonly called “N95 respirators”) in healthcare settings when there is limited supply, and is largely based on CDC’s Strategies for Optimizing the Supply of PPE. See also this CDC guidance for Optimizing PPE Supplies. The strategies are also listed in order of priority and preference in the [Checklist for Healthcare Facilities: Strategies for Optimizing the Supply of N95 Respirators during the COVID-19 Response](#) in an easy-to-use format for healthcare facilities. This document also addresses strategies for shortages of other PPE, such as surgical masks, gowns, gloves, and eye protection (e.g., face shields, and goggles).

The following strategies are based upon these assumptions: 1) facilities understand their current PPE inventory and supply chain, 2) facilities understand their PPE utilization rate, and 3) facilities are in communication with state and local public health partners (e.g., public health emergency preparedness and response staff) and healthcare coalitions. Facilities may use PPE burn-rate calculators or apps to assist in planning and optimizing PPE use. These strategies are targeted for optimizing the supply of PPE, as well as the supply of other personal protective equipment such as gowns, gloves, and eye protection.

N95 respirators are the PPE most often used to control exposures to infections transmitted via the airborne route, though their effectiveness is highly dependent upon proper fit and use. The optimal way to prevent airborne transmission is to use a combination of interventions from across the hierarchy of controls, not just PPE alone. Applying a combination of controls can provide an additional degree of protection, even if one intervention fails or is not available.

Respirators, when required to protect HCP from airborne contaminants such as infectious agents, must be used in the context of a comprehensive, written respiratory protection program that meets the requirements of [OSHA’s Respiratory Protection standard](#). The program should include medical evaluations, training, and fit testing.

While there are no commonly accepted measurements or triggers to distinguish surge capacity from daily patient care capacity, surge capacity is a useful framework to approach a decreased supply of N95 respirators or other

²⁴ <https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/index.html>



appropriate PPE during the COVID-19 response. Three general strata have been used to describe surge capacity and can be used to prioritize measures to conserve N95 respirator supplies along the continuum of care.²⁵

- **Conventional capacity:** measures consist of providing patient care without any change in daily contemporary practices. This set of measures, consisting of engineering, administrative, and PPE controls should already be implemented in general infection prevention and control plans in healthcare settings.
- **Contingency capacity:** measures may change daily contemporary practices but may not have any significant impact on the care delivered to the patient or the safety of the HCP. These practices may be used temporarily when demands exceed resources.
- **Crisis capacity:** alternate strategies that are not commensurate with contemporary U.S. standards of care. These measures, or a combination of these measures, may need to be considered during periods of expected or known N95 respirator shortages.

Decisions to implement measures in contingency capacity and then crisis capacity should be based on:

- Consideration of all conventional capacity strategies first.
- The availability of N95 respirators and other types of respiratory protection, surgical masks, gowns, face shields, goggles and other appropriate PPE.
- Consultation with entities that include some combination of: local healthcare coalitions, federal, state, or local public health officials, appropriate state agencies that are managing the overall emergency response related to COVID-19, and state crisis standards of care committees. Even when state/local coalitions or public health authorities can shift resources between health care facilities, these strategies may still be necessary.

Strategies include extending the use or limited reuse of PPE. **Extended use** refers to the practice of wearing the same PPE for repeated close contact encounters with several patients, without removing the PPE between patient encounters. Extended use may be implemented when multiple patients are infected with the same respiratory pathogen and patients are placed together in dedicated waiting rooms or hospital wards. Extended use has been recommended as an option for conserving respirators during previous respiratory pathogen outbreaks and pandemics.^{26 27} **Reuse** refers to the practice of using the same PPE for multiple encounters with the same patient but removing it (‘doffing’) after each encounter. The respirator is stored in between encounters to be put on again (‘donned’) prior to the next encounter with a patient. Even when N95 respirator reuse is practiced or recommended, restrictions are in place which limit the number of times the same FFR is reused. Thus, N95 respirator reuse is often referred to as “limited reuse”. Limited reuse has been recommended and widely used as an option for conserving respirators during previous

²⁵ Hick JL, Barbera JA, Kelen GD. Refining surge capacity: conventional, contingency, and crisis capacity. [Disaster Med Public Health Prep](#) 2009;3(2 Suppl): S59-67.

²⁶ CDC: “Questions and Answers Regarding Respiratory Protection For Preventing 2009 H1N1 Influenza Among Healthcare Personnel” [Online] Available at https://www.cdc.gov/h1n1flu/guidelines_infection_control_qa.htm, (2010).

²⁷ Rebmann, T., S. Alexander, T. Cain, B. Citarella, M. Cloughessy, and B. Coll “APIC position paper: extending the use and/or reusing respiratory protection in healthcare settings during disasters.” [Online] Available at http://www.apic.org/Resource_/TinyMceFileManager/Advocacy-PDFs/APIC_Position_Ext_the_Use_and_or_Reus_Resp_Prot_in_Hlthcare_Settings12091.pdf, (2009).



respiratory pathogen outbreaks and pandemics.^{28 29 30}

The list below contains the PPE standards implemented for crisis standards of care.

Crisis/Alternate Strategies are not commensurate with current U.S. standards of care but may need to be considered during periods of expected or known PPE shortages.

When PPE Supplies are Running Low

Personal Protective Equipment and Respiratory Protection	
	Use respirators as identified by CDC as performing adequately for healthcare delivery <u>beyond the manufacturer-designated shelf life</u>
	Use respirators approved under standards used in other countries that are similar to NIOSH-approved N95 respirators but that may not necessarily be NIOSH-approved, and do not appear to be counterfeit as described by NIOSH
	Implement limited <u>re-use</u> of N95 respirators for patients with COVID-19, measles, and varicella
	Use additional respirators identified by CDC as NOT performing adequately for healthcare delivery, for example N95s designed for nonmedical use, beyond the manufacturer-designated shelf life
	Use appropriate PPE such as face masks and eye protection beyond manufacturer-designated shelf life during patient care activities
	Implement limited reuse of appropriate PPE, such as face shields, gowns, and masks to the extent necessary when supplies are limited <ul style="list-style-type: none"> ➤ Limited reuse means using the same PPE by one HCP for multiple encounters with different patients but removing it after each encounter. ➤ Facemasks should be removed and discarded if soiled, damaged, or hard to breathe through.

²⁸ Beckman, S., B. Materna, S. Goldmacher, J. Zipprich, M. D’Alessandro, D. Novak et al.: Evaluation of respiratory protection programs and practices in California hospitals during the 2009-2010 H1N1 influenza pandemic. *American Journal of Infection Control* 41(11): 1024-1031 (2013).

²⁹ Hines, L., E. Rees, and N. Pavelchak: Respiratory protection policies and practices among the health care workforce exposed to influenza in New York State: Evaluating emergency preparedness for the next pandemic. *American Journal of Infection Control* (2014).

³⁰ IOM: *Reusability of facemasks during an influenza pandemic: facing the flu*. Washington, D.C.: National Academies Press, 2006.



	<ul style="list-style-type: none">➤ See additional guidance on potential methods for decontamination.
	<p>Prioritize face shields and other appropriate PPE for selected activities, such as</p> <ul style="list-style-type: none">➤ For provision of essential surgeries and procedures➤ During care activities where splashes and sprays are anticipated➤ During activities where prolonged face-to-face or close contact with a potentially infectious patient is unavoidable➤ For performing aerosol generating procedures, if respirators are no longer available
	Use respirators approved under standards set by bodies that are similar to NIOSH-approved N95 respirators but that may not necessarily be NIOSH-approved.
	Prioritize the use of N95 respirators and facemasks by activity type with and without masking symptomatic patients
	Relax requirements for the use of PPE, including N95 masks, when delivering care for patients with less-hazardous conditions, such as a history of MRSA or ESBL infection
	Decontamination and reuse of disposable filtering facepiece respirators (FFRs) in accord with the most recently issued FDA guidance
	Use of N95 respirator models and equivalent respirator models for which the HCP has not undergone fit-testing.

When No Respirators Are Left

Administrative Controls	
	Allow healthcare professionals to volunteer to provide care with alternative PPE, such as homemade masks



	Exclude HCP at higher risk for severe illness from COVID-19 from contact with known or suspected COVID-19 patients (i.e., those of older age, those with chronic medical conditions, or those who may be pregnant)
	Designate convalescent HCP for provision of care to known or suspected COVID-19 patients (those who have clinically recovered from COVID-19 and may have some protective immunity) to preferentially provide care)
	Discharge patients to medical shelters or alternate care sites that house COVID-19 positive patients.

Engineering Controls	
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	Use an expedient patient isolation room for risk-reduction
	Use a ventilated headboard to decrease risk of HCP exposure to a patient-generated aerosol
	Utilize remote monitoring tools or modified equipment to reduce exposure time and risk to HCP.

Personal Protective Equipment and Respiratory Protection	
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	Use masks not evaluated or approved by NIOSH or homemade masks as a last resort
	Use gown alternatives such as disposable lab coats, reusable patient gowns, reusable laboratory coats, disposable aprons, or a combination of pieces of clothing to provide body coverage



For reference, the following standards pertain to conventional and contingency standards of care.

Conventional Capacity Strategies consist of providing patient care without any change in daily practices

Engineering Controls reduce exposures for healthcare personnel (HCP) by placing a barrier between the hazard and the HCP	
	Isolate patients in an airborne infection isolation room (AIIR)
	Use physical barriers such as glass or plastic windows at reception areas, curtains between patients, etc.
	Properly maintain ventilation systems to provide air movement from a clean to contaminated flow direction

Administrative Controls refer to employer-dictated work practices and policies that reduce or prevent hazardous exposures	
	Limit the number of patients going to hospitals or outpatient settings by screening patients for acute respiratory illness prior to non-urgent care or elective visits
	Exclude all HCP not directly involved in patient care (e.g., dietary, housekeeping employees)
	Reduce face-to-face HCP encounters with patients (e.g., bundling activities, use of video monitoring)
	Exclude visitors to patients with known or suspected COVID-19
	Implement source control: Identify and assess patients who may be ill with or who may have been exposed to a patient with known COVID-19 and recommend they use facemasks until they can be placed in an AIIR or private room.



	Cohort patients: Group together patients who are infected with the same organism to confine their care to one area
	Cohort HCP: Assign designated teams of HCP to provide care for all patients with suspected or confirmed COVID-19
	Use telemedicine to screen and manage patients using technologies and referral networks to reduce the influx of patients to healthcare facilities
	Train HCP on indications for use of N95 respirators
	Train HCP on use of N95 respirators (i.e., proper use, fit, donning and doffing, etc.)
	Implement just-in-time fit testing: Plan for larger scale evaluation, training, and fit testing of employees when necessary during a pandemic
	Limit respirators during training: Determine which HCP do and do not need to be in a respiratory protection program and, when possible, allow limited re-use of respirators by individual HCP for training and then fit testing
	Implement qualitative fit testing to assess adequacy of a respirator fit to minimize destruction of N95 respirator used in fit testing and allow for limited re-use by HCP

Personal Protective Equipment and Respiratory Protection should be used as part of a suite of strategies to protect personnel, complementing the use of engineering and administrative controls as needed.

	Use surgical N95 respirators only for HCP who need protection from both airborne and fluid hazards (e.g., splashes, sprays). If needed but unavailable, use a face shield over standard N95 respirator.
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Use alternatives to N95 respirators where feasible (e.g., other disposable filtering facepiece respirators , elastomeric respirators with appropriate filters or cartridges, powered air purifying respirators)

Contingency Capacity Strategies may change practices but may not have a significant impact on patient care or HCP safety

Administrative Controls

Decrease length of hospital stay for medically stable patients with COVID-19 who cannot be discharged to home for social reasons by identifying alternative non-hospital housing
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Personal Protective Equipment and Respiratory Protection

Use N95 respirators beyond the manufacturer-designated shelf life for training and fit testing
--

Extend the use of N95 respirators by wearing the same N95 for repeated close contact encounters with several different patients, without removing the respirator per, recommended guidance on implementation of extended use
--

Implement re-use of N95 respirators by one HCP for multiple encounters with different patients, but remove it after each encounter. See additional guidance on potential methods for decontamination.

Shift supply use from disposable to reusable PPE (e.g. goggles, face shields, cloth gowns)
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Implement extended use of PPE, such as eye protection and facemasks. <ul style="list-style-type: none">➤ Extended use means wearing the same PPE for repeated close contact encounters with several different patients, without removing the PPE between patient encounters.➤ Should be removed and reprocessed if becomes visibly soiled, and discarded if damaged.

Appendix G6 - Crisis Standards of Care for Healthcare Staffing

Background & Overview

Prior to the COVID-19 crisis, healthcare systems were confronted with challenges related to maintaining a sufficient pool of experienced health care workers to face the increased demand in chronic disease as well as an aging population. The current pandemic imposes additional short-term and long-term strains on the system. The short-term challenge pertains to filling the workforce gap to face the increased demand during a surge, while the long-term objective would be to build resilience and sustain clinical effectiveness in order to maintain quality patient outcomes.

Following the spring 2020 surge, many hospitals expanded their medical-surgical and ICU bed capacity, PPE and ventilator supply, and prepared for the inevitable “second wave.” Many hospitals converted non-critical care spaces into auxiliary ICUs, increasing the total ICU capacity. Hospitals also worked to “train up” nurses and other clinicians from the less busy general medical-surgical units and community care clinics to critical care levels.

Additionally, in spring 2020, surges were sporadic across the U.S., and nurses, physicians and respiratory therapists could travel between peak communities of need, going where care was needed most. With the current spread nationwide, that flexibility has diminished and the market for healthcare staff is highly competitive – and expensive. Moreover, rising positivity rates and greater community spread has led to a higher proportion of nurses and other healthcare providers unable to work on any given day due to personal illness, family illness, exposure and need to quarantine. Competing family demands (for children being home schooled), staff burnout and crisis fatigue is further reducing the pool of available nurses and other essential healthcare personnel.

Staffing Limits as a “Hard Ceiling”

Staffing is too often viewed as a flexible variable in the equation that dictates total healthcare capacity. The number of ventilators is clearly a hard ceiling above which caring for more patients in need of a ventilator is not possible. A similar fact is true about physical hospital beds. At some point there may be more patients than physical beds. However, when considering essential staff shortages, simply asking a nurse or respiratory therapist to care for more patients during a shift is clearly not the solution. Spreading these critical resources too thin will increase the risk to safe patient care and could rapidly exhaust the pool of available professionals as individuals fall ill from being overworked or become burnout and leave the field. At the same time, in a true crisis, the only firm alternative may be to deny patients access to care.

It is absolutely critical that staff also be viewed as having a hard ceiling that cannot stretch endlessly, especially during a sustained mass casualty event like a global pandemic. Staffing is limited and can become so scarce as to require a change in the expectations of the standard of care that can be provided during the pandemic. To that end, crisis standards of care must contemplate severe staffing shortages and plan for their activation.

The COVID-19 pandemic response requires an altered health care delivery system that changes the ways healthcare professionals and facilities care for all patients, including the prescribing of



drugs, the ordering of tests, the performance of any evaluation, treatment, surgery or procedure, or the decision to forego any of the preceding; the measures taken to preserve personal protective equipment and ventilators; and, the settings of care through telehealth, changes in hospital units, drive-up testing sites, makeshift triage centers, and other modalities.

These crisis standards of care (CSC) may be activated as described in the Colorado Crisis Standards of Care Plan. Upon activation, these CSC may be implemented to best manage the influx of patients. These CSC will, by necessity, involve the Health Care Workers (HCWs), their employers, and health care facilities, and will require modifications to the usual procedures and protocols utilized.

The public health objectives of a Crisis Standards of Care for Health Care Staffing are to:

- Expand the availability of HCWs and health care resources to combat the COVID-19 pandemic and to address non-COVID-19 cases;
- Confirm for HCWs and health care facilities the need for altered healthcare delivery for both COVID-19 patients and those with other conditions without requiring any new laws;
- Assure that guardrails and supports are in place to optimize workplace safety, HCW resilience in the face of moral and physical stress, patient safety, and health outcomes of COVID-19 and non-COVID-19 patients;

Considerations for Health Care Entities, Facilities & Workforce

The following guiding principles should be prioritized by HCWs, health facilities, and other care settings as Crisis Standards of Care are evaluated and deployed. These guidelines apply not only to acute care institutions, but also long-term care facilities and home care services, including hospice:

- Aim to optimize and prioritize both patient care and HCW safety.
- Monitor and respond to HCW fatigue with strategies to promote resilience, health, and wellbeing.
- Support coordination by ensuring staffed bed and resource counts through EMResource are accurate, and educate frontline providers on the methods through which statewide and inter-facility coordination is happening.
- Ensure consistent communication between front line HCWs, executive leaders, governing board, state agencies, and local communities to ensure all facilities and HCWs are aware of the rapidly changing demands, standards of care, and distribution of resources.
- Enhance communication channels in a manner that supports HCWs to be able to elevate patient care concerns without fear of retaliation.
- Provide educational opportunities, current published research pertaining to the pandemic, and support for communication and implementation of best practices during the pandemic.
- Recognize that staffing solutions will not be one-size-fits-all, and decisions related to workforce staffing and patient care delivery should be made by institutional clinical leaders, including frontline caregivers.
- Rapidly evaluate and implement new technology in care facilities that could decrease staffing burdens and improve patient care related to the pandemic.

Protection from Liability

Consistent with the protections afforded by C.R.S. § 24-33.5-711.5(2), these Crisis Standards of Care, upon activation, will apply as follows:



The conduct and management of the affairs and property of each hospital, physician, health insurer or managed health care organization, health care provider, public health worker, or emergency medical service provider shall be such that they will reasonably assist and not unreasonably detract from the ability of the state and the public to successfully control emergency epidemics that are declared a disaster emergency. Such persons and entities that in good faith comply completely with board of health rules regarding the emergency epidemic and with executive orders regarding the disaster emergency shall be immune from civil or criminal liability for any action taken to comply with the executive order or rule. C.R.S. § 24-33.5-711.5(2).

Entities formally enacting Crisis Standards of Care shall notify CDPHE using this [linked form](#).

Crisis Standards of Care Continuum & Alternative Strategies

The Institute of Medicine (2012) describes the “duty to plan” for surge capacity based on resource availability and the demand for health care services. The continuum of resource demand is typically described as “Conventional”: normal operating conditions and standards of care; “Contingency”: modified use of resources, yet functionally equivalent care; and “Crisis”: extreme operating conditions requiring substantial changes in roles and responsibilities and ability to provide care. The National Academies of Medicine (2020) describes the relationship between Contingency and Crisis as follows:

The goal is to maximize conventional and contingency capacity, avoiding crisis. When crisis conditions exist, the goal is to “gracefully degrade” services to the minimum degree needed to meet the demands, maintaining the maximum patient and provider safety. Of these surge elements, staff is the most elastic (i.e., staff can be “stretched” to provide coverage in a number of different ways).

Crisis decision-making will often occur at the bedside, and it is imperative that clinicians are able to elevate issues for action with the goal of being able to return to contingency status as quickly as possible. The following table offers an example of factors to consider as the health care delivery system moves in and out of CSC. All efforts should be made to return to Contingency status as quickly as able in support of patient outcomes. The table illustrates the continuum between Conventional and Crisis standards, alongside possible staffing standards that could be implemented by a facility utilizing staffing crisis standards of care.

As described above, staffing crisis standards may be necessitated by staff shortages, staff illness, staff workload, or staff burnout among other reasons. It is also important to acknowledge that staffing is a finite resource that could potentially be fully overwhelmed. In this scenario, health facilities should be guided by their ethical and legal obligations (e.g., state law and EMTALA requirements for hospitals to provide emergency care within the “capability and capacity” of the facility), as well as balancing the importance of maintaining access to patients in need of care with the finite constraints of the facility and HCWs. Using patient diversion and transfers to balance patient loads across hospitals is the best method to ensure adequate care without overwhelming a particular facility; however, this is beyond the scope of this CSC.

Within this CSC, depending on the resources available in a given community or facility, some or all of the following measures may be implemented. In general, the same types of strategies are used in Contingency and Crisis Standards of Care. However, in Crisis, these strategies are deployed more extensively – across more clinical areas, throughout more shifts, and/or with more workload placed



on fewer workers. *The key differentiating factor between Contingency and Crisis is the degree to which these strategies are collectively deployed. As such, a facility may also implement more strategies, or the same strategies to a greater degree, depending on whether that facility is in contingency or crisis levels of care.*

Appendix A provides additional strategies and examples of how Contingency and Crisis strategies can be used in a clinical setting to ameliorate staffing-related issues._



Category	Conventional	Contingency	Crisis
Staff and Supply Planning	<ul style="list-style-type: none">• 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 HCWs on institutional disaster response.• Educate HCWs on community, regional and state disaster plans and resources.• Develop facility plans addressing HCWs' personal support needs	Same as Conventional, with strategies executed to reflect changes under the Contingency Standard of Care	Same as Conventional, with strategies executed to reflect changes under the Crisis Standard of Care
HCW Roles: Focus Staff Time on Core Clinical Functions	Usual HCWs on units	<ul style="list-style-type: none">• Minimize meetings and relieve administrative responsibilities during the defined crisis.• Reduce documentation requirements for HCWs.• Cohort patients to conserve PPE and reduce staff PPE donning/doffing time and frequency.• Restrict elective appointments and procedures.• Adjust staff schedules to minimize fatigue and promote resiliency.• Cross-train and/or upskill HCWs from other units• Utilize temporary/external staffing resources	Same as Conventional, but deployed to a greater extent or more strategies used, plus: <ul style="list-style-type: none">• “Step up” HCWs that do not usually care for patients of current acuity/requirements



HCW Roles: Focus HCW Expertise on Core Clinical Needs/Alternative Staffing Models	No alternative staffing models	<ul style="list-style-type: none">• Alternative staffing models generally introduced as a complement to offset increased workload• HCWs with specific critical skills (e.g., ventilator, burn management) should concentrate on those skills; delegate specified job duties that can safely be performed by other clinical or non-clinical staff.• Have specialty HCWs oversee larger numbers of less-specialized HCWs and patients (e.g., using tiered staffing; team-based care; functional staffing; less experienced staff supervised by normal unit staff in a “pyramid” model)• Consistent with applicable surge plans, develop a process by which non-emergent and non-urgent laboratory, radiographic, and other studies and procedures can be postponed to the extent necessary to redeploy HCWs into emergency duties.	Same as Conventional, but deployed to a greater extent or more strategies used, but adequate patient care is dependent on alternative staffing models
Use Supplemental or Alternative Personnel to Minimize Changes to Standard of Care	Supplemental or alternative personnel not used	<ul style="list-style-type: none">• Secure external staff to meet clinical needs (e.g., burn or critical care nurses, Disaster Medical Assistance Team [DMAT], other health system or Federal sources if available).• Cross train and/or upskill HCWs including HCWs working in administrative positions (e.g., nurse managers).• Adjust HCW schedules (longer but less frequent shifts, etc.) if this will not result in skill/PPE compliance deterioration.• Augment telehealth or virtual visits and remote consultations, particularly to improve coordination among sites and staff.• If appropriate, use family members/lay volunteers to provide basic patient hygiene and feeding – releasing HCWs for other duties.	Same as Conventional, but deployed to a greater extent, more strategies used, and adequate patient care is dependent on supplemental or alternative personnel



		<ul style="list-style-type: none">• Use less trained HCWs with appropriate mentoring and just-in-time education (e.g., healthcare trainees or other health care workers, Medical Reserve Corps, retirees; physicians, physician assistants, and advance practice registered nurses from other specialties).• Use less trained HCWs to take over portions of skilled staff workload for which they have been trained.• Provide just-in-time training for specific skills.• Redeploy HCWs to emergency duties including within in-hospital sites or assisting public health at external clinics/screening/dispensing sites.• Use volunteer HCWs for direct patient care in supportive roles	
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Triggers – Indicators of Change in Status from Conventional to Contingency to Crisis

As opposed to situations where there is a shortage of supplies (ventilators, personal protective equipment, etc.), there is not a bright red line to mark an obvious change in status with regard to healthcare staff shortages. The gradual and progressive silent deterioration of working conditions due to staffing issues may result in adaptation to worsening conditions occurs until there is sudden, catastrophic failure in the system. We list here some manifestations of those worsening conditions, which when present in rare occurrences would indicate development of contingency status, but when multiple manifestations exist or are present consistently, would indicate progression to a crisis status. The extent of and tolerance to these manifestations will vary amongst institutions and may vary dynamically over time.

- Lack of hospital clinical staff due to resignations, illness, quarantine and Colorado-mandated increased hospital bed capacity resulting in:
 - Medical/surgical unit nurses having to work in intensive care units without usual training and mentoring.
 - New nursing graduates with limited patient care experience hired and put immediately in positions of patient care that exceed their level of training and experience.
 - Recalibration of admission criteria into acute or intensive care units or discharge criteria into acute or subacute care causing ICU-level patients to be treated on medical/surgical units where nurses have not been trained to care for that severity of illness.
 - Staffing and alternative care models moving staff-to-patient care loads to abnormally high levels and higher patient acuity loads.
 - Nurse-extenders (such as nursing aides) working beyond their normal level of skill, sometimes with only a single registered nurse on a medical/surgical unit to supervise multiple personnel.
 - Other staff reassignment to units or settings outside of their usual practice setting such as outpatient-based providers now supplying care on inpatient units.
 - ICU patients requiring dialysis often not receiving continuous dialysis (Continuous Renal Replacement Therapy – CRRT) which requires 1:1 nursing. If this 1:1 nursing is not possible due to staffing shortages, the patients may then instead receive less desirable intermittent dialysis alternative renal replacement therapies that may be less optimal or differ than standard pre-pandemic care. Additionally, in some situations these patients may also receive less attentive 1:2 level nursing care, a deviation from pre-pandemic standards.
 - Changes in frequency and/or duration of outpatient hemodialysis sessions of chronic renal insufficiency patients from 4 hours three times a week to 3 hours 3 times a week or 4 hours twice a week.
- Similar staffing issues in skilled nursing and long-term care facilities:
 - Reports of lack of resident/patient assistance in basic activities of daily living which includes personal hygiene, grooming, dressing, toileting, transferring, ambulating and eating.
 - Reports of lack of resident/patient assistance in instrumental activities of daily living (IADL) which reflect on a person's ability to thrive which includes companionship, mental support, communication with; families, supportive agencies, counselors, chaplains, and hospice and palliative care staff.
 - Medications doses being given late
 - Wound care treatment delays
 - Staff having to work prolonged shifts without breaks or staff relief.
 - Exclusion of visitors who would normally provide required caregiving for complex needs of disabled or demented patients.
- Impacts on Telemedicine:



- Due to increasing numbers of dying and chronically ill patients, palliative care physicians are needing to volunteer to provide peer-to-peer palliative care consultations to other care providers who normally do not provide palliative care. These remote consultations are outside the normal scope of palliative care practice since the patient cannot be examined and the medical record cannot be reviewed. These remote consultations may be within a healthcare system, but also may extend between healthcare systems.
- Due to healthcare system loading issues and transfer difficulties, peer-to-peer telemedicine consults are being provided for patients in other specialties when these patients would normally be transferred for specialized care.

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APPENDICES

APPENDIX A: Additional Suggestions for Health Care Entities, Facilities & Workforce

The following inventory was generated from SG#5 to describe current efforts by Colorado hospitals, long term care facilities, and community providers to mitigate workforce shortages and enhance patient flow and to provide best practices to help augment staffing flexibility and workforce support. This list is not intended to be exhaustive or prescriptive, but to prompt further solutions and serve as a resource for organizational decision-making.

Workforce Flexibility & Cross Training

- Maximize the utilization of available EMTs and Paramedics as authorized in [SB19-052](#) allowing EMTs and Paramedics to deliver care within their scope of practice under the supervision of an on-site physician, APRN, PA, or RN.
- Partner with schools to access students with competencies to enhance workforce.
 - Respiratory Therapy, Nursing, Physical Therapy, Medicine;
 - Examples: Externships, Nurse-Techs.
- Eliminate the burden of non-clinical demands on staff, (e.g. “Disaster or Crisis Charting Standards”, Scribes and Smart Technology) to maximize staff ability to provide clinical care.
 - Remote and aggregate monitoring; Positioning of IV drips/Ventilator adjustment platforms outside patient room;
 - Auto-connect and sync technology to charting systems, such as syncing ventilator changes directly to the electronic documentation patient record eliminating the step of making ventilator adjustments and then entering into patient record separately;
 - Increase remote monitoring and intervention capabilities to impact patient outcomes including reduction of ventilator days, PPE demands, and total length of stay.
 - Utilize quarantined skilled staff as remote monitors and available consultants to staff in clinical delivery settings.
- Cross training and “upskilling” of staff from less acute practice settings to critical care to create agility in the workforce, which may include, but is not limited to:
 - Certified Nurse Assistant “sitter” roles replaced with unlicensed patient safety attendants with rapid training.
 - Clinical students, EMTs, LPNs utilized on care teams
 - Retired workforce encouraged to re-engage in patient care
 - Clinical employees redeployed to serve as helping hands or on a care team; may be redeployed within a health system; or may be shared across health systems (similar to current PRN clinical employees)
 - Non-clinical employees redeployed to function in support roles (e.g. runners, unit clerks, stocking, screening, transport)
 - Clinical leaders assigned to care for patients and/or serve on a care team

Care Models and Patient Transfers

- Intensivists collaborate with hospitalists and triage patient management.
- Students and cross-trained staff partner with an experienced health care worker for ready consults (phone a friend).
 - Hospitalists and Intensivist collaborate and share patient workloads relying on hospitalists to care for the more stable critical care patients and freeing up the intensivist to respond to urgent/emergent patient care needs;
 - Physical therapist, EMT, Paramedic and dentist cross training to assist with routine respiratory care of patients in collaboration with licensed respiratory therapist;
 - Nursing student externs partnered with an experienced nurse;



- Outpatient and medical surgical nursing staff partnered with experienced critical care staff.
- Discussion of shared call or coverage of essential staff between hospital facilities.
- Skilled critical care resource nurses made available to triage and support critical procedures and/or emergency responses throughout hospital.
- Redeploy ambulatory care staff to more urgent and emergent care centers. Many of these individuals have been “furloughed” offering opportunity to support the delivery of care in ICUs.
- Augment telehealth or virtual visits and remote consultations to expand access to needed care and/or retain conventional standard of care
- Exploring methods of utilizing available licensed staff in remote or consultation support roles.
 - Deploy medical and licensed health care professionals to provide consultation for care management for staff in all care facilities; examples include redeployment of Certified Nurse Midwives, Certified Registered Nurse Anesthetists, Nurse Practitioners, and Physician Assistants.

Workforce Stamina and Resilience Support

- Steps to take away employee burdens while at work:
 - Provision of free meals, coffee, hairdressing services, auto care services, childcare;
 - Community support
 - Poster thank yous, sidewalk messaging;
 - Rather than bring food, donate to fund hospital/facility Food and Nutrition Services to keep that staff employed.
- Incentivize healthcare staff as much as possible rather than simply mandating.
- Destress and Employee Wellness Support Programs.
 - [CDPHE Support Resources Website](#)
 - [Supportive Resources for Colorado Health Care Workers](#)
 - [Denver Health Rise Program](#)
 - [Safe at Hopkins](#)
- Providing pre- and post-shift briefings to manage emotional wellbeing and fatigue. This could mitigate PTSD resulting from vicarious trauma factors such as fear, heightened anxiety as a result of being separated from family, concerns regarding lack of PPE and encountering aggressive patients.



APPENDIX B: Other GMAG Staffing-related Recommendations

SG#5 also made the following recommendations that are related to, but not part of, these CSC:

Recommendations for State Actions to Provide Continued Support for Workforce Protection, Workforce Expansion, Best Use of Existing Workforce, and Improvement in Hospital Throughput

- Direct DORA (Professions and Occupations Division) to ensure licensee protections under Crisis Standards of Care related to staffing inadequacies.
- Continue temporary licensing and certifications per Executive Orders and provide fast-track services responsive to urgent workforce or facility needs.
- Advocate to ensure ACLS, PALS, & BLS Certification deadlines are waived or extended for the duration of the state or national emergency (whichever is later).
- Consider additional publication of and additional funding resources for employee wellness, resilience, and crisis fatigue, including debriefing and post-pandemic recovery – See Appendix A for specific resources
- Support rapid expansion of non-licensed healthcare workforce through innovative training programs (Certified Nurse Assistants, EMTs). Partner with DORA and CDPHE to fast track training and certification.
- Activate the Colorado Medical Reserve Corps and Colorado National Guard for non-clinical positions (e.g. security, entry screening, testing and contact tracing, sitters, environmental/janitorial, courier/transport). Note that the CNG should not be activated for clinical positions, as this is likely to deprive hospitals of essential personnel.
- Streamline transfer and discharge criteria and acceptance policies.
- Suspend or scale back state regulatory surveys as much as possible during CSC period, as surveys often divert significant staff and leadership time away from patient care.
 - CDPHE should consider reducing or limiting regulatory survey burden by narrowing their focus to the complaint or delaying surveys until the surge subsides, and use their discretion to consider complaints on an individual basis and balance whether the complaint or the crisis should be prioritized while CSC are deployed.
 - Advocate with Centers for Medicare and Medicaid Services for the potential suspension of surveys throughout the duration that CSC are necessary.
 - This should not impact the ability of patients, families, or HCWs to file a complaint with CDPHE.



APPENDIX C: The Importance of Staffing to Overall Hospital Capacity

Importance of Monitoring Staffed Bed Capacity

The Agency for Healthcare Research and Quality (2005) Public Health Emergency Preparedness published work done in partnership with Denver Health describes standardized hospital bed definitions that can clarify staffed bed availability. The definitions described then remain relevant today for hospital systems, emergency responders, and public health policy decision makers in assuring a consistent approach to address real capacity for patients and how that impacts access to care and Crisis Standards of Care thresholds. Note that these definitions may differ from data inputs used in EMResource, which are detailed in Appendix D.

- **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.
- **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.
- **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.
- **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.

The number of staffed beds available changes from day to day as different numbers of nurses and other essential personnel (i.e., respiratory therapists) can change for a variety of reasons, and how beds or units are staffed can be very fluid. The availability or lack of staffing can constrain the total number of beds available for the care of patients. As such, hospitals are required to report twice daily on a number of the bed and staffing metrics described above – please see Appendix B: Current EMResource Data Collection Elements (12/3/2020) for a more thorough description of current hospital reporting requirements. State policymakers and hospitals track this data very closely to have an accurate picture of local, regional, and statewide capacity and potential risk areas.



APPENDIX D: Current EMResource Data Collection Elements (Updated 12/3/20)

Below are the data elements being collected from hospitals twice daily by CDPHE that pertain to COVID emergency response.

EM Resource Field	Definition
# Confirmed COVID-19	Number of patients currently hospitalized for confirmed COVID-19 (use “comment” box as needed).
# COVID-19 PUIs	Number of patients currently hospitalized for suspected COVID-19, but who have not received confirmed test results.
# COVID-19 Discharged	Number of patients hospitalized for confirmed COVID-19 who were discharged or transferred to a lower level of acuity due to improvement of health status in the last 24 hrs (Note: This field resets 24 hours after last update; use “comment” box as needed).
Total # of ICU Capable Beds	Total # of ICU capable beds on your hospital campus, including 1) all currently staffed beds and 2) all surge areas that could be equipped and staffed for use within 24 hours (exclude neonatal, use comment box as needed).
Total # of Staffed ICU Beds	Total number of ALL staffed ICU beds in hospital (exclude neonatal; use “comment” box as needed).
ICU Bed Availability (current)	Number of beds immediately available for ICU level care.
ICU Bed Shortage (anticipated)	Does your facility have/anticipate a ICU bed shortage (under current or surge conditions) in the next week (use “comment” box as needed)?
Total # of Acute Care Beds	Total number of ALL staffed acute care beds in hospital, including overflow and surge/expansion beds used for inpatients. Includes all ICU, NICU, Psych, etc. beds; excludes any outpatient beds (e.g. OBS beds; use “comment” box as needed).
Med/Surgical Bed Availability (current)	Number of beds immediately available for Medical/Surgical level care (Note: Medical/Surgical beds = Acute Care Beds - ICU Beds).
Med/Surgical Bed Shortage (anticipated)	Does your facility have/anticipate a Medical/Surgical bed shortage (under current or surge conditions) in the next week (Note: Medical/Surgical beds = Acute Care Beds - ICU Beds)?
Adult Critical Care Vents - Total	Total number of working CRITICAL CARE ventilators for adults on your premises (use “comment” box as needed).
Adult Critical Care Vents - In-use	Number of CRITICAL CARE ventilators for adults that are in use (use “comment” box as needed).
Adult Non-Critical Care Vents - Total	Total number of working NON-CRITICAL CARE ventilators for adults on your premises (use “comment” box as needed).
Adult Non-Critical Care Vents - In-use	Number of NON-CRITICAL CARE ventilators for adults that are in use (use “comment” box as needed).
Ped Critical Care Vents - Total	Total number of working CRITICAL CARE ventilators for Peds on your premises (do NOT double count any you reported for adults) (use “comment” box as needed).
Ped Critical Care Vents - In-use	Number of CRITICAL CARE ventilators for Peds that are in use (do NOT double count any you reported for adults) (use “comment” box as needed).
Ped Non-Critical Care Vents - Total	Total number of working NON-CRITICAL CARE ventilators for Peds on your premises (do NOT double count any you reported for adults) (use comment box as needed).
Ped Non-Critical Care Vents - In-use	Number of NON-CRITICAL CARE ventilators for Peds that are in use (do NOT double count any you reported for adults) (use comment box as needed).
Ventilator & Treatment	Does your facility have enough critical care meds to care for COVID patients



Medications	for the next 2 weeks? Includes those required for safe ventilation (e.g. paralytics, analgesics and sedatives) and others used in the care of these patients (e.g. bicarb, insulin, TPN, etc.) (Note: If 'no', use "comment" box as needed).
PPE	Considering your current standards of care, does your facility have enough PPE to meet demand for the next week? This includes N95s, reusable respiratory protection and associated filters, eye protection, gloves, gowns (NOTE: Choose the answer that BEST describes PPE use in your facility and the supply of PPE using those practices).
PPE (explain)	If "No" to previous ('PPE'), please explain the shortage type.
Staffing (anticipated)	Are you anticipating staffing shortages within the next week (use "comment" box as needed)?



APPENDIX E: References & Additional Resources

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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.

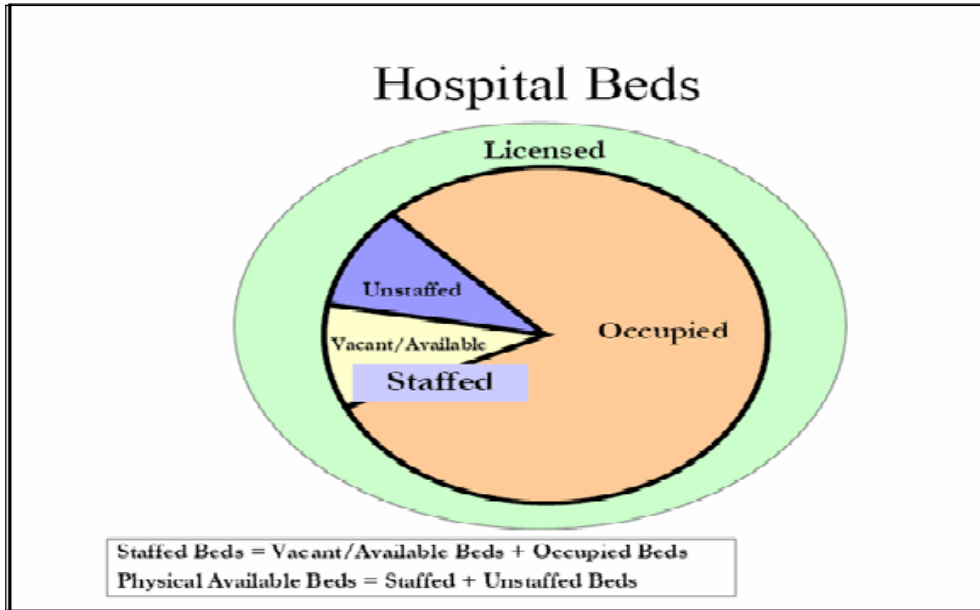


Figure 12: Licensed Hospital Beds (Colorado Department of Public Health and Environment, 2009, pp. 67)

- 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).