



Pediatric Crisis Standards of Care Template

Ethical Rational:

Utilize academy consultative report.

Definitions:

Crisis standards of care (CSC) refer to substantial changes in usual health care operations due to a pervasive or catastrophic disaster that necessitate rational utilization of scarce resources like space, personnel, and equipment to provide the best possible delivery of health care to the greatest number of patients. Pediatric specific CSC guidance may overlap with adult standards. Depending on the needs of the institution or jurisdiction, a pediatric specific document may be either independent or embedded within a more comprehensive general CSC document.

Triggers:

CSC may arise at any level of government or within regional or specific hospital or other health care settings based often on formally-declared emergencies or corresponding executive orders that change the legal and ethical landscapes to facilitate shifts in prevailing health care delivery.

Practical Considerations:

CSC should be considered only in circumstances when healthcare demands exceed capabilities (e.g., beds, equipment, or staffing) of a community or institution after all contingency level efforts have been implemented. These efforts may include expansion of facility capabilities beyond standard operations, lawful and permissive transfers of patients, supplementation of capabilities with

alternative resources and alternative care sites, and flexing of standard legal guidelines. Implementation of CSC guidance routinely is within the scope and authority of a governmental agency or a Healthcare facility incident command system. Engagement of subject matter experts, healthcare providers, or EMS personnel in the implementation process is appropriate and encouraged. Different CSC plans may coexist at multiple different levels (State, local or healthcare facility) and in different neighboring states, appropriately recognizing the variable resource constraints and specific procedures in each setting. Still, conceptual alignment of ethics rational, definitions, scope, triggers, and algorithms to the greatest extent possible is ideal, particularly in the context of resource-constrained tertiary pediatric capabilities.

Legal Considerations:

The National Academy of Medicine has specified a series of legal concerns underlying implementation of CSC that are relevant in any institution or community as espoused in its 2020 [rapid expert consultation](#) to ASPR re: COVID-19. These include concerns among health care workers and entities re: potential liability for key decisions impacting patients. General and specific liability protections for workers and entities are addressed in the Network for Public Health Law resource, [Legal Liability Protections for Emergency Medical/Public Health Responses](#), the [WRAP-EM Legal Resource Guide](#), and other online resources. An additional Network for Public Health Law resource, [Crisis Standards of Care: Legal Decision Factors](#), delineates lawfully-permitted factors from the unlawful in CSC planning.

Scope:

CSC standards may be implemented on an institutional, regional or state levels at the discretion of the appropriate level HICS or EOC incident command.

Pediatric Specific Guidance:

CSC implementation should focus on optimizing the best possible health care delivery to the most patients by prioritizing resources as follows:

- Delivery of care in lower level settings and with minimal resources wherever possible (examples include keeping patients in ward settings rather than transferred to intensive care units, utilization of alternative oxygen support

rather than ventilators, intentional delays in procedures, minimal necessary pharmaceuticals, or expanded nursing ratio care settings).

- Resource intensive care support and operative interventions to patients with appropriate consideration for anticipated short or long-term needs, and anticipated probability for long term recovery.

Practical implementation of these goals can be assisted with pre-determined guidelines for care delivery. Notwithstanding concerns over the potential for unintended disparate impacts of scoring systems among vulnerable populations, several models have been developed to implement CSC decisions in real-time. Many of these have not been validated well for children, but may be in place institutionally for adult patients, such as the SOFA score (see Appendix I). The most reliable of pediatric scores to assist with this process is the PELOD-2 (see Appendix I). Alternatively, each pediatric CSC plan may appropriately opt to define individual physiologic parameters as a guide (see Appendix II).

References:

1. Institute of Medicine 2012. *Crisis Standards of Care: A Systems Framework for Catastrophic Disaster Response: Volume 1: Introduction and CSC Framework*. Washington, DC: The National Academies Press.
<https://doi.org/10.17226/13351>.
2. National Academies of Sciences, Engineering, and Medicine. 2020. *Rapid Expert Consultation on Crisis Standards of Care for the COVID-19 Pandemic (March 28, 2020)*. Washington, DC: The National Academies Press.
<https://doi.org/10.17226/25765>.
3. Frank, Lori, Thomas W. Concannon, and Karishma Patel, *Health Care Resource Allocation Decisionmaking During a Pandemic*. Santa Monica, CA: RAND Corporation, 2020.
https://www.rand.org/pubs/research_reports/RRA326-1.html.

Appendix

- I. Scoring Systems
 - A. PELOD-2
 - i. Online Scoring Calculator
 - B. SOFA

- II. Regional Crisis Standards of Care Pediatric Annexes

- III. Pediatric Crisis Standards of Care Reference Table Template

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I. Scoring Systems

A. PELOD-2

Organ Dysfunctions and Variables ^a	Points by Severity Levels					
	0	1	2	3	4	6
Neurologic^b						
Glasgow Coma Score	≥ 11	5–10			3–4	
Pupillary reaction	Both reactive					Both fixed
Cardiovascular^c						
Lactatemia (mmol/L)	< 5.0	5.0–10.9			≥ 11.0	
Mean arterial pressure (mm Hg)						
0 to < 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
60–143 mo	≥ 65		49–64	36–48		≤ 35
≥ 144 mo	≥ 67		52–66	38–51		≤ 37
Renal						
Creatinine (μmol/L)						
0 to < 1 mo	≤ 69		≥ 70			
1–11 mo	≤ 22		≥ 23			
12–23 mo	≤ 34		≥ 35			
24–59 mo	≤ 50		≥ 51			
60–143 mo	≤ 58		≥ 59			
≥ 144 mo	≤ 92		≥ 93			
Respiratory^d						
Pao ₂ (mm Hg)/Fio ₂	≥ 61		≤ 60			
Paco ₂ (mm Hg)	≤ 58	59–94		≥ 95		
Invasive ventilation	No			Yes		
Hematologic						
WBC count (× 10 ⁹ /L)	> 2		≤ 2			
Platelets (× 10 ⁹ /L)	≥ 142	77–141	≤ 76			

All variables must be collected, but measurements can be done only if justified by the patient's clinical status. If a variable is not measured, it should be considered normal. If a variable is measured more than once in 24 hr, the worst value is used in calculating the score. Fio₂: fraction of inspired oxygen.

Neurologic dysfunction: Glasgow Coma Score: use the lowest value. If the patient is sedated, record the estimated Glasgow Coma Score before sedation. Assess only patients with known or suspected acute central nervous system disease. Pupillary reactions: nonreactive pupils must be > 3 mm. Do not assess after iatrogenic pupillary dilatation.

Cardiovascular dysfunction: Heart rate and mean arterial pressure: do not assess during crying or iatrogenic agitation.

Respiratory dysfunction: Pao₂: use arterial measurement only. Pao₂/Fio₂ ratio is considered normal in children with cyanotic heart disease. Paco₂ can be measured from arterial, capillary, or venous samples. Invasive ventilation: the use of mask ventilation is not considered invasive ventilation.

Logit (mortality) = -6.61 + 0.47 × PELOD-2 score.

Probability of death = 1 / (1 + exp [-logit(mortality)])

CRITICAL CARE MEDICINE

Leteurre, Stéphane; Duhamel, Alain; Salleron, Julia; Grandbastien, Bruno; Lacroix, Jacques; Leclerc, Francis; on behalf of the Groupe Francophone de Réanimation et d'Urgences Pédiatriques (GFRUP); Critical Care Medicine 41(7):1761-1773, July 2013. doi: 10.1097/CCM.0b013e31828a2bbd

From *Pediatric Critical Care Triage Algorithm* by Northwest Healthcare Response Network, 2020 (<https://nwhrn.org/wp-content/uploads/2021/04/Scarce-Resource-Management-and-Crisis-Standards-of-Care-December-2020.pdf>). In the public domain.

i. Online Scoring Calculator

European Society of Paediatric and Neonatal Intensive Care:

<https://espnice.org/Education/Professional-Resources/Paediatric-Logistic-Organ-Dysfunction-2-Score-Calculator>

B. SOFA

	Score				
	0	1	2	3	4
Respiratory system					
PaO ₂ /FiO ₂ (mmHg)	≥400	<400	<300	<200 with respiratory support	<100 with respiratory support
Hepatic system					
Bilirubin (mg/dL)	<1.2	1.2–1.9	2.0–5.9	6.0–11.9	>12.0
Cardiovascular system					
	MAP ≥70 mmHg	MAP <70 mmHg	Dopamine <5 or dobutamine (any dose) ^a	Dopamine 5.1–15 or epinephrine ≤0.1 or norepinephrine ≤0.1 ^a	Dopamine >15 or epinephrine >0.1 or norepinephrine >0.1 ^a
Coagulation					
Platelets ×10 ³ /μL	≥150	<150	<100	<50	<20
Central nervous system					
Glasgow coma scale	15	13–14	10–12	6–9	<6
Renal system					
Creatinine (mg/dL)	<1.2	1.2–1.9	2.0–3.4	3.5–4.9	>5.0
Urine output (mL/d)				<500	<200
<p>Notes: ^aAll catecholamine doses represent μg/kg/min. Organ dysfunction is identified as an increase in the SOFA score of ≥2 points. In patients with not known preexisting organ dysfunction, the baseline SOFA score is assumed to be zero. <i>Intensive Care Med.</i> The SOFA (Sepsis-related Organ Failure Assessment) score to describe organ dysfunction/failure. On behalf of the Working Group on Sepsis-Related Problems of the European Society of Intensive Care Medicine. 22(7), 1996, 707–710, Vincent JL, Moreno R, Takala J, et al. With permission of Springer.¹⁷</p> <p>Abbreviations: PaO₂, partial pressure of oxygen; FiO₂, fraction of inspired oxygen; MAP, mean arterial pressure.</p>					

Nunez Lopez, Omar & Cambiaso-Daniel, Janos & Branski, Ludwik & Norbury, William & Herndon, David. (2017). Predicting and managing sepsis in burn patients: Current perspectives. *Therapeutics and Clinical Risk Management*. Volume 13. 1107-1117. doi: 10.2147/TCRM.S119938.

II. Regional Crisis Standards of Care Pediatric Annexes

Resource	Source	Weblink
Scarce Resource Management & Crisis Standards of Care	Washington State Department of Health	https://nwahrn.org/wp-content/uploads/2021/04/Scarce-Resource-Management-and-Crisis-Standards-of-Care-December-2020.pdf
Arizona Crisis Standards of Care A Comprehensive and Compassionate Response	Arizona Department of Health	https://www.azdhs.gov/documents/preparedness/emergency-preparedness/response-plans/azcsc-plan.pdf
Patient Care Strategies For Scarce Resource Situations	Minnesota Department of Health	https://www.health.state.mn.us/communities/ep/surge/crisis/standards.pdf
Utah Crisis Standards of Care Guidelines	Utah Department of Health	https://health.utah.gov/wp-content/uploads/Final Utah Crisis Standards of Care 011719-1.pdf
Pediatric Annex for a Hospital Emergency Operations Plan	Oregon Health Authority	https://www.oregon.gov/oha/PH/PREPAREDNESS/PARTNERS/Documents/EOP-Annex-5.9.19.pdf

Pediatric Crisis Standards of Care Reference Table					
	Definition	Potential Triggers	Sample Activation Requirement	Institutional	Agency / Policy / Systems
Conventional	Baseline operations. Despite surge in demand, facilities are able to provide normal standards of care.	Moderate surge and anticipated potential difficulties.	None	Institute Hospital Incident Command Structure (HICS) or National Incident Management System (NIMS) early with anticipated need.	Consider pre-emptive activation of local incident command infrastructure prior to system surge.
Contingency	Surge plans enacted and required to maintain normal standards of care.	Staffed bed capacity or supply chain deficiencies resulting in remaining additional capacity estimated to be less than 5%.	Local Authorities / Facilities - Pediatric facilities should coordinate with the other hospitals in the area, and any area command infrastructure.	Options / Examples:	Options / Examples:

			<p>1. Identify regional pediatric SME to effectively coordinate with local agencies / healthcare systems - to appropriate load-balance i.e., who is best suited to be hospitalized at a specialty facility (generally as surge increases concentrate on making sure children with complex/congenital conditions receive pediatric specialty care and hospitalize older children at other facilities [preferably that already provide inpatient pediatric care, but also identify facilities that may offer pediatric surge that do not</p>	<p>1. Upstaffing with licensed and trained outside support (e.g., locums, travelers, per diem). Consider strategies from the National Academies of Medicine guidance: https://www.nap.edu/catalog/25890/rapid-expert-consultation-on-staffing-considerations-for-crisis-standards-of-care-for-the-covid-19-pandemic-july-28-2020 - it's important to compare current staffing contingencies at hospitals within the area (via the Pediatric Disaster Care Centers of Excellence, RDRHS or healthcare coalition, etc.) to ensure that there's as consistent level of care provided as possible.</p>	<p>1. Institutional load balancing: direct patient transports to like institutions with remaining capacity consistent with EMTALA requirements.</p>
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			<p>normally]) - initially, consider age >12 for hospitalization at non-specialty facilities, then age >8 as demand increases. Who will provide the input on the best destination for potential transfers to the referring facilities, and how will that be accomplished (deally coordinating that with a mechanism for same on the adult side of the referral equation)?</p>		
			<p>2. If the facility provides ECMO - how is the use and indications for ECMO in the area being coordinated? Is the facility willing to put young adults on ECMO? Can</p>	<p>2. Restricting elective procedures that are not time sensitive: cancelation of CHA tier 1 elective surgeries.</p>	<p>2. Activate telemedicine and outpatient resources to support acute care needs.</p>

			<p>other facilities provide ECMO for older children?</p> <p>Maximal use and honing indications for ECMO is critical to assure fair access and the best outcomes possible.</p>		
				<p>3. Reverse triage: discharge or ward downgrades wherever clinically safe and appropriate.</p>	<p>3. Alter standard EMS operations provided acceptable standards of care are maintained (i.e., 14-18 year old patients treated at adult or pediatric centers as capacity allows, limits on transport of non-urgent patients consistent with EMTALA requirements).</p>

				<p>4. Utilize HICS system in each facility early to maintain the institution in contingency status as long as possible. Activate critical care pediatric consultant (to the HICS) that can engage on decision-making for both inpatients at the facility when unusual situations are encountered (e.g. not enough dialysis machines) to avoid unnecessary triage decisions and also raise the specific resource issues to the facility incident command. This person should know how to engage ethics and administrative leaders when needed and ideally be available to provide consultation to referring providers or those having to provide pediatric care that do not normally do so.</p>	<p>4. Identify a regional pediatric SME that may serve in an advisory or liaison role. The pediatric SME ideally will have capability to coordinate with local agencies / healthcare systems - to facilitate appropriate load-balance across the healthcare system. Consider criteria for pediatrics that define children at the greatest need for pediatric specialty care (ie complex congenital conditions, children with special needs, neonates, etc.) Pediatric advisors may assist to identify facilities that may offer pediatric surge capacity that do not normally care for children. Consider tiered response to needs (i.e., 14 and older normally may be treated in adult facility, expands to 12 years old or greater than 40 kg</p>
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					as demand dictates). Analogous considerations should be considered for adult care in pediatric facilities (i.e., extending from the normal 18 year old limit up to 21 years old as needed).
				5. If the facility provides ECMO - how is the use and indications for ECMO in the area being coordinated? Is the facility willing to put young adults on ECMO? Can other facilities provide ECMO for older children? Maximal use and honing indications for ECMO is critical to assure fair access and the best outcomes possible.	

Crisis	Resource demands exceed supplies and capabilities. Unable to provide routine or contingency standards of care despite contingency surge efforts.	Staffed bed capacity or supply chain deficiencies allow no further capacity despite continued demand (i.e., no additional staffed beds or ventilators)	-Local or state emergency declarations. -Regional hospital system determination. -Internal hospital committee decisions.	Options / Examples:	Options / Examples:

				<p>1. Activate hospital ethics committee to serve in advisory role for the institutional HICS.</p>	<p>1. Expand staffing scope of care (i.e., expansion of floor nursing scope of practice, non-clinical personnel to assist with basic care needs, utilization of outpatient staff for inpatient needs; invitation to volunteer health providers vetted and ready to serve temporarily).</p>
				<p>2. Consider instituting resource triage algorithms (i.e., PELOD II scores). Alternate to scoring systems: ethics committee involvement in individual cases to advise on predetermined metrics to include issues of likelihood of survival from acute illness, expected resource requirements, expected length of time needing required resources, chronic illness with significant comorbidities.</p>	<p>2. Increasing standard nursing ratios, and empower facilities to implement team care models. Avoid specific approaches that may lead to unwarranted discrimination in the allocation of care on grounds of disability, age, or other protected factors.</p>

				3. Utilize non-maximal, acceptable resource requirements for each patient (i.e., step-down unit when normally in ICU, CPAP in place of ventilators).	3. Transfer or divert patients to lower level facilities that have remaining capacity consistent with EMTALA. These are level-balancing efforts with capacity being one of the priority consideration.
				4. Consider altering resource utilization devoted to palliative care, futile care, and extremely poor prognosis patients.	4. Establish alternate care sites (i.e., ESF8 resource mobilization), for focused care needs.
				5. Activate treatment teams models.	5. Temporary expansion of facility licensure capabilities (outpatient areas allowed to care for inpatient needs) consistent with legal allowances during declared emergencies or pursuant to routine licensure exceptions.
				6. Consider utilization of alternate areas of the facility for patient care (i.e., outpatient infusion areas converted to hospital beds).	6. Temporary expansion of licensure requirements for telehealth support (e.g., out-of-jurisdiction licensure

					reciprocity, agreeable Medicare/ Medicaid reimbursements).
				7. Activate unconventional staffing to augment licensed capabilities (outpatient providers mobilized to assist in critical care settings.) Include utilization of volunteers or non-clinical personnel to assist with basic patient care needs.	7. Expansion of reimbursement plans for alternate care sites, telemedicine, outpatient/home care models that collectively may decrease acute care needs.
				8. Expanded use of telehealth capability to increase outpatient service and prevent need for higher acuity care.	8. Expand reimbursement models for transfers and out of jurisdiction care. Change EMS standards to impact utilization of lower acuity care provided at high acuity facilities (ambulance diversion to lower level receiving centers, refusal to transport stable patients, limits on non-urgent medical transport programs, etc.)

				<p>9. Expand supply conservation efforts and establish MOUs with partner organizations for supply chain sharing models.</p>	<p>9. Utilization of supply chain safety net programs (i.e., ESF8 and Strategic National Stockpile where available).</p>
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II. Crisis Standards of Care: Legal Decision Factors

Crisis Standards of Care: Legal Decision Factors (as of Sept. 3, 2021)

Throughout the COVID-19 pandemic, health care providers have experienced series of patient surges and corresponding resource shortages leading to implementation of [crisis standards of care](#) (CSC). CSC is defined by the National Academy of Medicine (NAM) as a “substantial change in usual health care operations and the level of care it is possible to deliver” in emergencies. Avoiding CSC through advance, preventive measures is key. However, when critical decisions need to be made about allocations of care or services involving specific patients, health care providers must consider an array of medical, ethical, social, and legal factors. Profound confusion exists over which factors can – *and cannot* – be used legally to render CSC decisions. While specific legal bases for critical decisions directly impacting patient outcomes may vary across jurisdictions, this memo identifies (1) factors or criteria generally interpreted or viewed as “unlawful” for purposes of CSC decision-making; and (2) remaining lawful bases for which CSC decisions may be made.

1. Factors/Criteria Interpreted or Viewed as Unlawful for CSC Decisions Impacting Specific Patients:

- [Race/color](#)
- [Ethnicity](#)
- [National Origin](#)
- [Sex](#)
- [Gender](#)
- [Age](#)
- [Veteran Status](#)
- [Marital Status](#)
- [Religion/Exercise of Conscience](#)
- [Limited English Proficiency](#)
- [Long-term Mortality or Life Expectancy](#)
- [Assumptions of Perceived Health Status](#)
- [Disability - Physical or Mental](#)
- [Quality of Life](#)
- [Individual's Relative Worth](#)
- [Inequitable Clinical Assessment Scores](#)
- [Resource Intensity Due to Disability/Age](#)
- [Duration of Need Due to Disability/Age](#)
- [Income](#)
- [Ability to Pay](#)
- [Advanced Planning/Steering Decisions](#)
- [Categorical Exclusions](#)
- [Blanket Applications](#)
- [Stereotypes](#)

2. Factors/Criteria Which May Lawfully Be Used for CSC Decision-making Impacting Specific Patients:

- Specific Resource Limitations
- Current Medical/Public Health Information
- Individualized Patient Assessments
- Objective Medical Evidence
- Equitable Clinical Assessment Scores
- Short-term Survival
- Suitability of Available Resources
- Patient/Surrogate Consent and Choices
- Health Care Worker Status
- Reasonable Modifications to Assure Equal Access for Disabled or Aged Patients
- Appeals

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