

A MODEL APPROACH TO ALLOCATION OF SCARCE RESOURCES IN CRISIS CARE

Adapted with Oregon Crisis Care Guidance, 2018 | Version 5.1 | 2020.05.15

OVERVIEW. This is a model approach to the allocation of scarce resources in the setting of the COVID-19 pandemic if and when a surge of patients overwhelms capacity. What follows articulates *crisis standards of care*, including *triage decision-making*, for use in the COVID-19 pandemic. It was developed through an iterative and collaborative effort by clinicians, ethicists, and public health leaders based on the Oregon Crisis Care Guidance (and subsequent input from the Oregon Crisis Care Guidance Ethics Workgroup), Washington State Scarce Resource Management and Crisis Standards of Care, and National Academy of Medicine guidance. This model is intended to provide a consistent approach for local health care organizations to use in their communities if a crisis stage occurs.

Crisis capacity is defined as adaptive spaces, staff and supplies not consistent with usual standards of care but providing sufficiency of care. CONTINGENT and CRISIS capacity activation may constitute a significant adjustment to conventional standards of care. Relevant ethical principles including respect, fairness, duty to care, duty to steward resources, transparency, consistency, proportionality, and accountability are referenced in the foundational documents cited below.

GOAL OF RESOURCE ALLOCATION. The overarching goal of triage decision-making is *to maximize the number of lives saved*. That a person is less likely to survive may be the result of profound health inequities and systems that fail to provide the resources needed to those in greatest need; this implies a grave moral injustice. While it is impossible to erase the devastating health effects of pervasive structural inequalities in our society during triage decision-making, those who have historically suffered discrimination should not be discriminated against further, the marginalized should not be further marginalized, and the community should be accountable for holding to values of social solidarity, justice, and the common good.

CONTINGENT STAGE. Before moving from usual standards of care to crisis capacity activation, a contingent stage initiates measures to prepare for surge capacity. Many systems, while not yet overwhelmed, may be operating at this inflection point marked by bed census at or near capacity and critical care resources approaching capacity with an imminent surge expected. Surge capacity measures may include expanding telehealth, discharging patients not requiring acute inpatient care, preparing staff to serve in alternate duties, and deferring non-urgent surgeries. Collaboration between hospitals is essential in order to ensure that patients are transferred to facilities with available resources rather than resorting to allocation of limited critical care resources if it is not necessary.

CRISIS STAGE. A crisis stage is a state where systems are overwhelmed despite surge capacity measures. Instead of facilities operating in isolation, a shared decision in collaboration with the CMOs of community hospitals, county and state public health, and the Governor's Office as to when the community will enter CRISIS stage as one unified health system is recommended. Then, *teams** separate from the primary clinical care teams (to mitigate influences of implicit and explicit bias) would address scarce resource allocation (SRA) for critical care in collaboration with the incident command structure(s). Those operating within the SRA structure (i) should be guided by values of consistency, transparency, and compassion; (ii) engage with patients and loved ones in culturally-appropriate manners; and (iii) provide reasonable accommodations to individuals with disabilities.

* **Scarce Resource Allocation (SRA) team** (facility-specific) – considers a cross-institutional framework, guides transition into and implements CRISIS triage protocol, oversees operations and tertiary triage, considers appeals, mitigates moral distress

Membership could include team leader, logistics/operations, critical care, nursing, emergency department, ethics, diversity/equity/inclusion representative, infectious disease, palliative care, social work, and/or chaplain.

Some institutions may situate this team within existing command center structures.

* **Triage team** (person-specific) – functions under a SRA team to implement triage protocol by gathering clinical data, completing scoring, making triage decisions with priority scoring, directing clinical teams

Membership could include team leader, critical care, nursing, logistics/operations, and others.

[* The size and resources of a given facility will inform personnel decisions on these teams including practical considerations such as ensuring continuity across shift changes. Consideration should be given to reassigning those who are particularly vulnerable to COVID-19 from direct patient care to SRA and triage team roles. Ideally members of these teams would be trained in implicit bias and be reflective of the community being served.]

Each institution is to develop its own *triage team protocol* based on (1) survivability (prognosis for hospital- and near-term survival), and (2) a tie-breaker. Importantly, to protect against discrimination, the triage team protocol would **NOT** be based on morally or scientifically irrelevant considerations such as socio-economic status, race/ethnicity, gender identity, sexual orientation, national origin, immigration status, faith orientation, parental status, ability to pay, insurance coverage, or disability, nor based solely on age; instead, the best available medical information will be used to assess the potential to benefit from scarce resources in terms of likelihood of survival. Quality of life judgments have no basis in prognostic assessment, which should otherwise be based on the best available, objective medical evidence of overall physiological profile (i.e., not diagnosis alone). Triage teams should not reallocate ventilators for patients dependent on mechanical ventilation at baseline due to an underlying health state. The scoring system is detailed further in the **COVID-19 Pandemic: Model Crisis Triage Tool** (next page), which is intended to assist triage teams (as an example) in using clinical data to inform an allocation decision on the basis of survivability. (An example flowsheet to aid decision-making is also included.) An objective assessment that a given patient has a very low likelihood of survival even with critical care may result in admission to a more appropriate care setting which could include the provision of palliative care if appropriate while, for other patients who have a better chance of survival, the opposite may result in the initiation and continuation of critical care where resources permit.

ALIGNMENT WITH PATIENT PREFERENCES. Goals of care conversations should start immediately, carefully outlining likely ICU scenarios with all patients with significant comorbidities such as diabetes, heart disease, and chronic kidney disease discussing likely long-term ventilator requirements and prognosis.

REFERENCES

1. NAM/IOM. 2012. *Crisis standards of care: A systems framework for catastrophic disaster response*.
2. Oregon Crisis Care Guidance. 2018. www.theoma.org/crisiscare.
3. WA State Dept of Health / NW Healthcare Response Network. 2020. *Scarce Resource Mgmt & Crisis Standards of Care*.
4. VITALtalk. 2020. COVID-Ready Communication Skills, www.vitaltalk.org/guides/covid-19-communication-skills/.
5. While the primary source documents for this approach are the Oregon Crisis Care Guidance and the NW Health Care Response Network / Washington State Dept. of Health materials, additional insight was found in D. White and B. Lo, "A Framework for Rationing Ventilators and Critical Care Beds During the COVID-19 Pandemic," *JAMA*, March 27, 2020. See the updated model policy by the authors [here](#).

COVID-19 Pandemic: Model Crisis Triage Tool

Adapted with Oregon Crisis Care Guidance

For use by local triage teams only during a surge when crisis standards of care apply. Intended to inform community crisis standards of care for triage decision-making. This tool is not meant to replace clinical judgment, but rather to promote individualized assessments of prognosis based on overall physiological profile given best available, objective medical evidence.

STEP 1: Screen all patients with same criteria

All patients are eligible to receive critical care based on likelihood of survival and a priority assignment based on potential to benefit from critical care. No one will be categorically excluded due to any underlying condition or demographics.

Determine patient's wishes regarding maximizing quality versus quantity of life; review **advance care planning** materials (reliable patient preferences) if available.

Do expressed preferences or reliable documentation align with critical care?

YES → Move to Step 2

NO → Consider transition to comfort care / hospice, if clinically appropriate

STEP 2: Candidacy for Critical Care in Crisis

Assess patients with the same clinical ICU admission criteria

A) Patients must have at least ONE of the following inclusion criteria:

- **Requires ventilatory support** (invasive or non-invasive)
 - > Clinical evidence of impending respiratory failure
 - Refractory hypoxemia (SpO₂ < 90% on FiO₂ > 0.85)
 - Respiratory acidosis (pH < 7.2)
 - > Inability to protect or maintain airway
- **Hypotension** (SBP <90) secondary to either an acute medical or trauma condition, with **clinical evidence of shock** refractory to volume resuscitation that cannot be managed outside of a critical care setting
- **High risk of preventable death** from other causes: patient expected to benefit substantially from timely critical care services. E.g.: hemodynamically unstable, reversible arrhythmia; diabetic ketoacidosis; status epilepticus; life-threatening illness from toxins or sepsis; hypoglycemia; or illness of similar severity

B) Will the patient benefit from critical care?

- **Prognosis for hospital survival:** degree of organ dysfunction ideally as measured or informed by, for example, the mSOFA, SOFA, or age-appropriate prognostic tool (e.g., PELOD-2 for children; SNAPPE-II for full term neonates; and NICHD-OT for preterm neonates); also consider:
 - > Cardiac arrest if recurrent, due to blunt trauma, initial asystole, or no ROSC after initial interventions
 - > Severe acute trauma (e.g., non-survivable head injury, severe burns)
- **Prognosis for near-term survival:** consideration to current epidemiology, underlying illness(es) / comorbidities, age, and effect on life-expectancy should guide initial and subsequent assessment of prognosis based upon overall physiological profile
- **Response to current treatment**

C) Determine a triage score (to be considered for prioritization in Step 3). See table to right.

TRIAGE FOR CRITICAL CARE SCORING GUIDE (EXAMPLE)

Points assigned according to patient's hospital survival prognosis (score 1 to 4 points) and near-term survival prognosis.

These points are then added together to produce a baseline priority score, which ranges 1 to 8 points. Lower scores indicates higher likelihood to benefit from critical care.

Lowest combined scores receive highest priority.

Triage scoring and decisions are not permanent; re-evaluation may change score

Prognosis for Hospital Survival*		Prognosis for Near-term Survival	
mSOFA < 6 or PELOD-2 < 12 or NICHD-OT, 76 - 100% pred. surv. or SNAPPE-II 0-59	1 pt		...
mSOFA 6-9 or PELOD-2 12-13 or NICHD-OT, 56-75% pred. surv. or SNAPPE-II 60-69	2 pts	Death expected within 5 years despite successful outcome for acute illness	2 pts
mSOFA 10-12 or PELOD-2 14 - 16 or NICHD-OT, 26 - 55% pred. surv. or SNAPPE-II 70-79	3 pts		...
mSOFA > 12 or PELOD-2 > 16 or NICHD-OT, 0 - 25% pred. surv. or SNAPPE-II ≥ 80	4 pts	Death expected within 1 year despite successful outcome for acute illness	4 pts

* When a scoring system is utilized to assess prognosis for hospital survival, scores should be calculated in a clinically appropriate manner with due attention to and correction for notable limitations such as, where the Glasgow Coma Scale is used, how these scores might be inaccurate without considering a patient's communication abilities at baseline.

Is the patient a candidate for critical care? What is the triage score?

YES → Patient meets ICU admission criteria, move to Step 3

NO → Admit to floor → Consider transition to comfort care if clinically appropriate

STEP 3: Capacity & Allocation of Critical Care Resources

A) Are critical care resources available for the patient(s)?

- Review existing resource availability from the command center.

B) **Allocation & reallocation of critical care:** Pathway depends on whether 2 (or more) patients are candidates for critical at presentation or re-evaluation.

- 1) Evaluate or re-evaluate all patients relative to items in Step 2 above.
 - > **Prioritization:** Patients with a significantly **lower** score will get priority.
- 2) Consider the **scope and magnitude of resources needed** (excluding cost) to care for the patient compared to the scarcity of those resources (including particularly high resource treatments like ECMO, etc.).
- 3) In case of a priority tie (equipoise), options include applying in the following order:
 - > **Life-Cycle Principle:** prioritize patients to maximize life-years saved;
 - > **Randomization:** if necessary, randomize patients with a valid, blinded tool.

A. Are critical care resources available for the patient?

B. Determine which pathway is appropriate for which patient.

For purposes of this triage tool, there are 2 general pathways: (i) immediate ICU pathway and (ii) pending ICU pathway.

- (i) **Immediate ICU Pathway:** If there are available critical care resources, **transfer to ICU** as soon as possible for trial of intensive care.
If there are no critical care resources available, then determine whether there is a compelling reason to re-allocate critical care resources based on re-evaluation of other patients (Step 4 #1 below).
- (ii) **Pending ICU Pathway:** If there is NOT a compelling reason to reallocate, or if one patient has higher priority than another but both are candidates for critical care, **admit the lower priority patient to the floor and initiate temporizing measures**, place patient on ICU waitlist.

STEP 4: Continuous Monitoring & Re-evaluation

Triage decision-making occurs only during a surge when need outstrips capacity and there is no option for transfer. The following steps should be taken by a Triage Team on a predetermined schedule and in coordination with local public health officials.

1. Monitor patients in ICU and on ICU waitlist(s) (e.g., daily) for any relevant changes (e.g., improving, unchanged, or worsening). Based on re-evaluation, adjust treatment pathways as needed commensurate with needs of the community. *If there is a compelling reason, transfer to ICU and de-escalate treatment for the other patient who was in ICU. De-escalation may mean: (1) admit to the floor and initiate temporizing measures, place patient on ICU waitlist; or (2) admit to the floor and consider transition to comfort care / hospice if clinically appropriate.*
2. Assess any new epidemiological and prognostic data for COVID-19.
3. Escalate process issues to the command center or appropriate body.
4. Facilitate an appeals process for cases when a triage decision is in dispute.
5. Track triage decision-making for continuous quality improvement efforts.

COVID-19 Pandemic: Model Crisis Triage Algorithm

STEP 1: Screen all patients with same criteria

Review POLST, Advance Directive, and confirm treatment preferences

Critical care fit preferences?

No

Decline critical care; consider transition to comfort care/hospice

STEP 2: Candidacy for critical care

* Requires invasive mechanical ventilation
* Requires active resuscitation secondary to shock
* High risk of decompensation where timely critical care will make a difference

No

Decline critical care;
Admit to more appropriate care setting;
May consider transition to comfort care/hospice

Yes

Candidate for critical care?

Patient must satisfy at least 1 of these criteria

Yes

Resource limitation?

No

Admit to critical care

Yes

Evaluate prognosis for hospital- and near-term survival

Prognosis for Hospital Survival

Prognosis for Near-term Survival

mSOFA < 6 or
PELOD-2 <12 or
NICH-OT, 76 - 100% pred. surv. or
SNAPPE-II 0-59

1 pt

...

mSOFA 6-9 or
PELOD-2 12-13 or
NICH-OT, 56-75% pred. surv. or
SNAPPE-II 60-69

2 pts

Death expected within 5 years despite successful outcome for acute illness

2 pts

mSOFA 10-12 or
PELOD-2 14 - 16 or
NICH-OT, 26 - 55% pred. surv. or
SNAPPE-II 70-79

3 pts

...

mSOFA >12 or
PELOD-2 <16 or
NICH-OT, 0 - 25% pred. surv. or
SNAPPE-II ≥80

4 pts

Death expected within 1 year despite successful outcome for acute illness

4 pts

TOTAL SCORE:

Deliver score to Triage Team

STEP 3: Capacity & Allocation of Critical Care Resources

Apply life-cycle principle as first tie-breaker

Priority tie?

No

Allocate admission based on priority order (lowest points = highest priority) for total number of patients with available resources

Tie broken?

Yes

Admit higher priority patients for trial of critical care

Admit lower priority patients to ward, pending ICU allocation when available

Randomization of patients

No

STEP 4: Continuous Monitoring & Re-evaluation

Re-evaluate or as resources become available