PEDIATRIC Critical Care Triage Algorithm

Crisis Standards of Care

April 2020

NON-DISCRIMINATION COMMITMENT:

In applying this Crisis Standards of Care Pediatric Critical Care Triage Algorithm, health programs or activities that receive federal financial assistance agree with Section 1557 of the Affordable Care Act and Section 504 of the Rehabilitation Act which “prohibit discrimination on the basis of race, color, national origin, disability, age, sex, and exercise of conscience and religion in HHS-funded programs.”¹ The federal Office of Civil Rights has issued recent guidance that emphasizes that “persons with disabilities should not be denied medical care on the basis of stereotypes, assessments of quality of life, or judgments about a person’s relative ‘worth’ based on the presence or absence of disabilities. Decisions by health programs or activities that receive federal financial assistance concerning whether an individual is a candidate for treatment should be based on an individualized assessment of the patient based on the best available objective medical evidence.”²

1. 45 C.F.R. Part 92
Assumptions for use:

1. Health Officer has declared a crisis situation requiring scarce resource management and crisis standards of care, where crisis standards of care is defined 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 or catastrophic disaster”.¹

2. Healthcare systems are overwhelmed despite maximizing all possible surge and mitigation strategies impacting the space and/or staff and/or supplies needed to deliver usual levels of care.

Ethical Framework

Washington State has adopted and will use the ethical framework developed by the National Academy of Medicine, which stresses the importance of an ethically grounded system to guide decision-making in a crisis standards of care situation. All decisions and communications will be based on the ethical principles below. The National Academy of Medicine defines these ethical principles as:

- **Fairness** – Standards that are, to the highest degree possible, recognized as fair by those affected by them — including the members of affected communities, practitioners, and provider organizations, evidence based and responsive to specific needs of individuals and the population.

- **Duty to care** – Standards are focused on the duty of healthcare professionals to care for patients in need of medical care.

- **Duty to steward resources** – healthcare institutions and public health officials have a duty to steward scarce resources, reflecting the utilitarian goal of saving the greatest possible number of lives.

- **Transparency** – in design decision making, and information sharing.

- **Consistency** – in application across populations and among individuals regardless of their human condition (e.g. race, age disability, ethnicity, ability to pay, socioeconomic status, preexisting health conditions, social worth, perceived obstacles to treatment, past use of resources).

- **Proportionality** – public and individual requirements must be commensurate with the scale of the emergency and degree of scarce resources.

- **Accountability** – of individual decisions and implementation standards, and of governments for ensuring appropriate protections and just allocation of available resources.²

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Crisis Standards of Care

Updated Version: April 2020

STEP 1: Screen Patient for ICU Care after reviewing goals of care with patient and family.

STEP 2: A. Does patient meet ICU inclusion criteria? and B. Will patient benefit from ICU care?

STEP 3: ICU Resource available?

STEP 4: Compelling reason for reallocation of resource?

STEP 5: Add patient to ICU waiting list

STEP 6 ADMIT TO ICU

Data Collection
1. Expected duration of need
2. Prognosis
3. Response to treatment
4. PELOD

Worsening: Consider discharge from critical care, provide appropriate palliative care.

Unchanging: Consider continued ICU care or consider moving to floor with oxygen or NIPPV (as appropriate). Reassess daily to determine continued need for hospitalization.

Improving: Consider continued ICU care. If extubated with no significant organ failure, transfer to floor and reassess daily to determine continued need for hospitalization.
STEP 1: Screen Pediatric Patients for ICU care During Scarce Resources

Proceed to the following after reviewing goals of care with patient and family (e.g. limited code status). The goals of care should reflect the best interest of the patient.

For the following conditions consider available staffing and resources. If resources are inadequate, consider transferring the following patients to out-patient or palliative care with appropriate resources and support as can be provided.

1. Pre-existing or persistent encephalopathy, coma or vegetative state
2. Severe acute trauma (e.g. non-survivable head injury)
3. Severe burns with Low Survival burn scores based on the Triage Decision for Burn Victims table (See Table A). See Burn Scarce Resource Card for management of critical burn patient outside of a Burn Center.
4. Significant underlying disease process that predicts poor survival given the current circumstances which make crisis capacity triage necessary. *

*Examples of underlying diseases that predict poor survival, despite standard treatment, include but are not limited to:
  •Known severe chromosomal abnormalities with poor prognosis
  •Known severe metabolic, neuromuscular, cardiac, oncologic or pulmonary disease with poor prognosis
  •Extreme prematurity at the limits of viability
STEP 2: Determine if patient meets ICU Inclusion Criteria

2A: Patients must have at least one of the following INCLUSION CRITERIA:

1. Requires ventilatory support, either 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
2. Hypotension (see table A) or clinical evidence of shock (defined as an altered level of consciousness, decreased urine output, or other evidence of end stage organ failure) refractory to volume resuscitation secondary to either an acute medical or trauma condition that cannot be managed in a non-ICU setting.

2B: To determine critical care resource allocation the following should be considered:
   - Expected duration of need of critical care resource
   - Prognosis for survival based on medical assessment under current epidemiology and relevant comorbid conditions that impact survival. * Co-morbidities that do not affect prognosis will not be considered.
   - Response to current treatment
   - Degree of Organ Dysfunction as measured by the Pediatric Logistic Organ Dysfunction (PELOD 2) score. (Table C) – Please see Step 6 regarding use of scoring systems.

*Examples of underlying diseases that predict poor survival, despite standard treatment, include but are not limited to:
   - Known severe chromosomal abnormalities with poor prognosis
   - Known severe metabolic, neuromuscular, cardiac, oncologic or pulmonary disease with poor prognosis
   - Extreme prematurity at the limits of viability

STEP 3: Determine if patient meets ICU Inclusion Criteria

2A: Patients must have at least one of the following INCLUSION CRITERIA:

1. Requires ventilatory support, either 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
2. Hypotension (see table A) or clinical evidence of shock (defined as an altered level of consciousness, decreased urine output, or other evidence of end stage organ failure) refractory to volume resuscitation secondary to either an acute medical or trauma condition that cannot be managed in a non-ICU setting.

2B: To determine critical care resource allocation the following should be considered:
   - Expected duration of need of critical care resource
   - Prognosis for survival based on medical assessment under current epidemiology and relevant comorbid conditions that impact survival. * Co-morbidities that do not affect prognosis will not be considered.
   - Response to current treatment
   - Degree of Organ Dysfunction as measured by the Pediatric Logistic Organ Dysfunction (PELOD 2) score. (Table C) – Please see Step 6 regarding use of scoring systems.

*Examples of underlying diseases that predict poor survival, despite standard treatment, include but are not limited to:
   - Known severe chromosomal abnormalities with poor prognosis
   - Known severe metabolic, neuromuscular, cardiac, oncologic or pulmonary disease with poor prognosis
   - Extreme prematurity at the limits of viability

STEP 4: Assess for re-allocation of Critical Care Resource

To determine critical care resource allocation, the following should be considered:

- Expected duration of need of critical care resource
- Prognosis for survival based on medical assessment under current epidemiology and relevant comorbid conditions that impact survival. * Co-morbidities that do not affect prognosis will not be considered.
- Response to current treatment
- Degree of Organ Dysfunction as measured by the Pediatric Logistic Organ Dysfunction (PELOD 2) score. (Table C) – Please see Step 6 regarding use of scoring systems.

*Examples of underlying diseases that predict poor survival, despite standard treatment, include but are not limited to:
   - Known severe chromosomal abnormalities with poor prognosis
   - Known severe metabolic, neuromuscular, cardiac, oncologic or pulmonary disease with poor prognosis
   - Extreme prematurity at the limits of viability

STEP 5: Critical care waiting list

If a patient meets ICU inclusion criteria and resources are not available, patient will be placed on an ICU waiting list. As resources become available their clinical situation will be re-assessed and they will be re-triaged based on criteria outlined in Step 6. If a clear distinction cannot be made between patients of similar triage priority, the resource will be distributed as follows: 1) to the patient already utilizing the scarce ICU resource or 2) by a randomized process.
STEP 6: Admit to ICU

Patient data collection outlined on Step 6 of the Algorithm will be continuous and ongoing. It is recommended that every 24 hours of a patient’s ICU stay, their clinical condition will be reviewed and they will be determined to be “Improving”, “Unchanged” or “Worsening”. This determination must not only take into account data points as outlined in Step 6 but must also include updated epidemiology, critical care resource availability and census demands.

Pediatric prognostic scoring systems currently available (e.g. PELOD2) are unable to accurately predict patient outcomes and thus should not be used as a sole indicator of prognosis especially in a disaster situation. When considering critical care resource allocation in a crisis, it is recommended that decisions be made by a Triage Team. Decisions should be made based on best clinical judgment with full knowledge of regional resource availability. (Ped Crit Care 2011)

Other Pediatric Considerations

All patients receiving critical care before the onset of crisis standards will be re-assessed based on the same criteria as all incoming critical care patients. The same Data as outlined in Step 2 should be obtained and resources re-allocated if needed dependent on the Triage Team assessment and decisions.

The use of ECMO should be decided on an individual basis by the PICU and/or NICU attending, nursing supervisor and ECMO representative based on prognosis, suspected duration of ECMO, availability of staff and other resources.

<table>
<thead>
<tr>
<th>Percent TBSA burn size</th>
<th>0-9</th>
<th>10-19</th>
<th>20-29</th>
<th>30-39</th>
<th>40-49</th>
<th>50-59</th>
<th>60-69</th>
<th>70-79</th>
<th>80-89</th>
<th>≥ 90</th>
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<tr>
<td>0-1.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td>2-4</td>
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Table B
Table C. PELOD2 Scoring System

<table>
<thead>
<tr>
<th>Organ Dysfunctions and Variables</th>
<th>Points by Severity Levels</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Neurologic</td>
<td></td>
</tr>
<tr>
<td>Glasgow Coma Score</td>
<td>≥ 11</td>
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<tr>
<td>Pupillary reaction</td>
<td>Both reactive</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td></td>
</tr>
<tr>
<td>Lactatemia (mmol/L)</td>
<td>&lt; 5.0</td>
</tr>
<tr>
<td>Mean arterial pressure (mm Hg)</td>
<td></td>
</tr>
<tr>
<td>0 to &lt; 1 mo</td>
<td>≥ 46</td>
</tr>
<tr>
<td>1–11 mo</td>
<td>≥ 55</td>
</tr>
<tr>
<td>12–23 mo</td>
<td>≥ 60</td>
</tr>
<tr>
<td>24–59 mo</td>
<td>≥ 62</td>
</tr>
<tr>
<td>60–143 mo</td>
<td>≥ 65</td>
</tr>
<tr>
<td>≥ 144 mo</td>
<td>≥ 67</td>
</tr>
<tr>
<td>Renal</td>
<td></td>
</tr>
<tr>
<td>Creatinine (µmol/L)</td>
<td></td>
</tr>
<tr>
<td>0 to &lt; 1 mo</td>
<td>≤ 69</td>
</tr>
<tr>
<td>1–11 mo</td>
<td>≤ 22</td>
</tr>
<tr>
<td>12–23 mo</td>
<td>≤ 34</td>
</tr>
<tr>
<td>24–59 mo</td>
<td>≤ 50</td>
</tr>
<tr>
<td>60–143 mo</td>
<td>≤ 58</td>
</tr>
<tr>
<td>≥ 144 mo</td>
<td>≤ 92</td>
</tr>
<tr>
<td>Respiratory</td>
<td></td>
</tr>
<tr>
<td>( \frac{F_{\text{Pa}}O_2}{Fi_{\text{O}}2} )</td>
<td>≥ 61</td>
</tr>
<tr>
<td>( P_{\text{aco}}_2 ) (mm Hg)</td>
<td></td>
</tr>
<tr>
<td>Invasive ventilation</td>
<td>No</td>
</tr>
<tr>
<td>Hematologic</td>
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<tr>
<td>WBC count (× 10^9/L)</td>
<td>≥ 2</td>
</tr>
<tr>
<td>Platelets (× 10^9/L)</td>
<td>≥ 142</td>
</tr>
</tbody>
</table>

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1. Crisis Capacity: Adaptive spaces, staff and supplies are not consistent with usual standards of care, but provide sufficiency 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)

2. ECC Guidelines 2010, Circulation 2010;122 Suppl3:S876-S908

3. Leteurtre, 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

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