**Table 1. High Risk Conditions**

- Malignancy
- Sickle Cell Disease and other patients with asplenia
- Bone marrow transplant
- Central or indwelling line/catheter
- Solid organ transplant
- Severe mental retardation/cerebral palsy
- Immunodeficiency, immunocompromised or immunosuppression
- Urogenital abnormalities (i.e. spina bifida)

**Table 2. PALS Adjusted Vital Signs for Septic Shock (7,8)**

<table>
<thead>
<tr>
<th>Age</th>
<th>Heart Rate</th>
<th>Resp Rate</th>
<th>Systolic BP</th>
<th>Temp (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0d - 1m</td>
<td>&gt; 205</td>
<td>&gt; 60</td>
<td>&lt; 60</td>
<td>&lt;36 or &gt;38</td>
</tr>
<tr>
<td>&gt; 1m - 3m</td>
<td>&gt; 205</td>
<td>&gt; 60</td>
<td>&lt; 70</td>
<td>&lt;36 or &gt;38</td>
</tr>
<tr>
<td>&gt; 3m - 1y</td>
<td>&gt; 190</td>
<td>&gt; 60</td>
<td>&lt; 70</td>
<td>&lt;36 or &gt;38.5</td>
</tr>
<tr>
<td>&gt; 1y - 2y</td>
<td>&gt; 190</td>
<td>&gt; 40</td>
<td>&lt; 70 + (age in yr x 2)</td>
<td>&lt;36 or &gt;38.5</td>
</tr>
<tr>
<td>&gt; 2y - 4y</td>
<td>&gt; 140</td>
<td>&gt; 40</td>
<td>&lt; 70 + (age in yr x 2)</td>
<td>&lt;36 or &gt;38.5</td>
</tr>
<tr>
<td>&gt; 4y - 6y</td>
<td>&gt; 140</td>
<td>&gt; 34</td>
<td>&lt; 70 + (age in yr x 2)</td>
<td>&lt;36 or &gt;38.5</td>
</tr>
<tr>
<td>&gt; 6y - 10y</td>
<td>&gt; 140</td>
<td>&gt; 30</td>
<td>&lt; 70 + (age in yr x 2)</td>
<td>&lt;36 or &gt;38.5</td>
</tr>
<tr>
<td>&gt; 10y - 13y</td>
<td>&gt; 100</td>
<td>&gt; 30</td>
<td>&lt; 90</td>
<td>&lt;36 or &gt;38.5</td>
</tr>
<tr>
<td>&gt; 13y</td>
<td>&gt; 100</td>
<td>&gt; 16</td>
<td>&lt; 90</td>
<td>&lt;36 or &gt;38.5</td>
</tr>
</tbody>
</table>

**Table 3. Signs and Symptoms of Shock (2,9)**

<table>
<thead>
<tr>
<th></th>
<th>Cold Shock</th>
<th>Warm Shock</th>
<th>Non-specific</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Peripheral Puls</strong></td>
<td>Decreased or weak</td>
<td>Bounding</td>
<td></td>
</tr>
<tr>
<td><strong>Capillary refill</strong></td>
<td>≥3 sec</td>
<td>Flash (&lt;1 sec)</td>
<td></td>
</tr>
<tr>
<td><strong>Skin</strong></td>
<td>Mottled, cool</td>
<td>Flushed, ruddy, erythoderma (other than face)</td>
<td>Petechiae below the nipple, any purpura</td>
</tr>
<tr>
<td><strong>Mental status</strong></td>
<td></td>
<td>Decreased, irritability, confusion</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>inappropriate crying or drowsiness,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>poor interaction with parents,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>lethargy, diminished arousability,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>obtunded</td>
<td></td>
</tr>
</tbody>
</table>

*↑ HR followed by ↓ HR with BP changes will be noted as shock becomes uncompensated.

**Exclusion Criteria:**
- Trauma
- Neonates (0-28 days old)
- Pregnancy
- Age >18 years

**Differential Diagnosis:**
- Anaphylaxis
- Hypovolemia
- Urinary tract infection
- Fever without localizing symptoms
- Central line associated blood stream infection
- Congestive heart failure
- Neurogenic shock
- Sepsis
- Pneumonia
- Meningitis
**Septic Shock in Neonates**[^10-11]

The signs of septic shock in the neonate are non-specific including respiratory distress and poor perfusion, tachycardia, temperature instability, inadequate feeding, poor tone, pale color, tachypnea, and/or diarrhea. A maternal history of chorioamnionitis, prolonged rupture of membranes, or herpes simplex virus should be assessed. Differential diagnoses for the newborn with suspected septic shock are congenital heart disease (CHD), inborn errors of metabolism, disseminated viral sepsis and hypoglycemia. If the neonate has risk factors for HSV, CSF pleocytosis, appears ill, and/or has a persistent fever with negative bacterial cultures greater than or equal to 48 hours a HSV PCR should be completed. If the patient is presenting from home or CHD is suspected, initial evaluation should occur in the CVICU. Initial evaluation of the neonate with septic shock is similar to that of the pediatric patient except for the addition of a cardiac echocardiogram and a serum ammonia level.

Goal-directed treatment should be initiated with the additional therapeutic end points of oxygen saturations > 95%, less than 5% differential in preductal and postductal saturations, and absence of right-to-left shunting. Vascular access should be established and 10% dextrose containing fluid administered at a maintenance rate. An umbilical venous catheter is the preferred vascular access in neonates with suspected septic shock within the first week of life if the umbilical vein is patent and viable. If the patient is hypovolemic, treatment should be initiated with crystalloid fluid boluses of 10ml/kg up to a total of 60 ml/kg. Low dose dopamine (5 mcg/kg/min) should be started and advanced as necessary until therapeutic end points are achieved. If patient is unresponsive to dopamine, epinephrine can be added as a second pressor. Packed red blood cells can be administered for treatment of anemia (Hgb < 12). If the patient is presenting from home, empiric antibiotic treatment should consist of ampicillin and gentamicin. Previously hospitalized neonates with suspected septic shock should be empirically treated with vancomycin and gentamicin. All neonates with suspected meningitis should be given a third generation cephalosporin such as cefotaxime. Consider administration of acyclovir in neonates with consistent clinical findings of pneumonitis, hepatitis, coagulopathy, hypoglycemia, and/or vesicles.

**Diagnostic Evaluation:** A brief history and physical examination should be conducted concurrently with the prompt initiation of treatment.

**History: Assess for**
- Temperature instability
- Poor feeding
- Changes in mental status
- Difficulty breathing
- Decreased urine output
- Comorbid conditions

**Physical Examination:**[^1,9,10]

The severity of the inflammatory response associated with septic shock increases over a continuum. Early signs and symptoms of septic shock are a result of the body’s compensatory mechanisms while late signs are indicative of decompensation. Assess for the early indications of shock listed in Table 2 and Table 3 along with the signs below:
- Widened pulse pressure due to decreased diastolic pressures
- Normal systolic blood pressure
- Rapid shallow breathing
- Decreased respiratory rate
- Oliguria
- Cyanosis
- Hypotension

Continuously monitor:
- Heart rate and rhythm
- Oxygen saturation
- Blood pressure

Frequently Monitor:
- Temperature
- Urine output

**Laboratory Tests:** There is no single laboratory test that reliably predicts or confirms a patient’s initial condition. Blood cultures are an essential part of the evaluation of septic shock. A trend in procalcitonin or lactate levels may be helpful when incorporated with clinical judgment.

<table>
<thead>
<tr>
<th>Lab Test</th>
<th>Required</th>
<th>Consider</th>
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</thead>
<tbody>
<tr>
<td>Blood culture</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Complete blood count (CBC) with platelet and differential</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Blood gas with Metabolites</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Chem 10 panel</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Procalcitonin</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Lactate</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
**Critical Points of Evidence**

**Evidence Supports**
- Abnormal vital signs and indications of poor perfusion are the signs and/or symptoms that most reliably predict or confirm septic shock. *(8,12-15)* - Strong recommendation, low quality evidence
- Implement methods for early recognition of shock by non-physicians in order to improve outcomes. *(8,16-18)* - Strong recommendation, low quality evidence
- Initiate treatment consistent with PALS guideline prior to ED arrival for patients with suspected septic shock. *(14)* - Strong recommendation, low quality evidence
- Three boluses of 20 mL/kg of crystalloid fluid should be administered intravenously via push-pull, rapid infuser, or pressure bag with the first bolus given within 20 minutes of recognition of septic shock. *Adjust fluid volume and rapidity of administration for patients whose pre-existing condition precludes rapid, large volume fluid resuscitation.* *(14,19-29)* - Strong recommendation, moderate quality evidence
- Epinephrine (0.05 mcg/kg/min) should be started in patients with fluid refractory shock via a PIV or central line. Dopamine (5 mcg/kg/min) may be used as an alternative selection. Tailor vasopressor treatment for patients with fluid refractory shock based on the patient’s hemodynamic state with the selections below. *(30-37)* – Strong recommendation, moderate quality evidence
  - Reverse cold shock by titrating epinephrine.
  - Reverse warm shock by titrating central norepinephrine (starting dose: 0.05 mcg/kg/min).
- Evidence supports starting with at least the minimum doses listed above. These medications may be titrated up to achieve the desired effect up to a maximum of:
  - Epinephrine MAX 1 mcg/kg/min
  - Dopamine MAX 20 mcg/kg/min
  - Norepinephrine MAX 2 mcg/kg/min

**Evidence Lacking/Inconclusive**
- Patients with malignancies, asplenics, a history of bone marrow transplant, central or indwelling lines/catheters, history of solid organ transplant, severe mental retardation and/or cerebral palsy, immunodeficiency, immunocompromise, or immunosuppression, and/or urogenital abnormalities have an increased risk of septic shock. *(4,8,14,25-26,38)* - Strong recommendation, low quality evidence
- Administer vancomycin and ceftriaxone as empiric antibiotics to previously healthy patients with suspected septic shock (including children with sickle cell disease or suspicion of meningitis). Nafcillin should be added for suspected Staphylococcus infections. *(3,6,13,39-40)* - Strong recommendation, moderate quality evidence
- Administer vancomycin and cefepime as empiric antibiotic treatment for immunocompromised and other high risk patients with suspected septic shock (excluding children with asplenia or sickle cell disease). Gentamicin should be added to the empiric treatment regimen for the subset of patients within this group that are unstable. *(6,41-44)* - Strong recommendation, moderate quality evidence
- Alternative methods for fluid delivery should be pursued, including intraosseous access, if rapid intravenous access is not obtained in a timely fashion in order to provide the first fluid bolus within 20 minutes of the recognition of septic shock. – Consensus recommendation
- Oxygen should be titrated to keep oxygen saturations within the patient’s normal range. – Consensus recommendation
- Consider administration of stress-dose steroids for patients with catecholamine resistant shock. Consider obtaining a random cortisol level prior to administration of steroids, when feasible. *(45-49)* - Weak recommendation, very low quality evidence
- Consider treatment for anemia in patients with suspected septic shock. *(50)* – Weak recommendation, very low quality evidence

**Evidence Against**
- Single laboratory tests should not be used to inform about a patient’s initial condition. *(51-62)* – Strong recommendation, low quality evidence
- Prediction models should not be applied during the initial management of patients with septic shock to identify patients at risk for multiple organ failure. *(63-65)* – Strong recommendation, low quality evidence
Treatment Recommendations:

**Phase 1 – Within five (5) minutes** from recognition of septic shock initiate the following:
- Cardiac monitors and continuous pulse oximetry
- Vital signs every 15 minutes
- Neuro vital signs every 30 minutes
- Administer supplemental oxygen therapy and/or respiratory support to keep oxygen saturations within patient’s normal range.
- Strict intake and output

**Phase 2 – Within twenty (20) minutes** from recognition of septic shock initiate the following:
- Establish peripheral IV. If IV unattainable, start IO access.
- Draw labs on IV placement
- Completion of first fluid bolus of 20 mL/kg of crystalloid fluid intravenously (Table 4)
- Reassess for need of additional fluid resuscitation
- Consider inserting a Foley catheter

**Phase 3 – Within sixty (60) minutes** from recognition of septic shock initiate the following:
- Administer antibiotics (Table 5)
- Establish second PIV (or IO if PIV cannot be established) and consider central line if not done.
- Consider 2nd and 3rd bolus of 20 mL/kg NS or colloid fluid up to and over 60 mL/kg until perfusion improves or unless rates or hepatomegaly develops (Table 4)
- Correct hypoglycemia and/or hypocalcemia, if necessary
- Consider treatment for anemia
- If patient on chronic steroids, give stress dose for adrenal insufficiency.
- Reassess for need of additional fluid resuscitation

**Phase 4 – Fluid Refractory Shock**
- Transfer to the ICU
- Evaluate for warm or cold shock
  - Reverse **Cold Shock**
    - Titrate epinephrine (Dose range: 0.05 to a MAX of 1 mcg/kg/min) via IV or central access. Dopamine (Dose range: 5 to a MAX of 20 mcg/kg/min) may be used as an alternative.
  - Reverse **Warm Shock**
    - Titrate norepinephrine (Dose range: 0.05 to a MAX of 2 mcg/kg/min).
- Obtain central access if it does not delay admission to ICU. Initiate venous saturation and central venous pressure monitoring.
- Reassess for need of additional fluid resuscitation

**Phase 5 – Catecholamine Resistant Shock**
- Administer hydrocortisone at a dose of 2 mg/kg (Table 7)
- When feasible, send a random cortisol level prior to steroid administration to help guide treatment once stabilized.
- If patient is resistant to fluids and catecholamines, then look for other causes of shock including:
  - Pericardial effusion
  - Tension pneumothorax
  - Abdominal compartment syndrome
  - Ongoing blood loss
  - Necrotic tissue
  - Inadequate source control infection
- Consider ECMO if prior interventions are not effective

**Therapeutic End Points**
Treatment for septic shock should be aimed at achieving the end points below:
- Normal mental status
- Age-appropriate vital signs (HR, RR, blood pressure)
- Capillary refill <3 secs
- Palpable distal pulses without a differential from central pulses
- Urine output >1 mL/kg/hr
- Warm extremities
- Normal glucose and ionized calcium concentration
- Mixed venous oxygen saturation >70%

**Measures:**

**Outcomes**
- Mortality rate

**Process**
- Number of times best practice alert (BPA) triggered and not shock patient
- Utilization of the shock order sets all phases
- Utilization of other order sets as defined in BPA
- Percentage of patients administered fluids within 20 min of recognition of shock
- Time to antibiotic administration after recognitions of shock
- Number of patients admitted and shock recognized after admission to inpatient unit within 12 hours
- Appropriate antibiotics administered (high risk vs. low risk)
### Table 4. Bolus (68)

<table>
<thead>
<tr>
<th>Bolus 1 - Within 20 min of identification of shock then reassess need for additional fluids up to 3 boluses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sodium CHLORide 0.9% (NS)</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Patients whose condition prohibits rapid fluid resuscitation</strong></td>
</tr>
<tr>
<td><strong>Sodium CHLORide 0.9% (NS)</strong></td>
</tr>
</tbody>
</table>

### Table 5. Antibiotics (68)

#### Antibiotic Therapy - Previously Healthy /Sickle Cell Disease or other asplenia / Suspected Meningitis

<table>
<thead>
<tr>
<th>Antibiotic Therapy - Previously Healthy /Sickle Cell Disease or other asplenia / Suspected Meningitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceftriaxone</td>
</tr>
<tr>
<td>50 mg/kg</td>
</tr>
<tr>
<td>Vancomycin</td>
</tr>
<tr>
<td>15 mg/kg</td>
</tr>
<tr>
<td><strong>Add for suspected Staph Infection</strong></td>
</tr>
<tr>
<td>50 mg/kg</td>
</tr>
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</table>

#### Antibiotic Therapy - Immunocompromised and/or High Risk

<table>
<thead>
<tr>
<th>Antibiotic Therapy - Immunocompromised and/or High Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cefepime</td>
</tr>
<tr>
<td>50 mg/kg</td>
</tr>
<tr>
<td>Vancomycin</td>
</tr>
<tr>
<td>15 mg/kg</td>
</tr>
<tr>
<td><strong>Unstable patients</strong></td>
</tr>
<tr>
<td>Gentamicin</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Suspected intra-abdominal process</strong></td>
</tr>
<tr>
<td>Metronidazole</td>
</tr>
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<td></td>
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</tbody>
</table>

### Table 6. Pressors (68)

<table>
<thead>
<tr>
<th>Tailor vasopressor treatment based on hemodynamic state:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cold Shock</strong></td>
</tr>
<tr>
<td>EPINEPHrine</td>
</tr>
<tr>
<td>0.05 mcg/kg/min</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>DOPamine</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Warm Shock</strong></td>
</tr>
<tr>
<td>Norepinephrine</td>
</tr>
<tr>
<td>2 mcg/kg</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

### Table 7. Steroids (68)

<table>
<thead>
<tr>
<th>Catecholamine Resistant Shock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrocortisone sodium succinate</td>
</tr>
<tr>
<td>2 mg/kg</td>
</tr>
</tbody>
</table>
Clinical Algorithm for Septic Shock

**Initial Resuscitation**
- Within 5 min of arrival or recognition:
  - Administer supplemental oxygen and/or respiratory support to keep oxygen saturation in normal range.
  - Insert PIV. If IV unattainable, establish IO access.
  - Place on cardiac monitor and continuous pulse oximeter.
  - Vital signs every 15 min.
  - Neuro checks every 30 min.
  - Strict I & O's.

**Within 20 min. of arrival or recognition:**
- Administer 1st bolus of 20 mL/kg normal saline (NS) via push-pull, rapid infuser or pressure bag within 20 minutes.
- Reassess need for additional fluid resuscitation.
- Draw labs.
- Begin antibiotics within 60 minutes.
- Consider inserting a Foley catheter.

**OFF algorithm**
- Manage as appropriate to clinical findings.

**Clinical improvement**
- Yes
- No

**Subsequent Resuscitation**
- Establish second PIV (or IO if PIV cannot be established) and consider central line.
- Administer 2nd and 3rd boluses of 20 mL/kg isotonic saline or colloid up to and over 60 mL/kg until perfusion improves or unless rales or hepatomegaly develop.
- Correct hypoglycemia and/or hypocalcemia.
- Consider treatment of anemia.
- If on chronic steroids, give stress dose.
- Reassess need for additional fluid resuscitation.

**OFF algorithm**
- Manage as appropriate to clinical findings.

**Clinical improvement**
- Yes
- No

**Fluid Refractory Shock**
- Transfer to ICU.
- Evaluate for warm or cold shock.
  - Reverse cold shock by titrating epinephrine (dose range: EPINEPHrine 0.05 to 1 mcg/kg/min) via IV or central access. Dopamine (dose range: DOPAmine 5 to 20 mcg/kg/min) may be used as an alternative.
  - Reverse warm shock by titrating central norepinephrine (dose range: 0.05 to 2 mcg/kg/min) via central access.
- Obtain central access if it does not delay admission to the ICU. Initiate venous saturation and central venous pressure monitoring.

**Catecholamine Resistant Shock**
- Begin hydrocortisone if at risk for absolute adrenal insufficiency (Dosage: 2 mg/kg IV bolus). Obtain serum cortisol level prior to administration, if feasible.
- Consider ECMO if prior interventions are not effective.

**ICU Transfer Criteria**
- Vital signs and/or neurological signs every hour or more frequent as ordered.
- Intubation and/or acute ventilatory assistance.
- Vasopressors to maintain cardiovascular status.
- Clinical concern for deterioration.
- Arterial Cannulation.

**Vasopressor Concentrations for Peripheral/ Central Access**
- Peripheral IV – safety of peripheral infusion based upon drug concentration not drug dose. All vasoactive agents can be given safely through an intravenous line if there is no central access.
  - Dopamine: 1.6 mg/mL, 3.2 mg/mL
  - Epinephrine: 0.01 mg/mL, 0.05 mg/mL, 0.2 mg/mL
  - Norepinephrine: Should not be given peripherally.

**Central Access**
- Dopamine: 6 mg/mL
- Epinephrine: 1 mg/mL

**Hypoglycemia Treatment**
- D10W 5 mL/kg/dose IV/IO
- D25 2 mL/kg/dose IV/IO
- D25 should be administered for children > 1 year old.

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Texas Children’s Hospital

DATE: January 2017
References


44. Texas Children’s Hospital Susceptibility Data. (2014). Antibiotic susceptibility in gram negative organisms for 53 individual patient isolates in the hematology/oncology population. Available from the TCH Pathology Database.


Clinical Standards Preparation

This clinical standard was prepared by the Evidence-Based Outcomes Center (EBOC) team in collaboration with content experts at Texas Children's Hospital. Development of this clinical standard supports the TCH Quality and Patient Safety Program initiative to promote clinical standards and outcomes that build a culture of quality and safety within the organization.

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Andrea Jackson, MBA, RN, Research Specialist
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Development Process

This clinical standard was developed using the process outlined in the EBOC Manual. The literature appraisal documents the following steps:

1. Review Preparation
   - PICO questions established
   - Evidence search confirmed with content experts

2. Review of Existing Internal and External Guidelines

3. Literature Review of Relevant Evidence
   - Searched: Medline, Cochrane, AHRQ, Cinahl, AAP, Google Scholar, American College of Critical Care Medicine, American Heart Association, Guideline Clearing House

4. Critically Analyze the Evidence
   - 3 systematic reviews, 11 meta-analyses, 6 randomized controlled trials, 36 non-randomized studies, 4 professional organization guidelines

5. Summarize the Evidence
   - Materials used in the development of the guideline, evidence summary, and order sets are maintained in a Septic Shock evidence-based review manual within EBOC.

Evaluating the Quality of the Evidence

Published clinical guidelines were evaluated for this review using the AGREE II criteria. The summary of these guidelines are included in the literature appraisal. AGREE II criteria evaluate Guideline Scope and Purpose, Stakeholder Involvement, Rigor of Development, Clarity and Presentation, Applicability, and Editorial Independence using a 4-point Likert scale. The higher the score, the more comprehensive the guideline.

This clinical standard specifically summarizes the evidence in support of or against specific interventions and identifies where evidence is lacking/inconclusive. The following categories describe how research findings provide support for treatment interventions.

“Evidence Supports” provides clear evidence that the benefits of the intervention exceed harm.

“Evidence Against” provides clear evidence that the intervention is likely to be ineffective or that it is harmful.

“Evidence Lacking/Inconclusive” indicates there is currently insufficient data or inadequate data to support or refute a specific intervention.

The GRADE criteria were utilized to evaluate the body of evidence used to make practice recommendations. The table below defines how the quality of the evidence is rated and how a strong versus weak recommendation is established. The literature appraisal reflects the critical points of evidence.

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<thead>
<tr>
<th>Recommendation</th>
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<tbody>
<tr>
<td></td>
<td>Desirable effects clearly outweigh undesirable effects or vice versa</td>
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</table>

<table>
<thead>
<tr>
<th>Quality</th>
<th>Type of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Consistent evidence from well-performed RCTs or exceptionally strong evidence from unbiased observational studies</td>
</tr>
<tr>
<td>Moderate</td>
<td>Evidence from RCTs with important limitations (e.g., inconsistent results, methodological flaws, indirect evidence, or imprecise results) or unusually strong evidence from unbiased observational studies</td>
</tr>
<tr>
<td>Low</td>
<td>Evidence for at least 1 critical outcome from observational studies, RCTs with serious flaws or indirect evidence</td>
</tr>
<tr>
<td>Very Low</td>
<td>Evidence for at least 1 critical outcome from unsystematic clinical observations or very indirect evidence</td>
</tr>
</tbody>
</table>

Recommendations

Practice recommendations were directed by the existing evidence and consensus amongst the content experts. Patient and family preferences were included when possible. The Content Expert Team and EBOC team remain aware of the controversies in the recognition and initial management in children. When evidence is lacking, options in care are provided in the clinical standard and the accompanying order sets (if applicable).

Approval Process

Clinical standards are reviewed and approved by hospital committees as deemed appropriate for its intended use. Clinical standards are reviewed as necessary within EBOC at Texas Children's Hospital. Content Expert Teams are involved with every review and update.

Disclaimer

Practice recommendations are based upon the evidence available at the time the clinical standard was developed. Clinical standards (guidelines, summaries, or pathways) do not set out the standard of care and are not intended to be used to dictate a course of care. Each physician/practitioner must use his or her independent judgment in the management of any specific patient and is responsible, in consultation with the patient and/or the patient’s family, to make the ultimate judgment regarding care.

Version History

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