Clinical Practice Guideline for Rapid Management of Sepsis AND Septic Shock in the Emergency Department

**Patient Presents to the ED with one of the following:**

- Clinical Signs/Symptoms present AND
- Physician concern for sepsis/compensated septic shock

**Hypotensive Shock:**
- Hypotension with known or suspected infection

**Sepsis/Compensated Septic Shock:**
- Abnormal Perfusion
  - Pulses decreased or weak (cold shock)
  -Bounding (warm shock)
- Capillary refill
  - >2 seconds (cold shock)
  - <1 second (warm shock)
- Skin
  - Mottled, cool extremities (cold shock)
  - Flush, ruddy, erythroderma (warm shock)

**Clinical Signs/Symptoms**
- Mental Status Changes
  - Irritability
  - Confusion
  - Inappropriate crying or drowsiness
  - Poor interaction with parents
  - Diminished arousability
- Low OR High core temperature
- Hypotension
- Tachycardia
- Tachypnea

**Labs**
- Blood Cultures: obtain maximum allowable amount, Policy 4.26
- CBC with Diff
- CRP, CSF if indicated
- If concern or suspicion of UTI and/or no obvious source of infection, consider UA

**Additional Therapies**
- Fever Control
  - Consider foley catheter to monitor UOP
- Use Atropine/Ketamine PIV/IO/IM if needed

**Admission Criteria to General Care**
- If suspect ductal dependent lesion, consider Prostaglandin 0.01.au.
- If delay in transfer to PICU and patient exhibits pressor refractory shock and/or risk for adrenal insufficiency
  - Hydrocortisone 2mg/kg, max 100mg IV x 1

**Begin Pressors & Continue IV Fluid Resuscitation**

- Epinephrine/Norepinephrine preferred; if not readily available, administer DOPamine
- Central Line or IO preferred, may use PIV if necessary

**Rapidly Infuse/ Push Fluid Resuscitation**

- NS or LR 20mL/kg Bolus
- Goal within 60 min:
  - Cap refill < 2 sec
  - Restore & Maintain HR
  - Normal BP
  - Begin Antibiotics

**Assess need for additional therapy**

- Reassess
  - If concern or suspicion of UTI and/or no obvious source of infection, consider UA
  - If concern or suspicion of UTI and/or no obvious source of infection, consider UA

**Transfer to PICU**

- Do NOT delay IV fluids/antibiotics if unable to draw labs

**Begin Antibiotics**
- Type and Screen
- PT, PTT

**CXR, CSF if indicated**

**Blood Cultures**
- Dextrose 0.5 grams/kg = 5mL/kg of D10
- Calcium gluconate 50mg/kg to max dose of 2000mg
- Calcium chloride 20mg/kg to max dose of 1000 mg (Use only if CVL present)

**Hypoglycemia**
- Calcium chloride 20mg/kg to max dose of 1000 mg (Use only if CVL present)

**Hypovolemia**
- Calcium chloride 20mg/kg to max dose of 1000 mg (Use only if CVL present)

**Other causes of shock**
- Hypoalbuminemia
- Cardiogenic
- Metabolic Disorder
- Anaphylaxis

**Restive**
- Perfusion
- Vital Signs
- Mental Status
- Any evidence of Congestive Heart Failure

**Shock Reversed?**
- Yes
- NO

**Admission Criteria to General Care**
- If delay in transfer to PICU and patient exhibits pressor refractory shock

- Hydrocortisone 2mg/kg, max 100mg IV x 1

**Cold Shock**

- Epinephrine
  - Start at 0.1 mcg/kg/min
  - Titrate 0.05-0.1mcg/kg/min per MD order
  - Max dose 1mcg/kg/min

**Warm Shock**

- Norepinephrine
  - Start at 0.1mcg/kg/min
  - Titrate 0.05-0.1mcg/kg/min per MD order
  - Max dose 1mcg/kg/min
  - Not preferred for cardiac dysfunction

- DOPamine
  - Start at 10 mcg/kg/min and titrate rapidly by 5 mcg/kg/min q5min to establish BP per MD order
  - Max dose 20 mcg/kg/min

**Admission Criteria to General Care**
- <40 ml/kg of fluid resuscitation
- Normal BP, Normal Mental Status, UOP present
- Improving Tachycardia
- Patient stable 1 hour after last intervention
- ED Attending to Admitting Attending discussion and agreement on admission
**ANTIBIOTIC ADMINISTRATION FOR SEPSIS**

When infusing multiple antibiotics, administer in the following order. Use the antibiotics *readily available* in the pyxis first. Use the antibiotic with the *shortest administration time* before others.

<table>
<thead>
<tr>
<th>Group Unless otherwise specified</th>
<th>Medication</th>
<th>Dose All x1 in ED</th>
<th>Max Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy Kids &gt;29 days of age</td>
<td>CefTRIAXone*</td>
<td>75mg/kg IV</td>
<td>2000mg</td>
</tr>
<tr>
<td></td>
<td>Vancomycin</td>
<td>20mg/kg IV</td>
<td>1250mg</td>
</tr>
<tr>
<td>• If suspect toxic shock, <strong>ADD</strong></td>
<td>Clindamycin</td>
<td>13mg /kg IV</td>
<td>900mg</td>
</tr>
<tr>
<td>• If suspect Rocky Mountain Spotted Fever or tick borne disease, <strong>ADD</strong></td>
<td>Doxycycline</td>
<td>2.2mg/kg IV</td>
<td>100mg</td>
</tr>
<tr>
<td>• If high suspicion for Staph aureus, <strong>ADD</strong></td>
<td>Nafcillin</td>
<td>50mg/kg IV</td>
<td>2000mg</td>
</tr>
<tr>
<td>• If suspect abdominal pathogen and/or anaerobes, <strong>ADD</strong></td>
<td>MetroNIDAZOLE (Flagyl)</td>
<td>10mg/kg IV</td>
<td>500mg</td>
</tr>
<tr>
<td>If prior history of ESBL (Extended-Spectrum-Beta-Lactamase Resistant Organisms)</td>
<td>Meropenem</td>
<td>20mg/kg IV</td>
<td>1000mg</td>
</tr>
<tr>
<td>Oncology, including BMT</td>
<td>Meropenem</td>
<td>20mg/kg IV</td>
<td>1000mg</td>
</tr>
<tr>
<td></td>
<td>Vancomycin</td>
<td>20mg/kg IV</td>
<td>1250mg</td>
</tr>
<tr>
<td>Significant Chronic Medical Conditions:</td>
<td>Cefepime</td>
<td>50mg/kg IV</td>
<td>2000mg</td>
</tr>
<tr>
<td>• Sickle Cell Disease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Immuno compromised (excluding Oncology)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Immunosuppressive Meds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Recent Hospitalization (&gt;4 days within 2 months)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Central Line</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neonate ≥2kg</td>
<td>Ampicillin</td>
<td>100mg/kg IV</td>
<td>N/A</td>
</tr>
<tr>
<td>• If risk factors for Herpes Simplex Virus are present <strong>ADD</strong></td>
<td>CefTAZidime</td>
<td>50mg/kg IV</td>
<td>N/A</td>
</tr>
<tr>
<td>Risk factors:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Maternal history of herpes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Patient presents with seizures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Suspicious skin lesions, including any scalp lesions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Elevated ALT (&gt;50)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• If high suspicion for Staph aureus, <strong>ADD</strong></td>
<td>Acyclovir</td>
<td>20mg/kg IV</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Vancomycin</td>
<td>20mg/kg IV</td>
<td>N/A</td>
</tr>
</tbody>
</table>

* If allergic to PCN or Cephalosporins use Meropenem at 20mg/kg; Max dose of 1000mg

*Original Publication: 6/14
Revised: 5/2023

Developed through the efforts of Children’s Healthcare of Atlanta and physicians on Children’s medical staff in the interest of advancing pediatric healthcare. This is a general guideline and does not represent a professional care standard governing providers’ obligation to patients. Ultimately the patient’s physician must determine the most appropriate care. © 2022 Children’s Healthcare of Atlanta, Inc.