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Pediatric Sepsis Workgroup
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Pediatric Sepsis Guideline

Suspicion for Sepsis or Septic Shock
*** Evaluate for presence of high-risk conditions**

Use "Pedi Sepsis – Pedi Septic Shock > 60 Days [2727]" Order Set

- Supplemental oxygen
- Place 2 large bore IVs
- Obtain blood cultures and labs
  - Start Antibiotics 0-60mins after blood culture
  - If unable to obtain blood culture, do not delay antibiotics
- Make NPO

- Start fluid resuscitation **as fast as** possible with 20 mL/kg LR or normosol
  - Process: Give over 10-15 mins, by push/pull, not on a pump
  - Continuous reassessment
  - Consider 5-10 mL/kg bolus if known cardiac disease, concern for heart failure, pulmonary edema, renal disease
- Give stress dose steroids if known adrenal insufficiency, obtain baseline cortisol level

Provider re-assessment after 1st bolus

BP Stable?

NO

Repeat 10-20 mL/kg bolus

Provider re-assessment after 2nd bolus

BP not at goal

- **Page on call PICU Attending when reaching 40 mL/kg in boluses, continue to give up to 60 ml/kg**
- If not at MMCP, page One Call 866-662-6632
  - Obtain additional IV or IO access
- Start vasoactive agent (epinephrine or norepinephrine 0.05 mcg/kg/min), can be run peripherally
- Consider bedside echocardiogram

YES

Continue to monitor

VS Stable for 1 hr

- **Consult "Pediatrics" for admission or call One Call 866-662-6632 for transfer to MMC**
- If already admitted, re-evaluate in 60 minutes and set new clinical goal per discussion with primary team and RN

3 - Reassess

- **Reassess Q15min and/or after each bolus:**
  - Perfusion
  - Vital Signs
  - Mental Status
  - Any evidence of Congestive Heart Failure (Rales, Hepatomegaly, Gallop, Crackles)

Time of Presentation

Within 60 minutes

High Risk Conditions

- Malignancy*
- Sickle Cell Disease and other patients with asplenia *
- Bone marrow transplant *
- Central or indwelling line/catheter, implanted hardware or graft
- Solid organ transplant
- Immunocompromised/immunosuppressed
- Urogenital abnormalities (i.e. spina bifida)
- Recent surgery or trauma
- Conditions that limited mental status examination (cerebral palsy, technology dependence, etc.)

*refer to oncology and asplenia guidelines for further reference

Suggested Reference Values for Identifying Age-Based Vital Sign Abnormalities				
Age	**HR (bpm)**	**Systolic BP (mm Hg)**	**Diastolic BP (mm HG)**	**Tachypnea**
1 month – 1 year	**> 180**	**< 70**	**< 30**	**> 65**
2-5 years	**> 140**	**< 74**	**< 35**	**> 60**
6-12 years	**> 130**	**< 83**	**< 45**	**> 30**
13-18 years	**> 120**	**< 90**	**< 50**	**> 30**
Vital signs cut offs and integration of heart rate parameters in Sepsis HER Alerts may vary by patient location. Remember, heart rate may be affected by pain, anxiety, medications and hydration status.				

1 - Clinical Signs/Symptoms

- **Temp**
  - <36º C or >38.5º C
- **Abnormal perfusion**
  - Pulses
    - Decreased or weak (cold shock)
    - Bounding (warm shock)
  - Capillary refill
    - >2 seconds (cold shock)
    - Flash <1 second (warm shock)
  - Skin
    - Mottled, cool extremities (cold shock)
    - Flushed, ruddy, erythroderma (warm shock)
- **Mental Status Changes**
  - Irritability
  - Agitation
  - Lethargy
  - Confusion
  - Obtunded
  - Inappropriate crying or drowsiness
  - Poor interaction with parents
  - Diminished arousability
- **Hypotension (***clinical signs may present with or **WITHOUT** *hypotension)*
- **Tachycardia**
- **Tachypnea**

2 – Suggested Workup

- Blood Cultures – obtain maximum allowable amount
- CMP
- PT, PTT
- CBC with Diff
- Type and Screen
- CRP, procalcitonin
- Lactate
- VBG
- CXR, CSF if indicated
- If concern or suspicion of UTI and/or no obvious source of infection, consider UA
- Consider viral studies COVID/Flu/RSV

4 - Antibiotic Choices

Previously Healthy

- **Ceftriaxone** 50 mg/kg (max 2 kg)
- Consider vancomycin 15 mg/kg (max 1500 mg)
- If abdominal infection, add metronidazole 10 mg/kg (max 500 mg) q8 hrs OR use piperacillin-tazobactam 100 mg/kg (max 3 g) as single agent
- Consult ID for severe sepsis, bacterial meningitis, or resistant organisms (eg, if considering meropenem)

Immunocompromised or Oncology patient

- **Cefepime** 50 mg/kg (max 2 g)
- Consider vancomycin 15 mg/kg (max 1500 mg)
- If **abdominal infection**, use piperacillin-tazobactam 100 mg/kg (max 3 g) as single agent

5 – Additional Considerations

- **Fever Control**
- **Consider foley catheter to monitor UOP**
- **Respiratory Support**
  - Consider high flow nasal cannula if gas exchange is inadequate with nasal cannula >= 4L/min
  - Intubation of pediatric septic patients is high risk, discuss with on call PICU attending
  - Ketamine +/- fentanyl would be preferred sedation medications for relative hemodynamic neutrality. Ketamine should be used at a reduce dose and with caution in patients with cardiac dysfunction or impaired catecholamine response (due to risk for hypotension)
- **Hypoglycemia**
  - Dextrose 0.5 grams/kg = 5 mL/kg of D10
- **Hypocalcemia**
  - Calcium gluconate 50 mg/kg to max dose of 2000mg
  - Calcium chloride 20 mg/kg to max dose of 1000mg (use only if CVL present)
- **Neonate**
  - Utilize Fever Guideline 0-60 days
  - If suspect ductal dependent lesion, consider prostaglandin 0.01-0.03 mcg/kg/min
- If **patient exhibits pressor refractory shock and/or risk for adrenal insufficiency**
  - Hydrocortisone 2 mg/kg, max 100 mg IV x 1

6 – Admission Criteria to Inpatient Unit

- Less than or equal to 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