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Suspected Sepsis for Pediatric Patients on the Acute Care Floor

Monroe Carell Jr. Children's Hospital at Vanderbilt

Early recognition and prompt treatment of sepsis with goal-directed therapy improves outcomes, but recognition in children can be challenging given the low specificity in abnormal vital signs or single screening test/tool alone in identifying children in the early stages of sepsis or septic shock. This CPG intends to provide a general approach for clinicians to consider in evaluating patients who may have or be at risk of developing early sepsis.

Inclusion Criteria: Infants and children admitted to the inpatient acute care floors at MCJCHV
Exclusion Criteria: Pediatric Hematology/Oncology and Hematopoietic Stem Cell Transplant patients, please refer to PHO fever/risk prediction guidelines and recommendations

Signs and Symptoms Concerning for Sepsis

- Fever, Temp < 36 °C, or concern for infection
- Tachycardia
- Tachypnea
- Altered Mental Status
  - Lethargy, obtundation, agitation
- Hypotension or perfusion abnormality (a late finding in sepsis)
  - Diminished pulses, delayed/flash capillary refill, oliguria
- Skin
  - Petechial and/or purpuric rash or erythroderma

Identification of Signs and/or Symptoms Concerning for Suspected Sepsis/Septic Shock by Physical Assessment
or
Identification for Suspected Sepsis by EHR Sepsis Alert

Sepsis Huddle

- Go to bedside to evaluate your patient
- Notify attending/fellow of sepsis alert
- Perform Sepsis Huddle with bedside RN and nursing staff leader
- Take appropriate actions and document Sepsis Huddle using Sepsis Navigator

Special consideration is advised for certain populations including neonates, immunocompromised patients, presence of a central line, conditions that alter level of consciousness, or pre-existing neurologic dysfunction

Reminder: A Rapid Response can be called at any point during this process if there is sufficient clinical concern

Green

No suspicion for sepsis

No evidence of shock or organ dysfunction

- Consider other etiologies for abnormal signs and/or symptoms
- Consider adding patient to Watcher List if at risk for clinical deterioration

Yellow

Sepsis

Suspected or proven infection with systemic involvement but no shock or organ dysfunction

- Consider activating Rapid Response if concern for clinical deterioration
- Evaluation:
  - Expedited work up for infection, evaluate for organ dysfunction
  - Consider IV access and laboratory evaluation if indicated
- Treatment:
  - Use Pediatric Sepsis Order Set to initiate treatment
    - Fluid Bolus
    - Antibiotic administration
- Reassessment:
  - Assess mental status, WOB, perfusion, and VS every 30 min for 1 hr and at least q4hr VS and PEWS score thereafter
  - Huddle participants determine time for group reevaluation
  - Add patient to Watcher List

Red

Severe Sepsis

Suspected or proven infection with Shock or Sepsis Associated Organ Dysfunction

- Activate Rapid Response
- Treatment:
  - Use Pediatric Sepsis Order Set to initiate treatment
    - Fluid Bolus
    - Antibiotic administration
- If remains on acute care floor, follow Evaluation, Treatment, and Reassessment recommendations under Yellow Sepsis pathway and additional recommendations from the ICU Rapid Response team

Appendix

Definitions

- Fever - We advise using the AAP definition as ≥38.0°C (100.4°F) for enhanced sensitivity
- Septic shock - "severe infection leading to cardiovascular dysfunction (including hypotension, need for treatment with a vasoactive medication, or impaired perfusion)"*
- Sepsis-associated organ dysfunction - “severe infection leading to cardiovascular and/or non-cardiovascular organ dysfunction”*

*As per the Surviving Sepsis campaign

Treatment Considerations

Fluid Bolus Timeliness: *Patients with sepsis, including septic shock, may have ineffective circulating intravascular volume and decreased organ perfusion, which is often multifactorial. Restoring intravascular volume is a core element of international sepsis guidelines and the goal of intravenous fluid resuscitation is to restore normal perfusion and blood pressure.*

- Within the first 60 minutes of recognition, administer up to 40-60 ml/kg in bolus IV fluid (10-20 ml/kg per bolus; maximum of 1 liter per bolus) by push-pull, pressure bag, or rapid infuser method.
    - For patients with significant cardiac or renal dysfunction, consider smaller bolus volumes (5-10 mL/kg).
- After each bolus, reassess the patient’s clinical status and discuss with the team: including evaluation for clinical signs of fluid overload (rales, gallop rhythm, increased work of breathing, or increased oxygen need) and evaluation for persistence of shock state with potential need for additional fluid bolus

Antibiotic Timeliness: *Antibiotics are a key component of timely pediatric sepsis management and imperative to treating bacterial pathogens associated with sepsis.*

- Initiate timely empiric antibiotics as soon as possible:
    - Within 1 hour of recognition of septic shock
    - Within 3 hours of recognition of sepsis without shock
    - Ordering antibiotics as STAT priority will ensure timely review and delivery from Pharmacy
- Antibiotic selection:
    - Refer to disease/pathway-specific antimicrobial recommendations where available in other Clinical Practice Guidelines
    - Refer to antibiotic recommendations within the Pediatric Sepsis Inpatient Order Set
        - In addition to the listed recommendations, consider the addition of Metronidazole if concern for intra-abdominal source
    - If allergy to first-line suggested beta-lactam, assess need for an alternative agent
- Provide source control if appropriate, considering surgical consult for source control if indicated (concern for foreign body, infected device, appendicitis, infected joint/space, etc.)
    - All wounds should be carefully examined in patients with recent procedures (including surgical sites, Interventional Radiology sites, wounds under dressings/casts)
- Modify or stop immunosuppressive therapy if appropriate
- Narrow empiric antibiotic therapy as appropriate once the pathogen(s) and sensitivities are available

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