



**Thinking
beyond**



Small Patients, Big Challenges: Tackling Pediatric Sepsis in the Emergency Setting

Julyssa A. Rodriguez DNP, APRN, FNP-BC, CEN
Janine Perkins BSN, CPN

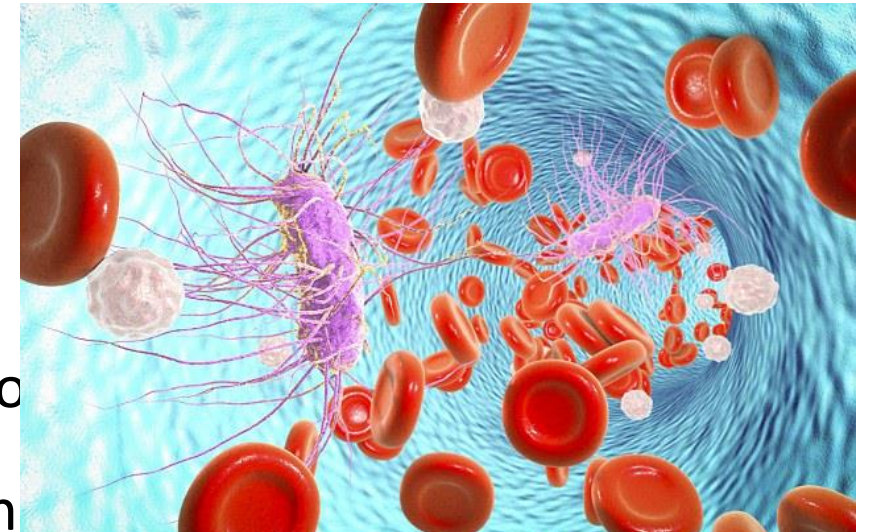
Learning Objectives

- **Define Pediatric Sepsis and its relevance in the ED setting**
 - Discuss challenges in early recognition and diagnosis.
 - Children often present with nonspecific symptoms, making early diagnosis difficult.
 - Special populations with chronic conditions or syndromes can add to difficulty in recognition.
- **Review current guidelines/recommendations for management of Pediatric Sepsis in the ED Setting**
 - Early intervention strategies, including fluid resuscitation and antibiotics, are crucial in the first hour of care
- **Highlight strategies for interdisciplinary collaboration**
 - Team-based approaches enhance the efficiency and effectiveness of sepsis management



Sepsis by the Numbers: A Leading Cause of Pediatric Morbidity & Mortality

- Annually, around 25 million children worldwide are impacted, with 3.4 million ultimately succumbing to sepsis.
- Alarmingly, 85% of fatalities due to pediatric sepsis occur in children younger than 5 years old.
- In the United States, there are more than 75,000 reported instances of pediatric sepsis each year.
- The mortality rate raises significant concerns, as approximately 9% of children admitted for sepsis do not survive each year.
- As many as 8% of pediatric sepsis cases may remain undetected during emergency department visits.



Why Pediatric Sepsis is Different (*and More Dangerous!*)

- **Sep-3:** Defines **sepsis** as life-threatening **organ dysfunction** caused by a dysregulated host response to infection. *There are no validated measures that determine when a child transitions from having an “infection” to having “sepsis”*
- Pediatrics encompasses a range of age groups, from neonates to young adults – which means substantial physiological differences.
- Sepsis in children progresses rapidly and is often diagnosed late. Unlike in adults, hypotension is a late sign, making early recognition crucial for survival.
- The pathogens responsible for severe infections and illnesses in children are often different from those in adults and even responses to the same viral infections may be different.

Improving Pediatric Sepsis Outcomes (IPSO)

- Nationwide collaborative with 66 children's hospitals
- 100,000 episodes
- Findings
 - Bundle compliance= patients are identified earlier and receive more timely treatment



Recognition



Timely bolus
administration



Timely antibiotic
administration

Hiding in Plain Sight: The Sneaky Symptoms of Sepsis

- Recognizing the subtle and atypical signs in children
 - Age-specific vital signs
 - Physiologic adaptations
 - Immune system of pediatric population and adults are considerably different *i.e. neonates*
 - Pediatric cardiovascular system can maintain adequate cardiac output by increasing the heart rate for a prolonged period, adults' cardiovascular system cannot. *This adaptation can mask hypotension in the setting of pediatric sepsis which could lead to further organ hypoperfusion and decompensation.*
 - Risk factors
 - *More than 68% of children admitted to the hospital for sepsis have one or more chronic illnesses.*



Spidey Senses



EMS vs Sepsis: The First Line of Defense

EMS plays a significant role in promptly identifying and treating patients with sepsis



STRAC (Southwest Texas Regional Advisory Council)
Guidelines

- **Suspected Infection AND AMS or Poor Perfusion* AND End Tidal CO₂ ≤ 30**
- All pediatric patients are at risk of sepsis; however, infection should be strongly considered in patients with:
 - Indwelling lines
 - Ventilator or trach support
 - Recent Surgery/hospitalization
 - Immunocompromised/unvaccinated
 - Cancer
 - Sickle Cell disease
 - Cystic Fibrosis
 - Congenital heart disease
 - Transplanted organ
 - Diabetes

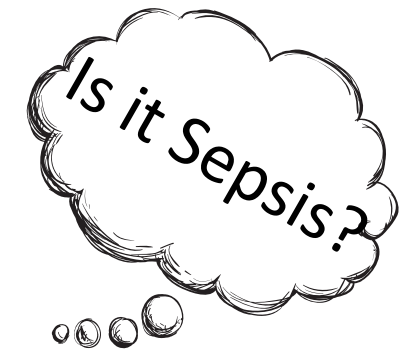
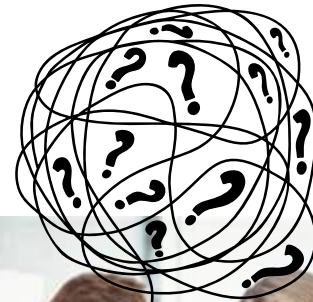
Sepsis in the ED: Spot it, Treat it, Save a Life

- A systematic process to trigger deliberate consideration that unwell children may be suffering from sepsis reduces time to treatment, shortens length of stay, and decreases missed sepsis diagnoses.
 - Utilizing sepsis screening tools
 - Best Practice Advisories
 - Standardized processes
 - Protocols
 - Order set utilization

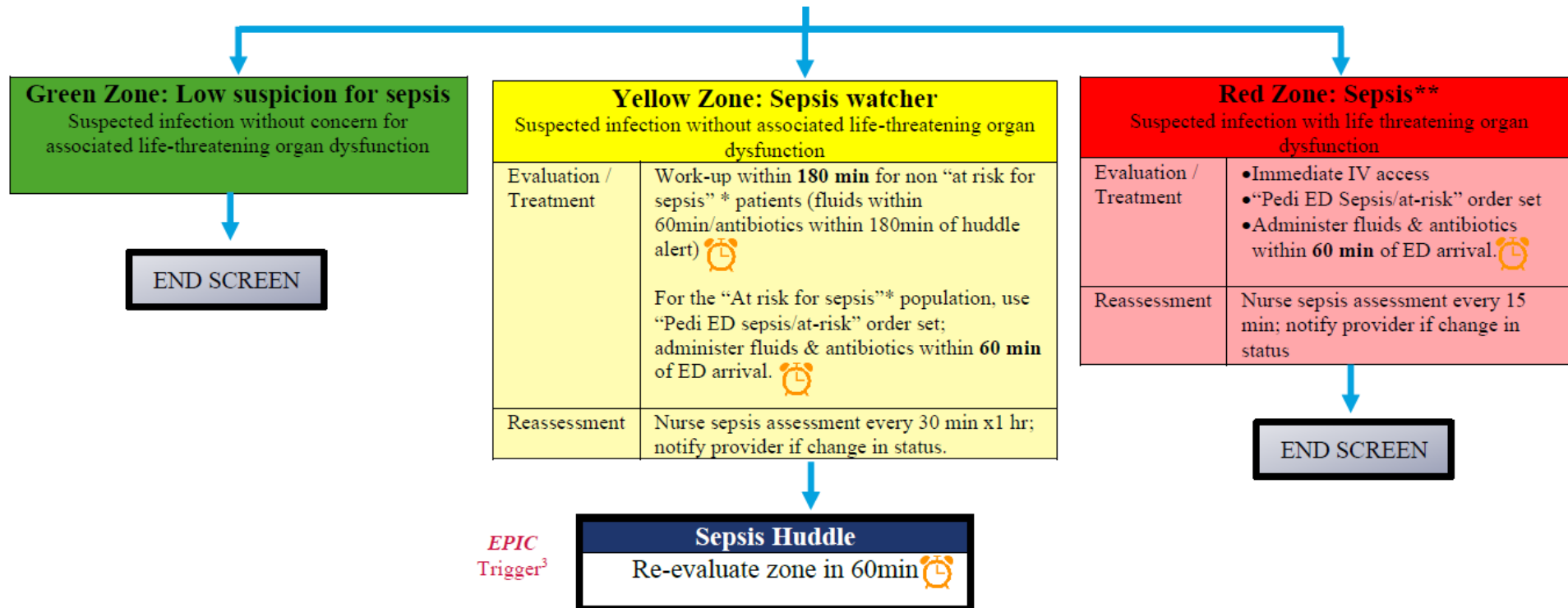
The screenshot shows a clinical decision support tool interface. At the top, a purple header indicates 'Important (1)'. Below this, a yellow banner with a warning icon states: 'Your patient has tachycardia and/or hypotension documented.' This is followed by a red text alert: 'Your patient has tachycardia and/or hypotension documented.' Below the alert, the 'Filed Sepsis-Related Vitals:' section shows a date and time '01/27/25 1457' and a blood pressure reading 'BP: (!) 50/20'. A red instruction reads: 'Complete below assessments to determine further interventions.' At the bottom, there are two buttons: 'Document' (highlighted in purple) and 'Do Not Document'. To the right of these buttons is a link: 'Document below to finish PEDI SEPSIS ASSESSMENT Collapse'. The main content area is titled 'Pedi ED Sepsis Screen' and contains a question: 'Concern for infection?'. Two radio button options are provided: 'NO: no fever (>38), no hypothermia (<36) and no infection suspected' and 'YES: fever >38, hypothermia (<36) or infection suspected'.

It Takes a Village: The Team Approach to Sepsis

- Interdisciplinary huddles – why fast, clear communication is key
 - Recognition is not always black and white



Potential Huddle Outcomes



Small Patients, Big Outcomes: Take These Tools with You

- Significant impact and risk
- Early recognition (screen)
- Team Approach (huddle)
- Trust your “Spidey Senses”
- Timely treatment/standardized management (order sets)
- Reassessment and monitoring





References

- Carrol, E. D., Ranjit, S., Menon, K., Bennett, T. D., Sanchez-Pinto, L. N., Zimmerman, J. J., Souza, D. C., Sorce, L. R., Randolph, A. G., Ishimine, P., Flauzino de Oliveira, C., Lodha, R., Harmon, L., Watson, R. S., Schlapbach, L. J., Kisson, N., Argent, A. C., & Society of Critical Care Medicine's Pediatric Sepsis Definition Taskforce (2023). Operationalizing Appropriate Sepsis Definitions in Children Worldwide: Considerations for the Pediatric Sepsis Definition Taskforce. *Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies*, 24(6), e263–e271. <https://doi.org/10.1097/PCC.0000000000003263>
- Paul, R., Niedner, M., Riggs, R., Richardson, T., DeSouza, H. G., Auletta, J. J., Balamuth, F., Campbell, D., Depinet, H., Hueschen, L., Huskins, W. C., Kandil, S. B., Larsen, G., Mack, E. H., Priebe, G. P., Rutman, L. E., Schafer, M., Scott, H., Silver, P., ... Brill, R. J. (2023). Bundled care to reduce sepsis mortality: The improving pediatric sepsis outcomes (IPSO) collaborative. *Pediatrics*, 152(2). <https://doi.org/10.1542/peds.2022-059938>
- Sanchez-Pinto, L. N., Bennett, T. D., DeWitt, P. E., Russell, S., Rebull, M. N., Martin, B., Akech, S., Albers, D. J., Alpern, E. R., Balamuth, F., Bembea, M., Chisti, M. J., Evans, I., Horvat, C. M., Jaramillo-Bustamante, J. C., Kisson, N., Menon, K., Scott, H. F., Weiss, S. L., Wiens, M. O., ... Wynn, J. L. (2024). Development and Validation of the Phoenix Criteria for Pediatric Sepsis and Septic Shock. *JAMA*, 331(8), 675–686. <https://doi.org/10.1001/jama.2024.0196>
- Weiss, S. L., & Fitzgerald, J. C. (2024). Pediatric Sepsis Diagnosis, Management, and Sub-phenotypes. *Pediatrics*, 153(1), e2023062967. <https://doi.org/10.1542/peds.2023-062967>

