Sepsis Quality Improvement for Child Health Directorate

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Background

- Sepsis is one of the leading causes of childhood mortality worldwide and the WHO has recently listed it as a key health care priority.[1]
- A recent systematic review extrapolating recent figures to a global scale describes an incidence of 3 million cases of sepsis in neonates and 1.2 million cases in children.[2]
- The Sepsis, Prevalence, Outcomes, and Therapies (SPROUT) showed that the prevalence of severe sepsis was 8.2% among children in the ICU (<18 years old) with a hospital mortality of 25%[1], highlighting the need for targeted studies and increased study in larger epidemiologic areas.
- In November of 2018, a baseline survey was conducted with all clinical personnel in the Paediatric ICU of KATH to identify a baseline level of knowledge regarding current guidelines. The survey showed that staff recognized proper steps to take when sepsis was suspected; however, there was poor understanding and/or inability to carry those steps out with rapidity secondary to multiple cited obstacles.
- Therefore, the second phase of this quality improvement project was education focused on collaborative identification of effective process mapping to overcome noted challenges to early detection and intervention.

OBJECTIVES

- **PRIMARY**

  - To educate house staff on how to improve the implementation of current sepsis guidelines.

- **SECONDARY**

  - To identify knowledge gaps among house staff.

  - To devise a standardized lesson plan for the education of future house staff and nurses on sepsis.

 - To identify issues in quality and safety in the Directorate in addressing early initiation of sepsis protocol.

Methodology

- **Study design**: This was a QI project – a mix of qualitative and qualitative interventional study
- **Site:** PEU and PICU at Komfo Anokye Teaching Hospital. A referral center with over 3 million catchment area
- **Study population:** Involved 21 participants (House Officers, PICU and PEU nurses as well as residents currently rotating in the PICU)
- **Inclusion criteria**:
  - ❑ Komfo Anoyke (KATH) house officers, residents and nurses who are rotating through the PEU and PICU
  - ❑ Participant should have partaken in baseline survey
- **Intervention**: Education session was taught with the following a specified schedule
- **Data collected and analysis:** obtained via re-Survey of participants using Survey monkey as well as panel interview
- **Ethics**: KATH IRB approval

Results

3. What is your role in the Paediatric Directorate?

Results based on 21 responses to this question
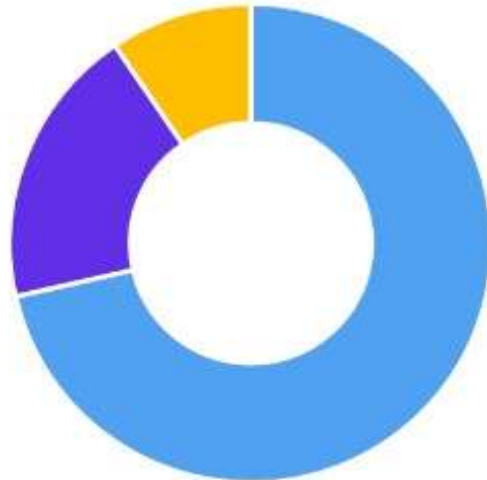
- 🔵 71.43% (15) Nurse
- 🟣 19.05% (4) House Officer
- 🟡 9.52% (2) Resident

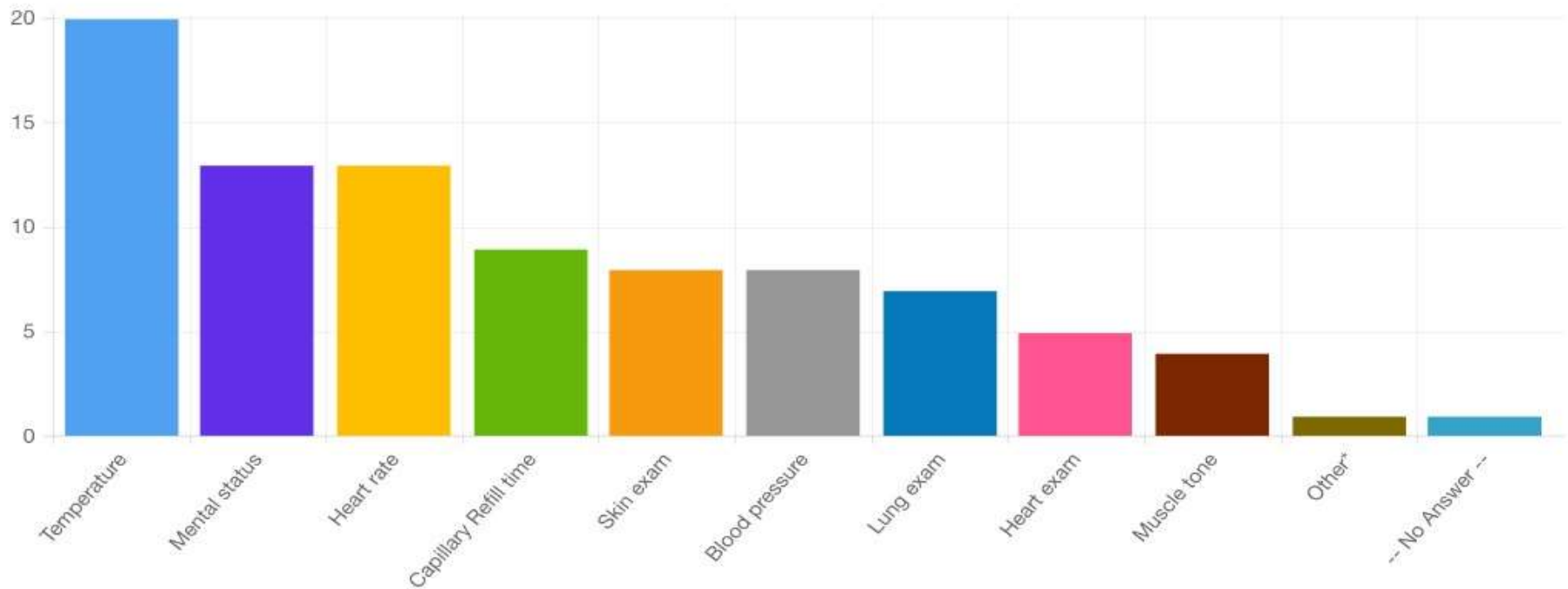## 5. Have you taken care of a septic patient in the last month?

Results based on 21 responses to this question

- 90.48% (19) Yes
- 9.52% (2) No

Sepsis indicators

6. After your initial assessment what indicators do you use to identify a septic patient? (You can choose more than 1)

Results based on 21 responses to this question
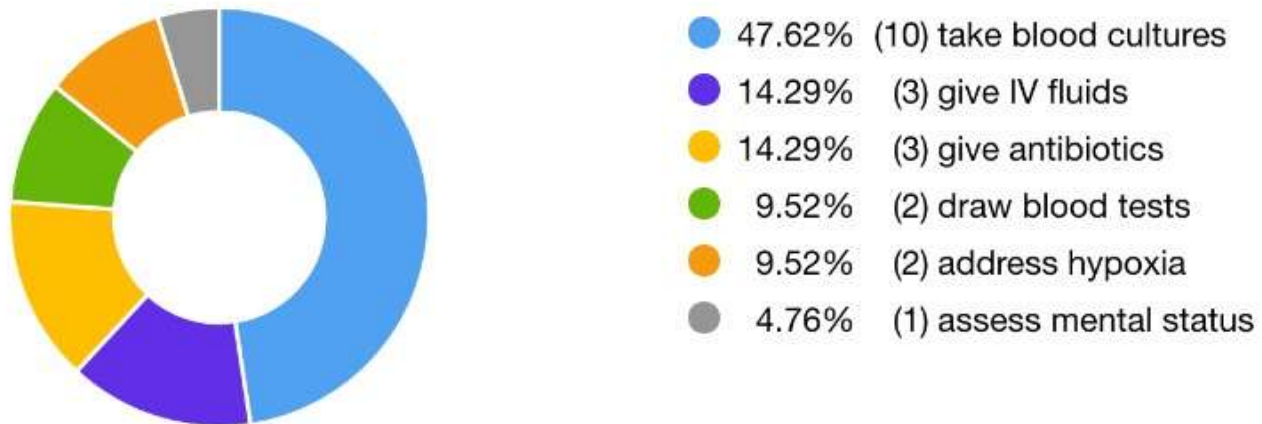
7. When you identify a septic patient, what is your first action item?

Results based on 21 responses to this question

- ● 80.95% (17) take vital signs
- ● 14.29% (3) take blood cultures
- ● 4.76% (1) give antibiotics
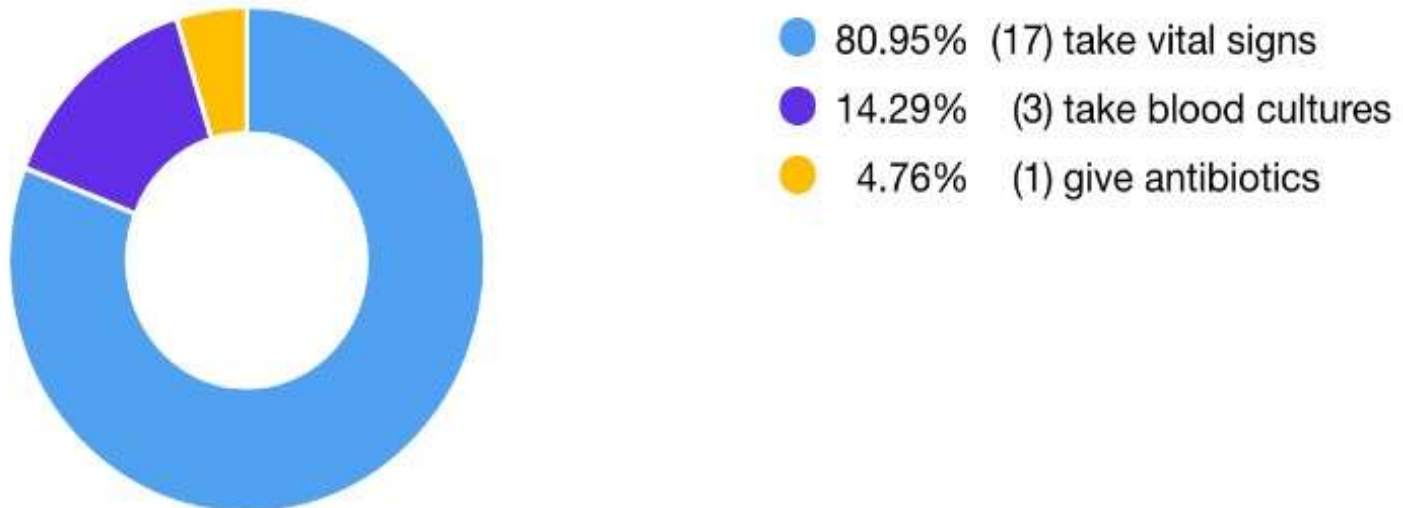
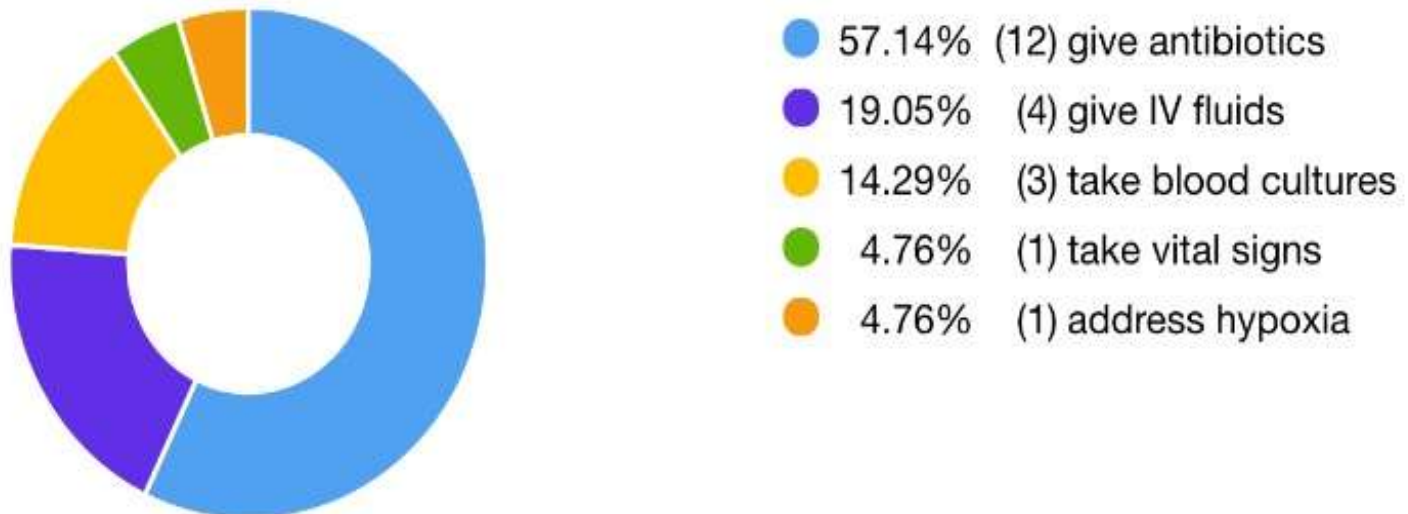## 8. When you identify a septic patient, what is your second action item?

Results based on 21 responses to this question

- 47.62% (10) take blood cultures
- 14.29% (3) give IV fluids
- 14.29% (3) give antibiotics
- 9.52% (2) draw blood tests
- 9.52% (2) address hypoxia
- 4.76% (1) assess mental status

9. When you identify a septic patient, what is your third action item?

Results based on 21 responses to this question

- 🔵 57.14% (12) give antibiotics
- 🟣 19.05% (4) give IV fluids
- 🟡 14.29% (3) take blood cultures
- 🟢 4.76% (1) take vital signs
- 🟠 4.76% (1) address hypoxia
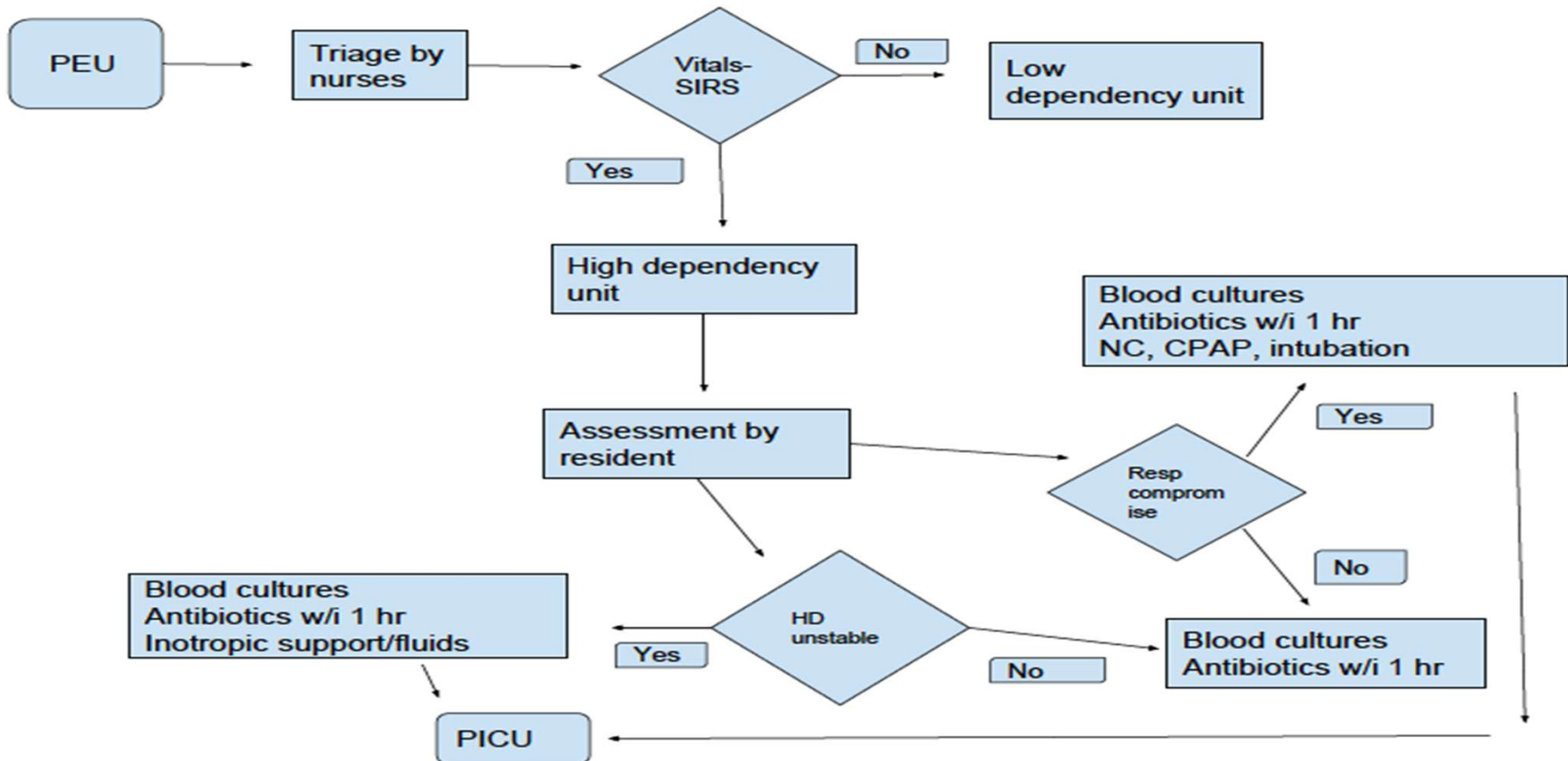
To achieve optimal patient outcomes, how quickly do you feel (above action items) need to be accomplished? (in what time frame)

- The average time frame ranged from 0-24 hours, with a mean of 3.7 hours identified.

Barriers to early initiation of action plan

Environment
- Delay in transfer (i.e. roads)
- Accessibility of medications (i.e. travel)

Material
- Availability of antibiotics, fluid, inotropes
- Access to perfuser, regulator
- Insufficient equipment (i.e. ETT)

People
- Personnel training (nurses, doctors, pharmacy)
- Attitude of personnel
- Buy in from management

Measure
- Incorrect devices/ equipment used to measure (i.e. vitals, labs)
- Not adhering to aseptic techniques (risk of contamination)
- Inappropriate sample bottles

Method
- Instructions/ guidelines unclear
- Unclear targets, goals (time to abx, to target BP, to source control)

Machine
- Broken machines/ pumps (i.e. ventilation, ABG)

Timely reaction/ management of sepsis

A collaborative process map and fishbone diagram were constructed:

Conclusion

- The provider, understanding of the time frame for early intervention, showed marked improvement after the educational intervention.

- Financial and/or resource constraints as well as lack of availability and access of antibiotics in a timely manner are the major barriers to early implantation of sepsis guidelines.

RECOMMENDATIONS

- A continuous educational drive is needed to ensure house staff are up to date with guidelines for management of sepsis.

- Implementation of algorithm developed will require further studies to evaluate its impact on outcomes on children with sepsis.

Reference

1. "Improving the Prevention, Diagnosis and Clinical Management of Sepsis." *World Health Organization*, World Health Organization, 3 May 2018, www.who.int/servicedeliverysafety/areas/sepsis/en/.
2. **Fleishmann-Struzek et al. The global burden of paediatric and neonatal sepsis: a systematic review**. Lancet Respiratory Medicine, The, 2018-03-01, Volume 6, Issue 3, Pages 223-230
3. Dellinger RP, Carlet JM, Masur H, Gerlach H, Calandra T, Cohen J, et al. Surviving Sepsis Campaign guidelines for management of severe sepsis and septic shock. Critical care medicine. 2004; 32(3):858– 73. PMID: 15090974
4. Who.int. 2021. Sepsis. [online] Available at: <https://www.who.int/news-room/fact-sheets/detail/sepsis> [Accessed 5 February 2021].