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CASE REPORT

Early Recognition and Timely Intervention in Sepsis: A Cornerstone for Improved Outcomes in Emergency Medicine

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ABSTRACT

Sepsis is a major contributor to global morbidity and mortality, especially in emergency settings. Despite decades of research, it continues to present diagnostic and therapeutic challenges, particularly in low and middle-income countries (LMICs). Early recognition and prompt, goal-directed therapy remain central to improving outcomes. This article reviews practical approaches to early sepsis identification using clinical scores such as qSOFA, NEWS2, and SIRS, and emphasizes rapid, protocol-driven intervention strategies suitable for emergency departments across resource-diverse settings.

KEYWORDS

• Sepsis • qSOFA • SIRS • NEW2

INTRODUCTION

Sepsis is defined as life-threatening organ dysfunction resulting from a dysregulated host response to infection.[4] Globally, an estimated 49 million people are affected by sepsis each year, resulting in 11 million deaths many of which are preventable with early identification and prompt intervention.[1,2] The burden is disproportionately higher in LMICs, where diagnostic and therapeutic delays are common due to infrastructure limitations.[11]

In the emergency department (ED), time-sensitive interventions can reduce mortality, decrease ICU admissions, and shorten hospital stays. This article focuses on the foundational pillars of early sepsis care in the ED: recognition,

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resuscitation, and risk stratification.

Early Recognition: The Clinical Imperative

Sepsis can be notoriously difficult to identify in its early stages, as its signs may mimic benign infections or other acute pathologies. Recognizing "red flags" within the first hour is essential.[3,4]

Key Clinical Signs:

- Hypotension (SBP <100 mmHg)
- Tachycardia (HR >90 bpm)
- Tachypnea (RR >22/min)
- Altered mental status
- Fever or hypothermia
- Reduced urine output
- Mottled skin or cyanosis

Scoring Systems for Risk Stratification

Several scoring systems are used to guide clinicians in identifying at-risk patients:

1. qSOFA (Quick Sequential Organ Failure Assessment)
   - Criteria: RR ≥ 22/min, altered mental status (GCS < 15), SBP ≤ 100 mmHg
   - Score ≥2 suggests increased risk of poor outcomes.[4,5]
   - Advantage: Fast and bedside-friendly.
   - Limitation: May miss early sepsis in certain populations.[7]
2. SIRS (Systemic Inflammatory Response Syndrome)
   - Criteria: Temp >38°C or <36°C, HR >90, RR >20, WBC >12,000 or <4,000
   - Two or more criteria indicate potential systemic response to infection.[6]
   - Advantage: Sensitive in early phases.
   - Limitation: Lacks specificity; can flag non-septic patients.[7]
3. NEWS2 (National Early Warning Score 2)
   - Includes RR, oxygen saturation, temperature, systolic BP, pulse, and mental status.[8,9]
   - Score >5 requires urgent clinical attention.
   - Advantage: Holistic; used widely in hospitals globally.[12]
   - Limitation: More time and resource-intensive than qSOFA.[8]

In LMICs, where advanced diagnostics may be unavailable, these scores especially qSOFA provide a pragmatic approach to triaging patients.[5,11]

Timely Intervention: The Golden Hour of Sepsis

The first hour following the suspicion of sepsis is crucial. The 2021 Surviving Sepsis Campaign (SSC) guidelines recommend a "1-hour bundle" to be initiated as soon as sepsis is suspected:[9,10]

- Measure serum lactate (repeat if >2 mmol/L)
- Obtain blood cultures before antibiotic administration
- Administer broad-spectrum antibiotics
- Begin rapid fluid resuscitation with 30 mL/kg crystalloids (if hypotensive or lactate ≥4)
- Apply vasopressors if hypotension persists after fluids to maintain MAP ≥65 mmHg

Challenges in LMIC Settings

Lactate Measurement: May not be available alternative markers like capillary refill time (CRT) or bedside ultrasound (IVC variability) can be used.[11]

Antibiotic Delays: Ensuring empirical coverage within 1 hour is essential even before culture reports.[9]

Fluid Responsiveness Monitoring: Passive leg raise (PLR) test or bedside echo can guide fluid needs where invasive monitors are unavailable.[9,10]

Case Snapshot: Practical Approach in the ED

A 62-year-old male with a history of diabetes presents with altered mental status, fever (38.7°C), and tachypnea. qSOFA = 3. Rapid lactate bedside test not available. CRT >3 seconds. Blood cultures are drawn. Broad-spectrum IV antibiotics and 2L normal saline bolus are initiated within 40 minutes of arrival. The patient is monitored for MAP and urine output.

Outcome: Stabilized within 6 hours, later admitted to HDU. Early intervention prevented ICU admission.[9,11]

The Role of Emergency Physicians

Emergency physicians are critical in orchestrating the early sepsis care cascade. Their leadership is essential in:

- Initiating sepsis protocols
- Training nurses and junior doctors in sepsis recognition
- Liaising with microbiology and ICU teams
- Auditing sepsis bundles to identify delays or errors

Simulation based sepsis drills, regular case audits, and adherence to national guidelines (like INICC protocols in India) can significantly uplift sepsis care standards.[11,12]

CONCLUSION

Sepsis is a race against time, and emergency departments serve as the battleground for this life-threatening condition. With the use of simple clinical tools and time-sensitive interventions, emergency physicians can substantially alter the trajectory of patient outcomes. Investing in training, protocol standardization, and low-cost diagnostic substitutes is essential, especially in LMICs, to bridge the sepsis care gap globally.[2,9,11]

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