

Sepsis Alerts: A Guide or Siren?

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Introduction

- With the integration of automated alert pathways in electronic health records (EMR), the system's role in identifying sepsis and guiding care has grown.
- This study evaluates the accuracy and effectiveness of an automated sepsis alert system at a tertiary medical center, aiming to improve clinical decision-making and patient outcomes.

Methods

- Geisinger Community Medical Center maintains a clinical database of all patients admitted with severe sepsis or septic shock (ICD-10 codes)
- A random sample of 148 patients aged >18 from January to December 2023 was evaluated to assess the efficacy of the EPIC-based sepsis alert system.
- Two independent reviewers conducted chart reviews to confirm sepsis criteria.
- Sensitivity, specificity, PPV, NPV, LR, and in-patient mortality outcomes were calculated."

Results

- Among the 148 patients, manual chart review identified 123 true sepsis cases.
- Of these, 65 were correctly flagged (true positives), and 16 were accurately ruled out (true negatives).
- There were 8 false positives and 59 false negatives.
- The sepsis alert system showed a PPV of 89.04%, NPV of 21.33%, sensitivity of 52.42%, and specificity of 67%.
- The positive likelihood ratio (+LR) was 1.45, and the negative likelihood ratio (-LR) was 0.75.
- Mortality rates were 9.23% in true positives, 10.17% in true negatives, 37.5% in false positives, and 6.87% in false negatives.
- Among the 8 false positives, 3 were misdiagnosed as cardiogenic shock, acute mesenteric ischemia, and decompensated liver cirrhosis

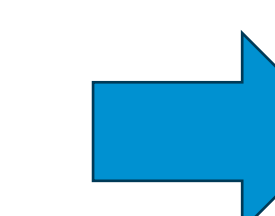
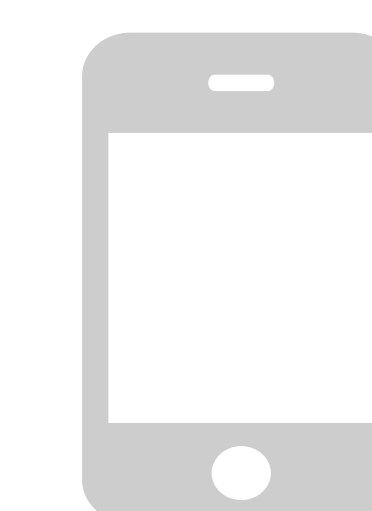
		Disease		
		Positive	Negative	
Sepsis Alert	Positive	65	8	89.04%
	Negative	59	16	21.33%
		52.42%	67%	

Clinical Implications

- Our single-center analysis highlights the limited generalizability of current sepsis screening tools and the need for improvements in diagnostic accuracy.
- The high mortality in falsely identified sepsis cases suggests misdiagnosis and improper treatment, underscoring the urgency to refine screening models.
- Due to the small sample size, mortality patterns are difficult to assess, warranting further research.
- This analysis also encourages clinicians to avoid overreliance on screening tools and be cautious of "sepsis mimickers" to prevent negative outcomes.

Key Points

Sepsis alerts in a tertiary center show low sensitivity and specificity, with higher mortality in misdiagnosed patients



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