

Definitions

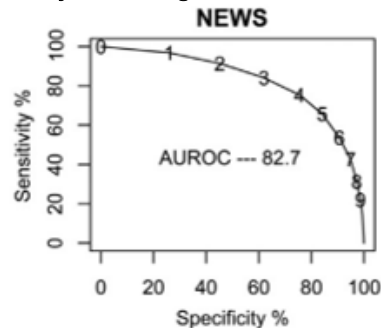
Context: Many clinicians rely on SIRS criteria (≥ 2 of temperature, HR, WBC, RR) to define sepsis (SIRS + source), severe sepsis (sepsis + organ dysfunction), and septic shock (sepsis + circulatory failure).

Current: Some evidence supports qSOFA (RR, cognition, SBP) as a superior tool.¹

Cutting Edge: These scores may serve slightly different roles, specifically SIRS to help detect sepsis (with high sensitivity) and qSOFA to help predict mortality (with high specificity).²

	SIRS	qSOFA
Sn	80.0	44.7
Sp	25.7	83.6
PPV	54.8	75.5
NPV	53.2	57.3

Early Warnings



Context: Early detection of sepsis is necessary for early, aggressive interventions such as IV fluids and antibiotics.

Current: Multiple early warning systems exist. The most effective may be the National Early Warning System (NEWS) which outperformed other scores in a head-to-head comparison.³

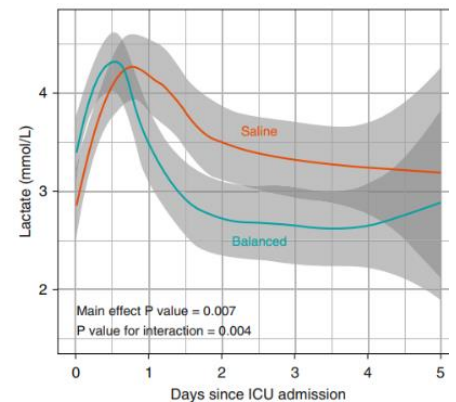
Cutting Edge: Early detection systems are increasingly being integrated into electronic health records for automated application to real-time patient data.

Fluid resuscitation

Context: IV fluid is key to help reduce inflammation and maintain perfusion.

Current: Normal saline is often used as first line IV fluid.

Cutting edge: Balanced crystalloids (ie, lactated ringer) have been shown to be superior to normal saline in sepsis regardless of the serum potassium, chloride, or lactate levels.⁴



Antibiotic Therapy

Context: Early, aggressive antibiotics are known to improve mortality in sepsis, especially septic shock.

Context: Optimal timing is uncertain, and sooner is likely better; however, the data are really for patients with septic shock and time-to-antibiotics after persistent or recurrent hypotension. For early sepsis without septic shock, the data are less compelling; while delays in antibiotics can increase the risk of progression to septic shock, the rise in the proportion of patients progressing to septic shock by the hour rises most notably after 5 hours. Thus, for patients where sepsis is possible but not definite/probable, where shock is absent, perform an assessment of infectious versus noninfectious causes and administer antibiotics, if indicated, within 3 hours (rather than 1 hour). Once antibiotics are deemed necessary, they should be administered as quickly as possible, ideally within one hour.⁵

Cutting Edge: Develop systems to ensure blood cultures are obtained before antibiotics. This reduces LOS, C difficile infection, and mortality. Address system issues that cause delays between antibiotic ordering and antibiotic administration. Administering broader antibiotic agents (ie as beta-lactams) prior to vancomycin may help reduce short-term mortality from bacteremia.⁶ Timing of subsequent doses of antibiotics are critical. Make sure that these are not missed, particularly for patients boarding in the ED.

References:

1. Singer et al. The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). JAMA. 2016;315(8):801.
2. Dykes et al. Contrasting qSOFA and SIRS Criteria for Early Sepsis Identification in a Veteran Population. Fed Pract. 2019;36:S21-24.
3. McGrath et al. Improvement of sepsis identification through multi-year comparison of sepsis and early warning scores. Am J Emerg Med. 2022. 51:239.
4. Brown et al. Balanced Crystalloids versus Saline in Sepsis. Am J Respir Crit Care Med. 2019. 200(12):1487-1495.
5. Kashiouris et al. Supply Chain Delays in Antimicrobial Administration After the Initial Clinician Order and Mortality in Patients With Sepsis. Crit Care Med. 2019;47(10):1388-1395.
6. Amoah et al. Administration of a β -lactam Prior to Vancomycin as the First Dose of Antibiotic Therapy Improves Survival in Patients with Bloodstream Infections. Clin Infect Dis. 2021. Ciab865.