Staging Sepsis for the Adult Patient: Critical Care Physician Module

Northwell Health℠

Sepsis Continuum

SIRS = 2 or more clinical criteria, resulting in Systemic Inflammatory Response Syndrome

Sepsis = SIRS + proven/suspected infection

Severe Sepsis = Sepsis + acute organ dysfunction

Septic Shock = Severe Sepsis + refractory hypotension

SIRS/Sepsis Defined

Manifested by a **documented or suspected infection** with two or more SIRS criteria:

Temperature > 38.3° C (101°F) or < 36° C (96.8°F)

Heart rate > 90 beats/min

Respiratory rate > 20 breaths/min

WBC > 12,000/mm³, or < 4,000/mm³ or more than 10% immature neutrophils or bands

Severe Sepsis

Sepsis with organ dysfunction.

Examples include:

- New onset renal insufficiency
- Alteration in mental status
- Lactate > 2 and < 4
- Coagulopathy/thrombocytopenia
- Hyperbilirubinemia

Septic Shock

Sepsis with refractory hypotension requiring vasoactive agents **or** lactate $\geq$ 4.0 mmol/L despite adequate fluid resuscitation

Stage	Definition	SIRS Criteria
Sepsis	Suspected infection + 2 or more SIRs criteria	T-38.3°C (101°F) or T-36°C (96.8°F) HR: > 90 RR: > 20 WBC > 12,000 or < 4,000
Severe Sepsis	Suspected or documented infection + organ dysfunction	T-38.3°C (101°F) or T-36°C (96.8°F) HR: > 90 RR: > 20 WBC > 12,000 or < 4,000
Septic Shock	Severe Sepsis + persistent hypotension that does not respond to appropriate fluid resuscitation	T-38.3°C (101°F) or T-36°C (96.8°F) HR: > 90 RR: > 20 WBC > 12,000 or < 4,000

Treating Sepsis

Source control (remove PICC, address gall bladder, etc). Administration of antimicrobials within 180 minutes of recognizing sepsis – broad spectrum to start.

- Draw blood cultures prior to antibiotics, increases the odds of isolating the causative agent(s) allowing tailoring of antibiotic regimens at 72 hrs
- Draw diagnostic lab studies to evaluate for potential organ dysfunction (include lactic acid measurement to screen for severe sepsis/septic shock)

Treating Severe Sepsis

"Empiric crystalloid administration (30mL/kg crystalloid)"

If lactate is elevated > 2 mmol/L, repeat within 6 hours

Antibiotics within 60 minutes of identification

Treating Septic Shock

- 30 mL/kg crystalloid; if hypotensive, norepinephrine is first line agent
- “Reassess volume status after resuscitation with ultrasound, Central Venous Catheter or other parameters”
- Repeat lactic acid measurement after resuscitation.
- Avoid Dopamine

Sepsis Bundles

Within 3 hours

- Blood cultures (prior to antibiotic)
- Antibiotics (2 antibiotics, first one first!)
- Lactic acid level (here, “lactate VBG” in dark green top is 90% faster, new choice)
- “(if hypotensive or organ dysfunction) 30 mL/kg *crystalloid* (normal saline, LR,) completed.
  - Bolus started within 30 minutes.

Sepsis Bundles

Within 6 hours

- **Repeat Lactic acid level** if first was > 2
- If shock (lactate > 4):
  - Reassess volume status
  - Vasopressors if MAP<65

Repeat focused exam

If shock: Repeat focused exam (after initial fluid resuscitation) by licensed independent practitioner (physician/APN/PA only) including vital signs, cardiopulmonary, capillary refill, pulse, and skin findings.

Proposed Sepsis 3.0 definitions (2016)

- Sepsis is **life-threatening** organ dysfunction caused by a dysregulated host response to infection.
  - Operationalize with qSOFA
    - Altered mental status
    - Respiratory rate ≥ 22/min
    - Systolic blood pressure ≤ 100 mmHg

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Sepsis 3.0 – Septic Shock

- Sepsis in which particularly profound circulatory, cellular, and metabolic abnormalities are associated with a greater risk of mortality than with sepsis alone.
  - Operationalized:
    - Needs vasoactive agents to maintain MAP > 65

      and

    - Serum lactate > 2 mmol/L
    - Mortality 35% (Kaiser) to 54% (UPMC)

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