Staging Sepsis for the Adult Patient: Critical Care Physician Module
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  > 38.3⁰ C (101⁰F) or < 36⁰ C (96.8⁰F)
- 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.
<table>
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<tr>
<th>Stage</th>
<th>Definition</th>
<th>SIRS Criteria</th>
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<tbody>
<tr>
<td>Sepsis</td>
<td>Suspected infection + 2 or more SIRs criteria</td>
<td>T-38.3°C (101°F) or T-36°C (96.8°F) HR: &gt; 90 RR: &gt; 20 WBC &gt; 12,000 or &lt; 4,000</td>
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<td>Septic Shock</td>
<td>Severe Sepsis + persistent hypotension that does not respond to appropriate fluid resuscitation</td>
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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
    • Serum lactate > 2 mmol/L
    • Mortality 35% (Kaiser) to 54% (UPMC)

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