Acute Management of Sepsis

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Disclosures and Disclaimers

Room, Board, Coffee
Biases

Teach Ultrasound

#FOAM
LIMITATIONS

Until you spread your wings,
you'll have no idea how far you can walk.
Yellow Brick Road

Quick

Key Points

Always Question
Who Cares

Greensboro, NC

Las Vegas, NV

Nepal
Nomenclature Change

Coding Change

Definition Change
<table>
<thead>
<tr>
<th>SEPSIS</th>
<th>OLD</th>
<th>NEW</th>
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<tbody>
<tr>
<td>SEPSIS</td>
<td>SIRS + Suspected Infection</td>
<td>SUSPECTED/DOCUMENTED INFECTION + 2 or 3 on qSOFA (HAT): Hypotension (SBP ≤100 mmHg) AMS (GCS ≤13) Tachypnea (≥22/min) OR Rise in SOFA score by 2 or more</td>
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<tr>
<td>SEVERE SEPSIS</td>
<td>Sepsis + SBP &lt;90 mmHg or MAP &lt; 65 mmHg lactate &gt; 2.0 mmol/L INR &gt;1.5 or a PTT &gt;60 s Bilirubin &gt;34 μmol/L Urine output &lt;0.5 mL/kg/h for 2 h Creatinine &gt;177 μmol/L Platelets &lt;100 ×109/L SpO2 &lt;90% on room air</td>
<td>SEPSIS + VASOPRESSORS needed for MAP &gt;65 mmHg + LACTATE &gt;2 mmol/L after adequate fluid resuscitation</td>
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From: http://stemlynsblog.org/sepsis-16/
Infection

cSOFA

SOFA
PRESSURE
BRAIN
RESPIRATORY
Now What...
EGDT
ARISE
ProMISE
ProCESS
Fluids = Medication

30mL/Kg
“Sepsis” ≠ Volume Deficit
“Sepsis” = Switched Sites
Inflammatoy
Glycocalyx
Capillary Leak
Mortality after Fluid Bolus in African Children with Severe Infection

ARDS
AKI
Anasarca
Chloride
Balanced
Albumin
CHF
ESRD
ESLD
SVV

IVC

VTI
Recognize severe sepsis, maintain airway and establish IV access

GOALS
1. MAP > 65 mmHg
2. CI > 2.5

500 ml boluses of LR Max. of 20-30 ml/kg,

Early broad spectrum antimicrobial therapy
Blood cultures, lactate and PCT

If MAP < 65 mmHg after fluid bolus
Establish central venous access

Start norepinephrine @ 0.01 ug/kg/min and titrate up to 0.1-0.2 ug/kg/min

MAP > 65 mmHg
Monitor hemodynamics and perfusion
If POOR
Attach non-invasive cardiac output monitor & Bedside ECHO

MAP < 65 mmHg
Cl > 2.5 or hyperdynamic LV
Vasopressin @ 0.03U/min ??
Corticosteroid Infusion ??

Cl < 2.5 or poor LV function

PLR
SV inc > 10%
500 cc fluid LR
Dobutamine @ 2.5 ug/kg/min and titrate to CI

SV inc < 10%
TRADITION

JUST BECAUSE YOU’VE ALWAYS DONE IT THAT WAY DOESN’T MEAN IT’S NOT INCREDIBLY STUPID.
Kumar, A., et al. (2006) CCM 34(6); 1589-1596
Surviving Sepsis

CMS, et al.

Reality
Meta

Pooled

Stats
Negative

Balls

Harm
Problem

Crap in = Crap out

Wrong + Wrong ≠ Right
Labs
Lactate
Procalcitonin
Lactate
High
Clear
Procalcitonin

Turn On

Turn Off
**LRTI algorithm: Initial PCT**

- **PCT Value**
  - <0.1 μg/L: Strongly Discouraged
  - 0.1 - 0.24 μg/L: Discouraged
  - ≥0.25-0.5 μg/L: Encouraged
  - >0.5 μg/L: Strongly Encouraged

**Antibiotic Use Recommendation**

- **Note:**
  - Consider alternative diagnosis
  - Repeat PCT in 6-12 hours if antibiotics not begun and no clinical improvement
  - If clinically unstable, immunosuppressed or high risk consider overruling (PSI Class IV-V, CURB>2, GOLD III or IV)

**Repeat every 2-3 days to consider early antibiotic cessation**

See Algorithm 2
LRTI algorithm: Follow Up PCT

**PCT Value**
- <0.1 μg/L or drop by >90%
  - Cessation Strongly Encouraged
  - Consider continuing if clinically unstable
- 0.1 - 0.24 μg/L or drop by >80%
  - Cessation Encouraged
- ≥0.25 - 0.5 μg/L
  - Cessation Discouraged
  - If PCT rising or not adequately decreasing consider possible treatment failure and evaluate for need for expanding antibiotic coverage or further diagnostic evaluation
- >0.5 μg/L
  - Cessation Strongly Discouraged

nebraskamed.com/careers/education-programs/asp/procalcitonin-pct-guidance
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• Levy, M. e. (2010). The Surviving Sepsis Campaign: Results of an International Guideline-Based Performance Improvement Programs Targeting Severe Sepsis. Critical Care Medicine, 38, 367-374.


