Sepsis: Establishment of Time Zero

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OK, What Do You Mean "Time Zero"?

Time zero is a critical concept used to determine the start of the clock for tracking the required patient interventions associated with severe sepsis and septic shock.

For Severe Sepsis (2 different ways)

1. A DR/APRN/PA states/documents it is **OR**
2. When clinical criteria are met:
   - Documentation of infection
   - Two or more SIRS criteria
   - **New onset** organ dysfunction within a specific timeframe

Here is Where the **Abstraction** Magic Happens…

1. Documentation of infection:

Examples: PNA, UTI, cellulitis, etc.

2. SIRS Criteria:
   - Temp > 38°C or < 36°C (>100.9 F or <96.8 F)
   - HR > 90 beats/minute
   - RR > 20 breaths/minute
   - WBC count > 12,000 or < 4,000 or > 10% bands

3. Organ dysfunction:
   - Systolic BP < 90 mmHg or MAP < 65 mmHg
   - **Acute** respiratory: new need for invasive or non-invasive ventilation
   - Creatinine > 2.0 mg/dL
   - Urine output < 0.5mL/kg/hour for two consecutive hours
   - Total bilirubin > 2mg/dL
   - Platelet count < 100,000
   - INR > 1.5 or a PTT > 60 seconds
   - Lactate > 2

Severe Sepsis Scenario #1

- LTACH presentation: Female, 58 years old. Patient arrived via ambulance for pos-discharge care of acute hemorrhagic stoke (dx 5/1/25 at outlying facility) with left-side weakness and moderate aphasia.
- History: DM, hypertension, LKW: 5/1/25 at 6am EST, no hx of prior strokes/TIAs. Prior to stroke, patient was ambulatory with self-regulation of ADL
- Arrival: 5/5/25 at 3PM EST
- Admission V/S: (taken-5/5/25 at 3:15 PM EST)
  - Temp: 100°F
  - HR: 110 bpm
  - RR: 24 breaths/minute
  - BP: 95/50 mmHg
- Doctor has examined the patient and wrote orders, including labs, CXR, medications, etc.

Severe Sepsis Scenario #1

Labs/Test ordered:

- CBC
- CMP
- Lactate
- Hemoglobin A1C
- PCXR

Findings: (5/5/25 at 3:55 PM EST)

- WBC: 13,000
- Lactate: 2.1

- **PCXR:** (5/5/25 at 4 PM EST)
  - New infiltrate seen on LLL as compared to CXR taken on 5/1/25. Pneumonia suspected.

Severe Sepsis Scenario #1

Our Patient

- HR: 110 bpm
- RR: 24 breaths/minute

5/5/25 3:15 PM

- WBC: 13,000
- Lactate: 2.1

5/5/25 3:55 PM

- PCXR: Pneumonia

5/5/25 4 PM

Time Zero: 5/5/25 4 PM

Criteria:

Documentation of infection:

SIRS Criteria:

- Temp > 38°C or < 36°C (>100.9 F or <96.8 F)
- HR > 90 beats/minute
- RR > 20 breaths/minute
- WBC count > 12,000 or < 4,000 or > 10% bands

Organ dysfunction:

- Systolic BP < 90 mmHg or MAP < 65 mmHg
- New need for invasive or non-invasive ventilation
- Creatinine > 2.0 mg/dL
- Urine OP < 0.5mL/kg/hour for 2 consecutive hrs
- Total bilirubin > 2mg/dL
- Platelet count < 100,000
- INR > 1.5 or a PTT > 60 seconds
- Lactate > 2

Severe Sepsis Scenario #2

LTACH presentation: Male, 78 years old. Patient arrived via ambulance for pos-discharge care CABG (5 vessel) (performed: 4/20/25 at outlying facility) requiring extended recovery & rehabilitation.

History: Left-sided CP & arrival to ED on 4/20/25 w/ emergent CABG performed same day. Hx of smoking 1pk/day, ESRD, dialysis M-W-F.

Arrival: 5/1/25 at 1PM EST

Admission V/S: (taken-5/1/25 at 1:30 PM EST)

- Temp: 100.9°F
- HR: 88 bpm
- RR: 22 breaths/minute
- BP: 98/56 mmHg

Doctor has examined the patient and wrote orders, including labs, CXR, medications, etc. Exam also revealed open area wound on L great toe.

Severe Sepsis Scenario #2

Labs/Test ordered:

- CBC
- CMP
- Lactate
- Hemoglobin A1C
- PCXR/Left foot

Findings: (5/1/25 at 2:00 PM EST)

- WBC: 14,000
- Lactate: 2.0

CXR/L Foot: (5/1/25 at 3:25PM EST)

- Normal reading. L Foot: open wound L great toe shows osteomyelitis

Severe Sepsis Scenario #2

Our Patient

- RR: 22 breaths/minute

  5/1/25 1:30 PM

- WBC: 14,000

  5/1/25 2 PM

- L Foot: new onset osteomyelitis

  5/1/25 3:25 PM

Time Zero: 5/1/25 3:25 PM

Criteria:

Documentation of infection:

SIRS Criteria:

- Temp > 38°C or < 36°C (>100.9 F or <96.8 F)
- HR > 90 beats/minute
- RR > 20 breaths/minute
- WBC count > 12,000 or < 4,000 or > 10% bands

Organ dysfunction:

- Systolic BP < 90 mmHg or MAP < 65 mmHg
- New need for invasive or non-invasive ventilation
- Creatinine > 2.0 mg/dL
- Urine OP < 0.5mL/kg/hour for 2 consecutive hrs
- Total bilirubin > 2mg/dL
- Platelet count < 100,000
- INR > 1.5 or a PTT > 60 seconds
- Lactate > 2

Severe Sepsis Scenario #3

LTACH presentation: Female, 64 years old. Patient arrived via ambulance for multiple chronic conditions r/t COPD, CHF, and Multiple Organ Failure from outlying facility.

History: Arrival: 5/5/25 at 6 PM EST

Admission V/S: (taken-5/5/25 at 6:10 PM EST)

- Temp: 100°F
- HR: 88 bpm
- RR: 18 breaths/minute
- BP: 92/52 mmHg

Doctor has examined the patient and wrote orders (5/5/25 6:15 PM EST), including labs, CXR, medications, etc. Doctor diagnosis of Severe Sepsis.

Severe Sepsis Scenario #3

Labs/Test ordered:

- CBC
- CMP
- Lactate
- Hemoglobin A1C
- PT and PTT
- Liver Function
- PCXR

Findings: (5/5/25 at 6:45 PM EST)

- WBC: 13,000
- Lactate: 1.8

CXR: (5/5/25 at 7 PM EST)

- Normal reading. No infiltrates seen

Severe Sepsis Scenario #2

Our Patient

- WBC: 13,000

5/5/25 6:45 PM

However:

- Doctor Diagnosis of Severe Sepsis

5/5/25 6:15 PM

Time Zero: 5/5/25 6:15 PM

Criteria:

Documentation of infection:

SIRS Criteria:

- Temp > 38°C or < 36°C (>100.9 F or <96.8 F)
- HR > 90 beats/minute
- RR > 20 breaths/minute
- WBC count > 12,000 or < 4,000 or > 10% bands

Organ dysfunction:

- Systolic BP < 90 mmHg or MAP < 65 mmHg
- New need for invasive or non-invasive ventilation
- Creatinine > 2.0 mg/dL
- Urine OP < 0.5mL/kg/hour for 2 consecutive hrs
- Total bilirubin > 2mg/dL
- Platelet count < 100,000
- INR > 1.5 or a PTT > 60 seconds
- Lactate > 2

Resources:

- 6.6-Identifying-Time-Zero.pdf
- https://qualitynet.cms.gov/files/66684889afe5ab12add59ccc?filename=HIQR_SpecsMan_v5.17.zip

Questions?

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