Sepsis
Early Recognition and Management

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Sepsis a Deadly Progression

- Affects millions around the world each year, killing one in four

- Contributes to approximately 50% of all hospital deaths

- Mortality Rates
  - 20% for sepsis
  - 40% for severe sepsis
  - More than 60% for septic shock

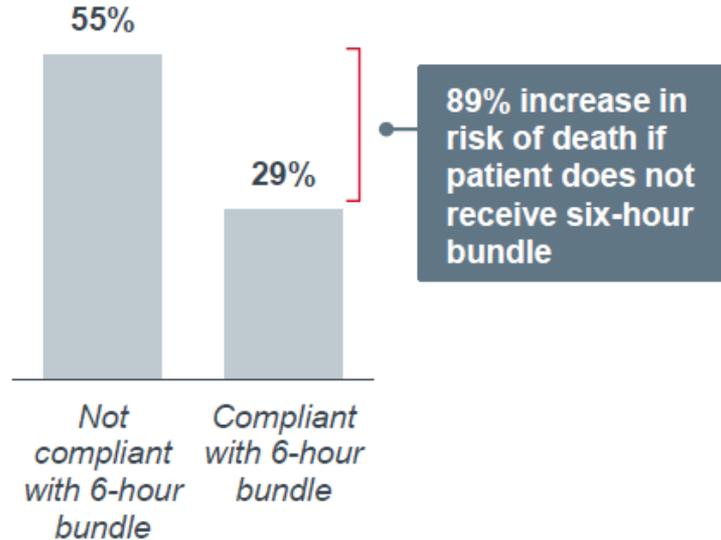- **Best outcomes through early identification and treatment**

Severe Sepsis vs. Current Care Priorities

Care Priorities	US Incidence	# of Deaths	Mortality Rate
AMI	900,000	225,000	25%
Stroke	700,000	163,500	23%
Trauma (Motor Vehicle)	2.9 million (injuries)	42,643	1.5%
Severe Sepsis	751,000	215,000	29%

Early Identification Key

Sepsis Too Often Still Flies Under Radar, Leading to Increased Mortality

Impact of Compliance with 6-hour Sepsis Bundle on Hospital Mortality[1]

55%

29%

89% increase in risk of death if patient does not receive six-hour bundle

Not compliant with 6-hour bundle

Compliant with 6-hour bundle

1 hour Delay in Antimicrobials → **7.6%** Increase in Mortality

Barriers to Early Identification

Subtle symptoms often fly under the radar

Floor nurses not exposed to many sepsis cases

Nurses reluctant to sound alarm because of false positive

All clinicians extremely busy

BAPTIST HEALTH

Surviving Sepsis Campaign

- A National Quality Improvement Initiative committed to reducing mortality from severe sepsis worldwide.

- Main objectives are

  – increase awareness

  – early recognition

  – treatment of sepsis for hospitalized patients

- Follows 2012 International Guidelines for Managing Severe Sepsis and Septic Shock

Definitions

- Sepsis = Presence of infection together with systemic manifestations of infection
  - Temperature >100.9° F or < 96.8° F
  - Systolic B/P <90 or MAP < 65
  - Heart rate > 90/min
  - Respiratory rate > 20
  - Acute changes in mental status (confusion, falls)
  - WBC >12 or < 4

- Systemic Inflammatory Response Syndrome (SIRS) when any two of the above are met

Definitions cont.

- Severe sepsis = sepsis plus sepsis induced organ dysfunction or tissue hypoperfusion

  - Sepsis induced hypotension
  - Lactate > 2   *Excellent indicator of organ failure
  - Creatinine > 2 mg/dl
  - Bilirubin > 2 mg/dl
  - Platelets < 100,000
  - INR > 1.5
  - Hyperglycemia without history of diabetes
  - Urine output <0.5ml/kg/hr for more than 2 hours with adequate fluids
  - Acute lung injury

Definitions cont.

- Septic Shock = Severe sepsis with hypotension despite adequate fluid resuscitation
  - Hypotension <90 systolic *Key marker for severe sepsis if no other explanation for low B/P or MAP < 65 mm Hg
  - Lactate ≥4 mmol/L

Early Identification of Sepsis

- Without early identification significant improvements in outcomes will not be seen

    – For each hour delay, risk of hospital death increases by 7.6%

    – Timely Antibiotics reflect the best outcomes (within 3 hours or identification, and after blood cultures drawn if possible). *Within one hour is even better.

    – Patients appropriately diagnosed and treated also saw a shorter length of stay, 11 days vs. 14

Tools For Early Identification and Treatment

- Nurse Sepsis Screening Tool
  - All ED patient screened in triage
  - Inpatients screened for sepsis at the beginning of each shift (Every 12 hours unless previously positive)

- Sepsis Order Bundles (3 and 6 hour)

Epic: Nursing Screen

Auto-populates with most recent vital signs

Positive "Sepsis Screen" appears in Patient Header

This will be the initial triage sepsis screen completed during the triage process. The last set of vital signs (likely those just entered) will appear in the associated cells on the right-hand side. Background logic will **preselect** the appropriate answers on the left-hand side.

Logic will also look for the designated lab values in the last 24 hours and answer the lab related items *(will not be available on most patients this early in the visit)*. The nurse will manually answer the Altered Mental Status (AMS) and infection questions and the tool will automatically select the screen result.

Sepsis

To be completed within 3 Hours

1. **Measure Lactate Level**

2. **Obtain blood cultures prior to administration of antibiotics**

3. **Administer broad-spectrum antibiotics (shortest infusion time first)**

4. **Administer 30 mL/kg crystalloid for hypotension or lactate ≥4 mmol/L**

*One automatic Lactic reflex order will be completed by lab within 4 hours if initial lactic acid is > 2.

*Time of Presentation is defined as the time of a positive nurse triage in the ED or as an inpatient, or if presented from another venue, from the earliest chart annotation consistent with all elements of severe sepsis or septic shock ascertained through chart review.

Sepsis

To be completed within 6 Hours

5. **Apply vasopressors (for hypotension that does not respond to initial fluid bolus) to maintain a SBP >90 or MAP >65 mmHg**

6. **In the event of persistent arterial hypotension despite volume resuscitation, or initial lactate ≥4mmol/L (Septic Shock) you must complete a "Septic Shock Focused Exam" within 6 hours of septic shock diagnosis: fluid bolus must be completed prior to assessment;** *Refer to Septic Shock Focused Exam. Form must be printed from Optio*

7. **Re-measure lactate acid if initial lactate was elevated > 2 (within 6 hrs)**

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Questions?