**SEVERE SEPSIS/SEPTIC SHOCK CLINICAL PATHWAY**

**SEVERE SEPSIS DEFINED AS:**
- Known or suspected infection, 2 or more signs of SIRS, organ dysfunction.
- Hypotension which is defined as systolic B/P less than 90 mmHg or MAP less than 65 mmHg or a >40 mmHg decrease in B/P from baseline after 30 minutes of fluid bolus or known or suspected infection with 2 or more signs of SIRS, organ dysfunction, and hypoperfusion evidenced by a lactate level greater than or equal to 4.

**SEPTIC SHOCK DEFINED AS:**
- Known or suspected infection with 2 or more signs of SIRS, organ dysfunction, and hypotension.
- Central Line Placed
- Goal MAP greater than or equal to 65 mmHg
- Goal Scv02 greater than or equal to 70% or Sv02 greater than or equal to 65% (if PreSep not inserted and you have a non-femoral central line draw an O2 Hgb from the distal port Stat. If not to goal draw one in 3 hours, then 6 hr until goal of 70.)
- Goal monitor fluid status utilizing stroke volume optimization

**GOALS TO ACHIEVE**

**INCREASED 0, DELIVERY:**
- CVP 6-12 mmHg (non-vented), 12-15 mmHg (vented)
- MAP greater than or equal to 65 mmHg
- Svo2 greater than or equal to 70%
- Blood Glucose less than 180 mg/dl
- Urine output greater than 0.5 ml/kg/hr

**0-1 HOURS GOALS (3 HOUR BUNDLE)**

1. Serum lactate drawn
2. Blood cultures x 2 obtained prior to antibiotics
3. Broad Spectrum Antibiotic-start AFTER obtaining blood culture? (if cannot obtain BC > 45 minutes hang abx) Goal delivery time 60 minutes or less.
4. 30 ml/kg crystalloid for hypotension (SBP <90, or decrease by >40 mm HG, or MAP <65) or lactate 3-4mmol/L
5. Patients body mass index (BMI) is _______ (if > 30 provider may choose to use ideal body weight for the 30 ml/kg crystalloid fluid volume, BMI must be documented)
6. Patients ideal body weight (IBW) is _______ (IBW Must be documented)
7. Utilized stroke volume monitoring for optimizing fluid bolus
   - ED/Critical Care only - see stroke volume optimizing
   - Amount of fluid given in ED/Floor
   - If initial lactic acid elevated > 2
   - Lactic acid to be drawn at: Date_______ Time_______

**STROKE VOLUME OPTIMIZING**

**Monitor Stroke Volume**

200 - 250 ml Fluid Challenge Over 5-10 min*

- SV Increase > 10% YES
- SV Reduction > 10% NO

**Monitor Stroke Volume for Clinical Signs of Fluid Loss**

**Time Zero** = ED Arrival Time OR Direct Admit Arrival to Hospital

**OR**

Patient identified on inpatient unit - follow below algorithm

**Suspected/ Known Infection**

- + 2 or more SIRS (may be less if immunocompromised or on beta blockers)

- + Organ Dysfunction of Hypotension 1 hour after fluid bolus started OR lactic acid > 4 (whichever comes first)

- If no fluid given time zero = 1 hour after onset of hypotension, on pressors - this counts for hypotension

**SEVERE SEPSIS**

**SEPTIC SHOCK**

Form 1112-PRN (Rev. 1/19)
Severe Sepsis Resuscitation Algorithm (Initiated Hours 1-6 & PRN)

1. Crystalloid Fluid Bolus (30ml/kg)
2. SEPSIS-INDUCED HYPOPERFUSION
   - Clinical picture of sepsis plus one or both of the following criteria:
     1) Hypotension* AFTER initial fluid bolus (30ml/kg) OR
     2) Lactate greater than or equal to 4 mmol/L with any BP

   Monitor vital signs per standard if lactate > 2 repeat within 2 hrs then as ordered

   Supplemental 02+ ETI with mechanical ventilation (if necessary)

   Place central line (Scv0₂ catheter)

   Continue crystalloid resuscitation 250-1000 ml boluses

   CVP less than 8 mmHg

   CVP 8-12 mmHg (non-vented)
   CVP 12-15 mmHg (vented)

   MAP less than 65 mmHg or SBP less than 90 mmHg

   MAP greater than or equal to 65 mmHg or SBP greater than or equal to 90

   Vasopressors (norepinephrine) preferred

   Scv0₂ greater than or equal to 70%
   Scv0₂ less than 70%

   Scv0₂ less than 70%

   Transfuse if ordered. See guidelines

   Start dobutamine 5-20 mcg/kg/min (in the presence of A) mild cardiac dysfunction as suggested by elevated cardiac filling pressures and low cardiac output OR B) ongoing signs of hypoperfusion (low SCV02 or elevated lactic acid) despite achieving adequate intravascular volume and adequate MAP. Keep cardiac index greater than or equal to 2.0 L/min/m²

   Resuscitation complete. Establish re-evaluation intervals.

   YES

   Achieve ALL Goals?

   NO
1. Patient’s known or suspected infection: ________________________________

(If there is no known or suspected infection stop documentation on this form)

2. Check all that apply to your patient (2 or More Selected Proceed to Question 3) (SIRS may be less for different situations, i.e., immunocompromised patients or patients on beta blockers)
   - Temperature greater than 38.3°C (100.9 F) or Less than 36°C (96.8°F)
   - Heart Rate greater than 90 bpm
   - Respiratory Rate greater than 20
   - WBC count > 12,000 or < 4000 or >10% bands

3. Organ dysfunction criteria present? (1 or more Selected Proceed to Bundle)
   (Different from baseline)
   - Cardiovascular: SBP < 90 or MAP < 65 or a SBP decrease of more than 40 points
   - Respiratory: Increasing oxygen requirements
   - Renal: urine output less than 0.5ml/kg/hr for 2 hours or creatinine greater than 2
   - Metabolic: lactate > 2 mmol/L
   - Hematologic: platelets < 100,000; INR > 1.5, or a PTT>60 seconds
   - Hepatic: Bilirubin > 2mg/dl
   - CNS: altered consciousness (unrelated to primary neuro pathology)

   Patient will NOT proceed to bundle due to patient/decision maker refusal of blood draw, fluid or antibiotic administration.

Bundle

TO BE COMPLETED WITHIN 3 HOURS:
   - Initial Lactate Level: ___________ Result (if not complete please order)
   - Blood Cultures Peripherally x’s 2 obtained (check box if cultures were obtained)
   - Broad Spectrum antibiotic ordered: ___________ (check box if broad spectrum were ordered)
   - 30 ml/kg crystalloid for hypotension (SBP <90, or decrease by >40 mm HG, or MAP <65)
     or lactate ≥4mmol/L (check box if this was ordered)
   - Patients body mass index (BMI) is ___________ (if > 30 provider may choose to use ideal body weight for the 30 ml/kg crystalloid fluid volume, BMI must be documented)
   - Patients ideal body weight (IBW) is ___________ (IBW Must be documented)

Provider Signature: ____________________________ Date/Time: ____________________________

TO BE COMPLETED WITHIN 6 HOURS:
   - Repeat Lactic Acid if initial lactate elevated > 2: ___________
     (check box if this was ordered)
   - SBP <90 or MAP < 65 mm Hg after fluid resuscitation Vasopressor initiated
   - Levophed (check box if was ordered)
   - For persistent hypotension after initial fluid administration
     (SBP <90, or decrease by >40 mm HG, or MAP <65) or if initial lactate was ≥4 mmol/L*
     re-assess volume status and tissue perfusion (see page 2 of form).

Provider Signature: ____________________________ Date/Time: ____________________________

*Reassessment of volume status and tissue perfusion can be completed by performing a focused assessment or thorough documentation of any two of the following: CVP, ScVO2, Bedside cardiovascular ultrasound, Passive Leg Raise, or Fluid Challenge (see page 2 of form).
Cookeville Regional Medical Center
PROGRESS NOTE
Reassessment of volume status and tissue perfusion
(Must be completed by a Provider (Physician, PA, NP) within 6 hours for persistent hypotension after the 30mL/kg fluid administration or if initial lactate was ≥ 4 mmol/L)

DATE / TIME | NOTES
---|---

- Reassessment of Volume status and tissue perfusion was completed post fluid administration (check box if completed)

1. Vital Signs:
   - BP__________ MAP__________ Pulse__________ RR__________ Temp__________

2. Cardiopulmonary Assessment
   - Heart
   - Lungs

3. Capillary Refill: ____ seconds

4. Peripheral Pulse Evaluation:
   - Radial__________ Dorsalis Pedis__________ Posterior Tibial__________

5. Skin Color/Condition __________________________

6. Urine Output _________________________________

7. Arterial Oxygen Saturation (from ABG)

OR ONE OF THE FOLLOWING:

- CVP measurement_____________________________
- SCVO2/SV02_________________________________
- Echo Cardiogram or Cardiac Ultrasound_________________________
- Assessment of fluid responsiveness with passive leg raise (PLR) OR fluid challenge
  (For a passive leg raise - patient in supine position and legs lifted passively for 2 minutes and monitor if there is a change)
  - Stroke volume increased with PLR
    - Pre PLR Stroke Volume ________ Post PLR Stroke Volume__________
  - Stroke volume increased with fluid challenge
    - Pre Fluid Challenge Stroke Volume ________ Post Fluid Challenge Stroke Volume__________

Notes:_____________________________________________________________________________________
__________________________________________________________________________________________
__________________________________________________________________________________________

DEFINITION
Sepsis defined as: Known or suspected infection, 2 or more signs of SIRS.

Severe Sepsis defined as: Known or suspected infection, 2 or more signs of SIRS, and organ dysfunction.

Septic Shock defined as: Known or suspected infection with 2 or more signs of SIRS, organ dysfunction, and hypotension which is defined as: systolic B/P less than 90mmHg or MAP less than 65 or 40mmHg decrease in B/P from baseline after a 30mL/Kg fluid bolus

OR

Known or suspected infection with 2 or more signs of SIRS, organ dysfunction, and hypoperfusion evidenced by a lactic acid level greater than or equal to 4.

Persistent hypotension defined as: In the one hour following administration of crystalloid fluids, one single blood pressure reading of either SBP <90, or MAP <65, or a decrease in systolic blood pressure by >40 mmHg from the last previously recorded SBP considered normal for that specific patient.

Time Zero defined as:
The date/time on which the last criterion was met to establish the presence of severe sepsis or septic shock. If all are present on arrival to ED then times zero is ED triage time.

Physician Signature:________________________________________________________

Date: ____________________________ Time:________________________

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