

## Sepsis Admission (Admit)

### Sepsis Guidelines

- Criteria to initiate Sepsis Bundle:
- 1) Documented or suspected infection AND
- 2) at least TWO of four SIRS criteria below:
  - - Temperature > 38 C OR temperature < 36 C with suspected sepsis
  - - Heart Rate > 90 bpm
  - - Respiratory Rate > 20 breaths/min OR PaCO<sub>2</sub> < 32mm Hg
  - - WBC > 12,000 OR WBC < 4,000 OR >10% bands
- 3) AND systolic blood pressure < 90 mm Hg after crystalloid fluid bolus 20-30 ml/kg (1.5-3 L over 30 minutes) OR blood lactate of >4 mmol/L

### Condition

- Admit Inpatient (Acute), Critical
- Isolation Precautions consider for patients with possible TB or other contagion
- Full Code
- Limited Code
- Do Not Resuscitate
- Present on Admission
- Activate Emergent Care Protocol for Adults in Monitored Beds [\*MGH, MSJ only]

### Nursing Orders

#### Assessments

- On arrival to the ICU and following the 6hr lab results the RN is to call the PMA physician and report the following:**
  1. The current CVP measurement
  2. The current S<sub>cv</sub>O<sub>2</sub>
  3. The current rate of the Norepinephrine gtt
  4. The total IV input
  5. The presence or absence of Urine and last hour total
  6. Current FIO<sub>2</sub> and O<sub>2</sub> saturation
  7. Vent Settings and PIP if mechanically ventilated.
  8. the Serum Lactate, Cr, and any abnormal lab results.
- Notify MD if blood glucose > 150 mg/dL x 2 measurements or > 180 mg/dL x 1 see IV insulin orders for goal BS < 150
- Consent for ScvO<sub>2</sub> Central line placement
- Fingerstick Blood Sugar every 4 hours unless on IV insulin protocol
- Neuro Check q 2 hrs till stable, then q 4 hrs
- Measure central venous pressure (CVP) per protocol
- Notify MD for new onset rhythm change
- sCvo<sub>2</sub> monitoring.
- svo<sub>2</sub> monitoring.

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Date

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Time

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### **Interventions**

- Specialty Bed
- Elevate Head of Bed > 30 degrees
- Arterial Line Insert
- Central Venous Line Care per protocol
- Nursing Communication If patient has chest pain order 12-lead EKG stat and notify MD
- Peripherally inserted central catheter (PICC) insertion/management (Power PICC) [Evidence](#)
- Peripherally inserted central catheter (PICC) insertion/management (Standard PICC) [Evidence](#)
- Nasogastric Tube site care, wall suction, continuous
- Foley cath Continuous to Gravity Drainage

### **Respiratory**

- RT to Evaluate and Treat per protocol
- Oxygen per protocol Titrate to O2 sat. > = 92%. Call MD if patient is requiring > 4L/min
- Incentive Spirometry q 2 hours while awake, set as a continuous task.
- Ventilator management order set**
- Respiratory Communication : Initiate ARDSnet protocol (SSA) Link ARDSnet RT Vent Management Protocol

### **Bronchodilators:**

- albuterol 0.5% inhalation by nebulizer 2.5 milligram inhaled every 4 hours while awake and prn, give with 2.5 cc ( 0.5 mg ) ipratropium via nebulizer
- ipratropium 0.5 milligram solution inhaled every 4 hours (via neb), give with 2.5 mg albuterol via nebulizer

### **IV FLUIDS**

- Treat hypotension with IV fluid resuscitation first. [Evidence](#)
- Nursing Communication CVP goal for non-Ventilated patient = 8-12 mm Hg ; for Ventilated patients = 10-14 mm Hg
- First Goal: Intravascular volume expansion to normovolemic CVP**
- Sodium Chloride 0.9% 1000 milliliter Bolus intravenously ; repeat until MAP > 65 and CVP > 10 for non-intubated, CVP >14 for intubated patients, or 6 liters infused. If 2L infused without achieving target CVP then initiate vasopressors in addition to continuing bolus infusions until target CVP reached. If MAP and CVP unstable after 6 liters NS call physician.
- Sodium Chloride 0.9% 1000 milliliter 250 milliliter/hour intravenously while on vasopressor, until MAP > 65 and CVP > 10 for non-intubated, CVP >14 for intubated patients.
- Sodium Chloride 0.9% 1000 milliliter 150 milliliter/hour intravenously ; if MAP > 65 and CVP > 15 off of vasopressors.

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- Sodium Chloride 0.9% 1000 milliliter 60 milliliter/hour intravenously ; if MAP > 65 and CVP > 18 off of vasopressors.
- Sodium Chloride 0.9% 1000 milliliter 15 milliliter/hour intravenously ; if MAP > 65 and CVP > 22 off of vasopressors.
- albumin human 25% 50 gram intravenously X 1 for MAP and CVP unresponsive to crystalloid 4 liters and vasopressors.

***Second Goal: Arterial pressure support for patients unresponsive to volume expansion***

- Consider arterial line if requiring use of vasopressors
- FIRST LINE AGENT
  - Norepinephrine Infusion 4 mg/ 250 mL D5W (Double Conc.) 2 microgram/minute intravenously through central IV. Start infusion for a SBP < 80. Increase by 2 mcg/min per protocol to achieve MAP > 65. Use as 1st line vasopressor if MAP is unresponsive to 2L volume expansion or target CVP reached. Do not exceed 30 mcg/min. As the MAP exceeds 70 wean off Norepinephrine as rapidly as possible.
  - Dopamine Infusion 800mg/ 250mL D5W 5 microgram/kilogram per minute intravenously ; Increase per protocol to achieve a MAP > 65 (maximum dose of 20 microgram/kilogram/minute, if at maximum rate and MAP less than 65). Use as 1st line vasopressor if MAP is unresponsive to 2L volume expansion or target CVP is reached. As the MAP exceeds 70 wean off Dopamine as rapidly as possible.
- SECOND LINE AGENT (ADD IF FIRST LINE AGENT INEFFECTIVE)
  - Vasopressin 60 units/ 250mL NS 0.02 unit/minute intravenously ; to achieve a MAP of >65. Use if unresponsive to 2L volume expansion and first line vasopressor alone.
  - Vasopressin 60 units/ 250mL NS 0.04 unit/minute intravenously ; to achieve a MAP of >65. Use if unresponsive to 2L volume expansion and first line vasopressor alone.

***Corticosteroids***  [Evidence](#)

- Use in combination with Vasopressin.
  - hydrocortisone 100 milligram intravenously every 8 hours. Discontinue after 6 doses.

***Third Goal: Optimize perfusion and oxygenation in resuscitated patients***

- For ScvO<sub>2</sub> < 70% AND hematocrit > 30%
  - Dobutamine infusion 1000 mg/250 mL D5W Premix 2.5 microgram/kilogram per minute intravenously ; Increase by 2.5 mcg/kg/min every 15 minutes until SCvO<sub>2</sub> > 70% or the maximum rate of 20 mcg/kg/min. Decrease rate by 2.5 mcg/kg/min every 15 min for MAP < 65 AND HR > 135.

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## Medications

- Pharmacy to monitor and adjust all Medication dosing PRN

### **Antibiotics - Empiric Therapy**

- EMPIRIC THERAPY - To start within 1 hour of the recognition of sepsis  
[Evidence](#)
  - levofloxacin 750 milligram solution intravenously every 24 hours , give AFTER cultures obtained
- PLUS EITHER (Choose one of the following)
  - ceftriaxone 2 gram intravenously once a day , give AFTER cultures obtained
- OR
  - cefepime 2000 milligram intravenously every 12 hours Give AFTER cultures obtained
- OR
  - ZOSYN 4.5 gram intravenously every 8 hours, give AFTER cultures obtained

### **Antibiotics - Other Choices**

- ZOSYN 4.5 gram intravenously every 8 hours , give AFTER cultures obtained
- PRIMAXIN IV 1000 milligram intravenously every 8 hours , give AFTER cultures obtained
- meropenem 2 grams IV every 8 hours, give AFTER cultures obtained
- Ceftriaxone 2 grams IV once daily, give AFTER cultures obtained
- ceftazidime 2 gram intravenously every 8 hours , give AFTER cultures obtained
- cefepime 2 gram intravenously every 12 hours , give AFTER cultures obtained
- levofloxacin 750 milligram solution intravenously every 24 hours , give AFTER cultures obtained
- Flagyl I.V. 500 mg every 8 hours, give AFTER cultures obtained
- fluconazole 200 mg IV q day, give AFTER cultures obtained
- Consider if MRSA likely
  - vancomycin IV per pharmacy protocol, give AFTER cultures obtained
  - linezolid 600 milligram intravenously every 12 hours , give AFTER cultures obtained
  - daptomycin, 6 mg/kg intravenously every 24 hours , give AFTER cultures obtained

### **Recombinant Human Activated Protein C [Evidence](#)**

- drotrecogin alfa per pharmacy protocol (insert link to local Xigris criteria)
- Physician to complete Xigris inclusion criteria sheet

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**Ancillary Medications**

- Use of prostaglandin inhibitors is not recommended in severe sepsis

Evidence

- Tylenol oral TABLET 650 milligram orally every 4 hours as needed for fever
- Tylenol oral TABLET 1000 milligram orally every 6 hours as needed for fever
- Tylenol rectal SUPP 650 milligram suppository rectally every 4 hours as needed for fever If unable to take oral dose
- sodium bicarbonate 100 milliequivalent intravenous push as needed (2 amps) for pH < 7.15
- INSERT Influenza Immunization screen and administration order
- INSERT Pneumonia Vaccine screen and administration order

**DVT/VTE Prophylaxis (Medical)**

- Do not give pharmacologic DVT/VTE prophylaxis; contraindicated due to bleeding risk or active bleeding
- enoxaparin 40 milligram solution subcutaneously once a day (pharmacy to adjust for renal function)
- heparin 5000 unit subcutaneously every 8 hours
- Mechanical prophylaxis is only recommended for patients considered high risk for bleeding. (Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy: Evidence based guidelines Vol 126. Number 13; p373s.)
  - Sequential Compression Device

**GI Prophylaxis**

- pantoprazole (Protonix) 40 milligram tablet, delayed release (E.C.) orally 2 times a day
- pantoprazole (Protonix) 40 milligram solution intravenously once a day

**Insulin Sliding Scales**

- Insulin Aggressive sliding scale with Lispro Insulin subcu
- IV Insulin Infusion per protocol

**K/Magnesium Replacement**

- Replace K+ to 3.5 per IV protocol
- Replace K+ to 4.0 per IV protocol
- Replace Magnesium per IV protocol

**Laboratory**

**Critical Labs for Early Intervention(If not yet performed)**

- CBC w/ Diff stat and every 6 hours
- Basic metabolic panel (Na, K, Cl, HCO3, BUN, Creatinine, Glucose, Calcium) stat once
- CMP (BMP + ALB, Tot Prot, Bili, CA, Aik Phos, ALT, AST) stat once

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- PT & PTT stat once
- Type and Screen (RN-O) stat
- Lactic Acid stat once and every 6 hours
- ABG with ionized Ca++ now and repeat in 6 hrs
- Urinalysis w/ Microscopic stat once
- Blood Culture Blood, Stat, q5min for 10 min, Two Different Sites
- Blood Culture now (1 peripheral and 1 from each port for vascular access device in place longer than 48 hrs, prior to antibiotic administration)
- Urine Culture Urine, Stat
- Culture Sputum & Gram Stain Stat
- Wound/Tissue Culture stat with gram stain

***Additional Labs (order where appropriate)***

- Troponin-I Blood; STAT
- CK (Run MB if elevated) Blood; STAT
- D-Dimer ELISA or quantitative (do not use latex agglutination)
- B-type natriuretic peptide (BNP)
- Magnesium Level ; Blood; Stat
- Phosphorus level, serum
- Calcium level, serum, ionized
- C-reactive protein (CRP) [Evidence](#)
- Venous Blood Gas ; from central line
- Amylase, pancreatic
- Lipase, pancreatic

***AM Laboratory***

- CMP (BMP + ALB, Tot Prot, Bili, CA, Alk Phos, ALT, AST) routine once in AM
- BMP (Lytes, Glucose, Bun, Creat, & CA) routine once in AM
- CBC w/ Diff routine once in AM
- PT & PTT stat once in AM

**Diagnostic Tests**

- EKG Stat, Sepsis
- XR Chest 1V Portable stat once ; Reason For Exam: Fever, sepsis
- XR Chest 1V Portable stat once ; Reason For Exam: Line / Tube placement
- XR Chest 2 Views AP or PA+Lat Reason For Exam: Fever, sepsis, Stat
- XR Abdomen AP+Decub +or Erect Sepsis

***CT Scans***

- CT Head wo Contrast Reason For Exam: Fever, sepsis, Stat
- CT Abdomen wo+w Contrast
- CT, abdomen, with contrast [Evidence](#)
- CT Abdomen+Pelvis w Contrast
- CT Abdomen+Pelvis wo Contrast

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