



AUTHORIZATION IS GIVEN FOR DISPENSING APPROVED THERAPEUTIC ALTERNATES UNLESS CHECKED HERE

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STAT
(SHADE ENTIRE AREA FOR STAT & NOW MEDS)



PHYSICIANS' ORDERS — SEVERE SEPSIS / SEPTIC SHOCK

Pg. 1 of 3

PLACE PATIENT IDENTIFICATION LABEL HERE

ALL entries MUST be DATED, TIMED and SIGNED

Diagnosis: Severe Sepsis / Septic Shock

Suspected source: _____

Other Diagnoses: _____

1. Admit to: Attending: _____ Pager: _____
 Resident: _____ Pager: _____
 Resident: _____ Pager: _____
2. Unit: _____

INITIATE THE FOLLOWING SHADED ITEMS STAT:

3, 4-a, 8, 9-a, 9-b, 9-d, 9-e

3 ✓ **Notify PharmD on call STAT for sepsis consult. Pager 8-8250 #6089 Time called:** _____

4. Diagnostics: IF NOT DONE IN EMERGENCY DEPARTMENT (ED): ✓ ALL THAT APPLY!

Items with ✓ must be completed.

- 4-a Labs:** ✓ Complete Sepsis Panel **STAT**.
 Panel includes: CBC, CRP, venous blood gas, LA, CMP, PT, PTT, Urinalysis, Blood Cultures x 2 prior to antibiotics (*Obtain one set of blood cultures from all intravascular devices in place > 48 hours*)
- ✓ Repeat Lactic Acid every 4 hours until < 2.0 mMol/L
 - ✓ Obtain mixed venous oxygen saturation from Central Line every 4 hours x 2 if central line in place.
 - ✓ ABG
 - ✓ A.M. labs: CBC, BMP, Lactic Acid, ABG Other A.M. labs: _____
- Other Cultures:** Urine Culture Sputum for culture and gram stain Other Culture: _____

- 4-b. Radiology:** Portable Chest x-ray; Reason: _____
 CT Scan of _____ when hemodynamically stable.
 Reason: _____
(If patient at risk for contrast nephropathy (home medication use - see back of order set), or chronic renal insufficiency, or overt renal dysfunction, pre-medicate with both Mucomyst and Bicarb infusion - see Order #11)
- Portable chest x-ray in the A.M.; Reason: _____

- 5. Assessment / Interventions / Monitoring: ✓ ALL THAT APPLY!**
 Continuous pulse oximeter, vital signs every 1 hour, place foley to bedside drainage, and strict Intake and Output on hourly basis.
- Respiratory support: _____
 or Ventilator settings Mode: _____, Vt _____, FiO₂ _____, RR _____, PEEP _____
 PS _____, IP _____, I:E _____, Other: _____
- ✓ Place two large bore IV's if possible (*18 gauge or larger*).
 - Get consent and equipment prepared for A-line placement / Central Line placement.

DATE:
(Required)

TIME:
(Required)

PHYSICIAN SIGNATURE:
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Definitions:

Sepsis – Infection plus systemic manifestations of infection (*see sepsis markers*)

Severe Sepsis – Sepsis accompanied by sepsis induced acute organ dysfunction or failure

Septic Shock - Sepsis-induced hypotension, persisting despite adequate fluid resuscitation, or lactic acid concentration > 4mmol/L

Sepsis Markers: (in conjunction with a history of new infection – known or suspected)

- **Temperature** ≥ 100.9 F (≥ 38.3 °C) or ≤ 96.8 F (≤ 36 °C)
- **Heart Rate** > 90 bpm
- **Respiratory rate** > 20 breaths/minute or PaCO₂ < 32mmHg
- **WBC Count** > 12,000mm³, or > 10% bands, or < 4,000/mm³
- **New mental status changes**
- **Glucose** > 120 mg/dL in the absence of diabetes

Early Goal Directed Therapy (EGDT)- Pre-defined end-points to maintain adequate resuscitation for patients in septic shock. Two essential features of early EGDT include:

- 1) maintaining adequate central venous pressure (CVP ≥ 8 mm Hg)
- 2) maximizing mixed or central venous oxygen saturation (SVO₂ ≥ 70 percent)

Organ Dysfunction – examples include:

- **Cardiovascular** - Systolic BP < 90 or MAP < 65, or requires vasopressors
- **Respiratory** - PaO₂ /FiO₂ ratio < 300 or requires mechanical ventilation
- **Renal** – Urine output <0.5ml/kg/hr, or Creatinine > 2.0 mg/dL or increased 50% from baseline, or requires acute dialysis
- **Hematologic** – Platelets <100,000/mm³, or PT/PTT > upper limit of normal
- **Metabolic** – pH < 7.3 and lactic acid > 2.0mMol/L
- **Hepatic** - Liver Function Tests > 2 times upper limit of normal; Bilirubin > 2.0 mg/dL
- **CNS** – significant mental status changes

Sepsis Panel – a convenience panel of lab tests that can be ordered when sepsis is known or suspected;

- ✓ CBC, CRP, venous blood gas, lactic acid, CMP, PT, PTT, blood cultures x 2 (15-20 min apart), and urinalysis

Sepsis Bundles - A group of interventions when implemented together, result in better outcomes than when implemented individually. The science behind the elements of the bundle is so well-established that their implementation should be considered a generally accepted practice.



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6. **Diet:** Strict NPO NPO except all medications

7. **Activity:** Bedrest. Head of bed at 30 degrees or reverse Trendelenburg at 30 degrees.

8 Initial Resuscitation Triggers (NOTIFY PHYSICIAN of any of the following):

- CVP less than 8 (Central Line recommended if elevated lactic acid (greater than 2.0) or no response to fluid administration in the 1st 4 hours including time in any other unit).
- MAP less than 65mmHg
- Urine output less than 0.5ml/kg/hour (0.5 x weight in kg per hour)
- Venous O₂ saturation
 - ❖ Less than 65% for mixed venous (PA) blood draw or from reading on the PA catheter monitor
 - ❖ Less than 70% from superior vena cava blood draw or from reading on the PreSep® catheter monitor

9. **Scheduled Medications:**

9-a. Initial Fluid Resuscitation: ✓ Bolus normal saline up to 40 ml/kg to meet resuscitation goals noted in Order #8.

9-b. Pressors: If unresponsive to fluid challenge **call physician** and begin:
 Norepinephrine (Levophed®) 5 mcg/minute and titrate to a MAP of 65 (4 mg in 250ml normal saline, with concentration of 16 mcg/ml.)
 Other: _____

9-c. Maintenance IV Fluids: _____
 [40+ weight in kg (if patient is over 20kg) will be appropriate hourly maintenance IV fluid rate]

9-d. Antibiotic Therapy:

- Cefotaxime (Claforan®) 2 gm IV x 1 dose + Azithromycin (Zithromax®) 500 mg IV x 1 dose
- Moxifloxacin (Avelox®) 400 mg IV x 1 dose
- Cefepime (Maxipime®) 2 gm IV x 1 dose + Ciprofloxacin (Cipro®) 400 mg IV x 1 dose
- Metronidazole (Flagyl®) 500 mg IV x 1 dose for intra- abdominal infection
- Vancomycin (Vancocin®) 20 mg/kg IV x 1 dose

Note: See Clinical Pharmacy consult for additional therapeutic recommendations.

9-e. Glucose Management:

- ✓ Obtain bedside glucose **stat** upon arrival and every 4 hours, using subcutaneous insulin sliding scale #3 per the adult subcutaneous insulin order set (# 17-6476-0082). (Place this order set in the medical record.)
- ✓ If 2 or more consecutive blood glucose results are greater than 125 mg/dL, discontinue the adult subcutaneous insulin order set, initiate adult insulin infusion order set (# 17-6476-0051) and **notify Pharmacy** to initiate insulin infusion. (Place this order set in the medical record.)

9-f.) Steroid Utilization:

- Hydrocortisone (Solu-Cortef®) 50 mg IV every 6 hours for refractory shock.
- Fludrocortisone (Florinef®) 50 mcg by mouth/NG/OG every day. (May add **if** steroids are being used)

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6 hour Resuscitation Bundle components:**24 hour Maintenance Bundle components:**

1) Draw Sepsis Panel (<i>to include lactic acid</i>)	1) Administer low-dose steroids according to policy
2) Obtain blood cultures prior to antibiotics (blood cultures included in Sepsis Panel)	2) Administer Drotrecogin Alfa (Activated) according to policy – <i>order sepsis consult via Severe Sepsis Order Set</i>
3) Administer broad spectrum antibiotic within 1 hour of presentation	3) Maintain adequate Glycemic control using appropriate insulin order set (<i>goal between 80-150mg/dL</i>)
4) Fluid resuscitation of 20-40 ml/kg; recommend initial bolus of 500 ml – 1000 ml	4) Maintain inspiratory plateau pressures (<i>goal of median plateau pressures < 30 cm H2O</i>)
5) Administer vasopressor therapy if systolic BP<90 and MAP < 65 after fluid resuscitation	
*6) Maintain CVP >8 mm Hg (if mechanically ventilated, CVP 12-15 mm Hg)	
*7) Maintain SVO2 > 70 percent	
<i>*If inserting central venous catheter, use PreSep® catheter (subclavian preferred site)</i>	

Severe Sepsis Diagnosis and Treatment Considerations:

- 1) Consider occult infection for any patient with unexplained organ dysfunction, including significant mental status changes.
- 2) Consider lactic acid assay on all “sick” patients. Elevation above 2.5mmol/L is associated with increased mortality in all patients regardless of etiology.
- 3) Severe sepsis should be considered in all infected patients with organ dysfunction, regardless of the presence of two markers for sepsis.
- 4) Virtually all severe sepsis patients require aggressive fluid loading, especially those that are hypotensive or have a lactic acid ≥ 4 mmol/L.
- 5) Nearly all severe sepsis patients should have early (within first 4 hours) central monitoring for CVP and SVO₂.



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9-g.) Deep Vein Thrombosis Prophylaxis: _____

- Enoxaparin (Lovenox®) 40mg SQ every 24 hours
- For Serum Cr greater than 1.5 or Cr Cl less than 30 ml/minute, Enoxaparin 30mg SQ every 24 hours
- Heparin 5000 units subcutaneous every 8 hours (*Recommended in patients with oliguric renal failure or renal replacement therapy.*)
- SCD Left _____ / Right _____

9-h.) Stress Ulcer Prophylaxis (SUP): Famotidine (Pepcid®) 20mg IV every 12 hour

10. Sedation Orders:

Benzodiazepines: (*Refer to RASS scale on back of order set*) (**Select one**)

- Lorazepam (Ativan®) _____ mg/hour(gtt)-titrate to sedation goal of RASS of 0 to —2 (recommend 0.5 — 4mg/hour).
- Lorazepam (Ativan®) _____ mg IV every 6 hours- sedation goal of RASS of 0 to —2 (recommend 0.5 — 6 mg/dose).
- Midazolam (Versed®) 2 mg IV every 1 hour as needed for sedation.
- Haloperidol (Haldol®) 5 mg IV every 4 hours as needed for **agitation** as long as **QTc is less than 0.45 seconds.**

Narcotics: (Select one)

- Hydromorphone (Dilaudid®) 0.5 mg/hour(gtt)-titrate to sedation goal of RASS of 0 to —2 (maximum recommended 2mg/hour).
- Fentanyl (Sublimaze®) 50mcg/hour(gtt)- titrate to sedation goal of RASS of 0 to —2 (maximum recommended 200mcg/hour).

11. Contrast Nephropathy Prophylaxis:

- Start Sodium Bicarbonate 150mEq in 1 Liter sterile water at 3ml/kg/hour, 1 hour prior to contrast then 1 ml/kg/hour during and after contrast for 6 hours; then discontinue and call physician for additional orders for intravenous fluids.

and

N-Acetylcysteine (Mucomyst®) 1200 mg by mouth every 12 hours x 4 doses; administer first dose before contrast.

12. As Needed Medications:

- Acetaminophen (Tylenol®) 1g by mouth / by rectum/OG/NG every 6 hours as needed for temperature greater than 38.5°C.
- Ondansetron (Zofran®) 4 mg IV every 6 hours as needed for nausea.

13. Other Medication Orders: **Please note Pepcid® is automatically ordered for SUP unless alternative is ordered.**

- _____
- _____
- _____
- _____
- _____
- _____

DATE:
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Richmond Agitation Sedation Scale (RASS)*:

*Sessler. et al. AJRCCM 2002; 166:1338-1344. Ely. et al. JAMA 2003;289:2983-2991

Score	Term	Description
+4	Combative	Overtly combative or violent; immediate danger to staff
+3	Very agitated	Pulls on or removes tube(s)/catheter(s); aggressive behavior toward staff
+2	Agitated	Frequent, non-purposeful movement, fights ventilator
+1	Restless	Anxious or apprehensive, but movements not aggressive
0	Alert/ Calm	
-1	Drowsy	Not fully alert, > 10 seconds awakening, with eye contact to <i>voice</i>
-2	Light sedation	Briefly awakens with eye contact to <i>voice</i> (< 10 seconds)
-3	Moderate sedation	Any movement or eye opening to voice (but no eye contact)
-4	Deep sedation	No response to voice, but movement or eye opening to <i>physical</i> stimulation
-5	Unarousable	No response to <i>voice</i> or <i>physical</i> stimulation

RISK FOR CONTRAST NEPHROPATHY

- | | | |
|---|---|---------------------------------|
| <ul style="list-style-type: none"> 1. ACE Inhibitors 2. Loop Diuretics 3. Cyclosporine 4. Aminoglycosides | } | <i>Prior Medications</i> |
|---|---|---------------------------------|

- | | | |
|--|---|------------------------------------|
| <ul style="list-style-type: none"> 1. Heart Failure 2. Diabetes Mellitus 3. Peripheral Vascular Disease 4. Coronary Artery Disease 5. Proteinuria/Chronic Renal Insufficiency | } | <i>Underlying Diagnoses</i> |
|--|---|------------------------------------|

If any of the above, please institute contrast nephropathy prophylaxis.

Calculation of Ideal Body Weight and Creatinine Clearance:

Male IBW = 2.3 kg per inch over 5 feet + 50 kg

Female IBW = 2.3 kg per inch over 5 feet + 45.5 kg

Male CrCl = [(140-Age) x weight (kg)] / (72 x serum creatinine)

Female CrCl = [(140-Age) x weight (kg)] / (72 x serum creatinine) x 0.85

