IV / Central Line Access - Hemodynamics Monitoring

IV / Central Line Access

- [ ] Initiate and maintain IV
  - [ ] Ensure / Initiate and maintain IV access
    - Routine, Once
    - As needed immediately insert 2 large bore (at least 20 gauge) peripheral IV lines or call attending MD for STAT central line, intraosseus (IO) or other access.

- [ ] sodium chloride 0.9 % flush
  - 10 mL, intravenous, every 12 hours scheduled

- [ ] sodium chloride 0.9 % flush
  - 10 mL, intravenous, PRN, line care

Hemodynamic Monitoring

**If patient has IJ or Subclavian Central Venous Line**

- [ ] Hemodynamic Monitoring - CVP
  - Routine, Every hour
  - Measure: CVP

Nursing

Vital Signs

- [ ] Vital signs - T/P/R/BP
  - Routine, Every hour For 3 Hours
  - Monitor every 1 hour for 3 hours, or more frequently as indicated by clinical condition and assessment findings, then re-evaluate frequency of vitals assessment.

- [ ] Pulse oximetry
  - Routine, Daily
  - Current FIO2 or Room Air;
  - Place Sp02 monitor (near infrared spectroscopy)

Notify

- [ ] Notify Provider/Sepsis Team:
  - Routine, Until discontinued, Starting S, -for MAP LESS than 65 or GREATER than 80
  - -for heart rate LESS than 60 or GREATER than 120
  - -for urine output LESS than 30 mL/hour
  - -immediately for any acute changes in patient condition (mental status, vital signs)

Initial Management of Suspected Sepsis

Blood Cultures

- [ ] Blood culture x 2
  - "And" Linked Panel

- [ ] Blood Culture (Aerobic & Anaerobic)
  - Once, Blood
  - Collect STAT before antibiotics given. Blood cultures should be ordered x2, with each set drawn from a different peripheral site. If unable to draw both sets from a peripheral site, one set may be drawn from a central line; an IV line should NEVER be used.

- [ ] Blood Culture (Aerobic & Anaerobic)
  - Once, Blood
  - Collect STAT before antibiotics given. Blood cultures should be ordered x2, with each set drawn from a different peripheral site. If unable to draw both sets from a peripheral site, one set may be drawn from a central line; an IV line should NEVER be used.

Lactic Acid - STAT and repeat 2 times every 3 hours

- [ ] Lactic acid level, SEPSIS - Now and repeat 2x every 3 hours
  - Now and repeat 2x every 3 hours For 3 Occurrences
  - STAT - SPECIMEN MUST BE DELIVERED IMMEDIATELY TO THE LABORATORY. Repeat lactic acid in 3 hours.
Crystallloids for Fluid Resuscitation for hypotension, lactic acid greater than 2.0, or any one sign or symptom of acute organ dysfunction) (Single Response) (Selection Required)

Is your patient obese? (BMI GREATER than 30)

() Yes (Single Response) (Selection Required)

Given your response of "Yes", you have the option to dose IV fluids using Ideal Body Weight (IBW).

() Calculate dose using Ideal Body Weight (IBW) (Single Response)

() lactated ringers IV bolus + Vital Signs OR infusion - For Obese Patients (Single Response)

() lactated ringers IV bolus + Vitals Every 15 Minutes x 4 Hours - For Obese Patients

[] lactated ringers bolus

30 mL/kg, intravenous, once, For 1 Doses
Reassess patient after IV fluid bolus given.
If target not met (MAP 65 to 70 mmHg or SBP GREATER than 90 mmHg), notify ordering provider prior to administration of second bolus.
Doses start immediately.
Notify provider immediately upon completion of fluid bolus administration.
Provider Response: YES, I choose to use the Ideal Body Weight (IBW), BMI GREATER than 30

[] Sepsis vital signs - T/P/R/BP

STAT, Every 15 min For 4 Hours

() lactated ringers IV infusion - For Obese Patients

"And" Linked Panel

[] lactated ringer's infusion

126 mL/hr, intravenous, continuous
Reassess patient after 1 L of IV fluid given.
If target not met (MAP 65 to 70 mmHg or SBP GREATER than 90 mmHg), notify ordering provider prior to administration of additional fluids.
Doses start immediately.
Notify provider immediately upon completion of administration of 1 L of fluid.

() sodium chloride 0.9% bolus + Vital Signs OR infusion - For Obese Patients (Single Response)

() sodium chloride 0.9% bolus + Vitals Every 15 Minutes x 4 Hours - For Obese Patients

[] sodium chloride 0.9 % bolus

30 mL/kg, intravenous, once, For 1 Doses
Reassess patient after IV fluid bolus given.
If target not met (MAP 65 to 70 mmHg or SBP GREATER than 90 mmHg), notify ordering provider prior to administration of second bolus.
Doses start immediately.
Notify provider immediately upon completion of fluid bolus administration.
Provider Response: YES, I choose to use the Ideal Body Weight (IBW), BMI GREATER than 30

[] Sepsis vital signs - T/P/R/BP

STAT, Every 15 min For 4 Hours

() sodium chloride 0.9% infusion - For Obese Patients

"And" Linked Panel

[] sodium chloride 0.9% infusion

126 mL/hr, intravenous, continuous
Reassess patient after 1 L of IV fluid given.
If target not met (MAP 65 to 70 mmHg or SBP GREATER than 90 mmHg), notify ordering provider prior to administration of additional fluids.
Doses start immediately.
Notify provider immediately upon completion of administration of 1 L of fluid.

() Do NOT calculate dose using Ideal Body Weight (IBW) (Single Response)

() lactated ringers IV bolus + Vital Signs OR infusion (Single Response)
lactated ringers IV bolus + Vitals Every 15 Minutes x 4 Hours  

```
[] lactated ringers bolus  
30 mL/kg, intravenous, once, For 1 Doses  
Reassess patient after IV fluid bolus given.  
If target not met (MAP 65 to 70 mmHg or SBP GREATER than 90 mmHg), notify ordering provider prior to administration of second bolus.  
Doses start immediately.  
Notify provider immediately upon completion of fluid bolus administration.
```

Sepsis vital signs - T/P/R/BP  

```
[] Sepsis vital signs - T/P/R/BP  
STAT, Every 15 min For 4 Hours
```

lactated ringers IV infusion  

```
[] lactated ringers infusion  
126 mL/hr, intravenous, continuous  
Reassess patient after 1 L of IV fluid given.  
If target not met (MAP 65 to 70 mmHg or SBP GREATER than 90 mmHg), notify ordering provider prior to administration of additional fluids.  
Doses start immediately.  
Notify provider immediately upon completion of administration of 1 L of fluid.
```

sodium chloride 0.9% bolus + Vital Signs OR infusion - For Obese Patients (Single Response)  

```
[] sodium chloride 0.9% bolus + Vital Signs OR infusion - For Obese Patients
```

sodium chloride 0.9% bolus + Vitals Every 15 Minutes x 4 Hours - For Obese Patients  

```
[] sodium chloride 0.9% bolus  
30 mL/kg, intravenous, once, For 1 Doses  
Reassess patient after IV fluid bolus given.  
If target not met (MAP 65 to 70 mmHg or SBP GREATER than 90 mmHg), notify ordering provider prior to administration of second bolus.  
Doses start immediately.  
Notify provider immediately upon completion of fluid bolus administration.
```

Sepsis vital signs - T/P/R/BP  

```
[] Sepsis vital signs - T/P/R/BP  
STAT, Every 15 min For 4 Hours
```

sodium chloride 0.9% infusion - For Obese Patients  

```
[] sodium chloride 0.9% infusion  
126 mL/hr, intravenous, continuous  
Reassess patient after 1 L of IV fluid given.  
If target not met (MAP 65 to 70 mmHg or SBP GREATER than 90 mmHg), notify ordering provider prior to administration of additional fluids.  
Doses start immediately.  
Notify provider immediately upon completion of administration of 1 L of fluid.
```

Patient does not have initial hypotension, severe sepsis, nor septic shock at this time. No additional crystalloid IV fluid resuscitation bolus indicated at this time (Single Response)  

Patient does not have initial hypotension, severe sepsis, nor septic shock at this time. No additional crystalloid IV fluid resuscitation bolus indicated at this time  

Routine, Once  

No (Single Response)  

lactated ringers IV bolus + Vital Signs OR infusion (Single Response)  

```
[] lactated ringers IV bolus + Vital Signs OR infusion (Single Response)
```

lactated ringers IV bolus + Vitals Every 15 Minutes x 4 Hours  

```
[] lactated ringers bolus  
30 mL/kg, intravenous, once, For 1 Doses  
Reassess patient after IV fluid bolus given.  
If target not met (MAP 65 to 70 mmHg or SBP GREATER than 90 mmHg), notify ordering provider prior to administration of second bolus.  
Doses start immediately.  
Notify provider immediately upon completion of fluid bolus administration.
```

Sepsis vital signs - T/P/R/BP  

```
[] Sepsis vital signs - T/P/R/BP  
STAT, Every 15 min For 4 Hours
```
**And** Linked Panel

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>lactated ringer's IV infusion</td>
<td>126 mL/hr, intravenous, continuous. Reassess patient after 1 L of IV fluid given. If target not met (MAP 65 to 70 mmHg or SBP GREATER than 90 mmHg), notify ordering provider prior to administration of additional fluids. Doses start immediately. Notify provider immediately upon completion of administration of 1 L of fluid.</td>
</tr>
<tr>
<td>sodium chloride 0.9% bolus + Vital Signs OR infusion</td>
<td>(Single Response)</td>
</tr>
<tr>
<td>sodium chloride 0.9% bolus + Vitals Every 15 Minutes x 4 Hours</td>
<td>(Single Response)</td>
</tr>
<tr>
<td>sodium chloride 0.9% infusion</td>
<td>(Single Response)</td>
</tr>
<tr>
<td>Sepsis vital signs - T/P/R/BP</td>
<td>STAT, Every 15 min For 4 Hours</td>
</tr>
</tbody>
</table>

**Antibiotics for Community-Acquired Pneumonia (Single Response)**

- **if not already started within the last 24 hours**
- Recommended: A beta-lactam plus either azithromycin or a fluoroquinolone.

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommendation: Ceftriaxone 1 gram plus Azithromycin 500 mg</td>
<td>(Single Response)</td>
</tr>
<tr>
<td>cefTRIAXone (ROCEPHIN) IV</td>
<td>1 g, intravenous, for 30 Minutes, every 24 hours. Classification: Broad Spectrum Antibiotic</td>
</tr>
</tbody>
</table>

When multiple antimicrobial agents are ordered, you may administer these immediately at the SAME TIME via different IV sites. Do not wait for the first antibiotic to infuse. If agents are Y-site compatible, they may be administered per Y-site protocols. If the ordered agents are NOT Y site compatible, then administer the Broad-spectrum antibiotic first. Refer to available Y site compatibility information and determination of broad-spectrum antibiotic selection chart.

**Reason for Therapy:** Bacterial Infection Suspected

**Indication:** Sepsis

**Type of Therapy:** New Anti-Infective Order

**Indication:** Sepsis
azithromycin (ZITHROMAX) IV 500 mg, intravenous, for 60 Minutes, every 24 hours
Classification: Narrow Spectrum Antibiotic

When multiple antimicrobial agents are ordered, you may administer these immediately at the SAME TIME via different IV sites. Do not wait for the first antibiotic to infuse. If agents are Y-site compatible, they may be administered per Y-site protocols. IF the ordered agents are NOT Y site compatible, then administer the Broad-spectrum antibiotic first. Refer to available Y site compatibility information and determination of broad-spectrum antibiotic selection chart.

Reason for Therapy: Bacterial Infection Suspected
Indication: Sepsis
Type of Therapy: New Anti-Infective Order

() Alternative: Ceftriaxone 1 gram plus Levofloxacin 750 mg

"And" Linked Panel

cefTRIAXone (ROCEPHIN) IV 1 g, intravenous, for 30 Minutes, every 24 hours
Classification: Broad Spectrum Antibiotic

When multiple antimicrobial agents are ordered, you may administer these immediately at the SAME TIME via different IV sites. Do not wait for the first antibiotic to infuse. If agents are Y-site compatible, they may be administered per Y-site protocols. IF the ordered agents are NOT Y site compatible, then administer the Broad-spectrum antibiotic first. Refer to available Y site compatibility information and determination of broad-spectrum antibiotic selection chart.

Type of Therapy: New Anti-Infective Order
Reason for Therapy: Bacterial Infection Suspected
Indication: Sepsis

levofloxacIN (LEVAQUIN) IV 750 mg, intravenous, every 24 hours
Classification: Narrow Spectrum Antibiotic

When multiple antimicrobial agents are ordered, you may administer these immediately at the SAME TIME via different IV sites. Do not wait for the first antibiotic to infuse. If agents are Y-site compatible, they may be administered per Y-site protocols. IF the ordered agents are NOT Y site compatible, then administer the Broad-spectrum antibiotic first. Refer to available Y site compatibility information and determination of broad-spectrum antibiotic selection chart.

Type of Therapy: New Anti-Infective Order
Reason for Therapy: Bacterial Infection Suspected
Indication: Sepsis

Antibiotics for Other Suspected Sources of Infection
** if not already started within the last 24 hours **
(cefepime OR meropenem OR piperacillin/tazobactam)
AND
(vancomycin OR linezolid for patients allergic to vancomycin)

OPTIONAL: (tobramycin OR fluconazole OR metronidazole)

Select ONE of the following:

( ) cefepime OR meropenem OR piperacillin/tazobactam
(Single Response)
( ) **cefepime (MAXIPIME) 2 g IVPB**

2 g, intravenous, every 8 hours
First dose STAT - within an hour - after blood and other cultures obtained. If severe PENICILLIN allergy, substitute aztreonam for cefepime. Infuse over 30 minutes.
Type of Therapy: New Anti-Infective Order
Reason for Therapy: Bacterial Infection Suspected
Indication: Sepsis

( ) **meropenem (MERREM) 2 g IV PB**

2 g, intravenous, every 8 hours
First dose STAT - within an hour - after blood and other cultures obtained. Infuse over 30 minutes.
Type of Therapy: New Anti-Infective Order
Reason for Therapy: Bacterial Infection Suspected
Indication: Sepsis

( ) **piperacillin-tazobactam (ZOSYN) 4.5 g IVPB**

4.5 g, intravenous, every 6 hours
First dose STAT - within an hour - after blood and other cultures obtained. Infuse over 30 minutes.
Type of Therapy: New Anti-Infective Order
Reason for Therapy: Bacterial Infection Suspected
Indication: Sepsis

[] **vancomycin (VANCOCIN) OR linezolid (ZYVOX) (Single Response)**

** only choose linezolid (ZYVOX) for vancomycin allergy **

( ) **vancomycin (VANCOCIN) IV**

15 mg/kg, intravenous, Starting H+30 Minutes
First dose STAT - within an hour - after blood and other cultures obtained. FOR SEVERE vancomycin allergy, substitute linezolid below.
Type of Therapy: New Anti-Infective Order
Reason for Therapy: Bacterial Infection Suspected
Indication: Sepsis

( ) **linezolid (ZYVOX) IV**

600 mg, intravenous, for 60 Minutes, every 12 hours
First dose STAT after blood and other cultures obtained. For patients allergic to VANCOMYCIN.
Type of Therapy: New Anti-Infective Order
Reason for Therapy: Bacterial Infection Suspected
Indication: Sepsis

[] **optional antimicrobial therapies**

[] **tobramycin (NEBCIN) 7 mg/kg IVPB**

7 mg/kg, intravenous, for 30 Minutes, once, For 1 Doses
First dose STAT after blood and other cultures obtained. Pharmacist to dose 7 mg/kg based on IDEAL BODY WEIGHT.
Type of Therapy: New Anti-Infective Order
Reason for Therapy: Bacterial Infection Suspected
Indication: Sepsis

[] **fluconazole (DIFLUCAN) 400 mg IVPB**

400 mg, intravenous, for 60 Minutes, every 24 hours
First dose STAT after blood and other cultures obtained.
Type of Therapy: New Anti-Infective Order
Reason for Therapy: Fungal Infection Suspected
Indication: Other
Specify: Sepsis
Type of Therapy: New Anti-Infective Order
Reason for Therapy: Bacterial Infection Suspected
Indication: Sepsis

[] **metroNIDAZOLE (FLAGYL) 500 mg IVPB**

500 mg, intravenous, every 6 hours
First dose STAT after blood and other cultures obtained. Infuse over 30 minutes.
Type of Therapy: New Anti-Infective Order
Reason for Therapy: Bacterial Infection Suspected
Indication: Sepsis

**Antibiotics for Severe Beta Lactam Allergy Patients (administer in combination with Vancomycin)**
**if not already started within the last 24 hours**

[ ] aztreonam (AZACTAM) AND vancomycin (VANCOCIN)  
**"And" Linked Panel**

[ ] aztreonam (AZACTAM) 2 g IVPB  
2 g, intravenous, every 8 hours  
Infuse over 30 minutes. First dose STAT after blood and other cultures obtained. Substitute for severe BETA LACTAM allergy.  
Type of Therapy: New Anti-Infective Order  
Reason for Therapy: Bacterial Infection Suspected  
Indication: Sepsis

[ ] vancomycin (VANCOCIN) 15 mg/kg IVPB  
15 mg/kg, intravenous, every 12 hours  
Infuse over 2 hours. First dose STAT - within an hour - after blood and other cultures obtained. FOR SEVERE vancomycin allergy, substitute linezolid.  
Type of Therapy: New Anti-Infective Order  
Reason for Therapy: Bacterial Infection Suspected  
Indication: Sepsis

Additional Management of Sepsis

Colloid / Albumin (for patients not responding to initial fluid resuscitation with crystalloids)

[ ] albumin human 5 % infusion  
25 g, intravenous, once. For 1 Doses  
Administer 500 mL intravenous once for patients not responding to initial fluid resuscitation with crystalloids.  
Indication:

Vasopressor Therapy (if unresponsive to initial fluid bolus) (Single Response)  
**if unresponsive to initial fluid bolus**

( ) norEPInephrine (LEVOPHED) infusion  
4-30 mcg/min, intravenous, titrated  
Initiate norepinephrine infusion at 4 mcg/min. Titrate to keep MAP between 65 mmHg to 70 mmHg.  
Titrate by 2 mcg/minute every 5 minutes. Call MD if mean arterial pressure is LESS than 65 mmHg and rate is 30 mcg/min.

( ) EPINEPHrine (ADRENALIN) infusion  
2-30 mcg/min, intravenous, titrated  
Titrate by 2 micrograms per minute every 5 minutes for mean arterial pressure 65-70 mmHg. Call MD if mean arterial pressure is LESS than 65 mmHg and rate is 30 mcg/min.

Inotropic Therapy

[ ] DOButamine (DOBUTREX) infusion  
0.5-20 mcg/kg/min, intravenous, titrated  
Titrate by 2 mcg/kg/min every 10 minutes for mean arterial pressure 65-70 mmHg. Call MD if mean arterial pressure is LESS than 65 mmHg and rate is 10 mcg/kg/min.

Steroids  
**Per 2012 guidelines, steroid therapy is only recommended in the case of hypotension which is refractory to both fluids and vasopressor therapy. Stress dose steroids should also be considered for patients with a history of recent and/or chronic steroid use**

[ ] hydrocortisone sodium succinate (Solu-CORTEF) injection  
50 mg, intravenous, every 6 hours  
For patients with shock refractory to fluids and vasopressors.

Labs

Laboratory - STAT

[ ] Arterial blood gas  
STAT For 1 Occurrences

[ ] Venous blood gas  
STAT For 1 Occurrences

[ ] Comprehensive metabolic panel  
STAT For 1 Occurrences

[ ] Prothrombin time with INR  
STAT For 1 Occurrences

[ ] Partial thromboplastin time  
STAT For 1 Occurrences
Basic metabolic panel
- STAT For 1 Occurrences

CBC with differential
- STAT For 1 Occurrences

Fibrinogen
- STAT For 1 Occurrences

Hepatic function panel
- STAT For 1 Occurrences

Ionized calcium
- STAT For 1 Occurrences

Lactic acid level
- STAT For 1 Occurrences

Magnesium
- STAT For 1 Occurrences

Phosphorus
- STAT For 1 Occurrences

Type and screen
- STAT For 1 Occurrences

Laboratory - Repeat

Basic metabolic panel
- Every 6 hours, Starting S For 2 Occurrences

Blood gas, venous
- Every 6 hours, Starting S For 2 Occurrences

CBC with differential
- Every 6 hours, Starting S For 2 Occurrences

Laboratory - Additional Microbiology Screens

Aerobic culture
- Once For 1 Occurrences

Anaerobic culture
- Once For 1 Occurrences

Respiratory culture, quantitative
- Once For 1 Occurrences, Mini bronchial alveolar lavage

Respiratory pathogen panel
- Once For 1 Occurrences

Sputum culture
- Once For 1 Occurrences, Sputum

Urinalysis screen and microscopy, with reflex to culture
- Once For 1 Occurrences, Sputum

Specimen Source: Urine
Specimen Site:

Laboratory - Additional Microbiology Screens

Aerobic culture
- Once For 1 Occurrences

Anaerobic culture
- Once For 1 Occurrences

Gastrointestinal panel
- Once, Stool

Respiratory culture, quantitative
- Once, Mini bronchial alveolar lavage

Respiratory pathogen panel
- Once

Sputum culture
- Once, Sputum

Urine Culture and Urinalysis
- "And" Linked Panel

Urine culture
- Once For 1 Occurrences, Urine

Urinalysis
- STAT For 1 Occurrences

Laboratory - Additional Microbiology Screens

Aerobic culture
- Once For 1 Occurrences

Anaerobic culture
- Once For 1 Occurrences

Gastrointestinal panel
- Once For 1 Occurrences, Stool

Respiratory culture, quantitative
- Once For 1 Occurrences, Mini bronchial alveolar lavage

Respiratory pathogen panel
- Once For 1 Occurrences

Sputum culture
- Once For 1 Occurrences, Sputum

Urine culture
- Once For 1 Occurrences, Urine

Imaging

Chest X-Ray

Chest 1 Vw Portable
- STAT, 1 time imaging For 1

Chest 2 Vw
- STAT, 1 time imaging For 1

Consults

Antibiotics Pharmacy Consult

Pharmacy consult to manage dose adjustments for renal function
- Routine, Until discontinued, Starting S
  Adjust dose for:
  Pharmacy consult to review orders for renal dosing prior to
  administration of second dose of antibiotics
<table>
<thead>
<tr>
<th>Consults</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] Consult Infectious Diseases</td>
<td>Reason for Consult? Consult with Infectious Disease to review and/or adjust current antibiotic selection if necessary. Initial treatment should already be initiated. Patient/Clinical information communicated? Patient/clinical information communicated? Ordering provider must contact ID Consultant</td>
<td></td>
</tr>
</tbody>
</table>