



**MERCYHEALTH**

*Fairfield Hospital*

## **Back to Basics: Sepsis**

# Sepsis

• **Severe sepsis** defined as at least 2 SIRS criteria, suspected infection, and end-organ dysfunction.

*SIRS: The systemic inflammatory response to a variety of severe clinical insults.*

*The response is manifested by two or more*

*Temperature >38.0 degree C*

*Heart rate >90 beats/min*

*Respiratory Rate >20 breaths/min or Paco2 <32 mm Hg*

*WBC >12,000 cells/mm , < 4000 cells/mm, or 10% immature (bands) forms*

• **Septic shock** defined as at least 2 SIRS criteria, suspected infection, and persistent hypotension after 30 mL/kg bolus **OR** lactate >4. **This means that a patient can have septic shock without having refractory hypotension.**

• **End-organ dysfunction** is defined as creatinine >2, INR > 1.5 (in absence of anticoagulation), **bilirubin >2mg/dl, platelet count < 100,000, or SBP < 90 or MAP > 40 from last reading, AMS, or any lactic acid >2** even without other signs of end-organ dysfunction. This means we are likely under-utilizing the sepsis order-set.

# Sepsis con't.



## *First Three Hours*

*Early intervention is key to the survival of our patients. As nurses we can ensure that this care is completed in a timely manner.*

*During the first 3 hours there are many things that need to get done:*

- Lactate and Blood cultures drawn*
- Fluid resuscitation*
- Antibiotics administered*
- Repeat Lactate level if initial  $> 2.0$  ; hour 4 of presentation*
- Check responsiveness of fluid resuscitation: complete post fluid resuscitation VS every 15 min x 4*

# Week 1: Lactate and Culture



*First Three Hours*

- Lactate measurement
  - Lactate level is the byproduct of cellular death. As cells die due to the lack of circulating oxygen, the byproduct of this cellular death is lactic acid.
  - Level  $>2$  mmol/l is indicative of sepsis
  - Drawn without a tourniquet in place.
- Blood cultures X2 from different sites prior to starting antibiotic

# Week 2: Fluids



## *First Three Hours*

- RECEIVE 30 mL/kg of crystalloid fluid (most often 0.9% NS for Fairfield).

Pearls:

- Always weight-based!

30ml/kg

If the patient weighs 200kg (~440 lbs), yes, they need SIX LITERS to hit this core measure. That seems like a lot, but it is appropriate for these patients.

- Are you questioning "history of CHF" without pulmonary edema or other evidence of acute heart failure?

These are not reasons to avoid aggressive fluids with the septic patient.

If worried about inducing overload, consider EARLY BiPAP/CPAP.

# Week 3: Antibiotic



*First Three Hours*

- Broad spectrum antibiotics need to be given.
  - It's important that they are not just ordered
  - We are compliant if:
    - started within 3 hours following the presentation of severe sepsis.
    - or IV antibiotics had been given in the previous 24 hrs

# Week 4: Repeat the Lactate

- Lactate Level needs to be repeated within 4 hours after initial elevated level. (Initial level's >2.0 mmol/L)
- Then repeat every 6 hours there after until normalized.

# Week 5: Provider Documented Physical Exam

Documentation of Sepsis Focused physical exam must include:

**Vital signs**

**Cardiopulmonary exam**

**Capillary refill**

**Peripheral pulse evaluation**

**Skin exam**

OR any two of the following:

**Central venous pressure**

**Central venous oxygen**

**Bedside cardiovascular ultrasound**

**Passive leg raise or fluid challenge**

A repeat assessment of volume status and tissue perfusion is required for patients with septic shock. This is required when a patient has persistent hypotension after fluid resuscitation. The volume assessment can be done using either a focused physical exam or using some physiologic parameters.



# Week 6: Persistent Hypotension?

- One hour following administration of the 30 mL/kg crystalloid fluids, blood pressure documented every 15 min x 4
  - systolic blood pressure (SBP) <90, or
  - mean arterial pressure (MAP) <65

Is indicative of patient having severe persistent hypotension.

Vasopressor at this time would be indicated to maintain MAP > or equal to 65mmHg.

Central Line **REQUIRED** for vasopressor administration.

# Week 7: All or Nothing



In order to be compliant, you need to meet all the measures.

For severe sepsis, this includes:

**Within 3 hours of presentation:**

**Measure serum lactate**

**Obtain blood cultures x2 prior to antibiotics**

**Administer antibiotics**

**Resuscitation with 30mL/kg crystalloid fluids**

**Within 4 hours of presentation:**

**Repeat serum lactate if initial lactate is  $>2$**

**Repeat volume status and tissue perfusion assessment**

**Vasopressor administration**

**(If hypotension persists after fluid)**