

Sepsis

Objectives



- 1. Define SIRS / sepsis / severe sepsis / septic shock
- 2. Early recognition of Sepsis
- 3. Early Goal Directed Therapy

CASE

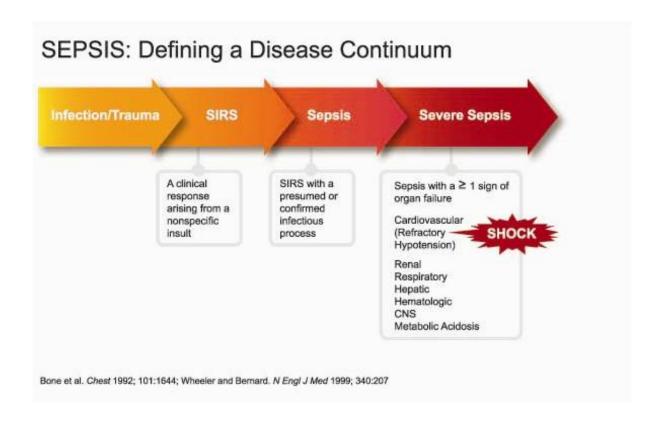


- 64yr Samoan male
- 24 hr Fever, productive cough, SOB and delirium
- Initial Obs
 - HR 162, RR 40, sats 90% on 15l, BP 85/50 (60), T 103
- History
 - 24 hr Fever, productive cough, SOB and delirium. Last few hours with altered mental status and progressively less responsive to wife and inability to complete sentences 2/2 SOB. Wife called 911

Definitions



1. A continuum of severity describing the host systemic inflammatory response



SIRS



- 1. SIRS systemic inflammatory response syndrome
- 2. Must have at least 2 of the following:
 - » Temperature >38.5°C or <36°C
 - » Heart rate >90 beats/min
 - » Respiratory rate >20 breaths/min or PaCO2 <32 mmHg</p>
 - » WBC >12,000 cells/mm3, <4000 cells/mm3, or >10 % immature (band) forms
- 3. SIRS is the body's response to infection, inflammation, stress.

Sepsis and Severe Sepsis



- 1. Sepsis SIRS + suspected or confirmed infection (documented via cultures or visualized via physical exam/imaging)
- 2. Severe Sepsis Sepsis + at least one sign of organ hypo-perfusion or dysfunction

Areas of mottled skin	Disseminated intravascular coagulation
Capillary refill > 3 secs	AKI
UOP < 0.5cc/kg /hr	ARDS or acute lung injury (ALI)
Lactate > 2mmol /L	Cardiac dysfunction on echo
Altered mental status	Plt < 100
Abnormal EEG	Troponin Leak

Septic Shock



- 1. Septic Shock Severe sepsis plus one of the following conditions:
 - » MAP <60 mm Hg (<80 mm Hg if previous hypertension) after adequate fluid resuscitation
 - » Need for pressors to maintain BP after fluid resuscitation
 - » Adequate fluid resuscitation = 40 to 60 mL/kg saline solution (NS 5L-10L)
 - » Lactate > 4mmol /L

SURVIVING SEPSIS CAMPAIGN

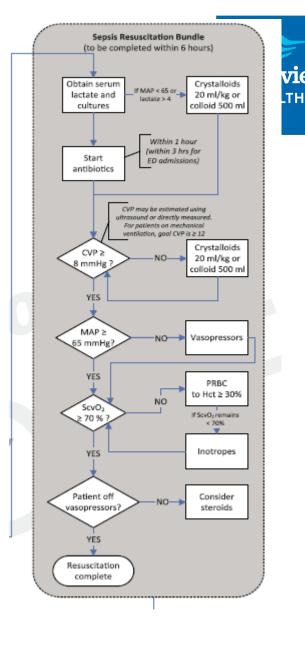


- 1. STEP 1: Identify SEPSIS
- 2. STEP 2: Categorize SEPSIS
- 3. STEP 3: Initiate TREATMENT

University of California, Irvine • Healthcare Sepsis Screening & Management Algorithm Exclude comfort care patients and patients <18 years old, from Sepsis Resuscitation Bundle (to be completed within 6 hours) RN screens Sepsis is confirmed or suspected for sepsis infection, plus two or more of the following: Obtain serum Crystalloids If MAP < 65 or T > 38.3°C or < 36°C lactate and 20 ml/kg or colloid 500 ml cultures HR > 90 bpm Sepsis RR > 20, or PaCO₂ < 32 suspected WBC > 12 or < 4, or > 10% bands Within 1 hour (within 3 hrs for Start ED admissions) antibiotics RN will attempt to contact RN contacts MD for evaluation CVP may be estimated using strasound or directly measured If no response in 15 mins, then wil attempt to contact attending For patients on mechanical lation, goal CVP is ≥ 12 Crystalloids CVP ≥ 15 mins, rapid response team will be called. 20 ml/kg or 8 mmHa colloid 500 ml MD evaluates patient If determined that patient only has SIRS, MAP≥ resume sepsis screening Vasopressors 55 mmHg MD evaluates MD initiates for possible order set VES PRBC to Hct ≥ 30% ScvO₂ 70 % Severe Sepsis/ Inotropes YES Septic Shock Patient off Consider asopressors? steroids ICU for MAP < 65, (octate > 4, or othe YES Administer dysfunction. oxygen Consider CVC Resuscitation complete Start IV fluids Sepsis Management Bundle Obtain (to be completed within 24 hours) serum lactate Consider low-dose steroids for septic shock Obtain Maintain blood glucose < 180 mg/dl Start antibiotics Maintain inspiratory plateau

pressures < 30 cm for

mechanically ventilated patients



Developed by the Sepsis Task Force 2011. For more detailed information: refer to the UCI sepsis guideline at https://intranet2.ha.uci.edu/clinicalpath 88583 (Rev 3-30-12)

UOP

Antibiotics



OCultures / Antibiotics / Labs

- ➤ Cultures PRIOR to Antibiotics (2 Sets, one peripheral and one from any line older than 48hrs)
- IV Abx within 3 hrs in the ED, within 1 hr in the ICU
- OBroad Spectrum, combination therapy for neutropenic and patients with pseudomonas risk factors
- Vancomycin PLUS Zosyn

OConsider need for Source Control!

➤ Drainage of abscess or cholangitis, removal of infected catheters, debridement or amputation of osteomyelitis

Fluid therapy



- Central Line Access (Fluid hydration +/- pressor)
- 2. 1st line therapy fluids, fluids, fluids!
- 3. Crystalloid equivalent to colloid
- 4. Initial 1-2 Liters (20mg/kg) crystalloid or 500 ml colloid
- 5. Careful in CHF patients!!

Pressors



- 1. See separate lecture on vasopressors
 - » Start with Levophed (norepinephrine) as first line therapy +/-Vasopressin
 - » Consider Dopamine peripherally on floor
 - ** This is available in crash cart ** If not responding to fluids, don't want for pharmacy to send levophed.

Corticosteroids



- 1. Use in Septic Shock, if NO response to vasopressors and fluids
 - » HYDROCORTISONE 200mg 300mg / day Divided doses (Q6hrs)

Initial Dose 100mg IV x1

Consider for patients who received etomidate

No need for cosyntropin stim test

Wean Steroids QUICKLY once off pressors

KEY TAKE HOME POINTS



- 1. Recongnize Sepsis **EARLY** and determine **SEVERITY**
- 2. EARLY Antibiotics are critical to resolution of shock
- 3. RESUSCITATE severe sepsis and septic shock ASAP
- 4. EARLY GOAL DIRECTED THERAPY