

# Sepsis

# Objectives



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

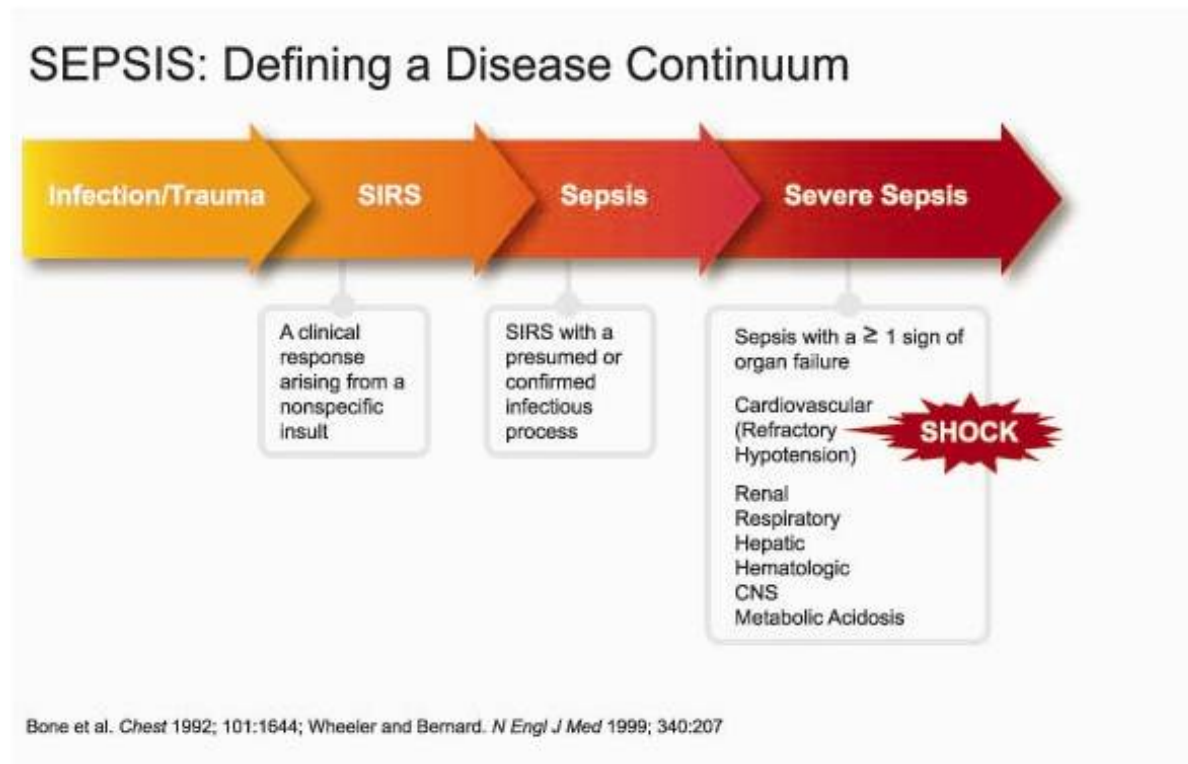
# CASE



- 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



1. SIRS – systemic inflammatory response syndrome
2. Must have **at least 2** of the following:
  - » ***Temperature  $>38.5^{\circ}\text{C}$  or  $<36^{\circ}\text{C}$***
  - » ***Heart rate  $>90$  beats/min***
  - » ***Respiratory rate  $>20$  breaths/min or  $\text{PaCO}_2 <32$  mmHg***
  - » ***WBC  $>12,000$  cells/mm<sup>3</sup>,  $<4000$  cells/mm<sup>3</sup>, 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*

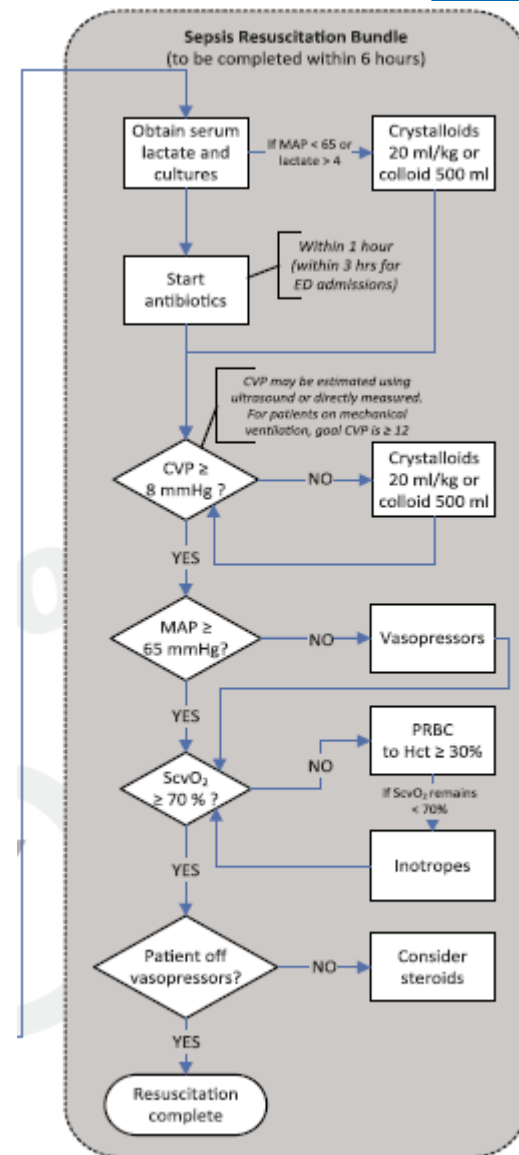
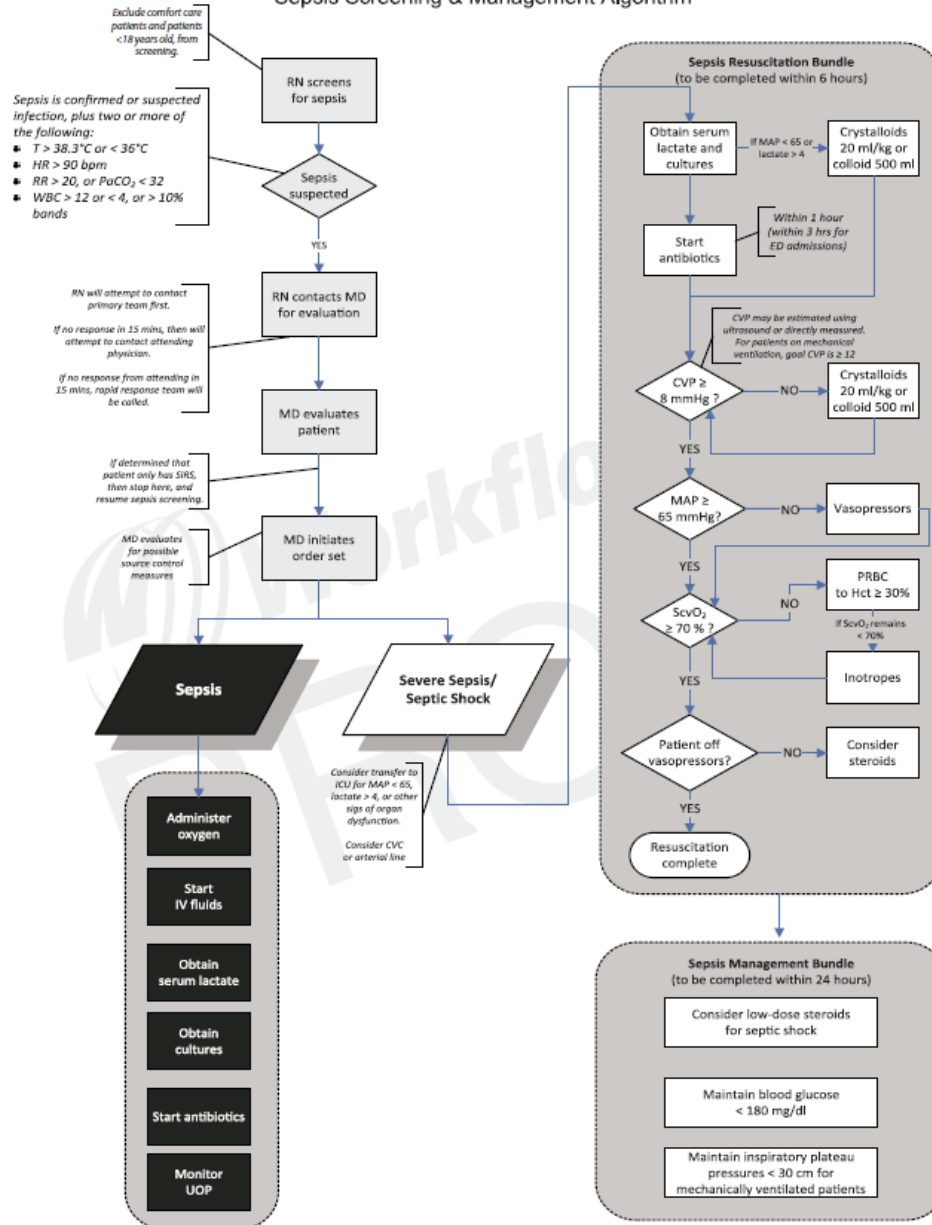
# SURVIVING SEPSIS CAMPAIGN



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



## Sepsis Screening & Management Algorithm



# Antibiotics



## ○ *Cultures / 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*
- Broad Spectrum, combination therapy for neutropenic and patients with pseudomonas risk factors
- Vancomycin PLUS Zosyn

## ○ *Consider need for Source Control !*

- ✦ *Drainage of abscess or cholangitis, removal of infected catheters, debridement or amputation of osteomyelitis*

# Fluid therapy



1. Central Line Access (Fluid hydration +/- pressor)
2. 1<sup>st</sup> 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. Recognize 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**