CMS Sepsis Core Measure Algorithm 2015/2016

SIRS

2 OR MORE of the following:

- ☐ HR >90
- ☐ RR > 20
- ☐ T >38.3 C or <36.0 C (>100.9F, or <96.8F)
- ☐ WBC >12K, <4K, or bands >10%

Clinically evaluate for infection to determine if Sepsis is present

Sepsis

BOTH of the following:

- ☐ 2 or more SIRS criteria

AND

- ☐ Known or suspected source of infection

Treat as appropriate, order lactate and check for evidence of end-organ dysfunction to indicate Severe Sepsis

CMS Sepsis Core Measures Apply to Severe Sepsis and Septic Shock ONLY

Severe Sepsis

ALL of the following 3 categories within 6 hours of each other:

- ☐ 2 SIRS criteria

AND

- ☐ Known or suspected source of infection

AND

- ☐ End-organ dysfunction

→ See next box for CMS definition

End-organ dysfunction = ANY ONE of the following:

- ☐ ***__Hypotension__ defined as:

SBP <90 **OR** MAP < 65 **OR** MAP = SBP + 2 (DBP) / 3

Drop in SBP of > 40 mmHg from the last previously recorded SBP considered normal for that patient

- ☐ Creatinine > 2 OR Urine output < 0.5ml/kg/hr for > 2 hours
- ☐ Total Bilirubin > 2
- ☐ Platelets < 100K
- ☐ Coagulopathy: INR > 1.5 OR aPtt > 60 seconds
- ☐ Lactate > 2 mmol/L
- ☐ Acute respiratory failure as evidenced by new need for invasive or non-invasive mechanical ventilation

DO NOT include evidence of organ dysfunction that is considered chronic or secondary to medication (ex. ESRD with Cr>2, patient on Coumadin with INR > 1.5). Prior lab values used to determine end-organ dysfunction must have been reported within the 6 hours preceding the onset of severe sepsis (TZ).

Provider Requirements for Severe Sepsis

Time Zero (TZ) refers to the time the last criteria to meet definition was identified. Critical Response Team will help to identify this time.

Write Time Zero here:_____

TZ to 1 hour (Ideally < 1 hour but not required until 3 hours)	**TZ to 3 hours**	**TZ to 6 hours**
ALL of the following: ☐ Lactate drawn & resulted (if not already known)-to be run on an blood gas analyzer if possible ☐ Blood cultures x 2 drawn ☐ If hypotensive (see strict definition) , initiate crystalloid IV fluid bolus (NS or LR) at 30ml/kg bolus to be given as rapidly as possible and within 3 hours if safely able (or document reason)	☐ Start **APPROVED sepsis broad-spectrum antibiotics**, if using combination therapy then BOTH drugs must be given or at least started by the 3 hour mark (See attached list) **PLEASE USE THE EPIC SEPSIS ORDER SET FOR ANTIBIOTICS !!!!** - Approved antibiotics - Organized by source of infection - Correct Dosing - Proper, aggressive rate along with specific nursing instructions ("Give First/ Give Second") to support the 3 hour antibiotic administration timeframe	☐ If initial lactate was > 2, then repeat lactate drawn, ideally after fluid resuscitation but definitely within 6 hours

CMS Sepsis Core Measure Algorithm 2015/2016
*****Septic Shock*****

Septic Shock

Severe Sepsis +

EITHER ONE of the following:

☐ Lactate Level ≥4

☐ Hypotension in the FIRST HOUR AFTER COMPLETION of a 30 mL/kg bolus

Provider Requirements for Septic Shock

Time Zero (TZ) refers to the time the last criteria to meet definition was identified. Critical Response Team will help to identify this time. Write Time Zero here:_____

TZ to 1 hour (Ideally < 1 hour but not required until 3 hours)	**TZ to 6 hours**	**TZ to 6 hours**
☐ If IV fluids not already given for severe sepsis with hypotension, then initiate crytalloid fluid bolus (NS or LR) of 30 ml/kg to be given as rapidly as possible and within 3 hours if safely able	☐ If 2 or more consecutive readings of persistent hypotension (see strict definition) within 1 hour following completion of IV fluids, then initiate vasopressors. Approved Vasopressors: -Norepinephrine -Epinephrine -Phenylephrine -Dopamine -Vasopressin	☐ ALL Patients with Septic Shock MUST have a bedside provider exam, documented after initiation of IV fluids and before 6 hours EITHER ONE of the following: Option 1: Specific Provider Bedside Physical Exam (see attached) Option 2: 2 of 4 Advanced Interventions (see attached)

Provider Exam Required for ALL patients with Septic Shock

Must be documented by provider AFTER IV fluids started and within 6 hours from TZ

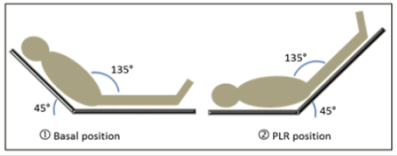
Option 1: ALL 5 ELEMENTS REQUIRED	Option 2: Need 2 of 4 advanced interventions
Vital signs : include BP, Pulse, Resp Rate, and Temp. MUST be documented by Provider (RN records do NOT count) Cardiopulmonary exam (Both heart AND lung need to be referenced) Capillary refill evaluation Peripheral pulse evaluation (Includes assessment of radial, DP, or PT pulses only) Skin examination - MUST include reference to skin color - ex. "flushed, mottled, pale, pink"	**CVP** **Central Venous O2** measurement **Cardiovascular U/S -** Can occur at patient's bedside OR patient may be sent to another department for imaging. No specific document requirements given, just documentation that it was performed. **Passive Leg Raise (PLR) OR Fluid Challenge** **See attached----------→**

Inpatient providers should activate the Critical Response Team at 919-784-5329 for ALL Severe Sepsis and Septic Shock patients, and for Sepsis patients if desired.
Providers may consult with the Intensivist at any time 919-784-1535
The Intensivist will be automatically consulted by the Critical Response Team for ALL inpatients with Septic Shock.

PLR vs Fluid Challenge for Option 2 Provider Exam – Septic Shock

Passive Leg Raise (PLR) – performed to evaluate if patient would benefit from additional fluids, commonly noted as positive or negative. Change patient position as follows:

PLR evaluates the patient vital sign response (or other parameters such as increased stroke volume or pulse pressure) to additional fluid load, and is reversible with returning the patient to the original position. Maximal effect occurs at 30-90 seconds



Fluid Challenge - After initiation of crystalloid infusion and ending at 6 hours after presentation of septic shock. Typically this will be given AFTER the 30mL/kg fluids bolus.

Rapid infusion (500mL in 15 min or 1,000mL in 30 min) of crystalloids (NS or LR) given to assess responsiveness to additional IV fluids.

Provider documentation should specifically state "fluid challenge" to differentiate this from the required 30mL/kg crystalloid bolus, and the fluid administered as part of this challenge does NOT count toward the 30m/kg bolus.

CMS Approved Sepsis Antibiotics (Based on Rex Formulary)

Unknown

□ **Piperacillin-tazobactam 4.5 grams** IV over 30 minutes **(ADMINISTER FIRST**), followed in 6 hours by **3.375 grams** IV over 4 hours every 8 hours (pharmacist may adjust)

OR

□ **Cefepime 2 grams IV** over 30 minutes **(ADMINISTER FIRST),** followed by **2 grams** IV over 4 hours every 8 hours (pharmacist may adjust)

OR for severe beta-lactam allergy:

□ **Aztreonam 2 grams IV** over 30 minutes **(ADMINISTER FIRST)** every 8 hours (pharmacist may adjust)

Choose one of the above PLUS

□ **Vancomycin 20 mg/kg IV x 1 (ADMINISTER SECOND),** then pharmacy to dose

Or for severe vancomycin allergy (not infusion reaction):

□ **Daptomycin 6 mg/kg IV** over 30 minutes **(ADMINISTER SECOND)** every 24 hours (pharmacist may adjust)

Meningitis

□ **Ceftriaxone 2 grams IV** over 30 minutes **(ADMINISTER FIRST)** every 12 hours

Or for severe beta-lactam allergy:

□ **Meropenem 2 grams IV** over 30 minutes x **1 (ADMINISTER FIRST),** then **2 grams** IV over 3 hours every 8 hours (pharmacist may adjust)

Choose one of the above PLUS

□ **Vancomycin 20 mg/kg IV x 1 (ADMINISTER SECOND) ,** then pharmacy to dose

OR for severe vancomycin allergy (not infusion reaction): Linezolid 600 mg IV over 30 minute**s x 1 (ADMINISTER SECOND) , then 600 mg IV** over 1 hour every 12 hours

If patient > 50 years old or post-partum, ADD

□ **Ampicillin 2 grams IV** over 30 minutes **(ADMINISTER THIRD)** every 4 hours (pharmacy may adjust)

If recent neurosurgery or head trauma:

□ **Cefepime 2 grams IV** over 30 minutes **(ADMINISTER FIRST), followed by 2 grams IV** over 4 hours every 8 hours (pharmacist may adjust)

PLUS

□ **Vancomycin 20 mg/kg IV x 1 (ADMINISTER SECOND),** then pharmacy to dose

OR for severe vancomycin allergy (not infusion reaction):

□ **Linezolid 600 mg IV** over 30 minutes **x 1 (ADMINISTER SECOND), then 600 mg IV** over 1 hour every 12 hours

Skin and Soft Tissue

□ **Piperacillin-tazobactam 4.5 grams IV** over 30 minutes **(ADMINISTER FIRST)** , followed in 6 hours by **3.375 grams IV** over 4 hours every 8 hours (pharmacist may adjust)

OR

□ **Cefepime 2 grams IV** over 30 minutes **(ADMINISTER FIRST), followed by 2 grams IV** over 4 hours every 8 hours (pharmacist may adjust) **AND Metronidazole 500 mg IV over 1 hour (ADMINISTER THIRD)** every 8 hours

OR for severe beta-lactam allergy:

□ **Aztreonam 2 grams IV** over 30 minutes **(ADMINISTER FIRST)** every 8 hours (pharmacist may adjust**) AND Metronidazole 500mg IV** over 1 hour **(ADMINISTER THIRD),** every 8 hours

Choose one of the options above PLUS

□ **Vancomycin 20 mg/kg IV x 1 (ADMINISTER SECOND) ,** then pharmacy to dose

OR for severe vancomycin allergy (not infusion reaction):

□ **Daptomycin 4 mg/kg IV** over 30 minutes **(ADMINISTER SECOND)** every 24 hours (pharmacist may adjust**)**

Urinary Tract

□ **Ceftriaxone 2 grams IV** over 30 minutes **(ADMINISTER FIRST)** every 24 hours

OR

□ **Piperacillin-tazobactam 4.5 grams IV** over 30 minutes **(ADMINISTER FIRST),** followed in 6 hours by **3.375 grams IV** over 4 hours every 8 hours (pharmacist may adjust**)**

OR for severe beta-lactam allergy:

□ **Aztreonam 2 grams IV** over 30 minutes **(ADMINISTER FIRST)** every 8 hours (pharmacist may adjust) **AND Vancomycin 15 mg/kg IV x 1 (ADMINISTER SECOND)**

CMS Approved Sepsis Antibiotics (Based on Rex Formulary)

Pneumonia

Community-Acquired (CAP):

□ **Ceftriaxone 2 grams IV** over 30 minutes **(ADMINISTER FIRST)** every 24 hours

OR for severe beta-lactam allergy:

□ **Aztreonam 2 grams IV** over 30 minutes **(ADMINISTER FIRST)** every 8 hours (pharmacist may adjust)

Choose one of the above PLUS

□ **Levofloxacin 750 mg IV** over 90 minutes **(ADMINISTER SECOND)** every 24 hours (pharmacist may adjust)

OR for severe fluoroquinolone allergy :

□ **Azithromycin 500 mg IV** over 1 hour **(ADMINISTER SECOND)** every 24 hours

If Pseudomonal risk present, replace ceftriaxone with EITHER

□ **Piperacillin-tazobactam 4.5 grams IV** over 30 minutes **(ADMINISTER FIRST),** followed in 6 hours by **3.375 grams IV** over 4 hours every 8 hours **(pharmacist may adjust)**

OR

□ **Cefepime 2 grams IV over 30 minutes (ADMINISTER FIRST) followed by 2 grams IV** over 4 hours every 8 hours (pharmacist may adjust)

OR for severe beta-lactam allergy:

□ **Aztreonam 2 grams IV over 30 minutes (ADMINISTER FIRST) every 8 hours (pharmacist may adjust)**

If aspiration witnessed or suspected, replace beta-lactam above with

□ **Ampicillin-sulbactam 3 grams IV over 30 minutes (ADMINISTER FIRST) every 6 hours (pharmacist may adjust)**

Healthcare-associated or hospital-acquired (HCAP/HAP):

□ **Piperacillin-tazobactam 4.5 grams** IV over 30 minutes (ADMINISTER FIRST), followed in 6 hours by **3.375 grams** IV over 4 hours every 8 hours (pharmacist may adjust) Select if aspiration witnessed or suspected

OR

□ **Cefepime 2 grams IV** over 30 minutes (ADMINISTER FIRST), followed by **2 grams** IV over 4 hours every 8 hours (pharmacist may adjust)

OR for severe beta-lactam allergy:

□ **Aztreonam 2 grams IV** over 30 minutes (ADMINISTER FIRST) every 8 hours (pharmacist may adjust)

Choose one of the options above PLUS

□ **Levofloxacin 750 mg IV** over 90 minutes (ADMINISTER THIRD) every 24 hours (pharmacist may adjust)

PLUS

□ **Vancomycin 20 mg/kg IV x 1** (ADMINISTER SECOND), then pharmacy to dose

OR for severe vancomycin allergy (not infusion reaction):

□ **Linezolid 600 mg IV** over 30 minutes x 1 (ADMINISTER SECOND), then **600 mg** IV over 1 hour every 12 hours

Intra-abdominal

□ **Piperacillin-tazobactam 4.5 grams IV** over 30 minutes **(ADMINISTER FIRST),** followed in 6 hours **by 3.375 grams IV** over 4 hours every 8 hours (pharmacist may adjust)

OR

□ **Cefepime 2 grams IV** over 30 minutes **(ADMINISTER FIRST), followed by 2 grams IV** over 4 hours every 8 hours (pharmacist may adjust) **AND Metronidazole 500 mg IV** over 1 hour **(ADMINISTER SECOND)** every 8 hours

If healthcare-associated, ADD

□ **Vancomycin 20 mg/kg IV x 1 (ADMINISTER THIRD),** then pharmacy to dose

OR for severe beta-lactam allergy:

□ **Aztreonam 2 grams IV** over 30 minutes **(ADMINISTER FIRST)** every 8 hours **(pharmacist may adjust) AND Metronidazole 500 mg IV** over 1 hour **(ADMINISTER THIRD)** every 8 hours

PLUS

□ **Vancomycin 20 mg/kg IV x 1 (ADMINISTER SECOND)**

□ **If healthcare-associated, continue vancomycin,** pharmacy to dose

Immunocompromised: (Neutropenia, Solid Organ Transplant, Hematopoietic Stem Cell Transplant)

□ **Cefepime 2 grams IV** over 30 minutes **(ADMINISTER FIRST), followed by 2 grams IV** over 4 hours every 8 hours (pharmacist may adjust)

OR

□ **Meropenem 1 gram IV** over 30 minutes **x 1 (ADMINISTER FIRST), then 1 gram IV** over 3 hours every 8 hours (pharmacist may adjust)

OR for severe beta-lactam allergy:

□ **Aztreonam 2 grams IV** over 30 minutes **(ADMINISTER FIRST)** every 8 hours (pharmacist may adjust) **AND**

□ **Metronidazole 500mg IV** over 1 hour **(ADMINISTER THIRD)** every 8 hours **(only if suspicion for intra-abdominal infection)**

Choose one of the above PLUS

□ **Vancomycin 20mg/kg IV x 1 (ADMINISTER SECOND),** then pharmacy to dose

OR for severe vancomycin allergy (not infusion reaction):

Daptomycin 6 mg/kg IV over 30 minutes (ADMINISTER SECOND) every 24 hours (pharmacist may adjust)

***Use alternatives for IgE-mediated reactions only (anaphylaxis, urticaria, angioedema, shortness of breath)**