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Disclosures

I have no financial disclosures or conflicts of interest related to this presentation.

6

Objectives

Define the evolving definitions of sepsis in adults
Understand the pathophysiology of sepsis
Discuss the impact of sepsis on U.S. Healthcare
Discuss the SEP-1 core measure
Discuss strategies to avoid "sepsis fallouts"

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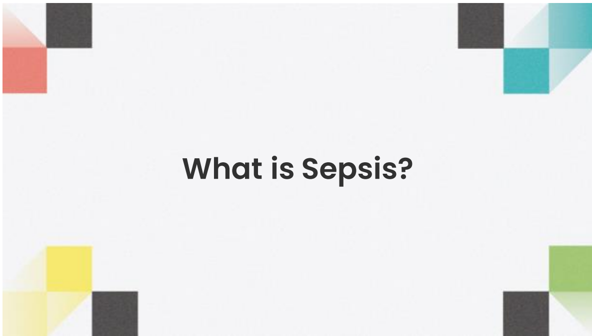

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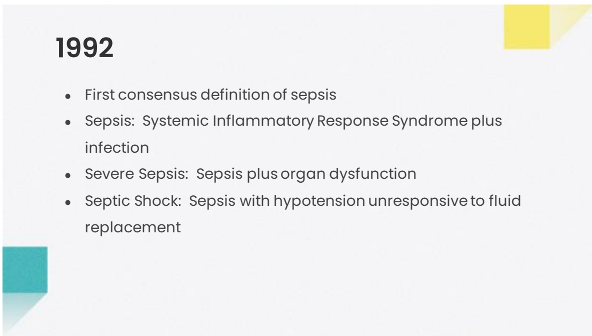

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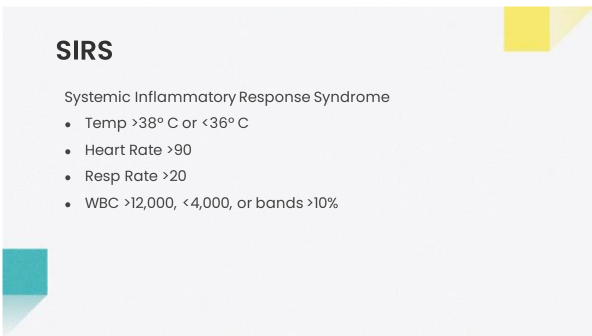

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2001

Defined as: a clinical syndrome ranging from septicemia to severe sepsis followed by the failure of vital organ function and septic shock, in which deep hypotension is the dominant sign.

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2002

Surviving Sepsis Campaign

International professional societies convened to develop guidelines for the management of severe sepsis and septic shock

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2016

More specific and based on pathophysiology

- A life-threatening organ failure caused by the host's inappropriate response to infection
- Severe Sepsis has been removed
- SIRS has been replaced with Sepsis-Related Organ Failure Assessment (SOFA)

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SOFA

Complicated scoring system scored based on multiple data points

- PaO2, Platelets, Glasgow Coma Scale, Bilirubin, Mean Arterial Pressure, Creatinine
- Predicts ICU mortality in sepsis

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qSOFA

quick SOFA

- Simplified screening tool for sepsis
- Altered mental status, Resp Rate ≥22, SBP≤ 100
- 2 out of 3 criteria predict increased mortality in patients with an infection

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What is Sepsis?

A life-threatening organ dysfunction caused by a dysregulated host response to infection. Septic shock is a subset of sepsis in which underlying circulatory, cellular, and metabolic abnormalities contribute to a greater risk of mortality.

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What is Sepsis?

Sepsis and septic shock are emergencies and treatment should be started as early as possible, immediately after the presentation of a patient with sepsis or septic shock criteria

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Why Does This Matter?

18

Impact of Sepsis

970,000 sepsis patients are admitted annually in the U.S.

Sepsis accounts for more than 50% of hospital deaths

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Impact of Sepsis

Mortality increases with severity of disease

- 10%-20% for sepsis
- 20-40% for severe sepsis
- 40%-80% for septic shock

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Impact of Sepsis

Sepsis represents 3.6% of hospital stays

Sepsis represents 13% of hospital cost

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Impact of Sepsis

Sepsis costs $24 billion per year

- Osteoarthritis - $17 billion
- Childbirth - $13 billion

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Impact of Sepsis

Sepsis admissions are increasing at a rate of 8.7% per year

Sepsis costs are growing at three times the rate of other admissions

23

Impact of Sepsis

Length of stay for sepsis patients is 75% longer than other diagnoses

- 4.5 days for sepsis
- 6.5 days for severe sepsis
- 16.5 days for septic shock

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Impact of Sepsis

Sepsis cases diagnosed after admission have a higher economic burden and mortality

25

Impact of Sepsis

Center for Medicaid and Medicare Services (CMS) needs to control costs related to sepsis care in the U.S.

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2015

CMS enacts a new quality measure

- Early Management Bundle for Severe Sepsis/Septic Shock
- SEP-1

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What is SEP-1?

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SEP-1

Largest quality measure ever introduced by CMS

Attempts to standardize care of patients with sepsis

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SEP-1

Goal is to reduce mortality and cost related to sepsis

30

SEP-1

Derived from consensus sepsis definitions and the Surviving Sepsis Campaign

Many aspects of the measure are controversial among sepsis experts

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SEP-1

Complex, multi-step measure

All aspects of the measure must be met to pass

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SEP-1

Hospital compliance with SEP-1 measure is public information

SEP-1 compliance will be tied to hospital reimbursement in 2024

33

SEP-1

Success is extremely difficult

- National compliance – 58%
- Oklahoma compliance – 52%

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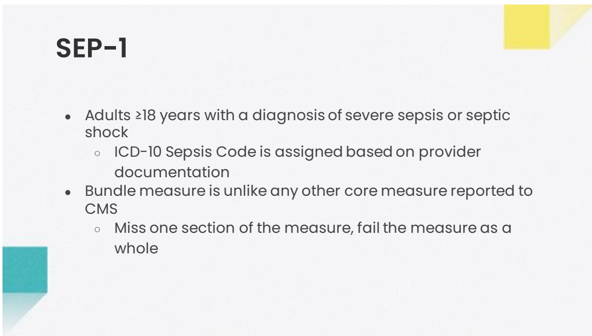

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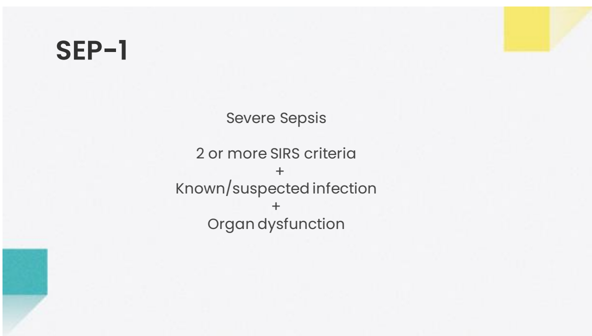

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Organ dysfunction

Organ dysfunction
- Systolic BP < 90, MAP < 65
- Systolic BP decrease of more than 40-points
- Lactate > 2mmol/L
- Creatinine > 2.0 (or 0.5 above documented baseline)
- Urine Output < 0.5mL/kg/hour for 2 consecutive hours
- Total Bilirubin > 2.0
- Platelet count < 100,000
- INR > 1.5
- PTT > 60 seconds
- Acute Respiratory Failure (Vent, NIPPV)

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Septic Shock

Severe Sepsis Criteria
+
Persistent Hypotension within 1-hour following 30ml/kg fluid resuscitation
OR
Lactate ≥ 4.0mmol/L

Persistent Hypotension manifestations:
- Systolic BP <90, MAP <65
- SBP Drop decrease more than 40mmHg (if directly related to infection)

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Exclusions

If SIRS criteria or organ dysfunction is:
- Normal for the patient
- Due to a chronic condition
- Due to an acute condition that has a non-infectious source

Document the abnormal value and its cause

40

Sources of Infection

- Abscess
- Acute Abdomen, Abdominal Infection
- Blood Stream Catheter Infection
- Bone/Joint Infection
- C. difficile (c-diff)
- COPD Acute Exacerbation
- Endocarditis
- Gangrene
- Implantable device infection
- Infection/Infectious
- Meningitis
- Necrosis
- Necrotic/Ischemic/Infarcted Bowel
- Pelvic Inflammatory Disease
- Perforated Bowel
- Pneumonia, empyema
- Purulence/Pus
- Sepsis/Septic
- Skin/Soft Tissue Infection
- Suspect Infection, Source Unknown
- Urosepsis, Urinary Tract Infection
- Wound Infection

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Excluded infections

Colonization, positive screens or positive cultures without provider documentation referencing an infection

- MRSA, VRE, or other bacteria

Fungal Infections

History of an infection, recent infection, or recurrent infection that is not documented as current/active

Orders for tests/screens without documentation of suspected infection

Antibiotics ordered for prophylaxis

Parasitic Infections

Results of tests without documentation of a suspected infection

- i.e. Infiltrates on chest x-ray, or positive cultures

Signs/Symptoms of an infection without supporting documentation

Viral Infections

If suspected or Confirmed COVID-19 is documented, it is excluded

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Source of infection

Ordering an antibiotic is a positive indicator for a suspected source of infection unless indication is for prophylaxis.

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Source of infection

Positive Qualifiers	Negative Qualifiers
Possible	Impending
Rule out (r/o)	Unlikely
Suspected	Doubt
Likely	Risk for
Probable	Ruled out
Differential Diagnosis	Evolving
Suspicious for	Questionable
Concern for	Monitor
Suggestive of	Query
Presumed	Less likely

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Sep-1 Measure

A series of actions that are time sensitive

Timer begins at "Time Zero"

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Time Zero

The earliest time the final clinical criterion for severe sepsis or septic shock is present (within a 6- hour period)

OR

The earliest documented time of severe sepsis or septic shock by a provider

Whichever comes first

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Time Zero

HR: 102 @ 14:00

RR: 23 @ 14:00

Provider Note: “CXR shows pneumonia” @ 14:07

Lactate: 2.2mmol/L (resulted by Lab @ 14:26)

Time Zero: 14:26

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Time Zero

HR: 102 @ 14:00

RR: 23 @ 14:00

Provider Note: “CXR indicative of pneumonia” @ 14:07

Provider Note: Severe sepsis present @ 14:10

Lactate: 2.2mmol/L (resulted by Lab @ 14:26)

Time Zero: 14:10

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Sepsis 3-hour bundle

Must be completed within 3-hours of presentation (Time Zero)

1) Obtain lactate
2) Obtain blood cultures prior to antibiotic administration
3) Administer IV antibiotic
4) Administer 30ml/kg crystalloid fluids

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30ml/kg bolus

Administer 30 mL/kg crystalloid fluid bolus if:

- Hypotensive (SBP < 90 or MAP < 65) OR
- Initial lactate ≥ 4.0 mmol/L

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30ml/kg bolus

If BMI is >30, ideal body weight (IBW) may be used

You must document that ideal body weight was used to calculate bolus due to BMI >30

51

Bolus Exclusions

Patients may be given <30 mL/kg if there is:

- Heart failure
- Renal failure
- Concern for fluid overload

Some amount of bolus can be given as colloids, but it must be documented

52

Bolus Exclusions

If less than the 30ml/kg bolus given:

- Some fluids must be ordered
- The following must be documented:
  - Volume of fluids administered
  - A reason for giving less than 30 mL/kg crystalloid fluids

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Sepsis 6-hour bundle

Must be completed within 6-hours of presentation (Time Zero)

1) Repeat Lactate if initial lactate >2.0mmol/L
2) Administer vasopressors if hypotension persists after fluid resuscitation (SBP <90, MAP <65)
3) Document Post Fluid Bolus Exam

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Sepsis 6-hour bundle

Document post fluid bolus assessment within 6 hours of fluid bolus completion

At least 5 of the following must be documented:

- Temperature, Pulse, Respirations, BP, Sa02 or Sp02, Cardiopulmonary assessment, Capillary refill

OR

Document in a note: "Sepsis Re-Assessment Performed"

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Palliative Care

If a patient is on palliative care, comfort measures only (CMO) OR provider is considering comfort measures:

- Document in the medical record within 6 hours of Time Zero

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Strategies for Success

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Strategies

Don't try to outsmart the measure!

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Strategies

EVERY TIME A NEW INFECTION IS IDENTIFIED OR SUSPECTED:

- Assume the patient has sepsis
- Assume the case will be included in SEP-1 Measure

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Strategies

EVERY TIME A NEW INFECTION IS IDENTIFIED OR SUSPECTED:

- Order lactic acid and blood cultures prior to antibiotic administration
- Order IV antibiotic
- Document date and time infection identified or expected
- Order 30ml/kg bolus
- Document sepsis fluid exclusions if applicable
- Perform post fluid bolus assessment

60

Strategies

Document:

- When in doubt, the time infection identified is the time you order antibiotics

61

Strategies

Avoid documenting:

- The term severe sepsis
- Present on arrival, present on admission, POA

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Strategies

Avoid documenting Infections in a differential diagnosis

- Listing a possible infection will trigger the measure
- If you aren't treating an infection you will fail

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Strategies

- Order blood cultures "stat"
- Procalcitonin does not replace lactic acid in early management of sepsis.
- Even if the suspected source of an infection (e.g., urine culture, wound culture) is obtained, blood cultures must still be ordered.

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Strategies

Remember your post fluid assessment

Document in a note: "Sepsis Re-Assessment Performed"

Order repeat lactic acid if initial lactate is ≥2.0

65

Strategies

EVERY TIME A NEW INFECTION IS IDENTIFIED OR SUSPECTED:

- Order lactic acid and blood cultures prior to antibiotic administration
- Order IV antibiotic
- Document date and time infection identified or expected
- Order 30ml/kg Bolus
- Document sepsis fluid exclusions if applicable
- Perform post fluid bolus assessment

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Thank You!

Questions?

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