Updating Your Practice: The 2017 Sepsis Guidelines

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Webinar Goal
Evaluate your clinical practice in light of key information from the 2016 Surviving Sepsis Campaign guidelines. Identify the opportunities to address any modifications you can make to improve patient care and outcomes.

Session Topics
- What is the Surviving Sepsis Campaign?
- Review sepsis definitions released in February 2016
- 2016 guideline priorities impacting nursing practice
- Putting it into your practice
Surviving Sepsis Campaign

Goal: reduce mortality, along with the following

1. Building awareness of sepsis
2. Developing guidelines of care
3. Educating healthcare professionals
4. Implementing a performance improvement program
5. Improving diagnosis
6. Increasing the use of appropriate treatment
7. Improving post-ICU care

Source: http://www.survivingsepsis.org/About-SSC/Pages/History.aspx
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Surviving Sepsis Campaign

- SSC was formed
- 1st SSC guidelines published
- 2nd SSC guidelines revised
- 3rd SSC guidelines revised
- 4th SSC guidelines revised

- SSC partnered with IHI
- 3- and 6-hour sepsis bundles developed
Current Sepsis Bundles

3-HOUR BUNDLE
- Measure lactate level
- Blood cultures prior to administering antibiotics
- Use broad-spectrum antibiotics
- 30 mL/kg crystalloid for hypotension or lactate ≥4 mmol/L

6-HOUR BUNDLE
- Vasopressors to maintain MAP ≥65 mmHg for hypotension unresponsive to initial fluid resuscitation
- Reassess volume status and tissue perfusion if MAP <65 mmHg or if initial lactate ≥4 mmol/L
- Remeasure lactate if initial lactate elevated

Surviving Sepsis Campaign Executive Committee. Available at: http://www.survivingsepsis.org/SiteCollectionDocuments/SSC_Bundle.pdf
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2016 Sepsis: 3 Definitions

- Third International Consensus Definitions
- Why do we need new definitions?
  - There is no single diagnostic test for sepsis

- Need for definitions and criteria that could be:
  - measured clinically
  - easily obtainable in all settings
  - provide uniformity
  - reflect current understanding of sepsis physiology
2016 Sepsis: 3 Definitions

- **Sepsis** is a life-threatening organ dysfunction caused by dysregulated host response to infection
  - Emphasis on systemic inflammatory response syndrome (SIRS) is gone
- **Severe Sepsis** is gone
- **Septic Shock** is a subset of sepsis in which underlying circulatory and cellular/metabolic abnormalities are profound enough to substantially increase mortality
  - Persisting hypotension requiring vasopressors to maintain MAP ≥65 mmHg and serum lactate >2 mmol/L despite adequate volume resuscitation
Polling Question

Have you seen the 2016 Sepsis Definitions used in your practice?

a) Yes  
b) No  
c) Unsure
What is SOFA and qSOFA?

- A model to identify organ dysfunction with higher mortality (>10%) in sepsis patients
- SOFA (sequential organ failure assessment) score is a multifactor scoring system
  - Good predictive validity for use in ICUs
- qSOFA (quick SOFA)
  - Easy to obtain in any setting; good predictive validity for use outside ICUs
## SOFA and qSOFA Criteria

### SOFA
- Respiration: PaO$_2$/FiO$_2$ ratio
- Coagulation: platelets
- Liver: bilirubin
- Cardiovascular: hypotension/use of vasopressors to maintain BP
- CNS: GCS score
- Renal: creatinine and urine output

*Scoring 1-4 for each criteria based on worsening data*

### qSOFA
- SBP ≤100 mmHg
- RR >22/minute
- Mental status: GCS <15

*Positive score if 2 or more of these indicators*
Mrs. Z

Mrs. Z is a 52-year-old female in the ED with complaints of lower abdominal pain, fever, cloudy/foul urine, and change in mental status. Medical history includes multiple sclerosis, ambulatory dysfunction, and chronic urinary catheter.

- Temp 36°C
- HR 118
- RR 28
- BP 92/56 with a MAP 68
- GCS 13

qSOFA score was positive for all 3 criteria
Mrs. Z

Mrs. Z has sepsis due to a probable urinary tract infection with life-threatening organ dysfunction

- Repeat vital signs are: Temp 36.2°C, HR 122, RR 26, and BP 80/40 with a MAP 53
- Lab work: WBC 15.5/μL, lactate 3.6 mmol/L
- STAT blood and urine cultures were obtained
- STAT antibiotics were given
- A 30 mL/kg bolus of normal saline is ordered (weight 64 kg or 2 L)
Centers for Medicare & Medicaid Services (CMS)

- CMS core measure went live in October 2015 with Severe Sepsis/Septic Shock Early Management Bundle (SEP-1)
  - Inpatients ages ≥18 with an ICD-10-CM principal or other diagnosis code of severe sepsis or septic shock
  - Currently not using Sepsis-3 2016 definitions

- CMS will not score the SEP-1 measure validation for Hospital Inpatient Quality Reporting (IQR) Fiscal Year (FY) 2018
- CMS is also postponing the public reporting of the SEP-1 measure on Hospital Compare
Impact of the Sepsis 3 Definitions on Practice

- Currently there remains no single diagnostic test for sepsis; we remain dependent on screening criteria
- New Sepsis-3 definitions and criteria promote earlier identification of patients with higher risk of mortality, leading to earlier treatment

**Recommendations for healthcare facilities**
- Evaluate and incorporate use of SOFA and qSOFA along with decreased reliance on SIRS criteria solely
- Reconcile data collection for CMS SEP-1 while concurrently using new Sepsis-3 definitions
2016 Sepsis Guidelines

- 25 international organizations were involved in the development of this new revision
- Align with the 2016 Sepsis-3 definitions for sepsis and septic shock
- Highlights of 5 sections:
  - HEMODYNAMICS
  - INFECTION
  - ADJUNCTIVE
  - METABOLIC
  - VENTILATION

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Evidence and Levels of Recommendation

- GRADE system to assess the quality of evidence
- Recommendations at 3 levels:
  - **BPS** Best Practice Statement. This is a strong recommendation, where benefit or harm is unequivocal
  - **R** Recommend. Following the recommendation will clearly outweigh any undesirable effects
  - **S** Suggest. The desirable effects will probably outweigh the undesirable effects, based on available evidence

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2016 Sepsis Guidelines

Hemodynamics

Sepsis and septic shock are medical emergencies and we recommend that treatment and resuscitation begin immediately.

- Early goal-directed therapy (EGDT) no longer supported
- Initial resuscitation: ≥30 mL/kg of crystalloids for sepsis-induced hypoperfusion within first 3 hours
- Targeted MAP 65 mmHg
- Targeted resuscitation to normalize lactate in patients
2016 Sepsis Guidelines
Hemodynamics

We recommend further hemodynamic assessment (such as assessing cardiac function) to determine the type of shock if the clinical exam does not lead to a clear diagnosis.

- Clinical measures such as heart rate, blood pressure, arterial oxygen saturation, respiratory rate, temperature and urine output
- Echocardiography
2016 Sepsis Guidelines

Hemodynamics

We suggest dynamic over static variables be used to predict fluid responsiveness, where applicable.

- The use of central venous pressure or other static measures to guide fluid resuscitation is not suggested.
Examples of Static vs Dynamic Measures

**STATIC MEASURES**
- Pressure
  - CVP
  - PAOP
- Volume
  - GEDV: global end-diastolic volume
  - LVEDC: left ventricular end-diastolic volume

**DYNAMIC MEASURES**
- PPV: pulse pressure variation
- SPV: systolic pulse variation
- PVI: pleth variability index
- SVV: stroke volume variation
- IVC: inferior vena cava
Mrs. Z

- Blood pressure remained low at 84/40, MAP 55, after an additional 3rd liter was infused. A central line was inserted and norepinephrine was started at 5 mcg/min to maintain a MAP ≥65 mmHg.
- The repeat lactate was 2.2 mmol/L (baseline was 3.6)
Polling Question

Does the patient meet criteria for septic shock?

a) Yes
b) No
c) Not sure
Mrs. Z

A passive leg raise test showed a stroke volume increase of 10%, indicating fluid responsiveness
  - Additional 2 L of normal saline were infused
  - Bedside cardiovascular ultrasound was done

Passive leg raising
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Infection

Narrow the antimicrobial therapy once pathogen identification and sensitivities are established and/or adequate clinical improvement is noted

- Antibiotic stewardship programs

We recommend against sustained systemic antimicrobial prophylaxis in patients with severe inflammatory states of noninfectious origin (e.g., severe pancreatitis, burn injury)
2016 Sepsis Guidelines

Infection

- Identify or exclude a specific anatomical diagnosis of infection requiring emergent source control as rapidly as possible in patients with sepsis and septic shock
- Implement any required source control intervention as soon as medically and logistically practical after the diagnosis is made
- We recommend a minimal target of 6-12 hours after diagnosis is appropriate for most cases
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Infection

- We suggest procalcitonin levels can be used to shorten the duration of antimicrobial therapy in sepsis patients.
- We suggest procalcitonin can be used to support the discontinuation of empiric antibiotics in patients who initially appeared to exhibit sepsis, but subsequently have limited clinical evidence of infection.
2016 Sepsis Guidelines

Adjunctive

We recommend RBC transfusion occur only when hemoglobin concentration decreases to $<7.0-7.5 \text{ g/dL}$

- In adults, in the absence of extenuating circumstances, such as myocardial ischemia, severe hypoxemia, or acute hemorrhage
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Ventilation

- We recommend using prone over supine position in adult patients with sepsis-induced acute respiratory distress syndrome (ARDS) and a PaO2/FiO2 ratio <150.
- We recommend against the use of HFOV in adult patients with sepsis-induced ARDS.
2016 Sepsis Guidelines

Ventilation

- We suggest using NMBA for ≤48 hours in adult patients with sepsis-induced severe ARDS and a PaO$_2$/FiO$_2$ < 150 mm Hg.
- We suggest using lower tidal volumes over higher tidal volumes in adult patients with sepsis-induced respiratory failure without ARDS.
2016 Sepsis Guidelines

Adjunctive

- We recommend against stress ulcer prophylaxis in patients without risk factors for GI bleeding

- We recommend that stress ulcer prophylaxis be given to patients with sepsis or septic shock who have risk factors for GI bleeding

- We suggest using either proton pump inhibitors (PPIs) or histamine-2 receptor antagonists (H2RAs) when stress ulcer prophylaxis is indicated
2016 Sepsis Guidelines

Metabolic

- We recommend the administration of early full enteral nutrition rather than early parenteral nutrition alone or parenteral nutrition in combination with enteral feedings in critically ill patients with sepsis or septic shock who can be fed eternally. (R)

- We suggest either early trophic or early full enteral feeding; if trophic feeding is the initial strategy, then feeds should be advanced per patient tolerance. (S)
2016 Sepsis Guidelines

Metabolic

- We suggest **against** routinely monitoring gastric residual volumes in critically ill patients with sepsis or septic shock.

- However, we suggest measurement of gastric residuals in patients with feeding intolerance or who are considered to be high risk for aspiration.

- We suggest placement of postpyloric feeding tubes in critically ill patients with sepsis or septic shock with feeding intolerance or who are considered high risk for aspiration.
Applying 2016 Guidelines to Your Practice

- Obtain the 2016 Surviving Sepsis Guidelines available at www.survivingsepsis.org/Guidelines
- Work with your sepsis team to incorporate the new changes
  - Less reliance on early goal-directed therapy and CVP
  - Research and implement procedures and/or policies to measure dynamic variables such as stroke volume
  - Emphasis on prone positioning and early NMBA for sepsis-induced ARDS
Summary

- Review the Surviving Sepsis Campaign website for current information on what is new regarding sepsis definitions, guidelines, and bundles along with resources
- Explore ways to incorporate use of SOFA and qSOFA as additional criteria for sepsis screening
- Reconcile data collection for CMS SEP-1
- Work with your sepsis and critical care teams to incorporate the new 2017 Sepsis Guideline changes
Questions?
AACN Implementation
Tools and Resources

Designed to help you apply these practices in your environment

- **Tools and Tactics**: Blueprint for Updating Your Practice with the 2016 Sepsis Guidelines
- **Bridging the Gap**: A Gap Analysis for Implementing the 2016 Surviving Sepsis Campaign Guidelines
- **Passive Leg-raising Maneuver (PLRM)**: A Procedure to Identify Patients as Responders or Nonresponders
- **Comparison of 2016 vs. 2012 Surviving Sepsis Campaign Guidelines**
- **qSOFA and SOFA Scoring System**

Find these tools on the: webinar information page at www.aacn.org/webinars
Implement Strategies for Updating Your Practice: The 2016 Sepsis Guidelines

Improve Patient Outcomes

1. Download the Implementation Tools. Find them on the Updating Your Practice: The 2017 Sepsis Guidelines webinar information page at www.aacn.org/webinars

2. Discuss the tools and recommended practices with your colleagues

3. Implement practices that are suitable for your unit
References


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