Improving Sepsis Bundle Compliance and Decreasing Sepsis Mortality Rates in Critical Access Hospitals (CAHs)

Compass, Telligen, IPRO and Alliant

Joint Hospital Quality Improvement Contract (HQIC) Learning and Action Network

August 29, 2024

We will get started shortly!

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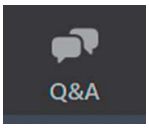

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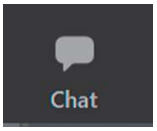

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Agenda

- Welcome and Introductions
- Improving Sepsis Bundle Compliance and Decreasing Sepsis Mortality Rates in CAHs Presentation
- Panel Discussion
- Q&A

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Improving Sepsis Bundle Compliance and Decreasing Sepsis Mortality Rates in CAHs

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Iowa Healthcare Collaborative
in collaboration with University of Iowa

Objectives

- Consider the epidemiology of sepsis and sepsis bundle interventions (SEP-1) in the context of social determinants of health
- Discuss best practices and challenges CAHs have with evidence-based sepsis protocols.
- Using implementation science, describe appropriate interventions to address barriers to following best sepsis practices.
- Examine successes and challenges of implementing sepsis bundle compliance improvement strategies in Iowa CAHs.

	2012	2018
Hospital Admissions	811,644	1,136,889
Cost	$17.8 billion	$22.4 billion 5% growth rate annually, exceeding inflation
Aggregate hospital cost		$57.5 billion

Sepsis in Medicare Beneficiaries

- Affects 1.7 million annually
- 250,000 deaths annually

Sepsis in Social Drivers of Health (SDOH)

- Mortality rates per 100,000:
  - Blacks 81.8
  - Native Americans: 68.0
  - Whites 47.0
  - Asians 33.7
- Poverty >10% in community and unemployed:
  - Statistically significant increase vs employed/non-poverty
- Small hospitals (<25 beds) vs large hospitals (>500 beds)
  - Far less likely to have dedicated time to lead sepsis programs
- Rural
  - Blacks have seen sepsis mortality improvements in urban populations but not rural populations

CMS Severe Sepsis and Septic Shock Early Management Bundle (SEP-1)

- Best practice introduced in 2016
- Time-sensitive sepsis interventions
- Algorithm format
- 3-hour and 6-hour indicators
- Mandated to be part of inpatient quality reporting in PPS hospitals
- Will have Value-Based Purchasing (VBP) component starting in 2026
- Minimal effect on short-term mortality
- Significant decrease in length of stay and 30-day mortality

SEP-1: Early Management Bundle, Severe Sepsis/Septic Shock (Composite Measure)	
Numerator: (Patients who received all of the following)	Within three hours of presentation of severe sepsis • Initial lactate level measurement • Broad spectrum or other antibiotics administered • Blood cultures drawn prior to antibiotics AND received within six hours of presentation of severe sepsis. ONLY if the initial lactate is elevated: • Repeat lactate level measurement AND within three hours of initial hypotension: • Resuscitation with 30 mL/kg crystalloid fluids OR within three hours of septic shock: • Resuscitation with 30 mL/kg crystalloid fluids AND within six hours of septic shock presentation, ONLY if hypotension persists after fluid administration: • Vasopressors are administered AND within six hours of septic shock presentation, if hypotension persists after fluid administration or initial lactate >= 4 mmol/L: • Repeat volume status and tissue perfusion assessment is performed
Denominator:	Inpatients age 18 or over with an ICD-10-CM Principal or Other Diagnosis Code of sepsis, severe sepsis or septic shock..., and not equal to [COVID-19].

SEP-1 Bundle

CMS QualityNet, 2022

Barriers to Quality Improvement (QI) and Evidence-Based Practice (EBP) Uptake

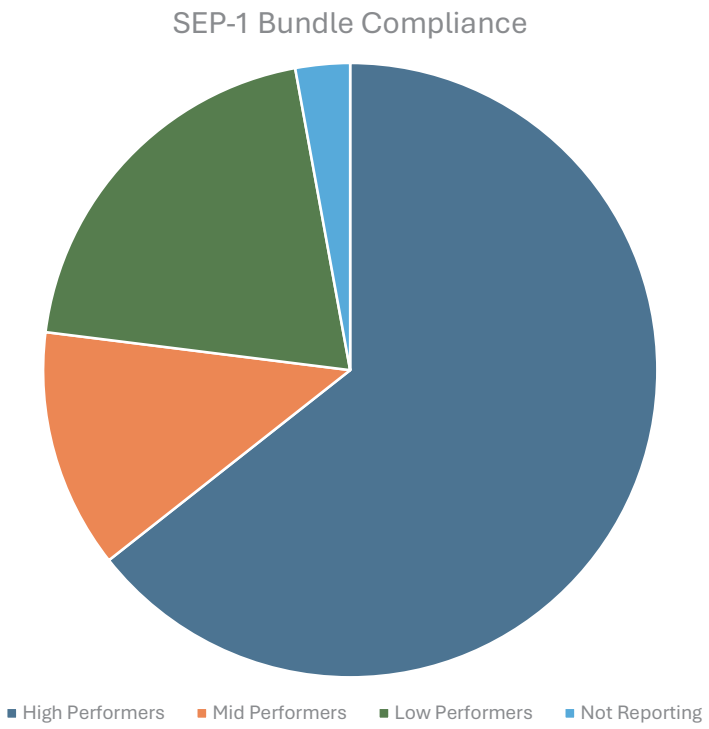
(Lit search)

- 1300 CAH in the United States
- Staffing challenges!!
- Resource allocation
- Conflicting time management and commitments
- Lack of infection preventionist or other clinical/quality expertise
- Lack of anonymity and/or bias from knowing patients in community
- Misaligned policies & incentives (payer, regulatory, professional priorities); national recommendations n/a to CAH
- Lack of available technology and equipment
- Lack of leadership/provider support, just culture, change management barriers

Facilitators to QI/EBP Uptake

(Lit search)

- Administrative support
- Multidisciplinary team champions
- Patient-centered culture with positive attitude toward EBP
- Expert availability to teach and implement QI initiatives



IHC CAH Compliance Rates

Sept 2023

SDOH	Target Counties vs State
White	↑
English speaking	↑
Non-Hispanic	↑
Home ownership	↑
Presence of internet in home	↓
High school education	=
College education	↓
Household income	≥
Poverty rates	≥
Food insecurity	↑
PCP: Patient Ratio	↑

SDOH in 6 Iowa Target Counties

Conclusion:

These counties impacted by poverty, lower education, food insecurity, and healthcare access

Focus Group Questions

(6 IA CAH)

- Role and experience in quality department
- Describe QI department
- What might be causing higher sepsis rates/sepsis mortality rates?
- Barriers to achieving sepsis quality metrics
  - Process
  - People
  - Resource
- Vision for ideal QI department
- Organization's engagement in sepsis mortality improvement
- One intervention wish to implement re: sepsis

Focus Group Results

- Quality leaders have varied backgrounds in nursing, varied expertise in quality and management.
- Quality usually managed at unit level using data collection, Plan, Do, Study, Act (PDSA) cycle improvements, and education
- Process of sepsis identification is varied and is often delayed. Occurs typically in the emergency department (ED) and sometimes in med-surg.
- Lack of continuity across care delivery teams with order sets, timely follow-up and accurate documentation.
- Handoff communication challenges present.
- Electronic Medical Record (EMR) has usability issues regarding alerts, order sets, navigation, documentation, and data extraction.
- Varied staff and provider expertise potentially leading to delays in sepsis identification.
- Providers have lack of accountability to processes and outcomes (not employed by hospital).
- Team members, particularly providers, less engaged than administration.

- Educational tools
- Requirement to use order set
- Better handoff communication and accurate documentation.
- Hard stop to use order set, use a protocol like chest pain or stroke.
- Sepsis tag added
- Team would stop to calculate the fluid bolus volume; use of lactate
- Mandatory use of order set
- Nurse-driven order set

Focus Group Requests

Summary:

- Consistent use of order sets, particularly nurse-driven
- Improved handoff communication
- Provider influence

Focused Interventions to Improve SEP-1 Using Implementation Science

Each QI eam will engage provider champion to facilitate sepsis bundle compliance improvement

QI team at each hospital will work on transforming sepsis order set to nurse-driven order set (like stroke protocol)

Panel Discussion

Panelists:

Jesica Steeg, RN- Quality Improvement Coordinator
Sanford Sheldon Medical Center

Sheyanne Schulz, RN- Quality, Education, & Safety Manager
Mitchell County Regional Health Center

IHC Support:

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Amanda Donlon, BSN, RN, CDCES, CPHQ, CPPS- Clinical Improvement Consultant
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Charisse Coulombe, MS, MBA, CPHQ, CPPS, CPHIMS, CSM- Director, Hospital Quality Initiatives

Panel Discussion Question #1

Tell us about your experiences with sepsis as a quality initiative this year.

Panel Discussion Question #2

Describe the successes you and this group have had so far with this QI project.

Panel Discussion Question #3

What barriers have you and this group experienced thus far and how are you working to move past them?

Panel Discussion Question #4

What advice do you have for a hospital that might be struggling with sepsis quality initiatives?

Tools and Resources

- Compass HQIC Sepsis Resources Quick-Reference Document (link)
- Intermountian Health's Care Process Model for Recognition and Management of Adult Severe Sepsis and Septic Shock (link)

Recognition and Management of Adult Severe Sepsis and Septic Shock

Diagnosis of Severe Sepsis or Septic Shock

Patient presents with suspected infection

Document suspected source of infection

See *Adult Sepsis Bundle Worksheet* to aid documentation

Evaluate for systemic inflammatory response (*Any Two*)

Determine if AT LEAST TWO of the following criteria are met for sepsis.

- ☐ Temperature >38.3°C or <36°C
- ☐ Heart rate >90 beats per minute (bpm)
- ☐ Respiratory rate >20 breaths per minute
- ☐ White blood cell (WBC) count >12,000/mm³, or <4,000/mm³, or >10% bands

If patient is 20 weeks pregnant to 3 days postpartum determine if AT LEAST TWO of the following criteria are met for sepsis.

- ☐ Temperature ≥38°C <36°C
- ☐ Heart rate >110 bpm
- ☐ Respiratory rate >24 breaths per minute
- ☐ WBC >15,000/mm³ or <4,000/mm³, or >10% bands

≥2 criteria met? — *no* / *yes*

no → Sepsis criteria *NOT* met: treat infectious condition

† If 20 weeks pregnant to 3 days postpartum use alternate criteria below for specified parameters of acute organ dysfunction.
- SBP <85 mm Hg
- Creatine >1.2 mg/dL
- Do not use lactate obtained during peripartum period or delivery

*Note: Organ dysfunction associated with preexisting chronic conditions should not be considered as meeting acute organ dysfunction criteria (e.g. Creatinine >2 mg/dL in patients with end stage renal disease).

INR: *International normalized ratio*
MAP: *Mean arterial blood pressure*
PPT: *Partial thromboplastin time*
SBP: *Systolic blood pressure*

yes → **Evaluate for *Any* of the following signs of acute organ dysfunction***

- SBP <90 mmHg†
- SBP decrease >40 mm Hg from patient's known baseline
- MAP <65 mmHg
- Creatinine >2 mg/dL†
- Acute respiratory failure requiring new or increased need for invasive or non-invasive mechanical ventilation
- Urine output <0.5 mL/kg/hr for >2 hours
- Total bilirubin >2 mg/dL
- Platelets <100,000/mm³
- INR >1.5 or PTT >60 sec
- Lactate >2 mmol/L†

ANY sign of acute organ dysfunction?† — *no* → Sepsis possible: treat infectious condition as necessary; *yes* →

Severe Sepsis / Septic shock
Treat using ***Severe Sepsis / Septic Shock Treatment - 3 hour bundle*** (next page)

Notify provider of positive screen using SBAR

Intermountain Health

Severe Sepsis / Septic Shock Treatment — 3 hour bundle

Patient meets severe sepsis or septic shock criteria

Document Time Zero

Document and communicate presentation time (this is time zero)

Begin severe sepsis / septic shock 3-hour bundle

The steps below should be completed within 3 hours of time zero.

- ☐ Draw serum lactate
- ☐ Draw blood cultures prior to giving antibiotics
- ☐ Give IV antibiotics according to recommendations in order sets / power plans
  - For severe sepsis, antibiotics should be ordered <2 hours after presentation (time zero)
  - For septic shock, antibiotics should be ordered <1 hour after presentation (time zero)
  - Use source-target antibiotics if possible; if source is unknown, use broad-spectrum antibiotics

-Start IV
-Vitals & Assess Frequency
-Source Control

Document abx time
Document fluid time & amt

Is patient hypotensive* AND / OR lactate ≥4 mmol/L? — *no* / *yes*

*Hypotension defined as:
- MAP <65 mm Hg OR
- SBP <90 mm Hg OR
- SBP >40 mm Hg below base line OR
- SBP <65 mm Hg if 20 weeks pregnant to 3 days postpartum

yes → **Give 30 mL / kg (actual weight) isotonic crystalloid over 30 – 90 minutes and then reassess blood pressure.**

- If BMI is >30 a fluid bolus of 30 mL / kg predicted body weight may be used.
- May give <30 mL / kg fluid bolus if clinical reason is documented in medical record AND a specific amount of isotonic crystalloid is ordered and documented in the note.

Is patient hypotensive* within an hour following fluid bolus? — *no* / *yes*

Treat based on patient's initial lactate (mmol / L)

≤2	2.1 – 3.9	≥4.0
Continue sepsis treatment, see *Severe Sepsis / Septic Shock 24-hr maintenance bundle* page 4	Repeat lactate within 3 hours of initial lactate, begin *Severe Sepsis Septic Shock 24-hr maintenance bundle* page 4	Complete all elements of the *Severe Sepsis / Septic Shock Treatment 6-hour bundle* page 3

Continue sepsis treatment, see *Severe Sepsis / Septic Shock Treatment 24-hr maintenance bundle* (page 4)

Begin *Severe Sepsis / Septic Shock Treatment 6- hour bundle* (next page)

Q&A

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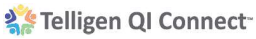

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We value your input!

Please complete the brief evaluation after exiting the event

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