



# HMS Sepsis Toolkit Launch

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# Welcome & Housekeeping



- Thank you for attending!
- We will have time for Q&A
  - Type questions into Q&A feature throughout
  - Use raise hand function
- Power point slides and webinar recording will be posted

- No financial COI
- Salary support: BCBSM, CDC
- Grant funding: NIH, AHRQ, VA HSR&D
- Roles:
  - Physician Lead, HMS-Sepsis Initiative
  - Co-Chair Surviving Sepsis Campaign Guidelines
  - Subject matter expert, CDC Core Elements of Hospital Sepsis Programs
  - Advisory Board, Sepsis Alliance

# Thank you! The team, the team, the team...



Eileen Creutz, BSN, RN



Kelli Souheaver, BSN, RN, CPEN



Pat Posa, RN, BSN, MSA, CCRN-K, FAAN



Elizabeth McLaughlin, MS, RN



Tawny Czilok, MHI, RN



Jennifer Horowitz, MA



Ashwin Gupta, MD



Tejal Gandhi, MD



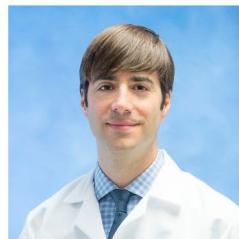
Lindsay Petty, MD



Valerie Vaughn, MD, MSc



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Jakob McSparron, MD

**DATA, DESIGN, AND PUBLICATIONS COMMITTEE**  
AN HMS SUB-COMMITTEE

**CRITICAL CARE STEERING COMMITTEE**  
AN HMS SUB-COMMITTEE

**HENRY FORD HEALTH** Trinity Health Corewell Health

**MUNSON HEALTHCARE** McLaren

**UNIVERSITY OF MICHIGAN HEALTH**  
MICHIGAN MEDICINE

DEPARTMENT OF HEALTH & HUMAN SERVICES - USA  
CDC

Hospital Sepsis Program  
Core Elements: 2023

**SEPSIS ALLIANCE**

# Agenda



Introduction to Hospital Medicine Safety (HMS) Consortium



Overview of HMS-Sepsis Initiative



Sepsis Toolkit



Q&A

# Introduction to HMS



# HMS is one of ~20 Collaborative Quality Initiative (CQIs)



PROGRAMS NEWS BLOG CONTACT | Q

Boosting healthcare quality. Reducing costs.

For more than a decade, Blue Cross, physicians and hospitals across Michigan have made health care work better.

WHAT IS VALUE PARTNERSHIPS



CQIs have resulted in **cost savings:**  
\$413 M for BCBSM and \$1.4B statewide

## Collaborative Quality Initiatives

Anesthesia  
Anticoagulation  
Back pain  
Bariatric Surgery  
Cardiovascular Procedure

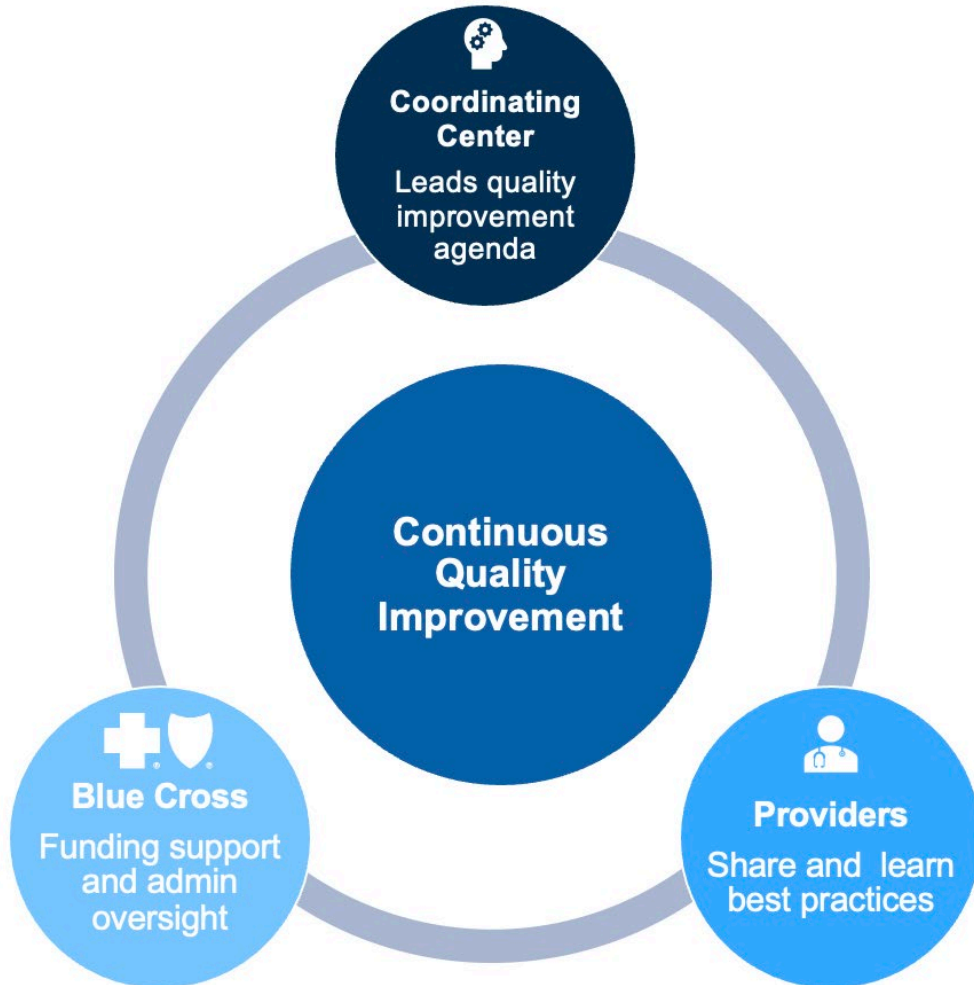
Diabetes  
Cardiothoracic Surgery  
Care transitions  
Emergency Medicine  
General Surgery  
Health Behavior  
Health Disparities  
**Hospital medicine**  
Knee + hip replacement

Obstetrics  
Oncology  
Radiation Oncology  
Spine surgery  
Trauma  
Urology  
Michigan value collaborative  
(episode-based payments)

[www.valuepartnerships.com](http://www.valuepartnerships.com)

<https://www.valuepartnerships.com/programs/collaborative-quality-initiatives/>

# Operational model for most CQIs



**BCBSM** funds coordinating center & participating hospitals

**Coordinating center** serves as data warehouse, generates feedback reports, sets performance targets, facilitates QI, and convenes meetings

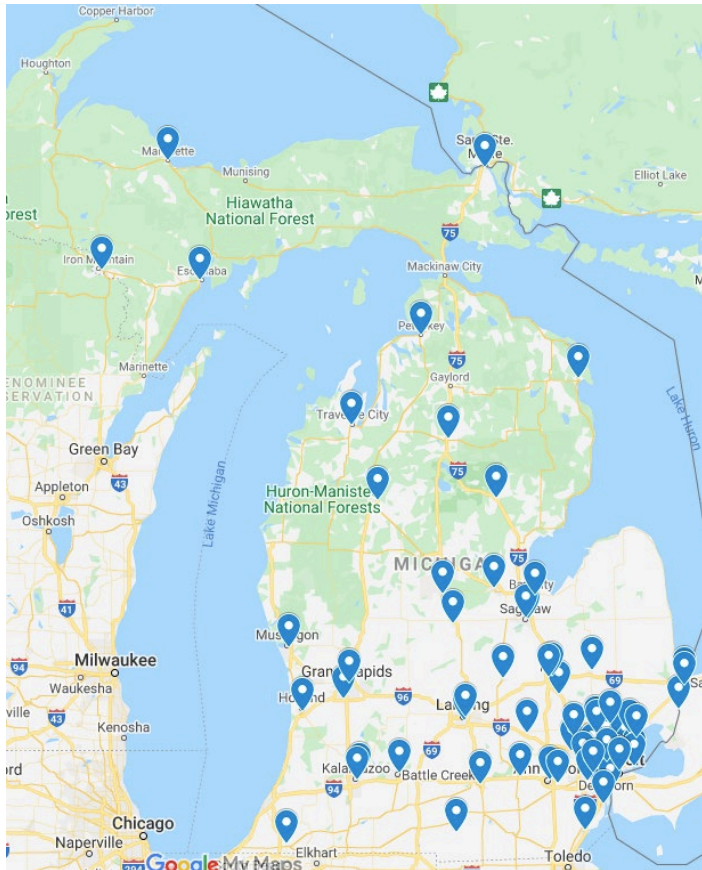
**Hospitals** submit their data, receive performance reports, implement local QI, share challenges and successes at collaborative-wide meetings



# Hospital Medicine Safety



69 diverse hospitals



HMS Coordinating Center Team

**Goal:** to improve the care of hospitalized medical patients

Blood clot prevention

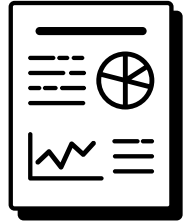
IV catheter use

Antimicrobial use

COVID-19

Sepsis

# How does HMS drive performance improvement?



## Audit and feedback

Quarterly report  
Live interactive website



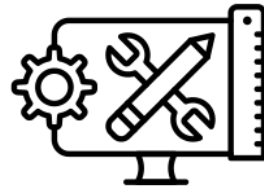
## Networking

3x yearly meeting  
Hospital presentations



## Hospital site visits

Review processes  
Provide feedback



## Tools & Resources

Education  
Documentation  
Order-sets  
Protocols  
Toolkit



## Performance index

(participation & performance)  
Tied to financial incentives

# CQI model has a track record of success



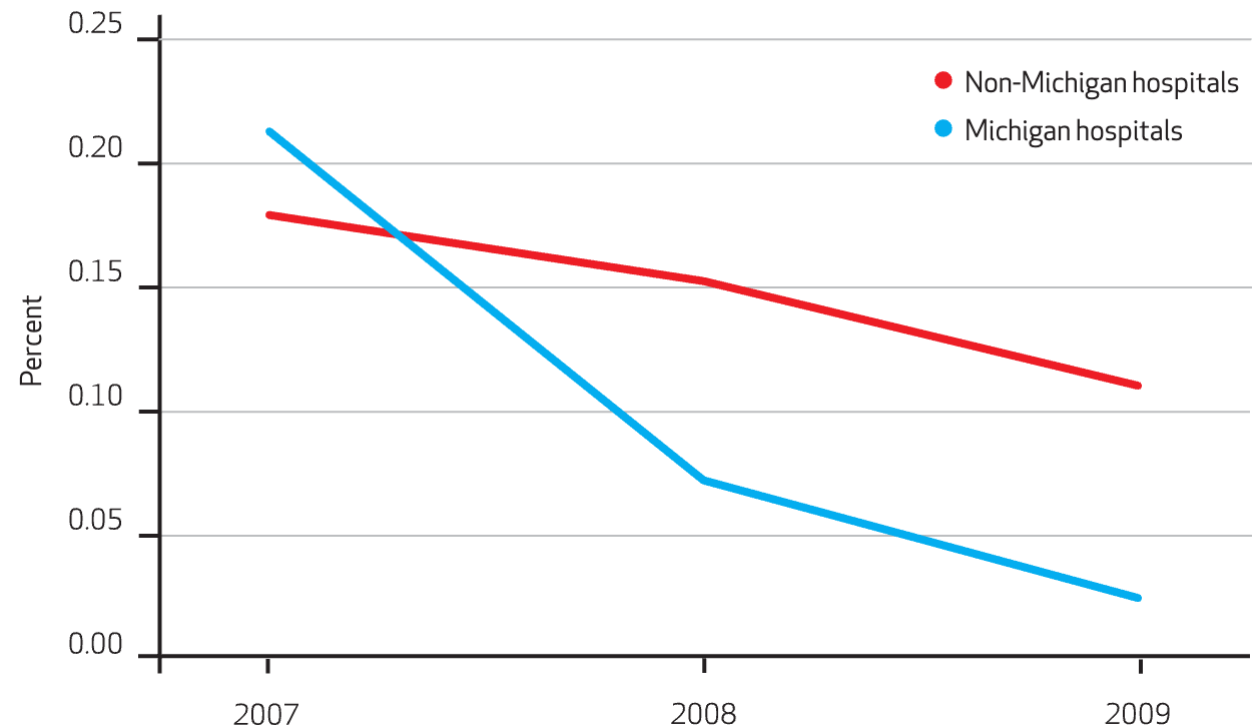
## QUALITY PROFILES

By David A. Share, Darrell A. Campbell, Nancy Birkmeyer, Richard L. Prager, Hitinder S. Gurm, Mauro Moscucci, Marianne Udow-Phillips, and John D. Birkmeyer

## How A Regional Collaborative Of Hospitals And Physicians In Michigan Cut Costs And Improved The Quality Of Care

**ABSTRACT** There is evidence that collaborations between hospitals and physicians in particular regions of the country have led to improvements in the quality of care. Even so, there have not been many of these collaborations. We review one, the Michigan regional collaborative improvement program, which was paid for by a large private insurer, has yielded improvements for a range of clinical conditions, and has reduced costs in several important areas. In general and vascular surgery alone, complications from surgery dropped almost 2.6 percent among participating Michigan hospitals—a change that translates into 2,500 fewer Michigan patients with surgical complications each year. Estimated annual savings from this one collaborative are approximately \$20 million, far exceeding the cost of administering the program. Regional collaborative improvement programs should become increasingly attractive to hospitals and physicians, as well as to national policy makers, as they seek to improve health care quality and reduce costs.

**Thirty-Day Mortality After Bariatric Surgery: Hospitals In Michigan Versus Hospitals Outside Of Michigan, 2007-09**



# Hospital Medicine Safety successes



Blood clot prevention

**1.4k** Patients avoided a blood clot

IV catheter use

**2.5K** clots, **8.7K** occlusions, **0.7K** infections avoided

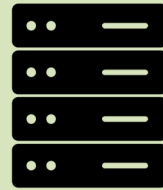
Antimicrobial use

**68k** days of unnecessary antibiotics avoided

# Key elements to success of the CQI model



Clinician led



Robust  
data registry



Rigorous  
performance targets



BCBSM  
support



Pay for  
performance



Multidisciplinary  
networking &  
**collaboration**

# HMS-Sepsis Initiative



# Why Sepsis? It's common, deadly, and costly



Sepsis was a growing concern of BCBSM and their customers

Sepsis is a common

- 1.7 hospitalizations, more than heart attack and stroke combined<sup>1</sup>

Sepsis is deadly

- 350,000 deaths, 33-50% of all hospital deaths<sup>2,3</sup>

Sepsis is costly

- Most costly cause of hospitalization (\$38 billion in 2020)

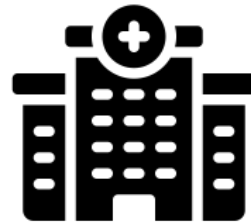
# Why Sepsis? It's a major driver of morbidity



3-fold increase in mod-severe cognitive impairment<sup>1</sup>



1-2 new functional limitations (ADLs)<sup>1</sup>



Increased risk for re-hospitalization<sup>2</sup>



Half with psychological symptoms<sup>3</sup>



Post-acute mortality<sup>4</sup>

**Only 55% of previously employed patients return to work within 6 months<sup>5</sup>**

1-Iwashyna, et al. *JAMA*, 2010.

2-Prescott, et al. *JAMA*, 2015.

3-Bienvenu, et al. *Intensive Care Med*, 2018.

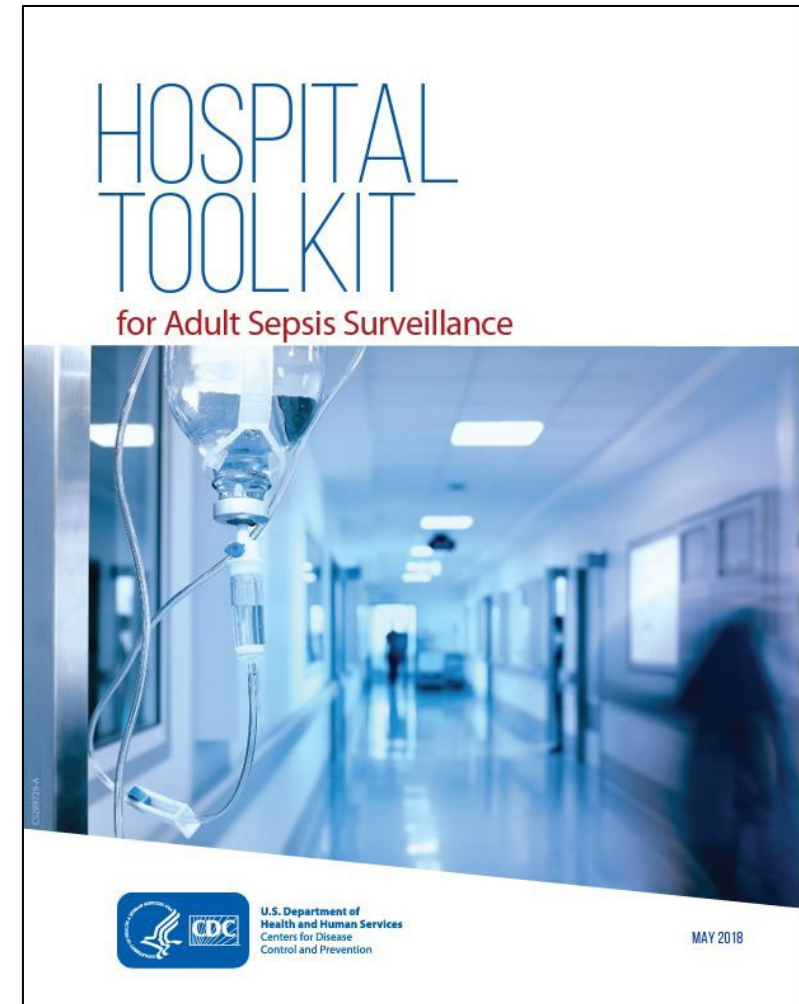
4-Prescott, et al. *BMJ*, 2016.

5-McPeake, et al. *AnnalsATS*, 2019.



# How does HMS identify sepsis hospitalizations?

- Random sample of sepsis hospitalization (18 per 2-week period)
- Two-step process: (1) diagnostic coding, (2) surveillance criteria for sepsis



# HMS-Sepsis Process Measure Bundles



ED (~98%)

Inpatient ward and/or ICU (~33%)



Early Sepsis Bundle



Additional Sepsis Bundle



Transitions of Care Bundle



Recovery Bundle

# HMS Sepsis Bundle Elements



## Early Sepsis Bundle

- Initial lactate resulted within 3 hours of arrival to hospital/ED
- Repeat lactate resulted within 4 hours of first lactate (if elevated)
- Blood culture collected within 3 hours of arrival (non-viral sepsis)
- Blood culture collected before antibiotic administration
- Antibiotic delivered within 5 hours of hospital/ED arrival (3 hours if hypotensive) for non viral sepsis
- $\geq 30$  ml/kg ideal body weight (IBW) fluid within 6 hours if indicated
- Receipt of vasopressors within 6 hours for persistent hypotension

## Additional Sepsis Elements

- Use of norepinephrine as first-line vasopressor
- $\geq 30$  ml/kg IBW fluid within 2 hours of vasopressor initiation
- Use of adjunctive steroids in septic shock
- Use of balanced solutions over other fluids
- Antibiotics delivered in recommended sequence
- Initial antibiotic delivered within 1 hour of order
- Lung protective ventilation strategy used

## ICU/Floor Transition of Care Elements

- Temporary CVC removal prior to transfer out of ICU
- Temporary CVC removal or documentation of need to keep prior to transfer out of ICU
- Urinary catheter removal prior to transfer out of ICU
- Urinary catheter removal or documentation of need to keep prior to transfer out of ICU
- Communication of volume status at ICU transfer
- Communication of antibiotic plan at ICU transfer
- Discontinuation or non-use of controlled substances at ICU transfer
- Delirium assessment at ICU transfer and in ward

## Recovery Sepsis Elements

- Baseline functional status was assessed ( $\geq 4$  I/ADLs documented)
- PT/OT Consultation
- Appropriate continuation of medications on discharge
- Appropriate discontinuation/non-use of controlled substances on discharge
- Assessment of care goals
- Hospital contact provided for issues post-discharge
- Scheduled for PCP follow-up within 2 weeks
- Post-discharge care coordination

# CMS SEP-1 vs. HMS-Sepsis



They are complementary.

But have several key differences:

- Broader scope: entire hospitalization
- Different cohort: community-onset sepsis, adapted CDC surveillance definition
- More nuanced: granular inclusions for each process measure

### Differences in the CMS and HMS Sepsis Initiatives

**EXECUTIVE SUMMARY**

The following table summarizes key similarities and differences between the Centers for Medicare & Medicaid Services (CMS) Sepsis 1 (SEP-1) measure and the Michigan Hospital Medicine Safety (HMS) Consortium's Sepsis initiative. Both initiatives focus on severe sepsis according to the Sepsis-3 definition (i.e., hospitalizations with infection-related acute organ dysfunction). Additionally, both initiatives collect data on recommended care elements, such as those included [Surviving Sepsis Campaign](#) bundles.

HMS captures additional data elements to break down process measures into more granular steps (e.g., time to antibiotic order, time from order to administration) and examine process measures in a variety of sub-populations (e.g., fluid administration in patients with hypotension vs just those initiated on vasopressors) and apply specific exclusionary criteria (e.g. ESRD, reduced left ventricular ejection fraction, or severe/critical aortic stenosis). Such granularity is essential to supporting focused hospital-specific quality improvement. Additionally, the HMS cohort identification strategy uses ICD-10-CM codes beyond severe sepsis / septic shock which allows capture of "missed sepsis" patients. This also ensures the threshold for entry into the cohort is consistent across hospitals and not dependent on hospital recognition and labeling of sepsis, which is known to vary over time and across hospitals. Finally, HMS uses a severity adjustment model incorporating granular physiologic data to facilitate robust comparison of risk-adjusted outcomes among Michigan hospitals.

*Support for Michigan Hospital Medicine Safety Consortium is provided by Blue Cross and Blue Shield of Michigan and Blue Care Network as part of the BCBSM Value Partnerships program*

	CMS	HMS	KEY POINTS
<b>Cohort Identification</b> 	<ul style="list-style-type: none"><li>Discharges age 18+ with an ICD-10-CM Principal or Other Diagnosis Code of Sepsis, Severe Sepsis, or Septic Shock.</li></ul>	<ul style="list-style-type: none"><li>Discharges age 18+ with an ICD-10-CM Principal Diagnosis Code of Sepsis, Influenza, COVID-19, Acute Respiratory Failure, or Pneumonia with objective evidence of suspected infection and acute organ dysfunction on encounter day 1 or 2.</li></ul>	<ul style="list-style-type: none"><li>HMS cohort includes COVID-19 patients (CMS excludes).</li><li>HMS cohort has broader list of primary discharge ICD-10-CM codes than CMS</li><li>HMS excludes patients who had surgery in the first 48 hours of the hospital encounter.</li><li>HMS requires objective evidence of sepsis (suspected infection plus acute organ dysfunction) during encounter day 1 or 2 akin to CDC's Adult Sepsis Event surveillance definition for community-acquired sepsis (CMS includes hospital-acquired sepsis).</li></ul>
<b>Process Measures</b> 	<ul style="list-style-type: none"><li>Bundle is an all or nothing measure focused on initial sepsis care only.</li><li>Applies crude exclusion criteria only.</li></ul>	<ul style="list-style-type: none"><li>Reports show individual process measures</li><li>Examines sepsis care throughout the hospitalization.</li></ul>	<ul style="list-style-type: none"><li>The scope of HMS sepsis is broader than just the first 6 hours of care addressed in SEP-1. This includes early sepsis care, care of the septic patient in the critical care and wards, upon discharge and in the 90 days following hospital discharge.</li><li>HMS provides precise exclusion criteria per measure (e.g., excluding patients with ESRD, reduced left ventricular ejection fraction, and/or severe/critical aortic stenosis from fluid resuscitation measures).</li></ul>
<b>Outcome Measures</b> 	<ul style="list-style-type: none"><li>Does not examine outcomes, although CMS is planning a future sepsis outcome measure.</li></ul>	<ul style="list-style-type: none"><li>Measures risk-adjusted mortality.</li><li>Captures patient-reported outcomes post-discharge.</li></ul>	<ul style="list-style-type: none"><li>HMS 30-day and 90-day mortality outcomes are risk adjusted. The risk-adjustment model includes demographics, comorbidities, and granular physiologic data collected within 6 hours of presentation. The risk-adjustment model was developed and validated in HMS hospitalizations following best practices laid out in a <a href="#">September 2021 CMS guidance</a></li></ul>

# Sepsis Toolkit

## HMS Sepsis Toolkit

### Tier 1: Implement Global Strategies to Improve Care for Patients with Sepsis and Septic Shock



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*This toolkit is a live document and will continually be updated as new tools are developed. Please visit the HMS website for the most up-to-date toolkit. If you have tools to be added to the toolkit, please see the HMS contact information below.*

- Provide hospitals with evidence and tools to support HMS Sepsis Performance Measures and CDC Core Elements
- Disseminate successful tools developed by HMS hospitals
- To be a living document – we will add resources and update the toolkit in real-time

# Overall structure: 8 sections

**Hospital Sepsis Program Core Elements**

1.  **Hospital Leadership Commitment**  
Dedicating the necessary human, financial, and information technology resources.

 **Accountability**  
Appointing a leader or co-leaders responsible for program goals and outcomes.

 **Multi-Professional Expertise**  
Engaging key partners throughout the hospital and healthcare system.

 **Action**  
Implementing structures and processes to improve the identification of, management of, and recovery from sepsis.

 **Tracking**  
Measuring sepsis epidemiology, management, and outcomes to assess the impact of sepsis initiatives and progress toward program goals.

 **Reporting**  
Providing information on sepsis management and outcomes to relevant partners.

 **Education**  
Providing sepsis education to healthcare professionals, patients, and family/caregivers.

 <https://www.cdc.gov/sepsis/core-elements.html>

## 2. Institutional Guidelines & Supporting Structures

### 3. Early Sepsis Bundle

### 4. Additional Sepsis Bundle

### 5. Transitions of Care Bundle

### 6. Recovery Bundle

## 7. Antimicrobial stewardship

## 8. Quality Improvement Approaches

### Implementation Science Techniques





# Section 1

Leadership Commitment, Accountability,  
Multi-Professional Involvement



Leadership  
Commitment,  
Accountability, and  
Multi-Professional  
Involvement



# Section 1: Background



## Leadership commitment

- Obtain support from hospital leadership
- Identify sepsis as a hospital priority

## Accountability

- Identify a sepsis program lead (or two co-leaders)
- Set ambitious but achievable goals for the hospital sepsis program, track progress, update

## Multi-professional involvement

- Assemble a team with relevant expertise (e.g., antimicrobial stewardship, critical care, emergency medicine, hospital medicine, infectious diseases, nursing, other primary services, pharmacy, and social work).
- Identify local/unit physician and nurse champions to ensure engagement

# Example Tool: Hospital self-assessment



- Consistent with CDC Core Elements of Hospital Sepsis Programs

This is your starting point to the toolkit!

## Hospital Sepsis Program Self Assessment Tool

The hospital sepsis program assessment tool is a companion to the CDC *Core Elements of Hospital Sepsis Programs* and the *HMS sepsis toolkit*. This tool provides examples of ways to implement a sepsis program at your hospital. The Core Elements/HMS Sepsis Toolkit are intended to be an adaptable framework that hospitals can use to guide efforts to optimize sepsis care. Thus, not all examples below may be necessary and/or feasible in all hospitals.

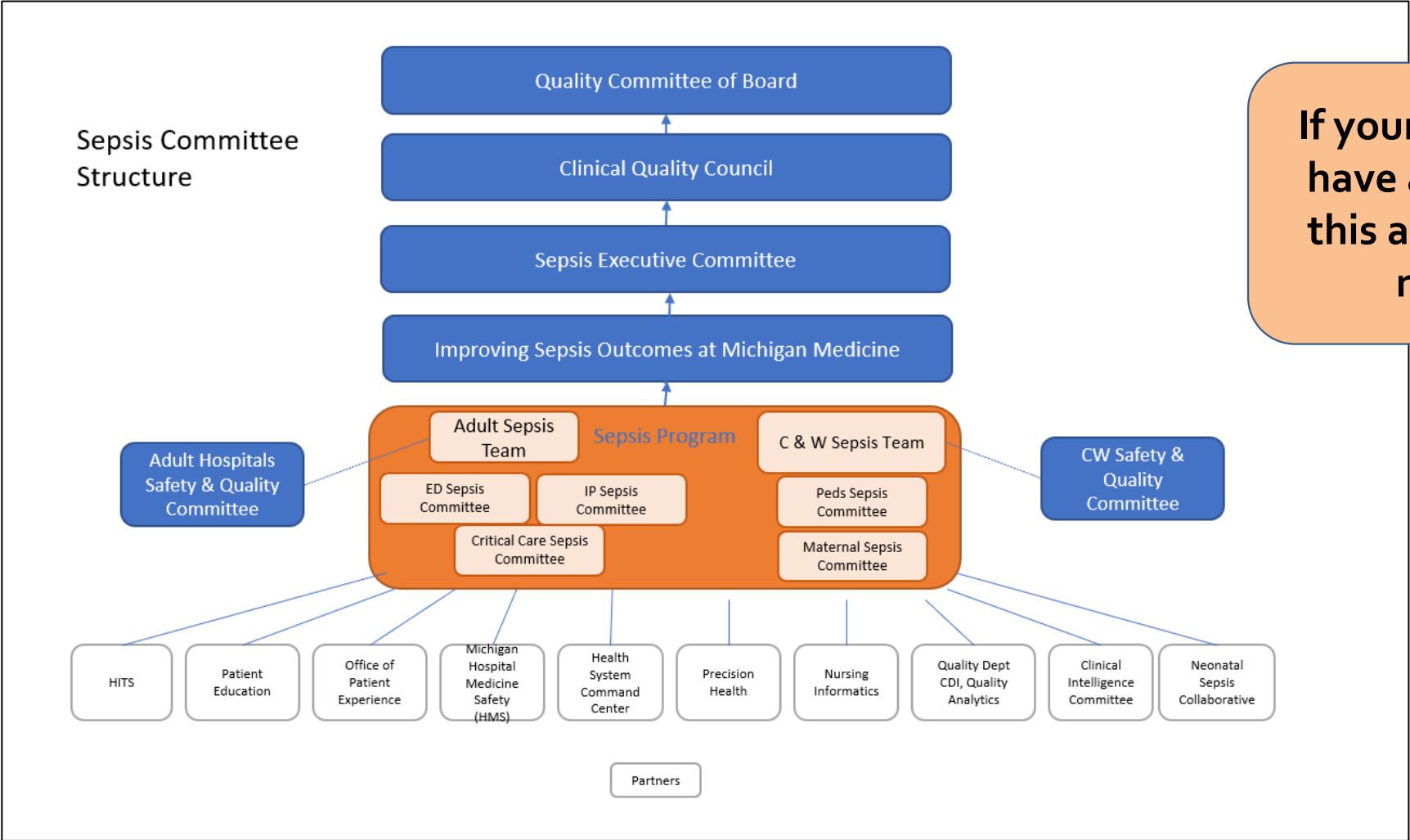
The assessment tool can be used on a periodic basis (e.g., annually) to document current program infrastructure and activities and to help identify items that could improve the effectiveness of the sepsis program. Consider listing specific details, such as points of contacts or facility-specific guidelines with the date, in the "comments" column as reference for the hospital sepsis program.



### Hospital Leadership Commitment

Component	Established	Notes
Our sepsis program leader(s) are given sufficient specified time to manage the hospital sepsis program.	Y / N	
Our sepsis program is provided sufficient resources, including data analytics and information technology support, to operate the program effectively.	Y / N	
Relevant staff from key clinical groups and support departments in our hospital have sufficient time to contribute to sepsis activities.	Y / N	
Our hospital has a senior leader (e.g., Chief Clinical Officer, Chief Medical Officer, or Chief Nursing Officer) who serves as an executive sponsor for the sepsis program.	Y / N	

# Example Tool: Sepsis Committee Structure



If your site does not already have a sepsis program, use this and other examples as models to follow.

# Example Tool: Sepsis Coordinator Description



## SEPSIS COORDINATOR

### JOB DESCRIPTION

**Job Summary**

The Sepsis Coordinator will provide leadership, strategic oversight and actively manage the day to day operations of the sepsis program within the adult hospitals and adult emergency department. The Sepsis Coordinator is responsible for ensuring for the provision of reliable, high value, evidence-based and coordinated care for adult sepsis patients in the ED and inpatient setting. This position will report to the Quality and Safety Program Manager within the adult hospital segment. In addition to promoting SEP-1 compliance and leading improvement efforts related to sepsis, the Sepsis Coordinator will provide updates to the Quality and Safety Committee. The Sepsis Coordinator will facilitate evidence based practice across all disciplines in accordance with current sepsis guidelines and will serve as a resource for staff and providers in developing a plan of care.

**Responsibilities**

**Clinical Education and Advocacy (70%)**


- Maintain current knowledge and competency in the management of the septic patient and in professional practice (e.g. conferences/workshops, professional organizations, etc.)
- Facilitate evidence based practice across all disciplines in accordance with current sepsis guidelines
- Serve as a role model, consultant, and clinical resource to medical, nursing staff, and other health care providers to promote health and reduce illness for sepsis patients
- Make patient rounds daily to integrate sepsis workflow and education into every day patient care
- Provide educational activities utilizing varied teaching/learning principles for clinical staff, sepsis patients and their families
- Round with identified healthcare personnel as necessary
- Serve as a professional practice and clinical expert at the bedside and in the classroom
- Actively participate in the HMS Sepsis Collaborative webinars, forums, discussions and workshops

**Project Facilitation & Leadership (20%)**

- Coordinate process for the adult ED and inpatient sepsis program and report to ISOMM on related metrics and projects
- Participate in Improving Sepsis Outcomes at Michigan Medicine (ISOMM)
- Assist in the development of policies, procedures, standards, clinical pathways, order sets, and other materials
- Assist in the development, implementation, and assessment of quality improvement activities and work to remove/address barriers as they arise



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## SEPSIS TEAM

### ROLES AND RESPONSIBILITIES

Effective teams include members representing three different kinds of expertise within the organization: system leadership, technical expertise, and day-to-day leadership. There may be one or more individuals on the team with each kind of expertise, or one individual may have expertise in more than one area, but all three areas should be represented in order to drive improvement successfully.


**Team Members:**

- Physicians\* (critical care, emergency department, hospitalist, infectious disease, antimicrobial stewardship)
- Nurses\* (sepsis coordinator, nurse manager/director, nurse educator, CNS, bedside staff nurse- representing ED-ICU-Floor)
- Executive Sponsor\*
- Pharmacist
- Respiratory Therapist
- Quality Improvement
- Data analytics
- Information Technology
- Therapies/Social work (as needed)

**Roles /Responsibilities**

- **Team Leader:** recommend having a nurse and a physician co-leading the team. The nurse lead could be the sepsis coordinator. Both should have expertise in sepsis and change management. They are responsible for engaging the team, creating shared visions, goals and moving program forward.
- **Executive Sponsor:** someone with executive authority who can provide liaison with other areas of the organization, serve as a link to senior management and the strategic aims of the organization, provide resources and overcome barriers on behalf of the team, and provide accountability for the team members. The Sponsor is not a day-to-day participant in team meetings and testing but should review the team's progress on a regular basis. For sepsis team recommend having Chief Clinical Officer or Chief Medical Officer as the Executive Sponsor.
- **Physician Champions:** (have one from ED, ICU and floor) leads the improvement in adherence to timely sepsis interventions in conjunction with the local leadership, in coordination with the institutional sepsis program. Local expert in sepsis care and advocate for improvement in bundle compliance and overall mortality rates. Share data and feedback with relevant stakeholders including individual and team performance on sepsis measures and outcomes. Serve as a clinical resource to other providers in the department related to sepsis with active involvement in case reviews. Select physicians that have sepsis expertise, committed to improving sepsis care, highly respected in his/her field, able to influence and persuade others, negotiate and take initiative as needed.
- **Nurse Champions:** (have a minimum of one representing each of the areas-ED, ICU and floor) Nurse sepsis champion serves as a unit resource to staff, and provides education to their units including: sharing data, review sepsis cases, identify issues and barriers to sepsis care. Work with sepsis team to identify gaps and solutions to close gaps. Serves as a clinical resource to other nurses, and works collaboratively with sepsis coordinator, educators, CNS and other local leaders. Select nurses are well respected by staff, that have some knowledge of sepsis, commitment to improving sepsis care, influential leader with ability to provide feedback/education to peers

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Need additional FTEs for your sepsis program? Examples job descriptions are provided in this section

# Section 2:

Develop, Share, & Integrate Institutional Guidelines  
for Patients with Sepsis



## Developing institutional guidelines

- Locally adapted from national and example hospital guidelines, for identification and management of sepsis
- Updated regularly

## Making it easy to do the right thing

- Order sets
- Care pathways
- Documentation templates

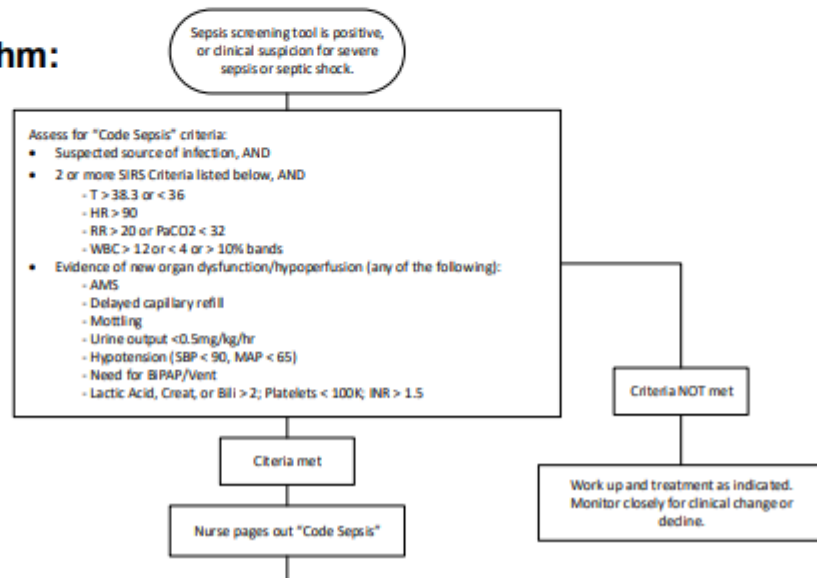
# Example Tool: Corewell Health Spectrum Clinical Pathway



## Clinical Pathway: Sepsis, Severe Sepsis and Septic Shock - Adult Inpatient

Updated: February 24, 2022

### Clinical algorithm:



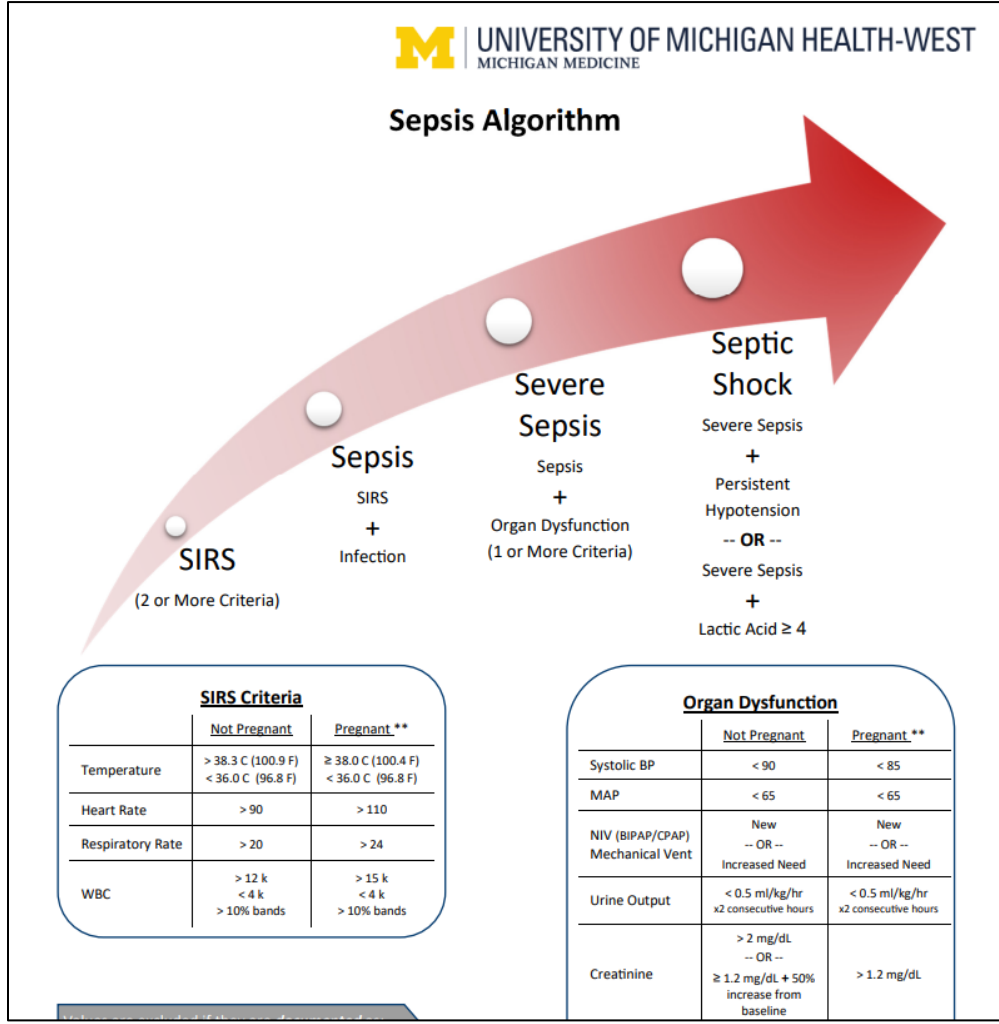
No current established pathway for identification and management of sepsis?

Multiple examples are provided that can be adapted to your institution



# University of Michigan Health –West - Sepsis Algorithm

## Munson Healthcare Cadillac Hospital – Sepsis Nursing Orders



### NURSING - SEPSIS POSITIVE SCREENING ORDERS

#### Nursing - Sepsis Positive Screening - C

Patient Status     InPatient     Observation     OutPatient  
 Bed Type     Acute Care     Acute Care Telemetry     ICU     OB     Special Care     Pediatrics     Hospice  
 Admitting Provider or Group \_\_\_\_\_

#### Allergies/Sensitivities (include types of reactions)

No Known Allergies     Allergies not known upon admission (timely allergy history follow-up required)

#### Patient Care

Insert IV    *This patient is to have 2 large bore IVs (18 gauge) if not already present - call attending if unable to obtain or use central line if present.*

Communication to Nurse    *Notify provider of POSITIVE screen immediately and to address IV fluid needs of the patient.*

Continuous O2 Monitoring (nsg)    *Nursing to place oxygen per Protocol.*

#### Vital Signs

Vital Signs    *As Directed, q1hr then per admitting orders of sepsis*

#### Laboratory

Blood Culture x 2    *STAT, q5min, 2, dose/occurrence    Comments: Note to lab Severe Sepsis*

Lactic Acid, Venous    *STAT*

+6 Hours Lactic Acid, Venous    *Timed/Dated, Once, T;N+360*

#### Therapies

O2 Per Protocol

#### Protocols/Standards

Nursing - Sepsis Positive Screening Protocol    *\*\*\*\*See Reference Text\*\*\*\**

Notification of a Sepsis plan ordered    *Notification for Sepsis Coordinator that the Nursing - Sepsis Positive Screening Protocol has been ordered for this patient.    Comments: \*\*\*\*GIVE TO CHARGE NURSE OR SEPSIS COORDINATOR\*\*\*\**

#### System Auto-Generated

Last Plan Review Date



# Example Tool: Institutional Guidelines

## Intermountain Healthcare Recognition and Management of Severe Sepsis and Septic Shock

SEPSIS AND SEPTIC SHOCK AUGUST 2020

### ADULT SEPSIS BUNDLE WORKSHEET

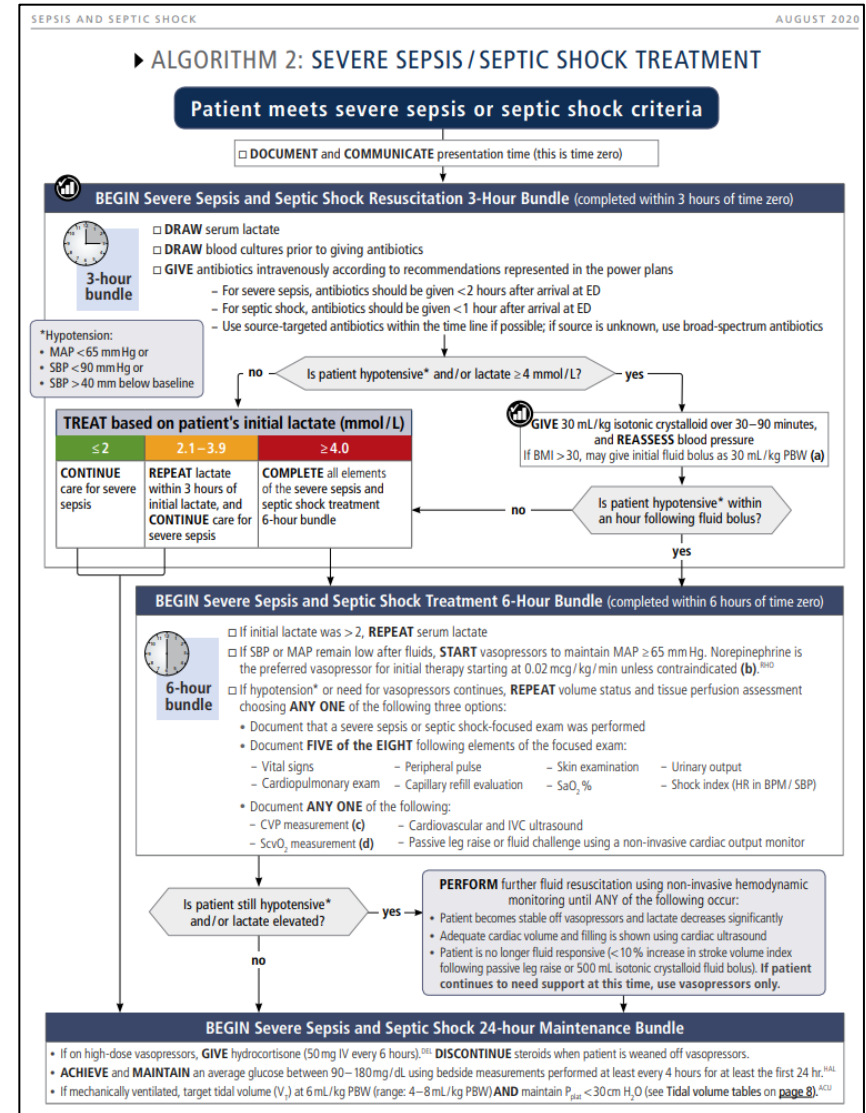
PLACE PATIENT STICKER HERE

Discuss worksheet progress in RN handoff upon admission. This is not part of the patient record. All nursing activities and interventions must be documented in iCentra.

Severe Sepsis Recognition	Severe Sepsis and Septic Shock Resuscitation 3-Hour Bundle			
	PRESENTATION TIME:	3-HOUR GOAL TIME:	3-HOUR GOAL TIME:	
<b>1. Known or Suspected Source of Infection:</b> <b>2. Signs of Possible Sepsis (at least 2):</b> • Temperature > 38.3°C OR < 36°C • Tachycardia > 90 bpm • Tachypnea > 20 bpm • WBC > 12,000/mm <sup>3</sup> or < 4,000/mm <sup>3</sup> or immature forms > 10% <b>3. Acute Organ Dysfunction Criteria* (at least 1):</b> • SBP < 90 (or 40 points lower than patient's normal) or MAP < 65 • Respiratory failure (evidenced by a new need for invasive or non-invasive mechanical ventilation) • Creatinine > 2.0 mg/dL • Urine output < 0.5 mL/kg/hr for > 2 hr • INR > 1.5 or PTT > 60 sec • Platelet count < 100,000/mL • Lactate > 2 mmol/L • Total bilirubin > 2 mg/dL *Organ dysfunction associated with pre-existing chronic conditions should not be considered as meeting acute organ dysfunction criteria (e.g. Creatinine > 2.0 mg/dL in end-stage renal disease).	<input type="checkbox"/> Draw serum lactate	Initials	Time	Lactate result: _____ mmol/L
	<input type="checkbox"/> Draw blood cultures (prior to antibiotics)	Initials	Time	
	<input type="checkbox"/> Give antibiotics intravenously	Initials	Time	
	<input type="checkbox"/> Isotonic crystalloid (30 mL/kg) administered over < 90 min for those with: • SBP < 90 mm Hg or • MAP < 65 mm Hg or • Decrease in SBP by > 40 mm Hg or • Initial lactate ≥ 4 mmol/L	Initials	Time	Actual body weight: _____ kg X 30 mL/kg of isotonic crystalloid = _____ mL administered over less than 90 minutes (if BMI > 30 may use 30 mL/kg predicted body weight (PBW))
	<input type="checkbox"/> Check BP every 15 minutes while in ED	Initials	Time	
	Severe Sepsis and Septic Shock Treatment 6-Hour Bundle			
	PRESENTATION TIME:	6-HOUR GOAL TIME:	6-HOUR GOAL TIME:	
	<input type="checkbox"/> Repeat lactate (if initial lactate > 2 mmol/L)	Initials	Time	Lactate result: _____ mmol/L
	<input type="checkbox"/> Vasopressors if SBP or MAP remain low after fluids (preferentially start norepinephrine at 0.02 mcg/kg/min)	Initials	Time	
	Perform ONE of the following 3 options if SBP or MAP remain low after fluids OR Lactate ≥ 4 mmol/L:			
	<input type="checkbox"/> Document a focused clinical exam including 5 of 8 exam elements. (List on right.) OR <input type="checkbox"/> State that a sepsis-focused clinical exam has been performed. OR <input type="checkbox"/> Perform any ONE of the list below: 1. CVP measurement 2. ScvO <sub>2</sub> measurement 3. Bedside cardiac and IVC US with documentation 4. Passive leg raise OR fluid challenge with SVI % change	Initials	Time	Document focused clinical exam of 5 of the following 8: • SaO <sub>2</sub> % • Capillary refill • Cardiopulmonary assessment • Peripheral pulses • Skin color or condition • Urine output • Vital signs • Shock index = (HR in BPM) / (SBP) • CVP result: _____ % • ScvO <sub>2</sub> result: _____ % • Cardiac and IVC US done: _____ • Passive leg raise done: _____ • SVI % change: _____ % • Fluid challenge, volume _____ mL and SVI % change: _____ %
	Severe Sepsis and Septic Shock 24-hr Maintenance Bundle (Not part of SEP-1 reporting)			
	<input type="checkbox"/> 1. Glucose management 2. Stress-dose steroids if on high-dose vasopressors 3. Lung-protective ventilation	Complete in the ICU		1. Target 90–180 mg 2. Hydrocortisone (50 mg IV q6) 3. Target Vt 6 mL/kg (4–8 mL/kg) maintain P <sub>aw</sub> < 30 cm H <sub>2</sub> O

Consider viral PCR testing when appropriate due to seasonality or local factors.

Intermountain Healthcare



# Example Tool: Munson Healthcare Sepsis Order set for Cerner



**Sepsis** for ED and Hospital Nurses  
Cerner FirstNet and PowerChart EDUCATION

### Sepsis Screening Tool

- Open the Sepsis Screening Tool from the Triage form, a Task, or from AdHoc.
- Select all the boxes that apply for SIRS Screen.
- Select the appropriate response for Infection Screen. **Choose Possible suspected, or Known infection or positive culture, if applicable. This does NOT generate a diagnosis as that is outside of nursing scope.**
- A positive SIRS and Infection Screen opens the Organ Dysfunction Screen.
  - Select organ dysfunction criteria that apply for **NEW, acute, or worsening** organ dysfunction. **For stable patients with chronic issues like chronic kidney disease, choose 'Known or improving organ dysfunction' box.**
  - One or more signs of Organ Dysfunction will calculate a positive Sepsis Screen.
- Once the Sepsis Action window opens, click Notify the Provider, chart Sepsis Provider Notification (this will generate a Provider Notification Task).
  - Click the
- Notify the Provider.
- Document the Sepsis Provider Notification task.
- Right click to access the Checklist (see the Sepsis and Septic Shock Checklist section for more details).
- Implement Sepsis orders ASAP.

Clinical EHR Education, July 14, 2022, LAM (E) 2 of 5

**Need ideas for Sepsis Order Sets?  
Examples are provided in this section**

# Example Tools: Handoffs

## Healthy Services Advisory Group SBAR for Sepsis

Quality Improvement Organizations  
Sharing Knowledge. Inspiring Health Care.  
ADVANCING PERFORMANCE IN MEDICAL SERVICES

HSAG HEALTH SERVICES ADVISORY GROUP

### Post-Acute Situation Background Assessment Recommendation (SBAR) for Sepsis

**Systemic Inflammatory Response Syndrome (SIRS)**  
Sepsis = two or more SIRS criteria and suspected or documented infection

*Communicate immediately with attending provider when a patient screens positive for sepsis*

**Situation:**

- \_\_\_\_\_ has met **two or more** of the following SIRS criteria (circle only those that apply) and has a confirmed or suspected source of infection.
  - Temperature greater than 38°C (100.4°F) or less than 36°C (96.8°F)
  - Heart rate greater than 90 beats per minute
  - Respiratory rate greater than 20 breaths per minute
  - White blood cell count (WBC) is greater than 12,000; less than 4,000 or greater than 10 percent bands

**Background:**

- Patient was admitted with \_\_\_\_\_ and now has two or more **positive** SIRS criteria (see above).
- Suspected source of infection (circle those that apply):
  - Recent surgery, trauma, or open wound(s) \_\_\_\_\_
  - Respiratory symptoms (i.e., productive cough, abnormal chest x-ray, decrease in pulse oximetry reading (SaO2) \_\_\_\_\_
  - Central line or dialysis catheter \_\_\_\_\_
  - Urinary tract infection, recent use of a Foley catheter \_\_\_\_\_
  - Unusual gastrointestinal (GI) symptoms \_\_\_\_\_
  - Other symptoms of infection \_\_\_\_\_

**Assessment:**

- Is patient hypotensive \_\_\_\_\_ (systolic blood pressure 100 mm Hg or less)
- Patients mental status is: Normal/Abnormal (compared to baseline)
- Most recent weight is: \_\_\_\_\_
- Pulse oximetry reading (SaO2) is now \_\_\_\_\_. Previous reading \_\_\_\_\_
- Urine output is \_\_\_\_\_ mL per hour or \_\_\_\_\_ over the last 8 hours

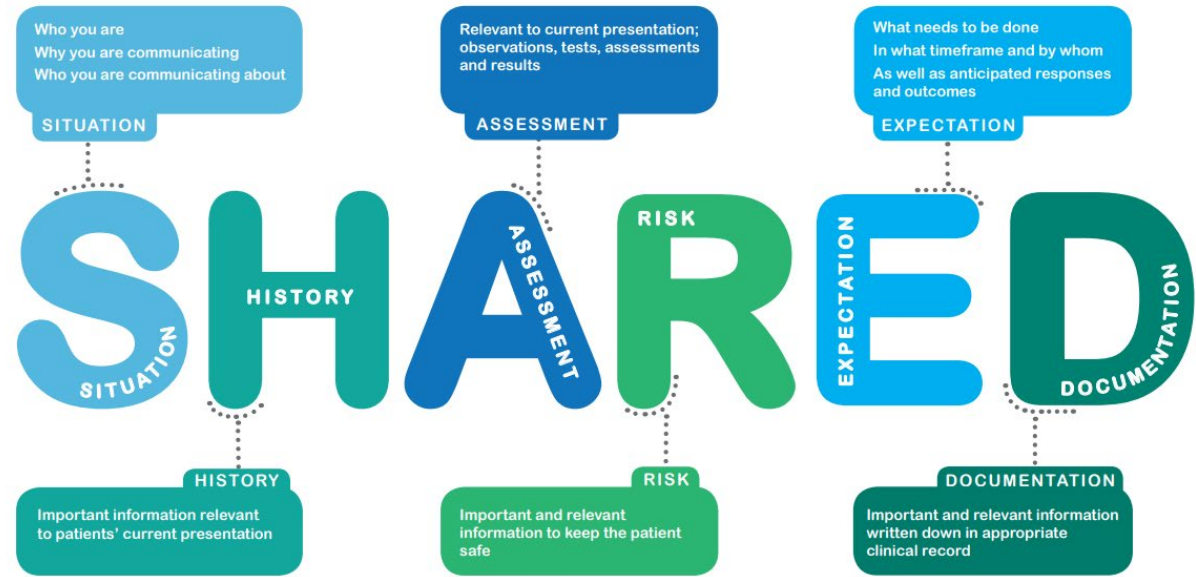
**Recommendations:**

- Based on positive screening criteria notify attending provider.
- Obtain orders for lactate level and blood cultures if possible, but administer broad spectrum antibiotic(s) and 30mL/kg crystalloid fluid with rapid infusion even if blood work not done.
- Consider transfer to an acute care facility based on patient presentation, availability of resources, and response to interventions.

**References:**  
 Dellinger RP, Levy MM, Rhodes A, et al. Surviving Sepsis Campaign: International guidelines for management of severe sepsis and septic shock: 2016. *Critical Care Medicine*. 2013;41(2): 580-637.  
 Singer M, Deutschman CS, Seymour CW, et al. The third international consensus definitions for sepsis and septic shock: 2016. *Journal of the American Medical Association*. 2016;315(8): 801-810. doi:10.1001/jama.2016.0287

## Australian Commission on Safety and Quality in Healthcare SHARED Clinical Handover

At every clinical handover, ensure you have...



# Example Tools: Provider Education Example



## Sepsis Alliance Institute Webinars

**Sepsis Alliance Institute**  
Elevate your sepsis care with education, resources, and peer-to-peer networking.

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**SEPSIS ALLIANCE**

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- SEP-1 and Value-Based Purchasing: What You Need to Know to Prepare**  
★★★★☆  
Includes a Live Web Event on 07/18/2023 at 11:00 AM (PDT)
- Lessons Learned: A Roundtable Discussion on Sepsis Coordination and Care**  
★★★★★

**Enduring Courses**

- Sepsis Alliance Symposium: Precision Sepsis Care (Enduring Course)**  
★★★★★  
Includes Credits  
FREE CE Contact Hours
- Searching for a Septic Arthritis Solution using a Novel Diagnostic Tool**  
Product not yet rated  
Sponsor Symposium Webinar



# 2023 CDC Hospital Sepsis Program Core Elements

## Hospital Sepsis Program Core Elements

[Print](#)



Hospital Sepsis Program Core Elements are essential to optimize patient care and help clinicians, hospitals, and health systems in efforts to improve the hospital management and outcomes of sepsis. Hospital Sepsis Program Core Elements outline structural and procedural components that are associated with the multidisciplinary expertise required to support the care of patients with sepsis.

[Download Print Version](#) [PDF - 39 Pages]



**NEW!**

[Sepsis Core Elements: CDC Webinar Series](#)



### Getting Started

For hospitals or healthcare systems just starting a sepsis program or those with limited resources.



### Assessment Tool

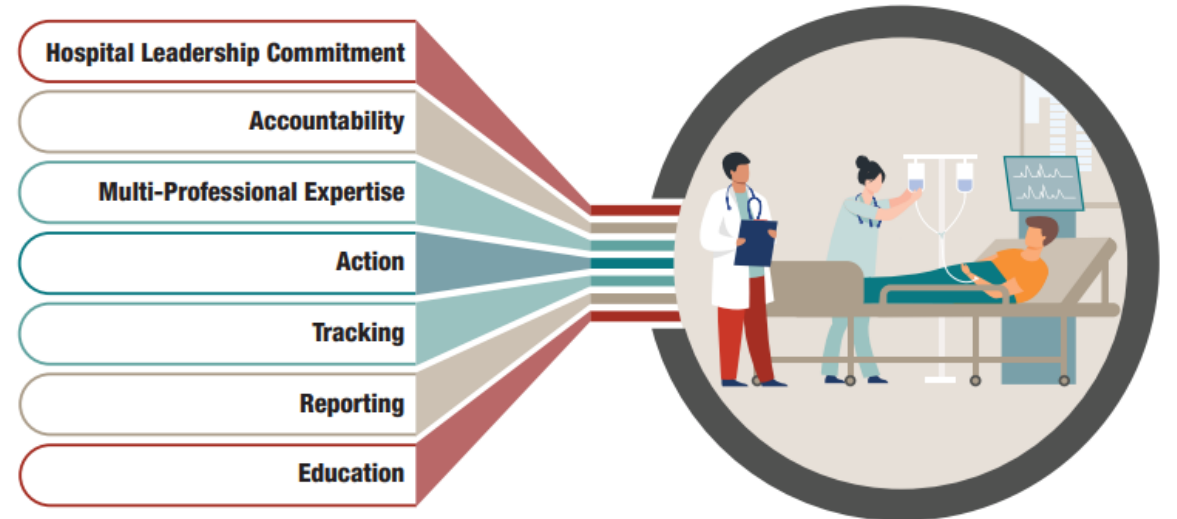
This tool provides examples of ways to implement the Core Elements.



### Resources

Practical resources that can help hospitals improve specific aspects of their sepsis programs.

**Figure: Hospital Sepsis Program Core Elements**



# Example Tools: Family Education Henry Ford Health and CDC



## Sepsis



Sepsis is a life-threatening reaction to an infection. It can damage tissues, cause organs to fail, and even lead to death. It calls for immediate care in a hospital.

### What causes sepsis?

Sepsis is caused by an infection. The infection can be caused by a virus, bacteria, fungus, or parasite. A long-term or a sudden illness can cause sepsis. An injury or a reaction to surgery can also cause it.

### Who gets sepsis?

Sepsis can happen in people of any age. It is more common in infants, older adults, and people with weakened immune systems.

### What are the symptoms of sepsis?

Sepsis can cause a combination of symptoms. If you see a combination of these symptoms, especially if you have had a cut, surgery, procedure, or infection recently, call 911 or have someone take you to the hospital.

- T Temperature:** Higher or lower than normal.
- I Infection:** Signs of an infection like fast heartbeat, chills, cool clammy skins, or shaking.
- M Mental Decline:** Confused, sleepy, or difficult to get up out of bed.
- E Extremely Ill:** Severe pain, discomfort, or shortness of breath.

## CDC's Get Ahead of Sepsis Brochure & Infographic









**Anyone can get an infection, and almost any infection, including COVID-19, can lead to sepsis. Each year:**

- About **1.7 million** adults in America develop sepsis.
- At least **350,000** adults who develop sepsis die during their hospitalization or are discharged to hospice.
- **1 in 3** people who dies in a hospital had sepsis during that hospitalization.
- Sepsis, or the infection causing sepsis, starts before a patient goes to the hospital in nearly **87%** of cases.

### WHAT ARE THE SIGNS AND SYMPTOMS OF SEPSIS?

A person with sepsis might have one or more of the following signs or symptoms:

-  High heart rate or weak pulse
-  Fever, shivering, or feeling very cold
-  Confusion or disorientation
-  Shortness of breath
-  Extreme pain or discomfort
-  Clammy or sweaty skin

A medical assessment by a healthcare professional is needed to confirm sepsis.

### WHAT IS SEPSIS?

Sepsis is the body's extreme response to an infection. It is a life-threatening medical emergency. Sepsis happens when an infection you already have triggers a chain reaction throughout your body. Infections that lead to sepsis most often start in the lung, urinary tract, skin, or gastrointestinal tract. Without timely treatment, sepsis can rapidly lead to tissue damage, organ failure, and death.

### IS SEPSIS CONTAGIOUS?

You can't spread sepsis to other people. However, an infection can lead to sepsis, and you can spread some infections to other people.

### WHAT CAUSES SEPSIS?

Infections put you and your family at risk for sepsis. When germs get into a person's body, they can cause an infection. If you don't stop that infection, it can cause sepsis. Bacterial infections cause most cases of sepsis. Sepsis can also be a result of other infections, including viral infections, such as COVID-19 or influenza, or fungal infections.

### WHO IS AT RISK FOR SEPSIS?

Anyone can develop sepsis, but some people are at higher risk for sepsis:

<b>65+</b> Adults 65 or older	 People with weakened immune systems	 People with chronic medical conditions, such as diabetes, lung disease, cancer, and kidney disease	 People with recent severe illness or hospitalization, including due to severe COVID-19	 People who survived sepsis	 Children younger than one
----------------------------------	------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------

# Section 3

## Early Sepsis Identification & Treatment



# Section 3: Early Sepsis Identification & Treatment



## HMS Early Sepsis Measures

- Early evaluation: lactate, repeat lactate, and blood cultures
- Early treatment: antibiotics, fluids, vasopressors



# Example Tools: Early Identification

Corewell Health Badge Buddy

**Know the symptoms of**

**S**hortness of breath.

**E**levated heart rate (fast beating) and/or low blood pressure.

**S**ain or discomfort all over.

**S**leepy, difficulty waking up, confusion.

**I**nfection somewhere in the body.

**S**hivering, feeling very cold and/or fever.

For more life-saving info, visit [beaumont.org/sepsis](http://beaumont.org/sepsis)



Surviving Sepsis: Antibiotic Timing Infographic

## Antibiotic Timing

	Shock is present	Shock is absent
<b>Sepsis is definite or probable</b>	<input checked="" type="checkbox"/> Administer antimicrobials <b>immediately</b> , ideally within 1 hour of recognition.	<input checked="" type="checkbox"/> Administer antimicrobials <b>immediately</b> , ideally within 1 hour of recognition.
<b>Sepsis is possible</b>	<input checked="" type="checkbox"/> Administer antimicrobials <b>immediately</b> , ideally within 1 hour of recognition.	<input checked="" type="checkbox"/> Rapid assessment* of infectious vs. noninfectious causes of acute illness.  <input checked="" type="checkbox"/> Administer antimicrobials <b>within 3 hours</b> if concern for infection persists.

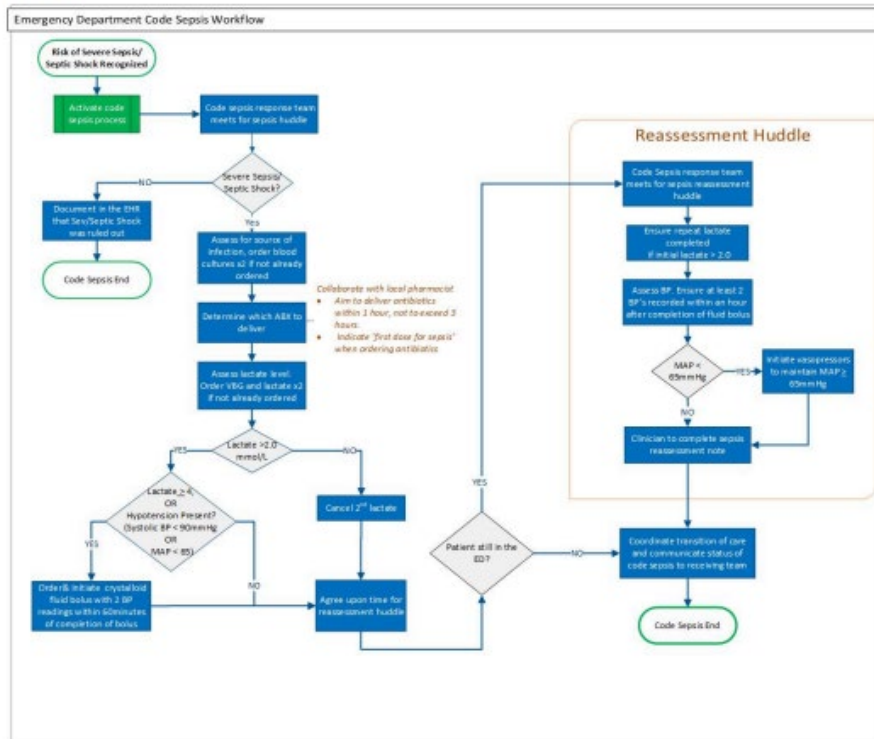
\*Rapid assessment includes history and clinical examination, tests for both infectious and noninfectious causes of acute illness, and immediate treatment of acute conditions that can mimic sepsis. Whenever possible, this should be completed within 3 hours of presentation so that a decision can be made as to the likelihood of an infectious cause of the patient's presentation and timely antimicrobial therapy provided if the likelihood is thought to be high.

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# Example Tools: Code Sepsis Policy – Henry Ford Health

## Appendices

### Appendix A: Emergency Department Code Sepsis Work Flow



Does your ED need a sepsis workflow?

Resources and examples are located in section 3!

# Example Tools: Initial Treatment

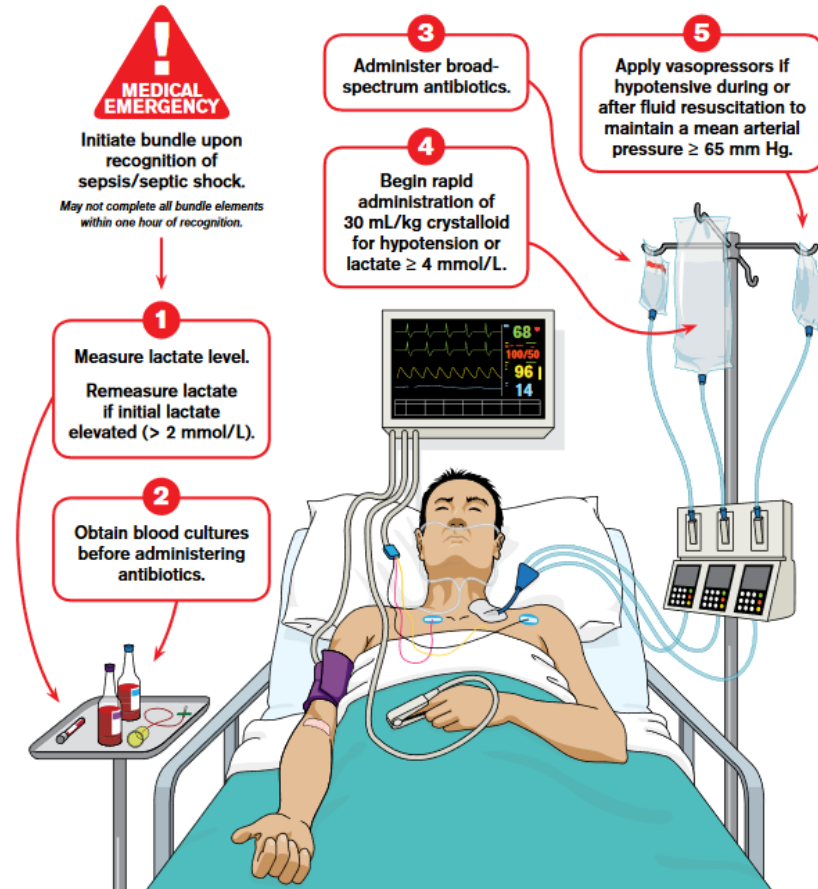
DATE: \_\_\_\_\_ ROOM#: \_\_\_\_\_

Sepsis Tracking Sheet		
Source of Infection?	Yes / No	IF YES, WHAT IS THE SOURCE?
2 SIRS Criteria Met?	Yes / No	IF YES, WHAT ARE THE 2 SIRS CRITERIA?
If yes to source and yes to 2 SIRS call CODE SEPSIS		Code Sepsis Called? YES / NO
Elements to be completed within 3 hours of arrival	Walk In/1st Documented Time (Clock Starts)	
	Lactate Level Drawn (Initial)	TIME RESULT
	Blood cultures Drawn	TIME
	ABX administered	TIME
	Repeat lactate level drawn w/in 6hr (if 1st lactate level >2) Draw Lactate Level prior to OR	TIME RESULT
Elements to be completed within 6 hours of arrival	If 1st or 2nd Lactic $\geq 4$ or SBP < 90 or MAP < 65 give 30ml/kg CF $\geq 125$ ml/h	Patient Weight: Start Time of CF:
	Hypotension X 2 within the 1hr after CF administered	<input type="checkbox"/> Yes <input type="checkbox"/> No
	If YES administer vasopressors	Start Time:
	If CVC/PICC CVP and SVO2 results	CVP _____ SVO2 _____
	OR	
If NO CVC/PICC available Focused Exam completed by provider ** (see below for mandatory elements)	Time Completed: Patient label	
<b>** Focused Assessment Element</b> 1. Vital signs AND 2. Cardiopulmonary exam AND 3. Capillary refill exam AND 4. Peripheral pulses exam AND 5. Skin exam OR Statement "Sepsis Focused Assessment Performed"		

## Hour-1 Bundle

Initial Resuscitation for Sepsis and Septic Shock

Surviving Sepsis Campaign



Bundle: [SurvivingSepsis.org/Bundle](https://www.survivingsepsis.org/Bundle) Complete Guidelines: [SurvivingSepsis.org/Guidelines](https://www.survivingsepsis.org/Guidelines)

# Section 4

## Additional Sepsis Management



Additional Sepsis  
Management

# Section 4: Additional Sepsis Management



## HMS bundle measures included in this section

- Antibiotic sequencing
- Use of balanced solutions
- Adjunctive steroids in persistent shock
- Lung-protective ventilation strategy

# Example Tools: Balanced Fluids



## McLaren Greater Lansing Balanced Fluids Educational Poster


### FLUID RESUSCITATION WHY BALANCED SOLUTIONS?

**Surviving Sepsis Campaign Updates 2021 suggest** balanced fluids instead of normal saline for fluid resuscitation. *Example: Lactated Ringer's or Plasma-Lyte*

#### Research Shows...


Probability of benefit of balanced fluids in sepsis: 96%

Association Between Type of Fluid Received Prior to Enrollment, Type of Admission, and Effect of Balanced Crystalloid in Critically Ill Adults: A Secondary Exploratory Analysis of the Balanced Solutions in Intensive Care (BaSICS) Study



Among patients with sepsis in a large randomized trial, use of balanced crystalloids was associated with a lower 30-day in-hospital mortality compared with use of saline.

Balanced Crystalloids versus Saline in Sepsis – A Secondary Analysis of the SMART Clinical Trial





# Example Tool: Stanford Health Severe Sepsis & Septic Shock Antibiotic Guide

Guidance for antimicrobial sequencing, choice, and delivery are available

**Premier Health**

## Sepsis Antibiotic Administration

**Why it Matters**  
Surviving Sepsis Campaign Guidelines recommend initiating empiric antibiotics within **1 hour** from identification of sepsis. Initiation of the broadest range of antibacterial activity first is imperative due to increasingly poor outcomes associated with delays in appropriate therapy.

**Recommended Order of Administration for Antibiotics Commonly Used in Sepsis**

If compatible multiple antibiotics can be administered concurrently. When incompatible or compatibility unknown administer those toward the top the chart first in order to administer broader spectrum agents first.

**When Administering 2 Antibiotics**

- Beta-lactams; Broad Spectrum**  
Ceftriaxone (ROCEPHIN)  
Cefepime (MAXIPIME)  
Ertapenem (INVANZ)  
Meropenem (MERREM)  
Piperacillin / Tazobactam (ZOSYN)
- Fluoroquinolone / Monobactam**  
Levofloxacin (LEVAQUIN)  
Aztreonam (AZACTAM)
- Miscellaneous**  
Vancomycin  
Linezolid (ZYVOX)  
Metronidazole (FLAGYL)  
Azithromycin (ZITHROMAX)  
Clindamycin (CLEOCIN)

**When Administering ≥3 Antibiotics**

- Beta-lactams: Broad Spectrum**  
Ceftriaxone (ROCEPHIN)  
Cefepime (MAXIPIME)  
Ertapenem (INVANZ)  
Meropenem (MERREM)  
Piperacillin / Tazobactam (ZOSYN)

One of the above broad spectrum beta-lactams administered?

**YES**

- MRSA Therapy**  
Vancomycin  
Linezolid (ZYVOX)
- Fluoroquinolone / Monobactam**  
Levofloxacin (LEVAQUIN)  
Aztreonam (AZACTAM)
- Miscellaneous**  
Metronidazole (FLAGYL)  
Azithromycin (ZITHROMAX)  
Clindamycin (CLEOCIN)

**NO**

- Fluoroquinolone / Monobactam**  
Levofloxacin (LEVAQUIN)  
Aztreonam (AZACTAM)
- MRSA Therapy**  
Vancomycin  
Linezolid (ZYVOX)
- Miscellaneous**  
Metronidazole (FLAGYL)  
Azithromycin (ZITHROMAX)  
Clindamycin (CLEOCIN)

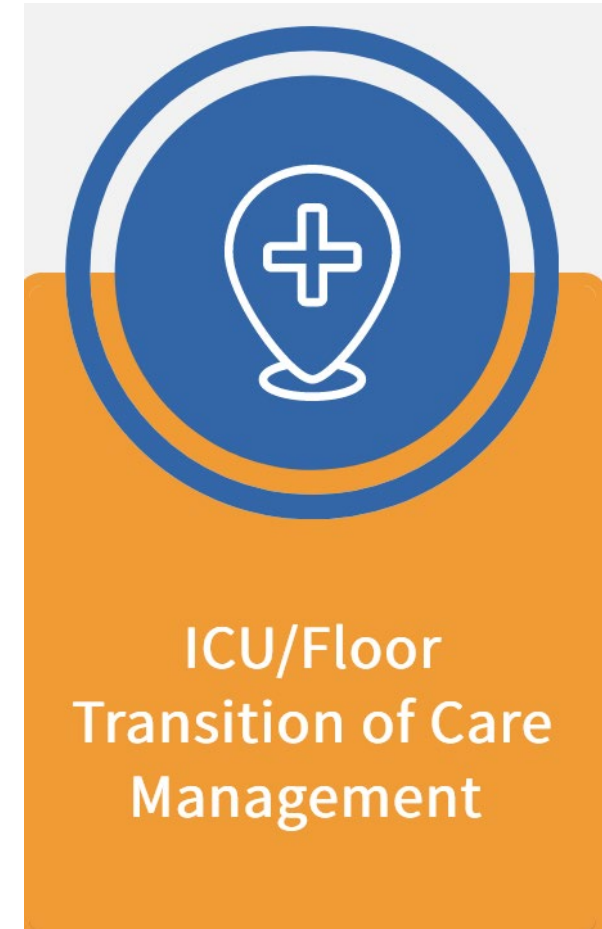
**For More Information**  
Surviving Sepsis Guidelines available at: [www.survivingsepsis.org](http://www.survivingsepsis.org)  
Antimicrobial Stewardship Site Leads  
**AMC:** Matthew Bauer, DO and Zach Jenkins PharmD  
**GSH:** Grant Starrett, MD and Jon Bachna PharmD  
**MVH:** Steve Burdette, MD and Craig Pleiman PharmD  
**UVMC:** Ron Manis, MD and Mike Barhorst PharmD

7/2017



# Section 5

## ICU/Floor Transition of Care Management



# Section 5: ICU/Floor Transition of Care Management



## HMS Measures included in this section

- Removal (or documentation of need to keep) temporary CVCs
- Removal (or documentation of need to keep) urinary catheters
- Communication of ongoing management plan
  - antibiotics, volume status, medication changes, and delirium assessments

# Example Tool: ATS ICU Pause



ICU Pause poster  
for printing and  
posting in work  
areas

**Press Pause** | Make safer ICU-Ward Transitions with the **ICU-PAUSE** Tool (Use the .icutoward dotphrase!)

**I · C · U · P · A · U · S · E**

ICU Admission Reason	Code Status	Unprescribing	Pending Tests	Active Consultants	Uncertainty Measure	Summary of Major Problems and To-Dos	Exam at the Time of Transfer
----------------------	-------------	---------------	---------------	--------------------	---------------------	--------------------------------------	------------------------------

**Why ICU-PAUSE?**

- Transitions from ICU → Ward are **high-risk**
- Often diagnosis is **uncertain**
- ICU-PAUSE to **standardize communication**
- Across **multiple sites** throughout USA
- This tool developed by **co-residents across US** to make your life easier on both ends (Santhosh et al, ATS Scholar 2022)

**We will circle back for your feedback**

Have a question?  
Contact your local ICU-PAUSE champion:

**Interested in improving transitions of care at your hospital? Learn how to get involved.**

**ATS**  
American Thoracic Society

# Section 6

## Recovery-Focused Practices and Discharge Planning



## HMS Measures

- Baseline functional status assessment,
- PT/OT consultation when indicate
- Assessment of goals of care
- Discharge planning
  - Providing contact for issues post-discharge
  - Post-discharge phone call within 3 calendar days
  - Outpatient follow-up scheduled prior to discharge
  - Appropriate continuation/discontinuation of medications at discharge

# Example Tool: AHRQ Post-Discharge Phone Call Script



## Postdischarge Followup Phone Call Script (Patient Version)

This form reinforces the information provided to the patient at discharge. The patient's discharge information should be available to the interviewer at the time of this call.

**CALLER:** Hello Mr./Ms. \_\_\_\_\_. I am [caller's name], a [type of clinician] from [name of hospital]. You may remember that when you left, the [hospital name] discharge educator, [DE name], mentioned you'd receive a call checking in on things. I am hoping to talk to you about your medical issues, see how you are doing, and see if there is anything I can do to help you. Do you mind if I ask you a few questions so I can see if there is anything I can help you with?

Is this a good time to talk? It will probably take about 15 to 20 minutes, depending on the number of medicines you are taking.

**If yes, continue.**

**If no, CALLER:** Is there a better time that I can call you back?

### A. Health Status Diagnosis

**CALLER:** Before you left the hospital, [DE name] spoke to you about your main problem during your hospital stay. This is also called your "primary discharge diagnosis." Using your own words, can you explain to me what your main problem or diagnosis is?

**If yes,** confirm the patient's knowledge of the discharge diagnosis using the "teach-back" method. After the patient describes his or her diagnosis, clarify any misconceptions or misunderstandings using a question and answer format to keep the patient engaged.

**If no,** use this opportunity to provide patient education about the discharge diagnosis. Then conduct teach-back to confirm the patient understood.

**CALLER:** What did the medical team at the hospital tell you to watch out for to make sure you're o.k.?

Review specific symptoms to watch out for/things to do for this diagnosis (e.g., weigh self, check blood sugar, check blood pressure, create peak flow chart).

Measure patient's understanding of disease-related symptoms or symptoms of relapse (e.g., review diagnosis pages from AHCP).

**CALLER:** Do you have any questions for me about your main problem [diagnosis]? Is there anything I can better explain for you?

**If yes,** explain, using plain language (no jargon or medical terms).

**If no, continue.**

**CALLER:** Since you left the hospital, do you feel your main problem, [diagnosis], has improved, worsened, or not changed? What does your family or caregiver think?

**If improved or no change,** continue below.

**If primary condition has worsened,**

- **CALLER:** I'm sorry to hear that. How has it gotten worse? Have you spoken to or seen any doctors or nurses about this since you left the hospital?
- **If yes, CALLER:** Who have you spoken with/seen? And what did they suggest you do? Have you done that?
- Using clinical judgment, use this conversation to determine if further recommendations, teaching, or interventions are necessary.
- Record any action patient/caregiver has taken and your recommendations on the documentation sheet.

**CALLER:** Have any new medical problems come up since you left the hospital?

**If yes:**

**CALLER:** What has happened?

**CALLER:** Is there anyone else involved in your care that I should talk to?

- **If yes,** Name: \_\_\_\_\_

Phone number: \_\_\_\_\_

**CALLER:** Have you spoken to anyone about this problem? Prompt if necessary: Has anyone:

- Contacted or seen PCP?
- Gone to the ER/urgent care?
- Gone to another hospital/provider?
- Spoken with visiting nurse?
- Other?
- Following the conversation about the current state of the patient's medical condition, consider recommendations to make to the caregiver, such as calling PCP, going to emergency department, etc. Record any actions and recommendations on documentation sheet.

### B. Medicines

#### High Alert Medicines

Use the guide below to help monitor medicines with significant risk for adverse events.

Drug Category	What To Look For
Anticoagulants	Bleeding; who is managing INR
Antibiotics	Diarrhea; backup method of birth control Should not taken at same time as calcium and multivitamin
Antiretrovirals	Review profile for drug interactions
Insulin	Inquire about fasting blood sugar
Antihypertensives	Dizziness If yes, suggest patient space out medicines (keep diuretic in a.m.)
Medicines related to primary diagnosis	Focus on acquisition and medication adherence

# Example Tool: Sepsis Alliance Hospital Discharge List



## Hospital Discharge List – Post-Sepsis or Septic Shock

Once you have been told you can go home, you may have questions or concerns. This list is a guideline of some questions you may ask regarding your discharge and suggested actions you may take. Feel free to add your own for a more personalized version. This list is also for caregivers.

Planning	Staff name if applicable	Date accomplished and any notes
Who is my discharge planner? <ul style="list-style-type: none"> <li>How do I get hold of them if I have questions?</li> </ul>		
Meeting with discharge planner (date and time). <ul style="list-style-type: none"> <li>Will there be follow-up meetings?</li> <li>Who else attended the meeting?</li> </ul>		
I have a written copy of my discharge plan.		
Is there someone at the hospital I can contact if I have more questions when I get home?		
What medications will I take at home? <ul style="list-style-type: none"> <li>Have they changed since I was admitted to the hospital?</li> <li>How do I take them?</li> <li>How often do I take them?</li> <li>How will I tell if they don't work?</li> </ul>		
How did I get sepsis? What type of infection caused it?		
Do I have any follow-up appointments and what kind? <ul style="list-style-type: none"> <li>What tests do I need to have?</li> <li>Who makes the follow-up appointments?</li> <li>If it is me, who are they with and what numbers do I call?</li> <li>If it is someone else, when will I get the information? Who is it and how do I contact them if I have questions?</li> </ul>		

**Looking for a way to ensure discharge is efficient for patients with sepsis?**

**Check out this discharge checklists!**



# Example Tool: Henry Ford Health System- Sepsis: Patient Education Guide



## Sepsis Action Plan

### Your Plan for Action

- Use this guide to help you tell your doctor or nurse about changes in your symptoms.
- You are less likely to have to go to the hospital for treatment when you notice your symptoms early and take action.

You are in control and doing well.



#### You feel like your usual self:

- You do not have fever or chills
- You do not have shortness of breath
- You have your usual energy level
- You are thinking clearly with no confusion

Take action today. Call your doctor now.



- You have a temperature more than 101°F or less than 96.8°F
- You are shivering or feel very cold
- Your heart feels like its beating faster than normal
- You feel short of breath
- You feel very tired and it is hard to do daily activities
- You have not urinated for 5 or more hours, or when you do urinate it burns, is cloudy, or smells bad
- Your wound or IV site is painful, red, smells, or has pus

Take action now! Call 9-1-1 right away!



- It is hard to wake up and you cannot do any daily activities
- You are confused
- You are breathing very fast
- Your skin is pale or a different color
- You have very bad pain
- You feel like you might die

Recovery-focused tools are located in Section 6.

# Section 7

## Antimicrobial Stewardship in Sepsis



# Section 7: Antimicrobial Stewardship in Sepsis



## Antimicrobial Stewardship

- Best practices in treatment of sepsis
- Using local microbiology data to develop recommendations
- De-escalation tools

# Example Tool: Intermountain Healthcare De-escalation: Quick Reference Guide for Hospital Pharmacists



## De-escalation

▶ Quick Reference Guide for Hospital Pharmacists



*This quick reference guide describes the process of antibiotic de-escalation in patients with **positive bacterial cultures**. This guide is not intended for use in patients on empiric antibiotics with negative bacterial cultures. This 6-step process ensures that patients receive the narrowest-spectrum antibiotic to treat the infection.*

### ➔ What is de-escalation?

As you know, we often prescribe broad-spectrum antibiotics because we don't have the full clinical picture. In many cases, the initial empiric antibiotic is not the best option for treatment of the patient's infection. De-escalation is when we switch to a narrower-spectrum antibiotic to target the causative pathogen(s) identified on culture.

#### Key Points

*Switching to narrower spectrum antibiotics when clinically indicated can prevent adverse reactions and reduce antibiotic resistance.*

### ➔ What is my role in de-escalation?

Every day, review all patients on broad-spectrum antibiotics in your patient care area and identify those with positive cultures. Review these patients using the 6-step process outlined in this guide to determine whether a narrower antibiotic would optimize therapy. If you feel a change in therapy is needed, work with the prescribing provider and recommend an alternate therapy.

#### Key Point:

*The goal of de-escalation is to determine whether a narrower antibiotic would be more appropriate for each patient.*

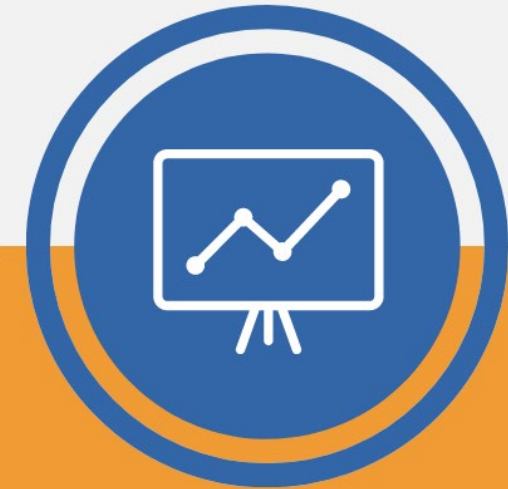
**This process is designed for patients with positive cultures only!**

**Need help with de-escalation?**

**Tools and pharmacy references are located in Section 7!**

# Section 8

Implementing, Evaluating & Sustaining Quality Improvement



Implementing,  
Evaluating, and  
Sustaining Quality  
Improvements

## Implementing quality improvements

- Resources from HMS hospitals including scorecards, feedback templates, and value analysis program
- Engaging stakeholders and prioritizing interventions

## Evaluation of effectiveness

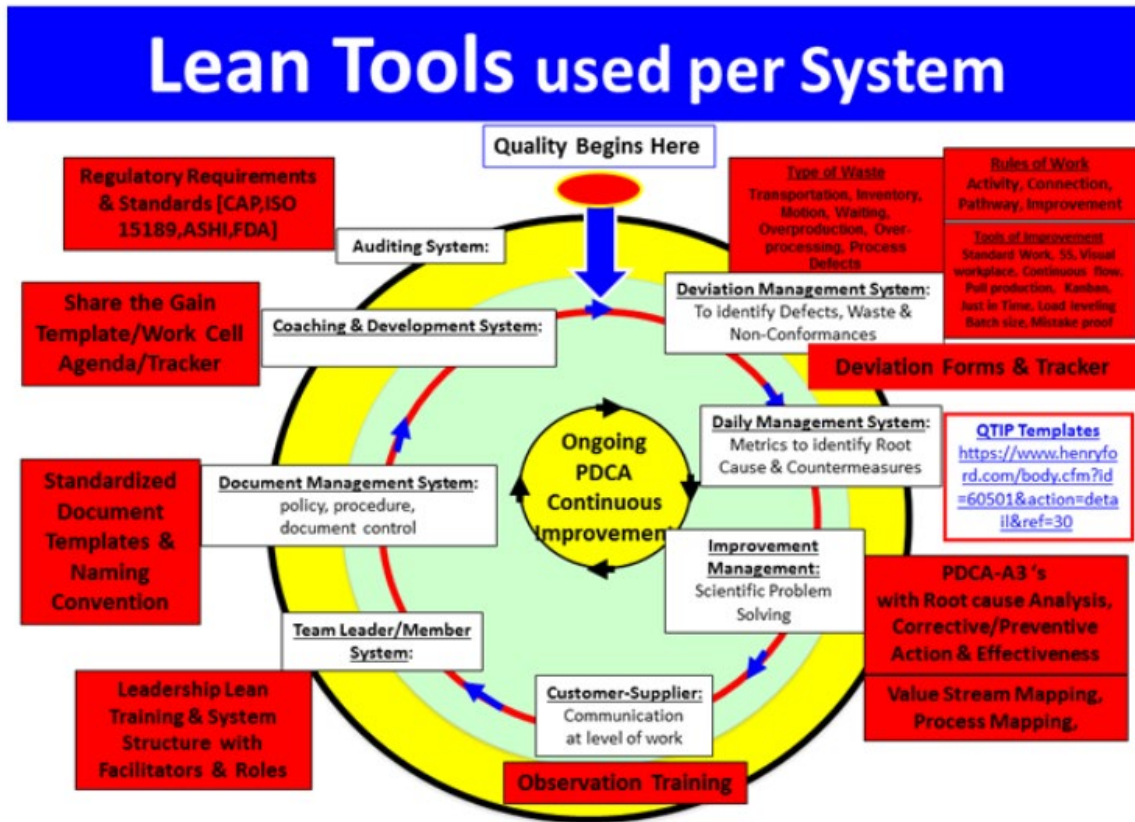
- Obtaining feedback, developing systems and processes, and analyzing data

## Sustaining improvement

- Long term success tools, sustainability models

# Example Tool: Henry Ford Health Lean Tools

## LEAN Tools



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Examples of LEAN tools are available to help with ongoing assessment of your program



- Toolkit covers multiple problem areas
- Toolkit contains multiple examples
  - Find examples to best fit your organization's needs and context

# How to Access the HMS Sepsis Toolkit



## Toolkit available on HMS Website

- <https://mi-hms.org/hms-sepsis-toolkit>

## Formats

- Static PDF version (updated quarterly)
- Live Dropbox Paper version (updated in real-time)

# How to Access the Toolkit



Go to the HMS Website, then click on:

**Quality Initiatives**

- Antimicrobial Use Initiative
- Peripherally Inserted Central Catheter (PICC) Use Initiative
- Midline Use Initiative
- Sepsis Initiative**
- Mi-COVID19 Initiative (Retired)
- Venous Thromboembolism Initiative (Retired)

### Overview

The Michigan Hospital Medicine Safety Consortium, or HMS, is a Collaborative Quality Initiative. The data-driven collaborative is comprised of **hospitals across the state of Michigan**. The goal of the consortium is to **improve care for hospitalized patients** who are at risk for adverse events. The **Coordinating Center** for HMS is housed at the University of Michigan. The structure of HMS includes **4 committees**: Data/Design/Publications, ICU Steering Committee, VTE Bleeding Review (retired), and Executive.

[Click Image to View HMS Video](#)

## Sepsis Initiative

In 2021, HMS launched a Sepsis initiative among 12 volunteer pilot hospitals. In 2022, the Sepsis initiative was launched among the remaining HMS hospitals. The Sepsis initiative assesses the care of patients diagnosed with Sepsis with the ultimate goal of improving care for patients with Sepsis. The Sepsis initiative focuses on the care of patients during the entire continuum of care including on admission/early diagnosis, inpatient hospitalization, discharge, and 90 days post-hospitalization.

Sepsis is a syndromic response to infection and is frequently a final common pathway to death from many infectious diseases worldwide. Therefore, in addition to our generous support from our sponsor, Blue Cross Blue Shield of Michigan (BCBSM) and Blue Care Network (BCN), HMS has partnered with the following national organizations to drive this initiative:

- Centers for Disease Control and Prevention (CDC)<sup>#</sup>
- National Institutes of Health (NIH)<sup>#</sup>

[Click HERE to access the HMS Sepsis Toolkit](#)

# Next Steps - How to Get Started



- Identify your sepsis leader or co-leaders at your institution
- Secure support from hospital and/or system leadership
- Conduct a “needs analysis” to identify areas of improvement
- Establish goals for your sepsis program
- Conduct ongoing program evaluation to track progress

# Send us feedback and tools!



## For HMS members

- Email your QA Coordinator, or email [HMS-QACoordinators@med.umich.edu](mailto:HMS-QACoordinators@med.umich.edu)

## For the broader community

- Email our Sepsis Toolkit mailbox [HMS-SepsisToolkitTeam@med.umich.edu](mailto:HMS-SepsisToolkitTeam@med.umich.edu)

# Thanks



We would like to thank the following for their support in developing this toolkit

- CDC
- The Sepsis Alliance Institute
- HMS ABX leadership team
- Members of the ICU Steering Committee
- Members of the Data, Design, and Publications Committee
- Henry Ford Health
- Corewell Health
- Michigan Medicine
- Munson Health Care

# Q&A





- **Question/Comment:**

- Have you developed any tools or resources for the coding department? We are struggling with accurately capturing sepsis on arrival versus sepsis that is not present upon arrival?

- **Answer:**

- We do not currently have any specific sepsis coding resources, but the CDC's Hospital Sepsis toolkit talks about the [CDC surveillance definition](#). HMS and CDC look for evidence of infection AND evidence of acute organ dysfunction within 48 hours of arrival. This is used to identify community onset sepsis.

- **Question/Comment:**

- Can you elaborate on getting started for sepsis for a smaller community hospital versus a larger hospital they may already have an established program and where they can launch from there?

- **Answer:**

- I would point people to the self-assessment tool in the back pages of CDC's core elements. This goes through all recommended practices, priority examples, and additional examples.
- **Key things:**
  - Leaders for the team, one or two people—not a committee.
  - Go to hospital or health system leadership and advocate for resources

- **Answer:**

- **Key things (continued):**

- The NHSN national annual survey showed that 73% of hospitals have a sepsis program or committee charged with addressing sepsis. Only 53% provide dedicated effort for those committees. Make a business case (there are resources in the toolkit) for ROI and cases to support the program.
- Look at any priority areas in the CDC Hospital Sepsis Program Core Elements and ask: Are there any areas that we are not yet doing? Focus on those. If there are a couple, focus on those that are most important or most achievable.

- **Question/Comment:**
  - Is the self-assessment tool done by a Performance Improvement person, or any clinicians involved with sepsis to get a more subjective response?
- **Answer:**
  - Any of the above. This may be something that needs to be answered by more than one person. It may be that an individual person might not have the full understanding of the landscape. Answer as you are able. This may require a full team of people to complete the self-assessment.

- **Question/Comment:**

- This set up is very similar to the structure of other systems of care like stroke, and trauma. Do you see there being verifications/certifications from accrediting bodies that hospitals would be able to obtain in the future?

- **Answer:**

- Great question! There is so much overlap between trauma, stroke, heart attack. Sepsis is a time sensitive medical emergency; I think the CDC Hospital Sepsis Program Core Elements are driving more attention to this issue as well. They will be tracking uptake of these recommended practices annually through the NHSN annual survey.

- Question/Comment:
  - [The Joint Commission \(JCO\) has a certification](#) that has been around for a long time.
- Answer:
  - There is a strong possibility that such things may exist in the future, that this may be part of JCO requirements, or they may be specific accreditations for sepsis coordinators or experts in the future. I completely agree with the parallels to stroke, trauma, and MI verifications. This is optional; there is no requirement currently.

# Sepsis Differential: Supporting Documentation



- Question/Comment:
  - We struggle with documentation of sepsis initially in a differential without strong clinical indicators to support the condition; often the source of audit denial. Do you have tips for providers documentation when it appears that sepsis isn't clinically supported?
- Answer:
  - Templated forms can help to push people to elaborate a little bit more on what is the thing that is making them think "sepsis"? Are there symptoms? Are there risk factors? I don't think that is has to be long or hard, but some sort of template for documentation of your initial assessment in the emergency department could really help there. This is an area where I think doing some sort of iterative evaluation of your tool is important. A lot of times these things are ruled out or no one really uses them because its not timesaving. But if you can develop a template that saves them time, they are more apt to use them, and this can help.



# Emergency Department Priorities/Code Sepsis



- Question/Comment:

- I wanted to make a point of the struggle in the emergency department with competing priorities. We discussed them earlier: trauma, stroke, MI, and sepsis. Staff are overwhelmed with time sensitive needs of these critically ill patients.

- Answer:

- Absolutely. We hear this all the time. This is why I think that hospital commitment from leadership is so important. If you are an ED provider and you are overwhelmed and have a huge wait time in your emergency department, it's going to be really hard. You as an individual are not going to be able to solve that problem. That is something that needs to be escalated to hospital leadership to think of resources or triages or how to address this.
- I keep coming back to these statistics of about one-third to one-half of all hospital deaths are from sepsis--this is a hugely important area of focus and area to direct resources. I completely hear that, and this is why it really takes a team, because no one person can overcome those challenges that we know exist day-to-day in the emergency department.

# Emergency Department Priorities/Code Sepsis



- Question/Comment:
  - Discussion of Code Sepsis in the busy ED.
- Answer:
  - We have heard from the ED that there are benefits of code sepsis. These patients are screened, and if they screen positive, the nurse, physician, MA, or pharmacist go to the bedside to talk about “what do we think? Is this definitely sepsis? Is this a false positive screen? What are the most important things we can do?”.
  - This is time-saving in the long run because you all get on the same page together. There are some concerns about having false positives, but these false positives are also really sick patients.
  - What we hear from the hospitals is that it is helpful. A quick huddle accelerates the patient’s care and saves time in the long run. These huddles do not require additional resources and require those who are already managing the patient to come together.

- **Question/Comment:**

- New nurses can use some assistance in education in sepsis recognition. Only 20% of new nurses recognize patient deterioration which is resulting in failure to rescue.

- **Answer:**

- Education is important. Education resources are available in our toolkit, as well as in CDC Hospital Sepsis Program Core Elements—it is the 7<sup>th</sup> core element. One of the key areas within that education element is the onboarding of new nurses and staff. It is important to train those coming into your intuitions on sepsis and sepsis recognition. We have seen several badge tools, lanyards attached to the vital sign machines, and posted throughout units. These key places of Sepsis tools for recognition helps keep that in the forefront of people's brain.