

# CREATING POCKETS OF EXCELLENCE: IMPROVING SEPSIS CARE THROUGH MULTI-DISCIPLINARY COLLABORATION AND PHYSICIAN CHAMPIONS

April 20, 2022

# **SEPSIS WEBSITE**

#### ohiohospitals.org/sepsis















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#### Sepsis

Reducing Sepsis Mortality in Ohio Through Early Recognition, Appropriate Intervention

The OHA Board of Trustees identified reducing sepsis mortality in Ohio as one of the key focus areas for OHA and Ohio hospitals. Sepsis is the body's overwhelming and life-threatening response to infection that can lead to tissue damage, organ failure and death. In other words, it's your body's over active and toxic response to an infection. Sepsis impacted an estimated 41,000 Ohioans in 2017. Early recognition and treatment can reduce the morbidity and mortality of sepsis.

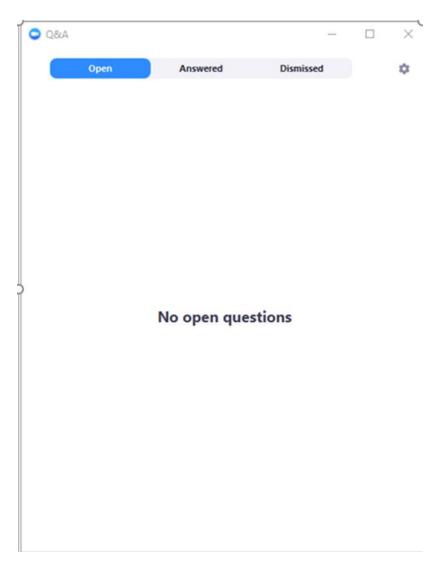
**Ohio Hospital Association** ohiohospitals.org March 16, 2022

# **CONTINUING EDUCATION**

- The link for the evaluation of today's program is: <a href="https://www.surveymonkey.com/r/Sepsis-April2022">https://www.surveymonkey.com/r/Sepsis-April2022</a>
- Please be sure to access the link, complete the evaluation form, and request your certificate. The evaluation process will remain open <u>two</u> <u>weeks</u> following the webcast. Your certificate will be emailed to you when the evaluation process closes after the 2-week process.
- If you have any questions, please contact Dorothy Aldridge (Dorothy.Aldridge@ohiohospitals.org)

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# SUBMITTING QUESTIONS



Ohio Hospital Association | ohiohospitals.org | March 16, 2022

# **PRESENTER**



Michelle Evans, RN, MSN, APRN, NP-C Advanced Practice Provider Program Coordinator I – Sepsis Program Coordinator Summa Health

# Creating Pockets Of Excellence:

Improving Sepsis Care Through Multi-Disciplinary Collaboration and Physician Champions



# Summa Health System

1005 total registered beds>7800 employees136,836 annual ED visits

#### 3 campuses:

- Akron (AKA City Hospital)
  - Level 1 Trauma Center
  - 3 ICUs = 78 beds
- Barberton
  - 220 beds
- St. Thomas Behavioral Health

Freestanding 24-hour EDs - Green and Wadsworth-Rittman

Rehab Hospital - Akron Campus

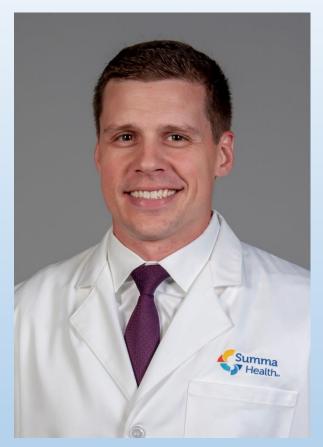
5 Urgent Cares

Ambulatory Surgery Center - Medina





# Panel: Summa's Sepsis Team



Quentin Reuter, MD Emergency Medicine CDU Medical Director Core Faculty



Mike Chandler, MD
Critical Care / Pulmonary Medicine
Critical Care Medical Director
Core Faculty



# Panel: Summa's Sepsis Team



Gwendolyn Hughes, MD, FACP Medical Director of Nutritional Support Services Proceduralist & Hospitalist of Critical Care



Cameron "Spike" McCorcle, MD

Core Faculty – Internal Medicine Residency;
Clinical Teaching Faculty within the Internal

Medicine Residency



# Panel: Summa's Sepsis Team



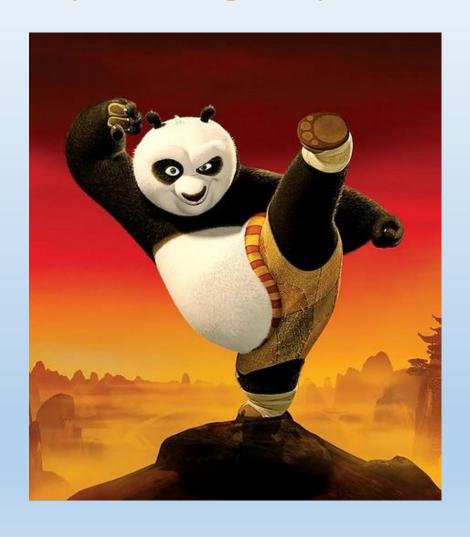
Michelle Evans, MSN, RN, APRN, NP-C Advanced Practice Provider Program Coordinator I Sepsis Program Coordinator



# Where to start?????



# Improving Sepsis Care: Pockets Of Excellence



- Many facets, huge undertaking (especially during a pandemic!)
- Began with areas with highest rate of sepsis cases / sickest patients
- Goal: Improve sepsis care where it makes biggest impact, create pockets of excellence in these areas

# Summa's Sepsis Program

- Formally created January, 2021
- Dedicated Coordinator APRN, 1.0 FTE
- Integrated prior work done by ICU, ED, and Quality
- Summa sepsis definition/diagnosis and program charter
- System-wide Sepsis Multi-Disciplinary Committee
- Issue-specific team meetings/huddles during month
- Strong analytics team support data-base development
- Heavy focus on educating & monitoring compliance
- Weekday review of all concerning patients



#### **Summa Sepsis Definitions and Diagnosis**

Samma Sepsis Deminitions and Diagnosis							
	Simple Sepsis	Severe Sepsis	Septic Shock				
Definition	SIRS Criteria  Must have at least 2:  Temp >100.4 or <96.8, HR >90,  RR >20, WBC >12,000 or  >4,000, bands >10%  AND/OR  Epic sepsis alert fires  Confirmed or Suspected Infection	Meets Simple Sepsis Criteria  plus:  Lactate > 2  AND/OR  Signs of Organ Dysfunction  (SBP <90 or MAP <65, altered mental status, increasing creatinine, decreased urine output, bilirubin >2, INR >1.5, platelets <100,000, increased oxygen demand)	Meets Simple Sepsis and Severe Sepsis Criteria plus:  Lactate > or = to 4 at presentation on Hypotension / Organ Dysfunction persists and/or Lactate > or = 4 after fluids				
HADRINGER	USE SEPSIS ORDER SET!!     STAT Lactate Level     STAT Blood Cultures     Antibiotics within 1 hour     Source Control     Assess for Organ Dysfunction     Document Using:     .SEPSISCOREMEASURE phrase	In addition to Simple Sepsis Interventions:  Repeat lactate level within 6h if initial result >2  Administer 30 ml/kg fluid bolus over 30-60 minutes  May give lesser amount per IBW or for advanced CHF/advanced renal disease if documented (Use .SEPSISCOREMEASURE)	In addition to Simple and Severe Sepsis Interventions:  Begin Vasopressors  Must document sepsis reassessment within 6h of shock using .SEPSISCOREMEASURE or .SUMMASEPSISREEVALNOTE				



# Summa Sepsis Program Charter - 2021

#### Summa Health System Sepsis Program Charter

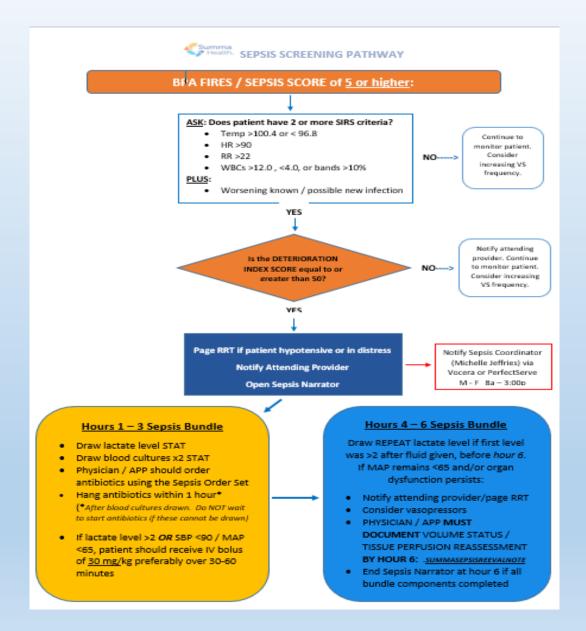
Mission:	Summa Health aspires to be the leading Sepsis Care health system in the Northeastern Ohio area. We will aim for the best outcomes for our septic patient population by incorporating national guidelines and evidence-based care into our treatment plans.		
Problem Statement:	Severe sepsis and septic shock are considered a medical emergency by the CDC and other major organizations. Millions of Americans are affected yearly with at least one in four dying from the syndrome; the incidence continues to increase. Similar to acute myocardial infarction or stroke, research has indicated that the speed of appropriate interventions administered during the initial and most critical hours after presentation greatly influences and improves outcomes.  Bef: Surviving Sepsis Campaign: International Guidelines for Management of Servere Sepsis and Septic Shock:  Civilical Care Medicine Journal, 2017 (45)3. 486-560.		
Committee Facilitators and Members	Facilitators: Dr. Brad Martin Michelle Jeffries, CNP (Program Coordinator)  Team Members: Medical Director, ED Medical Director, ICU Medical Director, Trauma/Surgery Assistant Medical Director, Operations Sepsis Physician Lead, ED CNO (ACH, Barberton) VP of Nursing (ACH) Director, Quality Improvement Director, Quality Improvement System Director, Bundled Care Manager, HIM-System Admin.	Lead Quality and Clinical Analyst Unit Directors, ICU, ED (ACH) Unit Directors, ICU, ED (Barberton) Lead APP, ICU CNS, ICU, Med/Surg (ACH, Barberton) Senior Quality Improvement Engineer Clinical Documentation Improvement RN Supervisor, ED Clinical Coordinator RN Physician Representatives: ED, ICU, Hospitalists, Cardiology	
Committee Facilitators and Members Roles	The Program Coordinator will develop plans, policies, and procedures based on the most current evidence and present to the committee for discussion and approval. Will facilitate movement toward and implementation of best practices for sepsis care. Will serve as a resource to the hospital system and community.  Dr. Martin will serve as committee chair, provide guidance and support to the Program Coordinator, and serve as a liaison between the medical staff and the committee.  Committee members will attend scheduled meetings, engage in endeavors to improve patient outcomes, and provide ideas and feedback.		
Scope:	Severe sepsis / Septic shock patients in ED, ICU, and inpatient units within the Summa Health System - Akron and Barberton campuses.  Target Population: Adults age 18 and older.		

#### Summa Health System Sepsis Program Charter

	Obtain Disease Specific Certification through The Joint Commission	
Goals / Objectives:	Reduce Sepsis mortality	
	Reduce Sepsis LOS	
	Improve percentage of patients who receive appropriate care for severe	
	sepsis / septic shock	
Performance Targets and Measures:	Measure 1: Consistently decrease Observed/Expected Mortality to ≤1.0 by the quarter 4 of 2021.     Measure 2: Consistently decrease Observed/Expected LOS to ≤1.08 by the end of 2021.     Measure 3: Consistently achieve ≥75% compliance with use of Sepsis Order Sets for all areas (ED, ICU, and other inpatient units) by quarter 4 of 2021.     Measure 4: Increase compliance with 3 and 6 hour bundle sets for Severe Sepsis and Septic Shock to ≥60% by quarter 4 of 2021.     Includes:     1. Initial lactate level drawn within 3 hours of meeting criteria.     2. Blood cultures drawn within 3 hours of meeting criteria AND prior to receiving antibiotics.     3. Antibiotics within 24 hours prior or 3 hours of meeting criteria.     4. 30 mL/kg of crystalloid fluid for hypotension (MAP <65 mmHg) or lactate >4 within 3 hours of meeting criteria.     5. Repeat lactate level done if initial level >2 within 6 hours     6. Provider reassessment of tissue perfusion documented within 6 hours	
Business Case:	Septic patients have a high rate of mortality, higher LOS, increased use of resources, and likelihood of complications (including post-discharge). Summa seeks to improve outcomes for these patients, including decreasing LOS and mortality.	
Milestones:	Action plan:  - Step 1: Develop the sepsis program infrastructure  - Complete evaluation of baseline data / gap analysis  - Implement Sepsis Alert Team Policy / procedure by June 1 <sup>st</sup> , 2021  - Solidify Program Charter goals and measures  - Step 2: Reduce process variation. Provide staff awareness education  - Pilot: 6-West and 4-North. Staff education 2/24-3/8/2021. Pilot date 3/10/2021 through 4/7/2021 (4 weeks).  - Complete house-wide education on understanding of early sepsis recognition and intervention by May 31 <sup>st</sup> , 2021  - Goal date for house-wide "go-live": June 1 <sup>st</sup> , 2021  - Develop consistent procedure for transition from ED to inpatient units by (date pending completion of Pilot/inpatient education)  - Step 3: Obtain Sepsis Certification: The Joint Commission. Goal Year: 2022  • Long-term: Patient/Family education and post-discharge follow-up	

### Summa's Sepsis Program

- Nursing education:
   Learning Management
   System (HealthStream™),
   in-person (ICU, pilot floors)
- Developed nursing pathway in beginning
  - Piloted on 2 inpatient units
  - Not successful, brought to light need to investigate sepsis "Best Practice Alert" processes

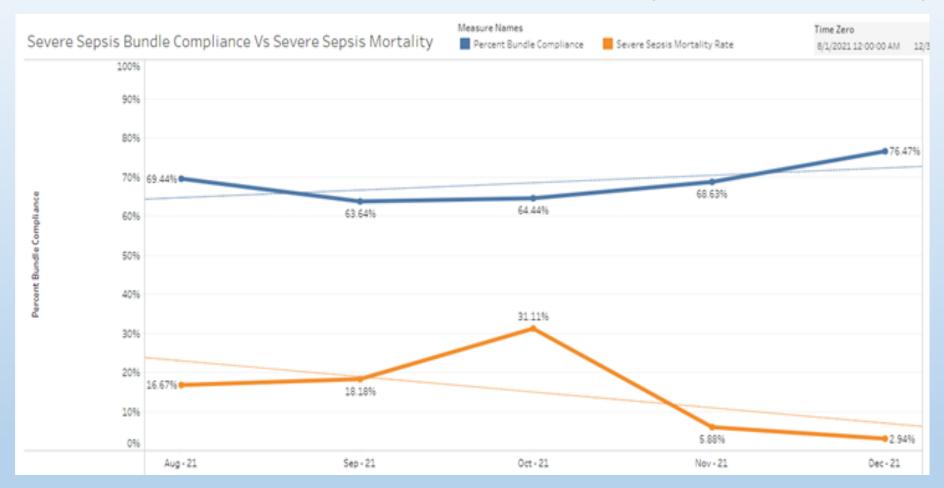


# Summa: Bundle Compliance, 2021

\*National AVG = 57% State AVG = 51%



# Summa Bundle Utilization vs Sepsis Mortality

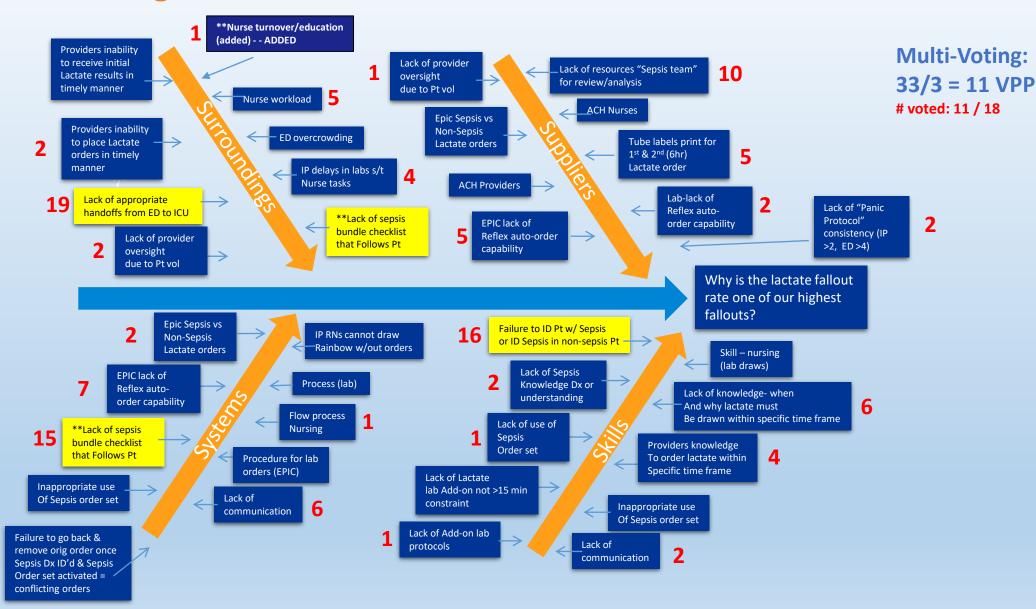


- August December 2021
- Compliance = Mortality

# Lean Six Sigma Project: Repeat Lactate Compliance

- Repeat lactates = biggest fall-out
- Project Improvement Project
- Sponsors: CNO, Medical Quality Director
- Team of key players including physicians, bedside RNs, lab, data team, CNS/RN educators (ICU/ED)
- Issues identified
- Currently transitioning from "Analyze" phase to trial (ED-ICU)

### LSS Ishikawa Diagram – Lactate Labs 6hr Fallout



# Unexpected Challenges

Pandemic: significant challenge due to higher patient acuity, staffing, ED boarding / overcrowding

- Nursing: high turnover / Agency
- Slowed education
- ED = increased fall-outs
- Sepsis alerts significantly increased!



# BPAs during COVID Surges

- Michigan study In JAMA\* noted significant increase in sepsis BPAs
- Summa's data analyzed
- Found same results
- Decision to suppress
   BPAs temporarily

<sup>\*</sup>Ref: Wong, A., et. al. Quantification of Sepsis Model Alerts in US Hospitals Before and After the COVID-19 Pandemic. JAMA Open Network. Nov. 19, 2021.



# Emergency Department

# Sepsis Physician Champion: Dr. Quentin Reuter

- Began formal sepsis team /process Fall, 2020
- Re-Education, rolled out again March 29<sup>th</sup>, 2021
- Trialed use of "Sepsis Team" responders
- Epic "SmartPhrase", ED fever/sepsis order set, pocket reference card
- Pandemic greatly affected ED flow / created new challenges



# Emergency Department

- Regular Sepsis Committee attendance
- Monthly updates in ED Departmental meetings
- Regular dialogue between coordinator, Dr. Reuter, Nurse educator, ED staff (providers, residents, nurses)
- ED physicians/APPs receive feedback via emails outlining fall-outs, celebrating passes
- Advocate for optimal sepsis care in ED, contact for ED providers/residents, address issues



# Critical Care

# Sepsis Physician Champions: Drs. Mike Chandler & Gwen Hughes

- Manage Cardiothoracic, Neurocritical Care and Medical ICUs
- Early education for all residents upon Medical ICU rotation start
- Pocket reference card, Epic sepsis "SmartPhrases", Sepsis order sets
- Weekday manual review of patients for sepsis by RN
- Review Sepsis cases via email: fall-outs and successes alike
- Regular Sepsis Committee attendance



# Monthly Resident Education





# Pocket Reference Card

#### **Summa Sepsis Definitions and Diagnosis** Simple Sepsis Severe Sepsis Septic Shock SIRS Criteria Meets Simple Sepsis Criteria Meets Simple Sepsis and Must have at least 2: Severe Sepsis Criteria plus: Temp >100.4 or <96.8, HR >90, plus: RR >20, WBC >12,000 or Lactate > 2 >4,000, bands >10% Lactate > or = to 4 atAND/OR presentation AND/OR Signs of Organ Dysfunction **Epic sepsis alert fires** (SBP <90 or MAP <65, altered mental status, increasing creatinine, decreased Hypotension / Organ urine output, bilirubin >2, INR >1.5, Dysfunction persists and/or Confirmed or Suspected platelets <100,000, increased oxygen Lactate > or = 4 after fluids demand) Infection In addition to Simple and In addition to Simple Sepsis USE SEPSIS ORDER SET!! Severe Sepsis Interventions: Interventions: STAT Lactate Level · Repeat lactate level within 6h if Begin Vasopressors STAT Blood Cultures initial result >2 Antibiotics within 1 hour Must document sepsis · Administer 30 ml/kg fluid bolus over Source Control reassessment within 6h of 30-60 minutes Assess for Organ Dysfunction shock using May give lesser amount per IBW or for · Document Using: .SEPSISCOREMEASURE or advanced CHF/advanced renal disease if .SEPSISCOREMEASURE phrase documented (Use .SEPSISCOREMEASURE) .SUMMASEPSISREEVALNOTE

#### FRONT

#### SEPSIS MANAGEMENT

Use sepsis order set (General or Focused) for ALL patients. Document using Epic Sepsis SmartPhrase: .SEPSISCOREMEASURE

#### 3-HOUR BUNDLE: Must be done within 3 hours of sepsis presentation time (time zero), but preferably within 1 hour:

- STAT lactate, sepsis
- STAT blood cultures
- Administer antibiotics

#### If SBP <90, MAP <65, or lactic acid >2:

- Give 30 ml/kg bolus using <u>crystalloid</u> fluid (LR preferred). Blood products excluded.
- May give less fluid in for acute/chronic CHF, Renal disease Stage IV/V/ESRD, or per IBW. May give albumin as part of fluids. Lessor amounts and/or albumin <u>must</u> be documented (included in Epic Sepsis SmartPhrase and sepsis order set).

#### 6-HOUR BUNDLE:

- Repeat lactate level within 6 hours of sepsis presentation time if initial is >2.
- Assess for shock. Document septic shock only if SBP <90 / MAP <65 and/or lactic acid >4 within one hour after fluid
- FOR SHOCK:
  - Consider additional fluid challenge, central line, and/or pressors for persistent hypotension
    - DO NOT DELAY PRESSORS: Utilize low-concentration peripheral pressors (via peripheral line) if necessary
  - Perform / document sepsis reevaluation within 6 hours of shock presentation time using one of following:
    - Physical exam: MUST INCLUDE: VS, cap refill, peripheral pulses, skin, and cardiopulmonary exam (use .SEPSISCOREMEASURE or .SUMMASEPSISREVALNOTE in Epic SmartPhrases)
    - Bedside US documenting cardiovascular volume exam



# Critical Care

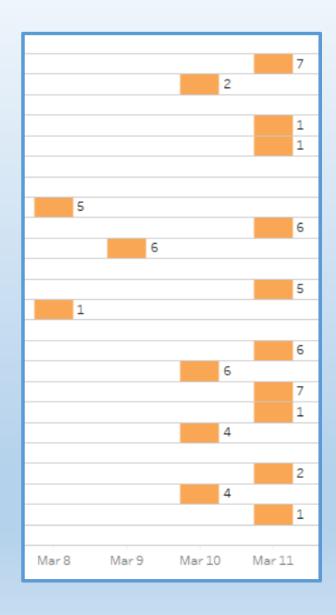
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# Critical Care

- ICE-T: ICU Clinical Evaluation & Triage Team
  - Responds to various teams, including Sepsis
  - Evaluate in ED or inpatient to assure bundle compliance (if ICU involved)
- Exploring Sepsis Dashboards: Efficient/Broad Management
  - Including tracking bundle completion
- Communication "dotphrases"
  - Track daily communication with families



# Residencies and Inpatient

# Sepsis Physician Champion: Dr. Spike McCorcle

- Case review of inpatient non-ICU cases
- Communication with individual providers regarding sepsis cases
- Incorporation of sepsis/protocol education into established resident didactics
- Regular Sepsis Committee attendance
- Working to eliminate controllable "fall-outs" via education, optimization of our new LIS integration, and improving communication



# Bundle Compliance: Order Set/SmartPhrase Use

Increased compliance observed with higher use!



# Epic Sepsis SmartPhrase - .SEPSISCOREMEASURE

#### SEP-1 CORE MEASURE DATA

SIRS Criteria	Sepsis Criteria	Severe Sepsis Criteria	Septic Shock Criteria			
Must meet 2:	Must be confirmed or suspected to move forward with diagnosis of sepsis.	Must meet 1:	Must meet 1:			
☐ Temperature > 100.4 F (38 C) or < 96.8 F (36 C) ☐ HR > 90 ☐ RR > 22 ☐ WBC > 12 or < 4 or 10% bands	<ul> <li>Infection Confirmed or Suspected.</li> <li>■ No infection present. Patient does not meet criteria for Sepsis.</li> </ul>	□ Lactate > 2 or □ Signs of Organ Dysfunction:  - SBP < 90 or MAP < 65 - Altered mental status - Creatinine > 2 or increased from baseline - Urine Output < 0.5 ml/kg/hr Bilirubin > 2 - INR > 1.5 - Platelets < 100,000 - Acute Respiratory Failure as evidenced by new need for NIPPV or mechanical ventilation □ No criteria met for Severe Sepsis.	■ Lactate > 4 after fluid bolus administration or SBP < 90 or MAP < 65 for at least two readings in the first hour after fluid bolus administration			
@IPVITALS(6:3048001087:1::1:0)@						
@LABRCNT(WBC:3,LACTA:3,CREATININE:3,BILITOT:3,INR:3,PLT:3)@						

Sepsis Identified at {HPI MILITARY HOURS:20204}.

Fluid Resuscitation Rational: {Fluid Resuscitation:36114}

Infection Source: {Infection Source: 37458}

{Reassessment Exam: 36586}

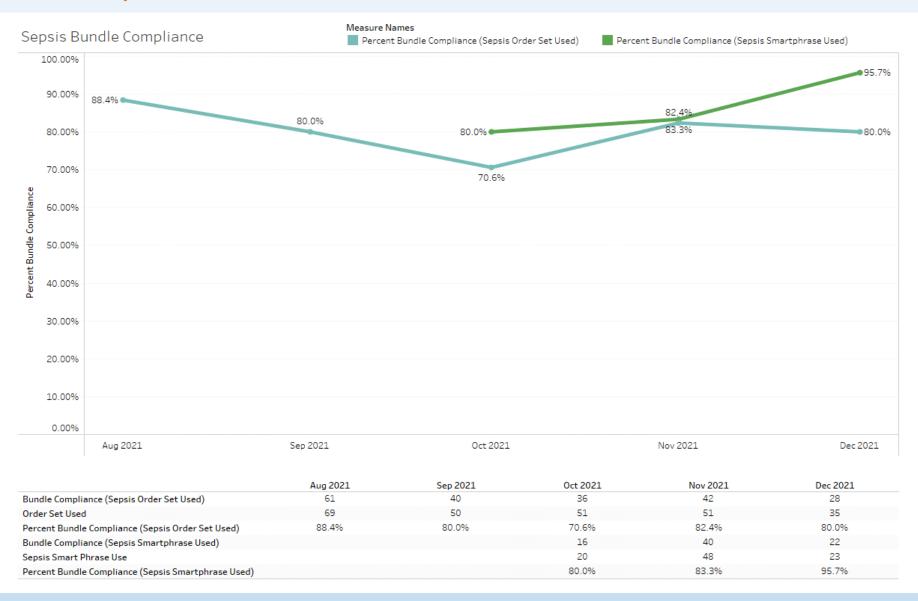
@ESIGN@

# Bundle Compliance and Order Set Use Correlation

Blue line: order set

Green line:

phrase



# Example: Positive Email

Dr. Smith,

The sepsis team evaluates sepsis cases to determine compliance with SEP-1 core measures. I wanted to thank you for the *excellent* care on a recent case (Name, MRN, DOS). The patient met criteria for severe sepsis, and all sepsis bundle interventions were completed within the required time frame, thanks to your diligence. We especially appreciated your concise documentation using the .SEPSISCOREMEASURE phrase.

Thank you for your ongoing dedication and commitment to improving sepsis care at Summa. If we can help in any way or you have questions, please let us know.

# Example: Educational Email

Dr. Smith,

The sepsis team evaluates sepsis cases to determine compliance with the Sep-1 core measures. A recent case (Name, MRN, DOS) was found to have fallen out for the following reasons:

• Repeat lactate level was not ordered in ED and not ordered/drawn until the patient was in the ICU. The initial lactate was 2.4 at 1534; repeat level was drawn at 0040 (10/28). Initial lactates greater than 2.0 must be repeated within 6 hours of time zero.

We also recommend using the .SEPSISCORE MEASURE smart phrase as this helps delineate sepsis type and assists with approved documentation.

We acknowledge your excellent care otherwise and we thank you for your ongoing commitment to improving sepsis care at Summa. If we can help in any way, please let us know.

# Current Projects & Future Goals

#### Much work to be done!!!

- Next phase of Lean Six Sigma Lactate Project
- Epic Sepsis BPA rebuild
- Process for capturing/treating NPOA (Not Present On Admission) Sepsis
- Medical and sub-specialty provider education (outside of ED/ICU)
- Resume nursing education
- EMS education
- Patient education program
- September: Sepsis Awareness Month: Systemwide and community event
  - Developing award for outstanding staff

# Current Projects & Future Goals

- Wish-List: Sepsis Dashboard and "Mission-Control" Center
- Post-Sepsis Care Clinic
- Community outreach Skilled Nursing Facilities, Area Agency on Aging
- Begin sepsis care improvement Barberton Campus
- Joint Commission certification!

# Increasing Sepsis Care Compliance – Tips!

- Focus on areas with largest sepsis population first
- Engage physician(s) from these areas committed to improving sepsis care to champion the sepsis initiative
- Involve leadership and key players
- Strategically educate continuously!
- Find tools that work for the providers/nurses in your facility
- "Tweak" as you go
- Improvement will come even if slowly...baby steps are better than no steps!

# Questions???



# Questions?

Please feel free to email us:

evansmi@summahealth.org

Thank you for your attention!

# OHA collaborates with member hospitals and health systems to ensure a healthy Ohio

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