OHA STATEWIDE SEPSIS INITIATIVE COACHING CALL

January 18, 2017
Collaborating for a Healthy Ohio

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Carol Jacobson
Rhonda Major-Mack

January 18, 2017
Coaching Call

I. Overview of Data Reports

II. Effective Practices
   - Salem Regional Medical Center
   - Cleveland Clinic Lodi Hospital

I. Question/Answer Opportunity
DATA PROGRAM BACKGROUND

• Proprietary Data owned by OHA Member Hospitals.


• All Inpatient and Outpatient Encounters

• Patient level, encounter-based Information

• Clinical and Financial Data

• Primary use – Regional Market Analysis, State Comparative Benchmarking, Multi-year Trending, Quality Analysis
DATA USE AGREEMENTS

• OHA maintains current Agreements for Release of and Access to Hospital Data and Business Associate Agreements with all participating hospitals.

• OHA is permitted to utilize de-identified, aggregated data for:
  • Advocacy
  • Public Health
  • Quality Assurance, or
  • Other purposes authorized by the OHA Board of Trustees

• The Executive Committee of the OHA Board may also approve the release of aggregate data for research and public policy making purposes.

• The HIPAA minimum necessary standard applies to all uses and disclosures by OHA.
DATA COLLECTION

- OHA DataTrack is a Web-based application used by OHA to validate hospital data. The application allows hospitals users to view, correct, and approve patient-level data.
DATA COLLECTION

• Collected Quarterly

• Due to be completed by hospitals within 75 days from the close of each quarter

<table>
<thead>
<tr>
<th>Quarter of Data</th>
<th>Submission Due on or Before:</th>
<th>Data Signed-off on or Before:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Quarter (Jan-Mar)</td>
<td>May 15th</td>
<td>June 15th</td>
</tr>
<tr>
<td>2nd Quarter (Apr-Jun)</td>
<td>August 15th</td>
<td>September 15th</td>
</tr>
<tr>
<td>3rd Quarter (Jul-Sep)</td>
<td>November 15th</td>
<td>December 15th</td>
</tr>
<tr>
<td>4th Quarter (Oct-Dec)</td>
<td>February 15th</td>
<td>March 15th</td>
</tr>
</tbody>
</table>
DATA VALIDATION

• Over 110 different validations

• Validation Examples:
  • Discharge Date is a required field.
  • Admission Source does not correspond to accepted values.
  • Primary Procedure is required when Secondary Procedures are present.
  • Primary Diagnosis is newborn specific; this patient does not meet the age requirement.
    • 779.31 - Feeding problems in newborn
    • V30.00 - Single live born, born in hospital, delivered without mention of cesarean delivery

• Data Sign-off and Integrity Reports
DATA REPORTING

- OHA Member Applications
  - Insight
  - Wayfinder

- Required Hospital Reporting
  - Annual Price Disclosure Data
  - Neonatal Abstinence Syndrome (HB315)

- OHA Reports
  - Collaborative
  - Quality Benchmark Report

- Quality & Patient Safety
  - HIIN
  - Sepsis Initiative

- Public Health
  - Healthcare Cost and Utilization Project (HCUP)
  - Ohio Department of Health
INTENDED USES OF THE REPORTS

This report contains confidential and proprietary information of the Ohio Hospital Association (OHA).

Hospital agrees to:
(i) keep and hold information in confidence;
(ii) not disclose information to any other party without the written consent of OHA;
(iii) use the information only for the internal business purposes of the hospital; and
(iv) not use information in any marketing activities.

To the extent this report contains a limited data set, as defined by the Health Insurance Portability and Accountability Act of 1996 (“HIPAA”), Hospital shall comply with the applicable requirements of HIPAA regarding the privacy and security of such information.
CONSIDERATIONS

✓ (WHAT) What is the report showing?

✓ (WHEN) What time period is included in the report?

✓ (WHO) Who needs to view the report?
CONSIDERATIONS

✓ (WHERE) What clinical areas are represented in the report?

✓ (WHY) What are the implications for clinical practice?

✓ (HOW) What focused efforts should be taken?
OHA collaborates with member hospitals and health systems to ensure a healthy Ohio

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Sepsis Management Journey

Presented by:
Maria Ryhal, MD
CQI Physician Liaison
&
Lyn Pethtel, BS,SM(ASCP),RN, CIC
Director Quality Improvement & Infection Control

January 24, 2017
Central Plant

Columbiana Medical Center

FACILITIES: SRMC Main Campus

- Founded in 1913
- 199 registered beds
- Private, not-for-profit, independent hospital

**FY 2016**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Days</td>
<td>22,644</td>
</tr>
<tr>
<td>Discharges</td>
<td>4,142</td>
</tr>
<tr>
<td>ED visits</td>
<td>28,806</td>
</tr>
<tr>
<td>Total Surgeries</td>
<td>3,570</td>
</tr>
<tr>
<td>Births</td>
<td>408</td>
</tr>
<tr>
<td>Net Patient Revenue</td>
<td>$111.2 million</td>
</tr>
<tr>
<td>Total Revenue</td>
<td>$115.6 million</td>
</tr>
</tbody>
</table>
2014 FMEA: Sepsis Care Summary

Sepsis Bundle Interventions

- Nursing education (multiple venues)
- Physician Education (Department of Medicine, General Medical Staff Meeting)
- Developed Emergency Department screening tool and initial order set (March 2014)
- Developed paper order set for ICU patients
- Sepsis added to Rapid Response Team order set
- Joined OHA Partnership for Patients to share Sepsis Bundle best practices September 2014
- Developed Electronic Nursing Sepsis Alert
- Procalcitonin Test available by end of December
Electronic Sepsis Alert: Go-Live Sept. 2014

- Electronic clinical decision support tool to guide nursing staff action and document the plan of care
- The alert will “fire” if a patient develops:
  - 2 abnormal vital signs or 1 abnormal vital sign plus an abnormal white blood cell count
  - 1 lab value indicating end organ failure

Sepsis Continuum

<table>
<thead>
<tr>
<th>Sepsis</th>
<th>Severe Sepsis</th>
<th>Septic Shock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infection (known or suspected) + Presence of 2 SIRS Criteria: Temperature &gt; 101°F or &lt; 96.8°F Heart Rate &gt; 90 beats/min Respiration &gt; 20 breaths/min WBC Count &gt; 12,000/mm³, &lt; 4,000 mm³ or &gt; 5% K/μL bands</td>
<td>Infection (known or suspected) + Presence of 2 SIRS Criteria + Organ Dysfunction</td>
<td>Infection (known or suspected) + Presence of 2 SIRS Criteria + Organ Dysfunction + Systolic BP &lt; 90 mmHg after fluid bolus</td>
</tr>
</tbody>
</table>
The electronic record scans the data every 4 hours

Nursing then completes a sepsis screen with instructions on how to proceed

Patients excluded from the alert: < 18 yrs, hospice, DNR-Comfort Care

Infection Control Department Goal: Develop an Electronic physician order set
SRMC Sepsis Mortality

SEPSIS MORTALITY RATE 2013Q4-2014Q3

Northeast OH Collaborative mean is 19.88

Lower is better, 15.5 is the statewide mean

Statewide improvement target is 10.86

25 hospitals have a rate of 0

Salem Regional Medical Center
Other Ohio/OHA Member Hospitals
SRMC Sepsis Mortality: Sepsis not Present On Admission

**SEPSIS NOT POA MORTALITY RATE 2013Q4-2014Q3**

Northeast OH Collaborative mean is 36.82

Lower is better, 31.96 is the statewide mean

Statewide improvement target is 22.37

19 hospitals have a rate of 0

- Salem Regional Medical Center
- Other Ohio/OHA Member Hospitals
### OHA Sepsis Initiative 2015

#### Sept 2015 Data:
- SRMC = 21 Cases
- Collaborative = 300 Cases

<table>
<thead>
<tr>
<th></th>
<th>SRMC</th>
<th>Collaborative Sept 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mortality Rate</strong></td>
<td>0/0/5/4</td>
<td>2.7</td>
</tr>
<tr>
<td><strong>Initial Lactate Level Collection</strong></td>
<td>29/50/25/35</td>
<td>60</td>
</tr>
<tr>
<td><strong>Blood Culture Collection</strong></td>
<td>95/83/71/83</td>
<td>88</td>
</tr>
<tr>
<td><strong>Broad Spectrum Antibiotic within 3 hours</strong></td>
<td>86/100/58/57</td>
<td>86</td>
</tr>
<tr>
<td><strong>Crystalloid 30 ml/kg for Septic Shock</strong></td>
<td>0/N/A/0/0</td>
<td>35</td>
</tr>
</tbody>
</table>

**SRMC Action: SEPSIS SHOCK CLOCK CHECKLIST**

To facilitate timely recognition of Severe Sepsis and implementation of the Sepsis Bundle

**Legend**
- Same/better than project wide
- Within 5 min/% of project wide
- > 5 min/% worse than project wide
**SRMC Sepsis Initiatives: Procalcitonin**

**Table 5: Sepsis Initial Antibiotic Use Algorithm**

<table>
<thead>
<tr>
<th>PCT Value</th>
<th>Antibiotic Use Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 0.25 ug/L</td>
<td>Strongly Discouraged</td>
</tr>
<tr>
<td>0.25 - 0.49 ug/L</td>
<td>Discouraged</td>
</tr>
<tr>
<td>≥ 0.5 – &lt; 1.0 ug/L</td>
<td>Encouraged</td>
</tr>
<tr>
<td>≥ 1.0 ug/L</td>
<td>Strongly Encouraged</td>
</tr>
</tbody>
</table>

- Consider alternative diagnosis
- Repeat PCT in 6 – 12 hours if antibiotics not begun
- If clinically unstable, immunosuppressed or high risk, consider overruling

Repeat daily for 3 days to consider early antibiotic discontinuation

See Algorithm in Table

**Table 6: Sepsis Follow Up PCT Antibiotic Use Algorithm**

<table>
<thead>
<tr>
<th>PCT Value</th>
<th>Antibiotic Use Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 0.25 ug/L or drop by &gt; 80%</td>
<td>Cessation strongly encouraged</td>
</tr>
<tr>
<td>0.25 - 0.49 ug/L</td>
<td>Cessation encouraged</td>
</tr>
<tr>
<td>≥ 0.5 ug/L and decreased by &gt; 80%</td>
<td>Cessation discouraged</td>
</tr>
<tr>
<td>≥ 0.5 ug/L and rising or not decreasing</td>
<td>Cessation strongly discouraged</td>
</tr>
</tbody>
</table>

- A PCT value which is rising or not declining at least 10% per day is a poor prognostic indicator and suggests infection is not controlled
- Consider expanding antibiotic coverage or further diagnostic evaluation

**Procalcitonin**

- Availability added
- Education provided
Systemic Inflammatory Response (SIRS) due to Infection:

SIRS includes at least 2 of the following:
- **Fever** (T > 101°F) or **Hypothermia** (T < 96.8°F)
- **WBC** > 12,000 or < 4,000 or bands > 10%
- **Tachycardia** (HR > 90) not due to another condition
- **Tachypnea** (RR > 20) not due to another condition

Other diagnostic criteria:
- **Lactate** > 2
- **Procalcitonin** elevated
- **CRP** elevated
- **Altered Mental Status**
- **Mottling** of skin
- **Hypotension**

SEPSIS: A deadly toll

Kills 1 in 6 of those it strikes

Affects more Hospital Patients than Any other diagnosis

Half of all in-hospital deaths involve it

Kills more people than AIDS, 10 breast cancer & prostate cancer COMBINED

SEP-1
First National Core Measure on Sepsis

Begins with October 2015 Discharges
TO BE COMPLETED WITHIN 3 HOURS OF TIME OF PRESENTATION

- **LACTATE**: Measure lactate level
- **BLOOD CULTURES**: Obtain blood cultures prior to administration of antibiotics
- **ANTIBIOTICS**: Administer broad spectrum antibiotics
- **FLUIDS**: Administer **30ml/kg crystalloid** for hypotension or

Begins with October 2015 discharges
TO BE COMPLETED WITHIN 6 HOURS OF TIME OF PRESENTATION:

• **VASOPRESSORS:** For hypotension that does not respond to initial fluid resuscitation to maintain MAP ≥ 65mmHg

• **DOCUMENT REASSESSMENT OF VOLUME STATUS:** If persistent hypotension after initial fluid administration (MAP < 65 mm Hg) or if initial lactate was ≥4 mmol/L, **re-assess volume status and tissue perfusion and document** findings by:
  
  – Repeat Physical Exam – 5 elements (*next slide*)
  
  Or 2 of the following:
  – CVP goal 8-12 mm Hg
  – ScvO2 > 65/70%
  – Bedside Cardiovascular Ultrasound
  – Passive Leg Raise 10% increase in pulse pressure

• **LACTATE FOLLOW-UP:** Re-measure if initial finding was elevated

Begins with October 2015 Discharges
Reassessment of Volume Status and Tissue Perfusion:

Repeat focused exam (after initial fluid resuscitation) by licensed independent practitioner including:

- Vital Signs
- Cardiopulmonary exam
- Capillary refill
- Pulse
- Skin findings
## SRMC Sepsis Initiatives: Initial Interventions

<table>
<thead>
<tr>
<th>Date</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec. 2014</td>
<td>Mandatory RN &amp; LPN Sepsis education with CE</td>
</tr>
<tr>
<td>Sep. 2014</td>
<td>Post-acute group education and sample screening tools provided</td>
</tr>
<tr>
<td>Dec. 2015</td>
<td>Electronic H&amp;P template revised to include 6 hour reassessment note</td>
</tr>
<tr>
<td>Jan. 2016</td>
<td>Electronic sepsis order form implemented and Empiric Antibiotic Selection Guide revised</td>
</tr>
<tr>
<td>Mar. 2016</td>
<td>Initiated compliance letters to physicians regarding core measure variation</td>
</tr>
<tr>
<td>Aug. 2016</td>
<td>In response to changes in Sepsis data abstraction requirements, memo sent to physicians to advise documentation of skin color as part of 6 hour reassessment</td>
</tr>
<tr>
<td>Date</td>
<td>Action</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Apr. 2016</td>
<td>Hospitalist presented Sepsis Early Recognition &amp; Treatment inservice to Department of Medicine</td>
</tr>
<tr>
<td>May 2016</td>
<td>Medical Staff approved Lactic Acid &gt; 2 as Panic Value (previous panic value = 4)</td>
</tr>
<tr>
<td>Jun. 2016</td>
<td>Positive feedback letters to physicians and nurses completing Sepsis Shock Clock Checklist and meeting all core measure elements</td>
</tr>
<tr>
<td>Sep. 2016</td>
<td>Reviewed Rapid Response cases related to sepsis and presented findings to Critical Care and Case &amp; Procedure (M&amp;M) Committees</td>
</tr>
<tr>
<td>Nov. 2016</td>
<td>SRMC partnered with Post-Acute Workgroup to form a Post-Acute Sepsis Task Force to work on decreasing readmissions to acute care and sepsis mortality</td>
</tr>
</tbody>
</table>
## Sepsis: OHA Sepsis Initiative

### Individual measure results for the Sepsis 3-Hour Bundle

<table>
<thead>
<tr>
<th>Measure</th>
<th>2016</th>
<th>2015</th>
<th>OHA Sep 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sep</td>
<td>Aug</td>
<td>Jul</td>
</tr>
<tr>
<td>Initial Lactate Level Collection</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Blood Culture Collection</td>
<td>86</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Broad Spectrum Antibiotic w/in 3 hours</td>
<td>100</td>
<td>100</td>
<td>88</td>
</tr>
<tr>
<td>Crystalloid 30 ml/kg for Septic Shock</td>
<td>100</td>
<td>89</td>
<td>88</td>
</tr>
</tbody>
</table>

- **Green**: Same or better than project wide
- **Yellow**: Within 5 percent of project wide
- **Red**: > 5 percent worse than project wide

Data Reviewed at the Sept. 2016 General Medical Staff Meeting
# Sepsis: Core Measure

## Composite Score

<table>
<thead>
<tr>
<th>% of patients for whom all measures met</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2016</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Nov</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>86</td>
</tr>
<tr>
<td>1/7</td>
</tr>
</tbody>
</table>

1 failed repeat lactic acid > 6 hrs
1 failed repeat lactic acid > 6 hrs
1 failed antibiotic before culture
1 failed fluid volume
1 failed vasopressor
1 failed fluid volume
1 failed focus exam
1 failed repeat lactate
3 no repeat lactate
1 failed lactate > 6 hrs
1 no repeat lactate
2 failed repeat lactate > 6 hrs
1 lactate not done
2 failed repeat lactate > 6 hrs

## Sepsis Bundle Measures

### Complete within 3 Hours

- Lactate
- Blood Cultures before antibiotics
- Broad spectrum antibiotics
- Fluids 30 ml/kg if hypotension or elevated lactate
- Vasopressors if persistent low BP

### Complete within 6 Hours

- Reassess volume/perfusion w/in 6 hours and document
- Lactate remeasured w/in 6 hours if initial level > 2
Sepsis: Core Measure

Composite Score: Jan. – Nov. 2016
% of Patients All Measures Met

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>April</th>
<th>May</th>
<th>Jun</th>
<th>July</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series1</td>
<td>25</td>
<td>38</td>
<td>100</td>
<td>50</td>
<td>50</td>
<td>100</td>
<td>63</td>
<td>78</td>
<td>88</td>
<td>88</td>
<td>86</td>
</tr>
</tbody>
</table>
**Sepsis: Next Steps**

- Meet Quarterly with the Post-Acute Sepsis Taskforce
- Build Sepsis protocol/orders in new EMR system to include empiric antibiotic treatment by suspected site of infection
- Implement a “reflex order” to repeat all Lactic acid results >2 in new EMR
- Revise the Sepsis Shock Clock Checklist to include use of qSOFA as a patient placement tool (ICU or “Step Down”)
- Focus on capturing fluids amount administered prior to transfers
- Explore use of SEPSIS alerts/messaging system for Physicians with new EMR or other vendor
- Explore continuous infusion beta lactam therapy*
- Provide sepsis education to area EMTs

* Ref. : Roberts JA et al. Am J Respir Crit Care Med 2016 Sept 15
Sepsis: Summary/Goals

- Meet OHA Goal of Reducing Sepsis Mortality by 30% (est. 34,000 patients) in Ohio
- Achieve High Reliability
  - SRMC defines High Reliability as sustained performance above project wide or at goal for ≥ 24 months
- Ultimate Goal: Save Lives at SRMC
  - approximately 550 patients a year require care for sepsis at SRMC, with approximately 140 requiring emergent care for severe sepsis/septic shock
QUESTIONS?
Early Identification
Tools for Success

- Minimal information required to get patient in the system – name and date of birth
- Patients are immediately roomed
- Sepsis screening by nurses – when sepsis is suspected nurses have physician see patient even quicker.
Early Identification

Short Door to Physician time
door to doc average < 10 min

Physicians have a Fever/Sepsis order set to assist in ordering.
Treat And Transfer

Tools for Success

Lactic Acid

Change to run lactic acid in-house

Full range of Antibiotics options available in the ED

One call for transfers
Cleveland Clinic

Every life deserves world class care.