ICU - Sepsis, CAUTI and CLABSI
Less May Be Better

HRET HIIN ICU Virtual Event
April 11, 2017
Emily Koebnick, Program Manager, HRET

WELCOME AND INTRODUCTIONS
<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Details</th>
<th>Presenter(s)</th>
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</table>
| 11:00 a.m.  – 11:10 a.m. | Welcome                             |                                                                 | Emily Koebnick  
Program Manager, HRET |
|              | Objectives                           | Identify strategies for the 6-hour septic shock bundle implementation.   |                                                  |
|              |                                     | Review handoff communication tools.                                     |                                                  |
|              |                                     | Discuss the evidence for invasive monitoring and could less be more.     |                                                  |
| 11:15 a.m.  – 11:25 a.m. | Sepsis and Septic Shock in the ICU  | Review the 6 hour bundle and what is new in the ICU.                    | Maryanne Whitney  
Steve Tremain  
Improvement Advisors, Cynosure Health |
|              | Communication and Treatment          | How do you determine where to start?                                   |                                                  |
| 11:25 a.m.  – 11:35 a.m. | Hospital Story                       | Understand how a HIIN hospital decreased CAUTI in and catheter utilization in the ICU. | Taylor Tenbrink  
RN, ICU  
Wellstar Spaulding Regional Hospital, Griffin, GA |
## Agenda for Today

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Description</th>
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<tbody>
<tr>
<td>11:35 a.m. – 11:45 a.m.</td>
<td>Challenge in the ICU: Monitoring Without Central Lines and Foleys?</td>
<td>Maryanne Whitney, Steve Tremain, Improvement Advisors, Cynosure Health</td>
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<td>Monitoring patients in the ICU with invasive devices has become automatic. Is this the best for our patients? Less may be better.</td>
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<tr>
<td>11:45 a.m. – 11:55 a.m.</td>
<td>Ask a Fellow</td>
<td>Teams from the following hospitals:</td>
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<td>Now’s the time to tap into the expertise of your fellows. Learn how they move their project forward, overcome barriers and maintain success.</td>
<td>- Good Samaritan Hospital, Vincennes, IN</td>
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<td>- Memorial Hospital of Sweetwater County - Rock Springs, WY</td>
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<td>- Charlotte Hungerford Hospital, Torrington, CT</td>
</tr>
<tr>
<td>11:55 a.m. – 12:00 p.m.</td>
<td>Bring it Home</td>
<td>Emily Koebnick, MPH, MPA, Program Manager, HRET</td>
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</table>
AHA/HRET Hospital Improvement Innovation Network (HIIN)
ICU: Sepsis, CAUTI, and CLABSI-Less May Be Better
Online Live Webinar
April 11, 2017

The planners and faculty of the HRET HIIN “ICU: Sepsis, CAUTI, and CLABSI-Less May Be Better” webinar have indicated no relevant financial relationships to disclose in regard to the content of this presentation.

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical education through the joint providership of the American Board of Quality Assurance and Utilization Review Physicians, Inc. (ABQAURP) and Health Research & Education Trust (HRET). ABQAURP is accredited by the ACCME to provide continuing medical education for physicians.

The American Board of Quality Assurance and Utilization Review Physicians, Inc. designates this live activity for a maximum of 1.0 AMA PRA Category 1 Credits™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

ABQAURP is an approved to provide continuing education for nurses. This activity is designated for 1.0 Nursing Contact Hours through the Florida Board of Nursing, Provider # 50-94.
Despite Challenges - Treatment Unchanged
3 Hour Bundle

• 3 hour bundle:
  – Blood cultures
  – Lactate
  – Antibiotics
  – Fluids for lactate > 4 and/or hypotension
    • 30m/kg crystalloids
  – Repeat lactate in four hours if greater than 2mmol/L
Truth About Inpatient Sepsis

• Highest mortality
  – Sepsis diagnosed on the floors
  – Lactate >2 mmol/l but < 4 mmol/l

• Bundle compliance
  – Worst on the floor

• Hospitals with RRT/sepsis alert as resource saves most lives
Can qSOFA Help?

• Score of 2 or greater is predictive for poor outcome and increased length of stay
  – Decreased blood pressure <110mmHg (SBP)
  – Increased respiratory rate > 22/min
  – Change in LOC GCS <15

• Level of care determinant

• Inpatient screening
• Apply vasopressors
  – For hypotension that does not respond to initial fluid resuscitation - to maintain a mean arterial pressure (MAP) ≥65mmHg - Norepinephrine

• Re-assess volume status and tissue perfusion and document findings
  – In the event of persistent hypotension after initial fluid administration (MAP < 65 mm Hg) or if initial lactate was ≥4 mmol/L

• Re-measure lactate if initial lactate elevated
  – Guiding resuscitation to normalize lactate in patients with elevated lactate levels as a marker of tissue hypoperfusion
Updates For 6 Hour Bundle

- Requiring measurement of CVP and ScvO2 in all patients with lactate >4 mmol/L and/or persistent hypotension after initial fluid challenge and timely antibiotics is NOT supported by available evidence.

- *Dynamic measures vs. static measures are now recommended to predict fluid responsiveness where available.*

- Frequent assessment of the patients’ volume status is crucial throughout the resuscitation period.

Therefore
EITHER:

Repeat focused exam (after initial fluid resuscitation) a by licensed independent practitioner including vital signs, cardiopulmonary, capillary refill, pulse and skin findings

OR TWO OF THE FOLLOWING:

- Measure CVP -static
- Measure ScVO2 -static
- Bedside cardiovascular ultrasound-dynamic IVC
- Dynamic assessment of fluid responsiveness with passive leg raise or fluid challenge -dynamic
Where Do You Begin?
# Ideas and Tools for Handoff

## Severe Sepsis / Septic Shock Clinical Pathway

Please complete the following:
- **Time severe sepsis criteria met**: Date: ____________ Time: ____________
- **Time septic shock criteria met**: (Time Zero); Date: ____________ Time: ____________

1. Severe sepsis criteria: known or suspected infection plus 2 or more SIRS plus new organ dysfunction (see screening tool for organ dysfunction criteria)
2. Septic shock criteria: severe sepsis plus SBP less than 90mmHg or 40mmHg decrease from baseline after initial 30 min kg fluid bolus or requires vasopressors or initial lactic acid is greater than or equal to 4 mEq/L

<table>
<thead>
<tr>
<th>Patient with severe sepsis—Implement interventions below within 1 hour:</th>
<th>Decision Grid</th>
<th>Date _________ to 0-6 Hours</th>
<th>Date _________ to 6-24 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Labs: serum lactate, additional labs as ordered by physician</td>
<td>Yes</td>
<td>No</td>
<td>Patien...</td>
</tr>
<tr>
<td>Serum lactate drawn</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Blood Cultures X 2</td>
<td>Time 1:</td>
<td></td>
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<tr>
<td>Establish IV access</td>
<td>Time 2:</td>
<td></td>
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<tr>
<td>Broad Spectrum Antibiotic—start after obtain blood culture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time antibiotic hung</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Source Control</td>
<td></td>
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</table>

- If lactic acid greater than or equal to 4 mEq/L, or SBP less than 90mmHg or 40mmHg less than baseline or MAP less than 65mmHg adminster:
  - 30mKg fluid bolus over 1 hour or as fast as possible, unless knows EF is less than 32% or active treatment for heart failure (if present, consult physician for speed of bolus)
  - Time 30mKg fluid bolus infused Post fluid bolus: Repeat vital signs including temperature, obtain 2 SBP less than 90mmHg, consecutively within the hour to confirm shock

| Proceed to decision grid. | | |

### Septic Shock Bundle

- Apply vasopressor immediately for hypotension after fluid bolus
- Re-measure lactic acid if initial lactic acid is greater than 2mEq/L within 4 hours of meeting severe sepsis criteria
- At next planned draw time
- In the event of persistent hypotension after initial fluid administration (MAP less than 65mmHg) or if initial lactic acid greater than or equal to 4mEq/L reassess volume status and tissue perfusion and document finding according to below: Between hours 3-4 (at a minimum)

- Repeat focused exam including vital signs, cardiovascular, capillary refill, pulse and skin findings by physician or APP
- OR two of the following
  - Measure CVP
  - Measure ScvO2

- Bedside cardiovascular ultrasound
- Stroke volume optimization with passive leg ratio or fluid challenge (500 ml over 15 min)
- Volume replete
- Needs more volume

### Additional 24-72 Hours

- Re-assess need for broad spectrum antibiotics based on culture reports
- Re-evaluate need for invasive lines and tubes
- Resume screening after 72 hours

Available here: [www.survivingsepsis.org/SiteCollectionDocuments/Protocols-Sepsis-Screening-StJoseph.pdf](http://www.survivingsepsis.org/SiteCollectionDocuments/Protocols-Sepsis-Screening-StJoseph.pdf)
Ideas and Tools for Handoff

IMCP Severe Sepsis/Septic Shock Bundle Handoff/Checklist - 2014

Available here:
www.nyspfp.org/Materials/2016_0525_Sepsis_IntermountainHandoff.pdf
Ideas and Tools for Handoff

ICU CAUTI Reduction

WellStar Spalding Regional Hospital
• Eliminating patient harm is our ongoing goal for this hospital.
• Hospital-acquired infections are included in the CMS value-based purchasing program.
• CAUTI rates in the ICU were too high.
**Purpose:** To eliminate harm by decreasing our catheter-associated urinary tract infections (CAUTIs) in our Intensive Care Unit.

**Goal:** To decrease the number of CAUTIs and our CAUTI rate by 25% for FY2015 when compared to FY2014 in our ICU patients with indwelling Foley catheters.
Gap Analysis

- **Tools and Materials**
  - Lack of bathing supplies – plastic bags, washcloths

- **Process/Methods**
  - Complicated bathing process
  - Confusing policy verbiage
  - Unclear expectations
  - No guidelines for catheter reinsertion

- **People**
  - Nursing Culture/Expectations
  - Physician culture/expectations
  - Knowledge Deficit

- **Equipment**
  - No equipment to assess for retention
  - Double layer insertion tray
  - No urimeters

- **Complicated bathing process, unclear policy verbiage, knowledge deficit and nurse/physician belief that catheter necessary to treat critically ill patients resulted in lack of compliance with eliminating unnecessary catheters which resulted in continued higher than average CaUTI rates.**
## Action Plan

<table>
<thead>
<tr>
<th>Structure</th>
<th>Process</th>
<th>Outcomes</th>
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<tbody>
<tr>
<td>• Culture of Safety</td>
<td>• Appropriate indications for ICU</td>
<td>• # of CAUTIs</td>
</tr>
<tr>
<td>• Bladder scanner</td>
<td>• Daily Assessment of need</td>
<td>• # of ICU Days</td>
</tr>
<tr>
<td>• Appropriate supplies (chlorhexidine wipes, updated ICU catheter tray)</td>
<td>• Gemba Rounds</td>
<td>• CAUTI Rate</td>
</tr>
<tr>
<td>• Nurse driven ICU removal protocol</td>
<td>• ICU catheter days</td>
<td>• SIR</td>
</tr>
<tr>
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<td>• ICUs in &gt; 48 hrs</td>
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Changing the checklist

**Complicated nurse driven protocol**

- **FOLEY REMOVAL CHECKLIST:**
  - Remove if patient meets ALL criteria
- **URINARY CATHETER REMOVAL CHECKLIST:**
  - No prolonged effect of epidural anesthesia
  - Patient can ambulate safely per falls risk assessment and/or safely use BSC, bedpan, condom cath or Attends pads
  - Patient is not end stage palliative care *(per MD documentation)*
  - Catheter was not placed for urinary retention / obstruction *(check chart AND order)*
  - No recent urological surgery within the last 3 months OR currently under care of Urologist
  - No evidence for gross hematuria
  - Patient not admitted with chronic indwelling urinary catheter
  - No Stage 3 or 4 pressure ulcer located in the coccyx/hip region
    - *(not rash or denuded skin)*
  - Patient’s urinary output will be monitored per unit routine & no need for accurate measurement *(i.e. ACUTE CVA, ACUTE MI, ACUTE Dialysis, Sepsis)*
  - Patient is not receiving large volume infusions *(bolus, high rate fluids)* or diuretics *(high dose po, IV)*
  - **2.04.01 If all criteria for removal are met,** The nurse will remove the indwelling urinary catheter without a physician order unless the physician has written an order to maintain the indwelling urinary catheter in situ. Physician’s order needs to document reasons for leaving catheter in place. *(enter DC order)*

**Simplified nurse driven protocol updated to the CDC guidelines**

- Appropriate Indications for an indwelling urinary catheter are:
  - Placed by urology service
  - To relieve acute urinary retention including obstruction and neurogenic bladder: The patient is unable to pass urine because of an enlarged prostate, blood clots, or an edematous scrotum/penis, or is unable to empty the bladder because of neurologic disease/medication effect
  - To obtain highly accurate measurements of urinary output in critically ill patients requiring hourly measurement
  - To continue treatment in patients with long-term catheter management
  - Incontinence with Stage 3 or 4 Pressure ulcer to the trunk
  - Hospice/comfort care or palliative care, per patient’s request
  - Required strict immobilization for trauma or surgery *(fracture, traction)*
  - Short perioperative use in selected surgeries and procedures (less than 24 hours) and for urologic studies or surgery on contiguous structures.
The Results

ICU CAUTI Count and Catheter Utilization
7/2014 - 12/2016

<table>
<thead>
<tr>
<th></th>
<th>FY2015</th>
<th>FY2016</th>
<th>FY2017 YTD</th>
</tr>
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<tbody>
<tr>
<td>CAUTIs-ICU Count</td>
<td>11</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>CAUTI-ICU SIR</td>
<td>3.033</td>
<td>1.302</td>
<td>1.816</td>
</tr>
<tr>
<td>ICU days</td>
<td>3022</td>
<td>2560</td>
<td>1378</td>
</tr>
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</table>
Sharing Results

And Celebrating Successes!
CHALLENGE IN THE ICU: MONITORING WITHOUT CENTRAL LINES & FOLEYS?
Polling Question

- What percentage of patients in your ICU have a central line upon admission to the department?
  - >90%
  - 70-90%
  - 50-70%
  - 30-50%
  - <30%
Polling Question

• What percentage of patients arrive with a foley catheter to your ICU?
  – >90%
  – 70-90%
  – 50-70%
  – 30-50%
  – <30%
Are Central Lines and Foleys Automatic?
Tough Questions

• If central lines and foley catheters are placed in the ED do we think about removing them?
• Who do central lines and foley catheters help more? Patients? Clinicians? Nurses?
• Can we monitor and care for patients without central lines and foley catheters? And/or do they need central lines and foley catheters as long?
Can We Do Without?

Sometimes “YES” is the answer

• Sepsis without a central line
  – Physical examination
  – Passive leg raise – no central line
  – Lung and heart assessment - cardiac ultrasound - IVC

• Options for output and fluid status evaluation?
  – “GET UP”
  – Non invasive measurements
ASK A FELLOW
Who’s On the Line?

Good Samaritan Hospital
• Vincennes, IN
• 232 beds

Charlotte Hungerford Hospital
• Torrington, CT
• 109 beds

Memorial Hospital of Sweetwater County
• Rock Springs, WY
• 99 beds
Emily Koebnick, Program Manager, HRET

BRING IT HOME
ICU Resources

Sepsis Change Package

Coming soon
• CAUTI Change Package
• CLABSI Change Package: 2017 updates

CLABSI Change Package

Sepsis Data Collection Fact Sheets

Postoperative Sepsis Rate (HRR-SEPIS-3a)

<table>
<thead>
<tr>
<th>Measure Definition</th>
<th>Nominator</th>
<th>Denominator</th>
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<tr>
<td>Postoperative sepsis cases (secondary diagnosis) per 1,000 elective surgical discharges for patients ages 18 and older.</td>
<td>Discharges among cases meeting the inclusion and exclusion rules for the denominator, with any AHRQ-designated secondary ICD-9-CM or ICD-10 diagnosis codes for sepsis.</td>
<td>Effective surgical discharges, for patients ages 18 years and older, with any-listed ICD-9-CM or ICD-10 procedure codes for an operating room procedure.</td>
</tr>
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<td></td>
<td>• Discharges among cases meeting the inclusion and exclusion rules for the denominator, with any AHRQ-designated secondary ICD-9-CM or ICD-10 diagnosis codes for sepsis.</td>
<td>• Effective surgical discharges, for patients ages ≥18 years and older, with any-listed ICD-9-CM or ICD-10 procedure codes for an operating room procedure.</td>
</tr>
<tr>
<td></td>
<td>• See AHRQ-TDS-347 for sepsis diagnosis codes, which include codes for septic shock.</td>
<td>• Effective surgical discharges are defined by specific DRG or MS-DRG codes with admission type recorded as elective.</td>
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Numerator Exclusions (refer to the AHRQ specifica-
|                                                        | • Cases with a primary diagnosis of sepsis, pressure ulcer or infection. | • Effective surgical discharges are defined by specific DRG or MS-DRG codes with admission type recorded as elective. |
|                                                        | • Cases with sepsis present on admission. | • Effective surgical discharges are defined by specific DRG or MS-DRG codes with admission type recorded as elective. |
|                                                        | • Cases with a secondary diagnosis of infection present on admission (only if they also have a secondary diagnosis of sepsis). | • Effective surgical discharges are defined by specific DRG or MS-DRG codes with admission type recorded as elective. |
|                                                        | • Immunocompromised patients. | • Effective surgical discharges are defined by specific DRG or MS-DRG codes with admission type recorded as elective. |
|                                                        | • Patients with cancer. | • Effective surgical discharges are defined by specific DRG or MS-DRG codes with admission type recorded as elective. |
|                                                        | • Patients discharged from D8 (pregnancy, childbirth and puerperium). | • Effective surgical discharges are defined by specific DRG or MS-DRG codes with admission type recorded as elective. |
|                                                        | • Cases with stays fewer than four days. | • Effective surgical discharges are defined by specific DRG or MS-DRG codes with admission type recorded as elective. |

Data Sources
• Administrative Claims Data

Tools
• Please share useful tools on the Sepsis UserServ: http://www.hret-
bli.org/research/knows.shtml.
Continuing Education Credits

• Launch the evaluation link in the bottom left hand corner of your screen.

• If viewing as a group, each viewer will need to submit separately through the CE link.
Thank You!

Find more information on our website: www.hret-hiin.org

Questions or Comments: HIIN@aha.org