

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



Webinar Platform Quick Reference

Mute computer audio →

The screenshot shows a webinar interface for 'HRET HIIN VIRTUAL EVENT'. The main content area displays 'Today's presentation'. On the right, there is a 'Dial In Information' panel with phone numbers and a 'Chat (Everyone)' panel. At the bottom, there are three panels: 'Links', 'Files', and 'Upcoming Events'. The 'Files' panel shows a file named 'Data (Slides)' with a size of 9 MB. The 'Upcoming Events' panel lists several events with dates.

Today's presentation

Chat with participants

Download slides/resources

Register for upcoming events

Name	Size
Data (Slides)	9 MB

Event	Date
Sepsis	11/29
Fellowship	11/30
Falls	12/1
CAUTI	12/6
Fellowship (Repeat)	12/8

Links

- Encyclopedia of Measures
- HRET HIIN Website
- HRET HIIN Upcoming Events
- More information about HIIN
- NHSN Instructions



Agenda for Today

11:00 a.m. – 11:10 a.m.	Welcome	
	<p>Objectives</p> <ol style="list-style-type: none"> 1. Identify strategies for the 6-hour septic shock bundle implementation. 2. Review handoff communication tools. 3. Discuss the evidence for invasive monitoring and could less be more. 	<p>Emily Koebnick Program Manager, HRET</p>
11:15 a.m. – 11:25 a.m.	Sepsis and Septic Shock in the ICU- Communication and Treatment	
	<p>Review the 6 hour bundle and what is new in the ICU. How do you determine where to start?</p>	<p>Maryanne Whitney Steve Tremain Improvement Advisors, Cynosure Health</p>
11:25 a.m. – 11:35 a.m.	Hospital Story	
	Understand how a HIIN hospital decreased CAUTI in and catheter utilization in the ICU.	<p>Taylor Tenbrink RN, ICU Wellstar Spaulding Regional Hospital, Griffin, GA</p>



Agenda for Today

11:35 a.m. – 11:45 a.m.	Challenge in the ICU: Monitoring Without Central Lines and Foleys?	
	Monitoring patients in the ICU with invasive devices has become automatic. Is this the best for our patients? Less may be better.	Maryanne Whitney Steve Tremain Improvement Advisors, Cynosure Health
11:45 a.m. – 11:55 a.m.	Ask a Fellow	
	Now's the time to tap into the expertise of your fellows. Learn how they move their project forward, overcome barriers and maintain success.	Teams from the following hospitals: <ul style="list-style-type: none"> • Good Samaritan Hospital, Vincennes, IN • Memorial Hospital of Sweetwater County - Rock Springs, WY • Charlotte Hungerford Hospital, Torrington, CT
11:55 a.m. – 12:00 p.m.	Bring it Home	
		Emily Koebnick, MPH, MPA Program Manager, HRET



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.



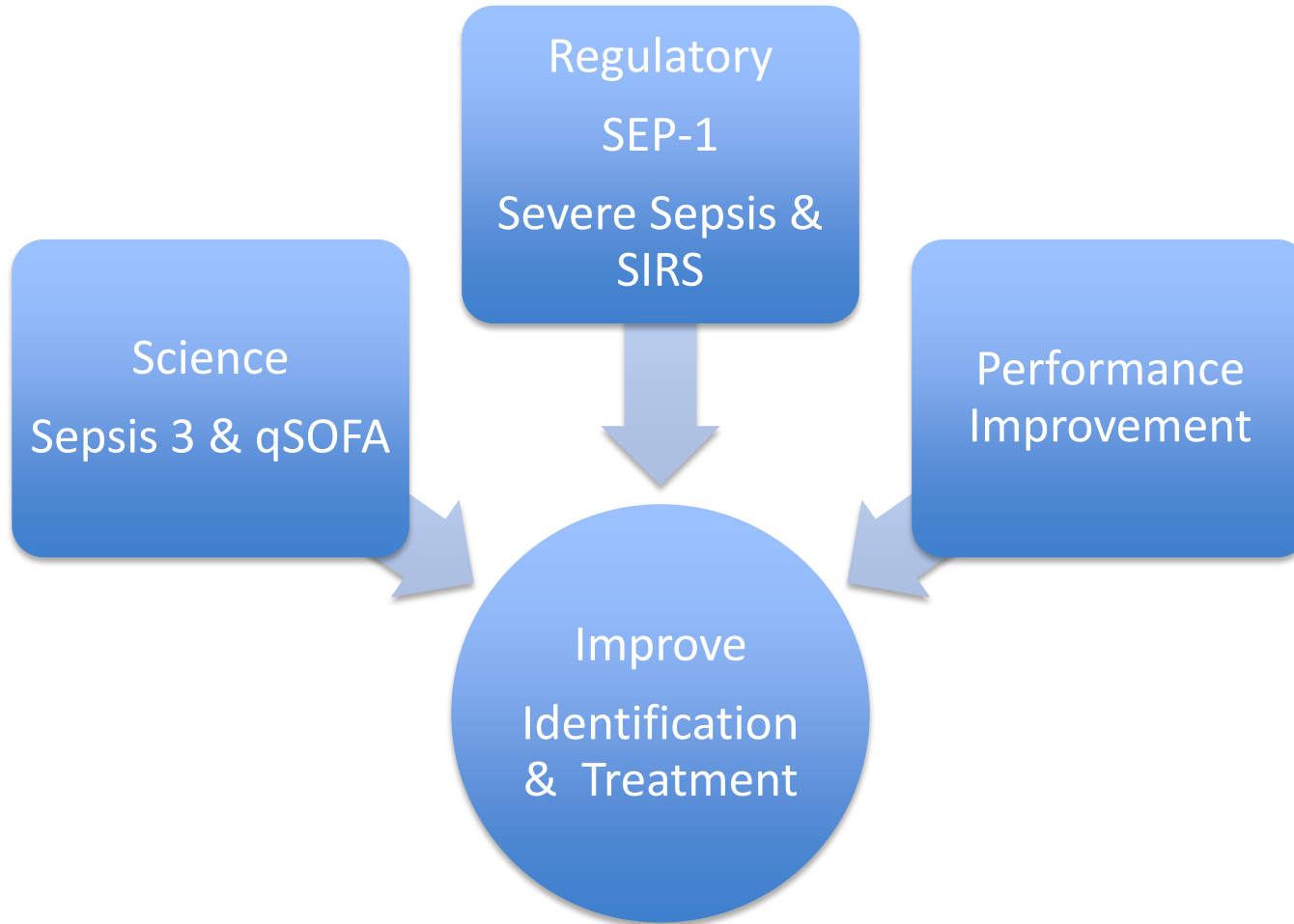
This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical education through the joint providership of the American Board of Quality Assurance and Utilization Review Physicians, Inc. (ABQAURP) and Health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

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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.



Sepsis Today



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 $<110\text{mmHg}$ (SBP)
 - Increased respiratory rate $> 22/\text{min}$
 - Change in LOC GCS <15
- Level of care determinant
- Inpatient screening



ICU Care for Sepsis



6 Hour Bundle

Persistent Hypotension or Lactate >4mmol/L

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



Re-assess Volume Status and Tissue Perfusion and Document Findings By....

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



St. Joseph Mercy Ann Arbor
St. Joseph Mercy Livingston

Severe Sepsis / Septic Shock Clinical Pathway

Room # _____ ICU admission Date: _____ Time: _____

Please complete the following:			
• Time severe sepsis criteria met ¹ : Date: _____ Time: _____		• Time septic shock criteria met ² : (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 ml/kg fluid bolus or requires vasopressors or initial lactic acid is greater than or equal to 4 mEq/L			
Patient with severe sepsis-Implement interventions below within 1 hour:	Decision Grid	Date _____ to _____ 0-6 Hours	Date _____ to _____ 6-24 Hours
<input type="checkbox"/> Initial Labs: serum lactic acid, additional labs as ordered by physician Time _____ Serum lactic acid drawn Yes No Blood Cultures X 2 Time 1: _____ Time 2: _____ <input type="checkbox"/> Establish IV access <input type="checkbox"/> Broad Spectrum Antibiotic-start after obtain blood culture Time _____ <input type="checkbox"/> Source Control 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 administer: <input type="checkbox"/> 30ml/kg fluid bolus over 1 hour or as fast as possible, unless know EF is less than 35% or active treatment for heart failure (if present, consult physician for speed of bolus) Time _____ 30ml/kg 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.	Yes No Patient with hypotension after initial 30 ml/kg fluid bolus and/or lactic acid greater than 4mEq/L If No, and initial lactic acid greater than 2mEq/L: Repeat lactic acid within 4 hour of meeting severe sepsis criteria <i>Continue screening</i> If Yes: Patient meets septic shock criteria <i>Continue to next column (6 hour septic shock bundle)</i> _____ Date/Time Septic shock criteria met (Time Zero)	Septic Shock Bundle _____ Time Apply vasopressor immediately for hypotension after fluid bolus _____ Actual Time 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 3-6 (at a minimum) _____ Time Repeat focused exam-including vital signs, cardiopulmonary, capillary refill, pulse and skin findings by physician or APP OR two of the following _____ Time Measure CVP _____ Time Measure ScvO2 _____ Time Bedside cardiovascular ultrasound _____ Time Stroke volume optimization with passive leg raise or fluid challenge (500 ml over 15 min) <input type="checkbox"/> Volume replete <input type="checkbox"/> Needs more volume	<input type="checkbox"/> Reassess for volume status/tissue perfusion at least every 4 hours <input type="checkbox"/> Consider additional vasopressors as necessary <input type="checkbox"/> Repeat lactic acid every 4 hours until normalized (less than or equal to 2mEq/L) <input type="checkbox"/> Ensure adequate source control Yes No Assess for risk factors for abdominal compartment syndrome (fluid resuscitation greater than 5 L in 24 hours or less) In patients with ARDS (P/F ratio less than 300): Yes No Patient on mechanical ventilator Yes No Is the tidal volume 6ml/kg of ideal body weight in the first 24 hours Yes No Are the static or plateau inspiratory pressures less than 30 cmH2O in the first 24 hours 24-72 Hours <input type="checkbox"/> Re-assess need for broad spectrum antibiotics based on culture reports <input type="checkbox"/> Re-evaluate need for invasive lines and tubes <input type="checkbox"/> Resume screening after 72 hours
Nurse _____			

Available here: www.survivingsepsis.org/SiteCollectionDocuments/Protocols-Sepsis-Screening-StJoseph.pdf



Ideas and Tools for Handoff

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

Patient Name: _____ ECN: _____ DOA ____/____/____

Time Zero (ED admits = time of arrival – Floor admits = time of admission to ICU or IMC)
 ← Enter Patients Height

← Enter "Time Zero" + 3 hours for ED patients **or** + 1 hour for other inpatient unit arrivals

Complete tasks within 3 or 1 hour from Time Zero	Severe Sepsis Resuscitation Bundle	
	Compliant?	Goal: to be done within a max. of 3 hours from "Time Zero" above or for non-ED patients within 1 hour from "Time Zero" above
	1. Measure serum lactate. (If ≥ 2, see #7 below)	
	2. Obtain blood cultures prior to antibiotic administration	
	3. Broad-spectrum antibiotic administration*: (see below)	Time started: _____
	4. Fluid bolus of 30 ml/kg PBW of crystalloid IV over 1 hour PRN MBP < 65 and/or Lactate ≥ 4 mmol/L (See height to fluid bolus conversion table)	

← Enter the above "Time Zero" + 6 hours

Complete tasks within 3 or 1 hour from Time Zero	Septic Shock Bundle	
	Compliant?	<ul style="list-style-type: none"> If low BP responds to fluid bolus permanently, continue to monitor and mark steps 5-6 "NA" If persistent hypotension after fluid bolus proceed to steps 5-7 If MBP is ≥ 65 but initial lactate is ≥ 4, mark step 5 "NA" and proceed to steps 6-7
	5. Administer Vasopressors (norepinephrine is preferred if not contraindicated)	
	6. Place central monitoring line and measure CVP and ScvO2 or use NICOM for further fluid resuscitation with goal of:	
	Central line: CVP ≥ 8 mmHg and ScvO2 ≥ 70% OR NICOM: ≤ 10% increase in SVI with PLR and CI ≥ 2.5 L/minute	
	7. If initial serum lactate is ≥ 2 repeat lactate within 6 hours (may be done before 6 hr.).	

← Enter the above "Time Zero" + 24 hours

Compliance Met within 24 hours	Maintenance Bundle	
	Compliant?	8. Stress-dose Steroids if on high dose or multiple vasopressors** (Hydrocortisone 50 mg q6 hours or 200 mg as continuous 24 hour infusion) (**High dose includes norepinephrine ≥ 0.3 mcg/kg/min or use of 2 or more vasopressors simultaneously)
	9. Mean glucose of 80-180 mg/dL by 24 hours checking glucose at least Q4 hours. (Exceptions for compliance will be given if initial Glucose is > 400 mg)	
	10. If mechanical ventilated, target Vt at 6 mL/kg PBW (range 4-7 mL/kg PBW)	

ENTER INTO EACH BLANK WHITE BOX ABOVE: "Y" = compliant, "N" = not compliant, or "NA" = not applicable

* Antibiotic Suggestions: (Use of antibiotic suggestions is not required to meet compliance criteria)

CAP: Ceftriaxone + azithromycin (preferred) or levofloxacin alone.
 HCAP: Zosyn (high dose) + levofloxacin + Vancomycin if MRSA risk
 Urosepsis: Ceftriaxone or If Pseudomonads suspected Zosyn or Cefepime
 Surg. Site: Cefazolin or Vancomycin In MRSA suspected
 Intra-abdominal: Levofloxacin + Flagyl or Zosyn or Ceftriaxone + Flagyl

This Form Is Not a Part of the Permanent Medical Record

7/28/2016

Available here:

www.nyspfp.org/Materials/2016_0525_Sepsis_IntermountainHandoff.pdf



Ideas and Tools for Handoff

Appendix VI in the HRET HIIN Sepsis Change Package: www.hret-hiin.org/Resources/sepsis/17/SEPSIS_ChangePackage_508.pdf





ICU CAUTI Reduction

WellStar Spalding Regional Hospital



Background

- 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.



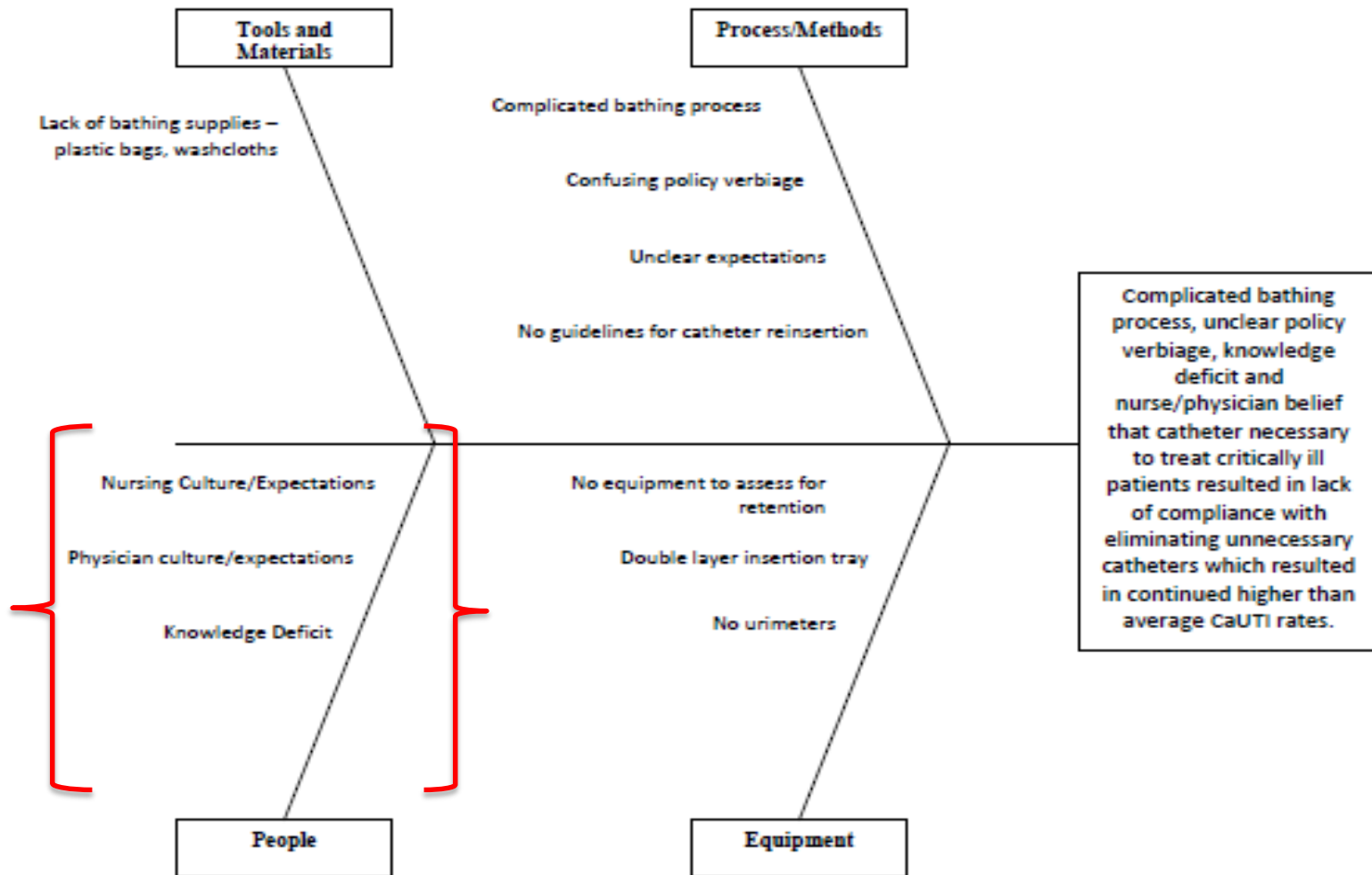
Plan

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



Action Plan

Structure	Process	Outcomes
<ul style="list-style-type: none">• Culture of Safety• Bladder scanner• Appropriate supplies (chlorhexidine wipes, updated ICU catheter tray)• Nurse driven ICU removal protocol	<ul style="list-style-type: none">• Appropriate indications for ICU• Daily Assessment of need• Gemba Rounds• ICU catheter days	<ul style="list-style-type: none">• # of CAUTIs• # of ICU Days• CAUTI Rate• SIR• ICUs in > 48 hrs



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*)

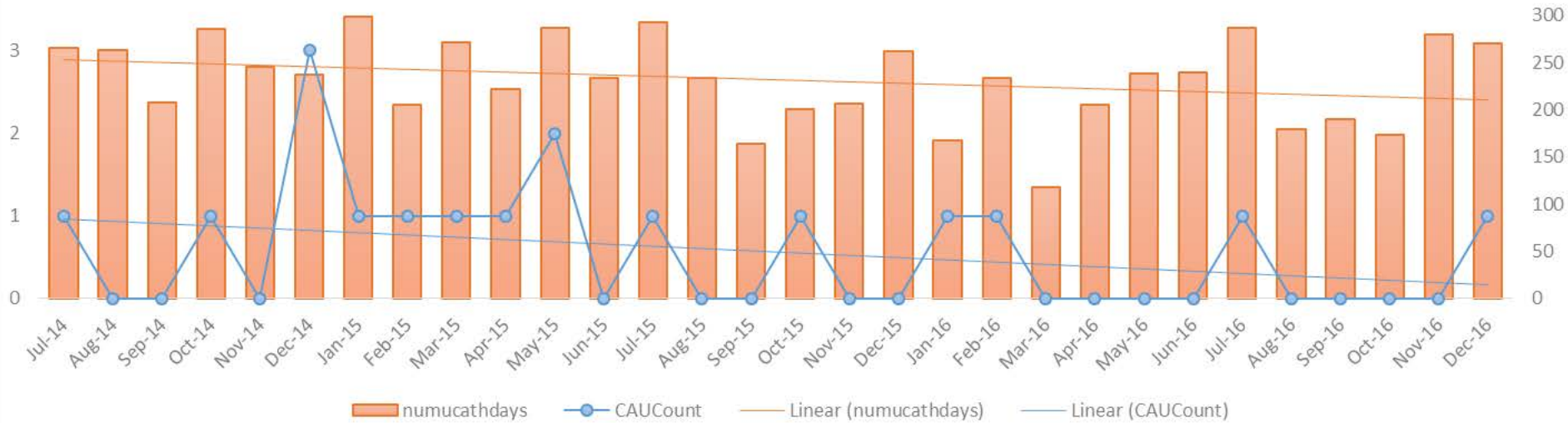
Simplified nurse driven protocol updated to the CDC guidelines

- 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.

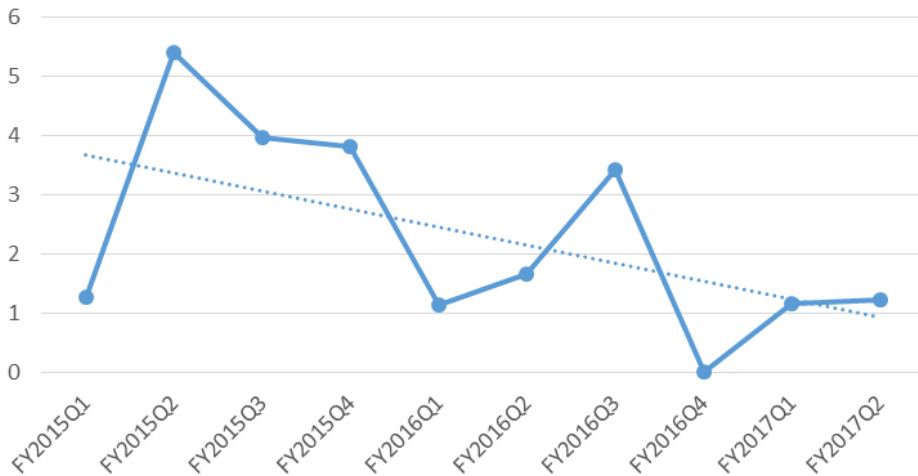


The Results

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

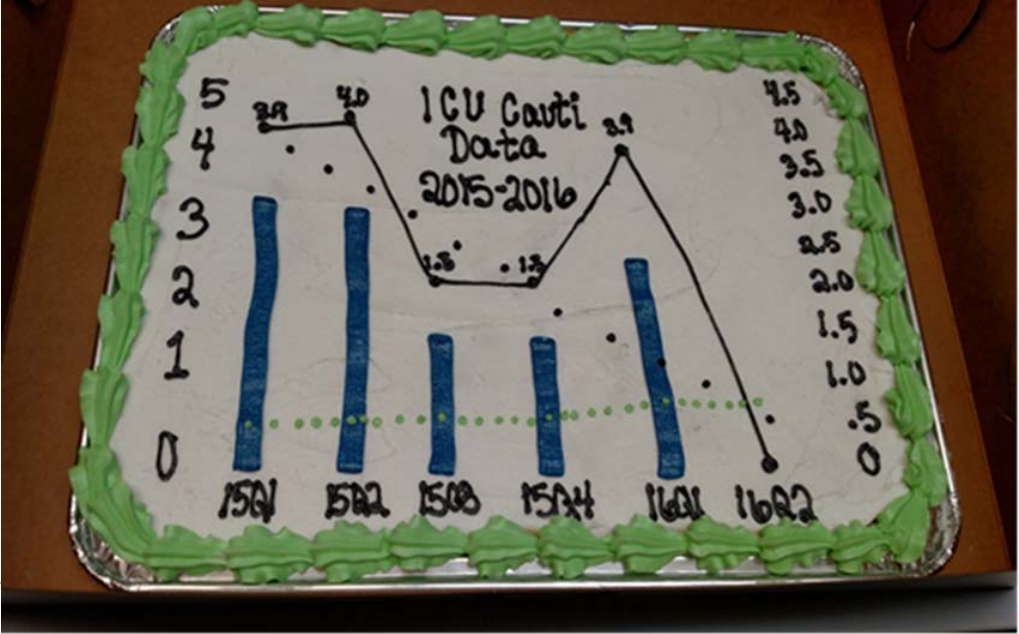
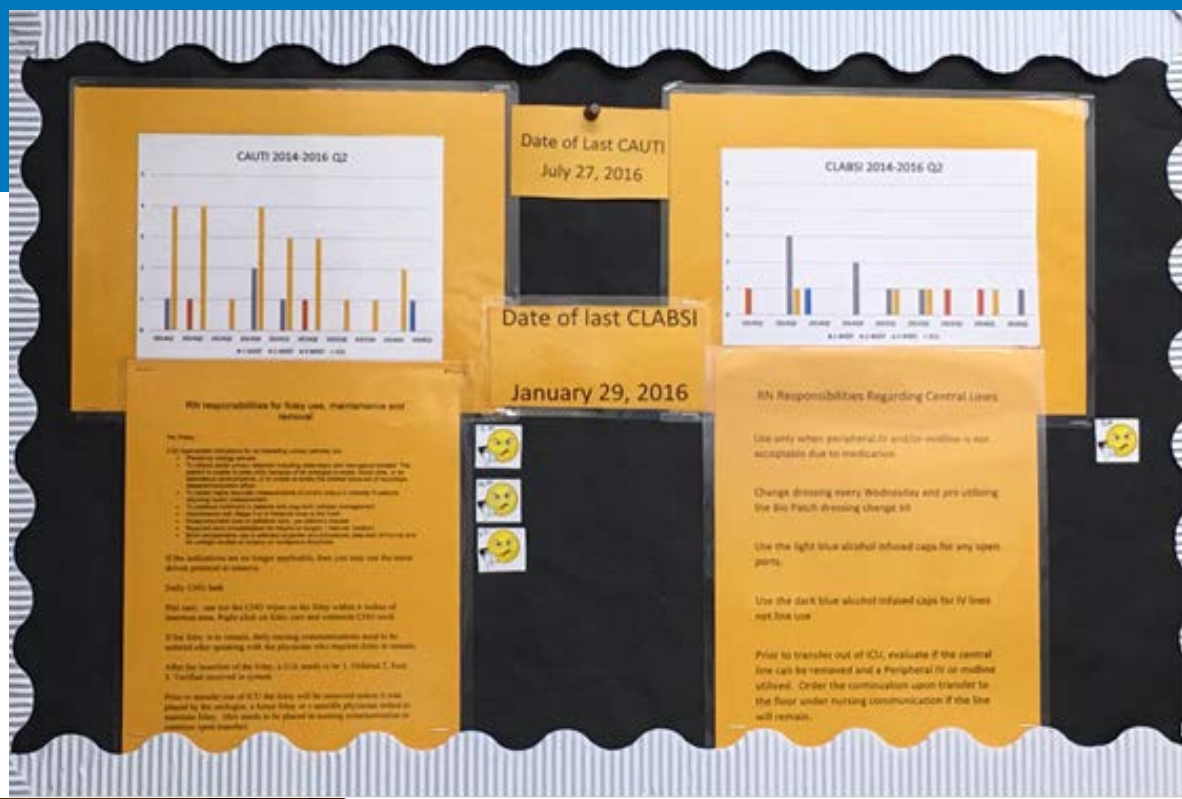


CAUTI Rate FY2015 - Present



	FY2015	FY2016	FY2017 YTD
CAUTIs-ICU Count	11	4	2
CAUTI-ICU SIR	3.033	1.302	1.816
ICU days	3022	2560	1378

Sharing Results



And Celebrating Successes!

Maryanne Whitney, Improvement Advisors, Cynosure Health
Steve Tremain, Improvement Advisors, Cynosure Health

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?

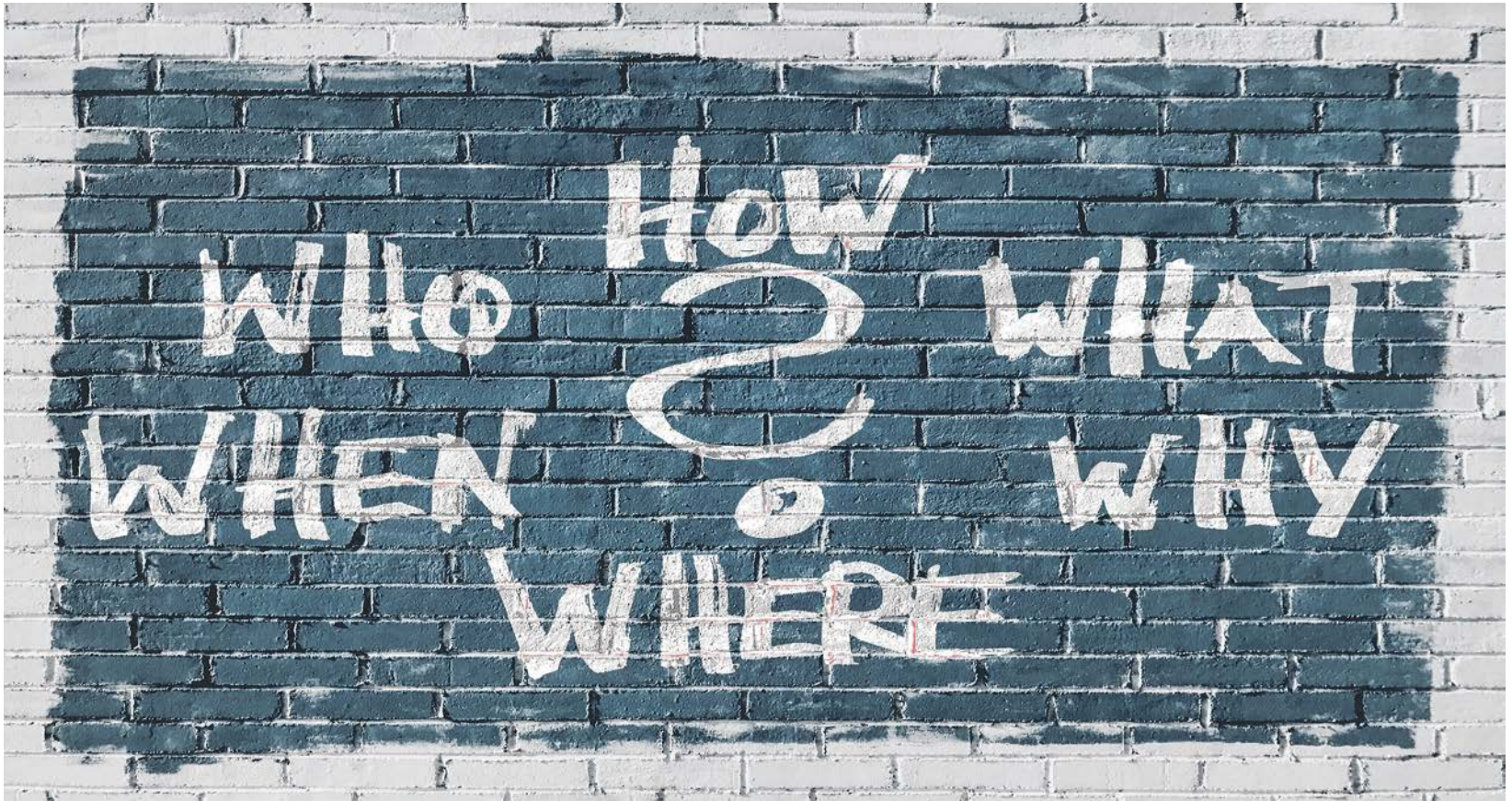


Can We Do Without?

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



Memorial Hospital of Sweetwater County

- Rock Springs, WY
- 99 beds



Charlotte Hungerford Hospital

- Torrington, CT
- 109 beds



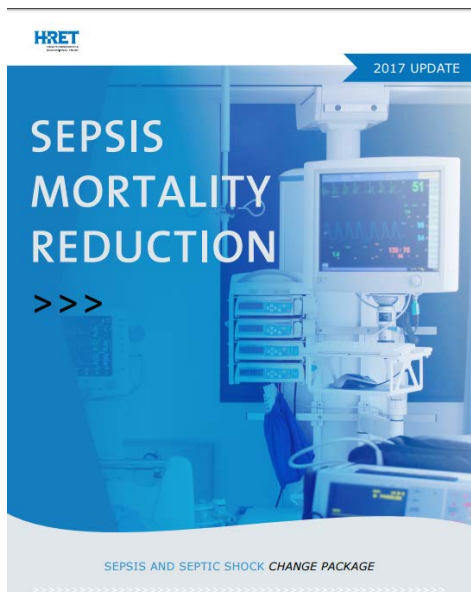
Emily Koebnick, Program Manager, HRET

BRING IT HOME



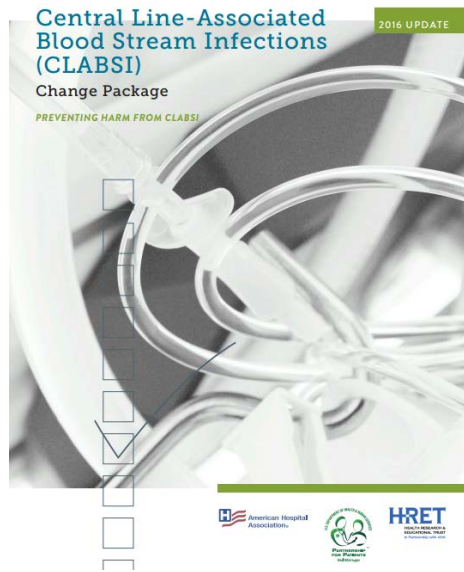
ICU Resources

Sepsis Change Package



Coming soon

- CAUTI Change Package
- CLABSI Change Package: 2017 updates



CLABSI Change Package

Hospital Improvement Innovation Network
Improve Quality and Patient Safety at your Hospital and Impact National Health Outcomes



Sepsis Data Collection Fact Sheet

Postoperative Sepsis Rate (HIIN-SEPSIS-1a)

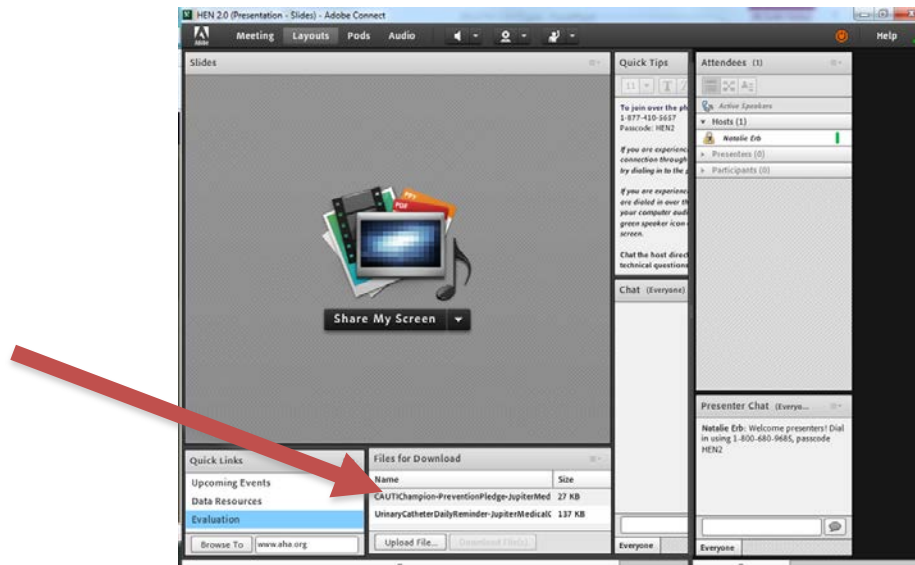
Measure Definition	Postoperative sepsis cases (secondary diagnosis) per 1,000 elective surgical discharges for patients ages 18 and older.
Numerator	<ul style="list-style-type: none"> Discharges among cases meeting the inclusion and exclusion rules for the denominator, with any AHRQ designated secondary ICD-9-CM or ICD-10 diagnosis codes for sepsis. <ul style="list-style-type: none"> See AHRQ PSI-13 for sepsis diagnosis codes, which include codes for septic shock.
Denominator	<ul style="list-style-type: none"> Elective surgical discharges, for patients ages 18 years and older, with any listed ICD-9-CM or ICD-10-PCS procedure codes for an operating room procedure. <ul style="list-style-type: none"> Elective surgical discharges are defined by specific DRG or MS-DRG codes with admission type recorded as elective.
Numerator Exclusions (refer to the AHRQ specification for more details, these are summarized)	<ul style="list-style-type: none"> Cases with a primary diagnosis of sepsis, pressure ulcer or infection. Cases with sepsis present on admission. Cases with a secondary diagnosis of infection present on admission (only if they also have a secondary diagnosis of sepsis). Immunocompromised patients. Patients with cancer. Patients discharged from OB (pregnancy, childbirth, and puerperium). Cases with stays fewer than four days.
Data Sources	<ul style="list-style-type: none"> Administrative Claims Data
Tools	<ul style="list-style-type: none"> Please share useful tools on the Sepsis ListServ: http://www.hret-hiin.org/engage/listserv.shtml.

Sepsis Data Collection Fact Sheets



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

