



STATEWIDE SEPSIS INITIATIVE

February 17, 2016

OHA EDUCATIONAL EVENTS

2016 SAVE-THE-DATES

SEPSIS EVENT

Wed., March 16
Web-based: Pre-hospital
identification and
intervention

SEPSIS EVENT

Wed., April 20
Web-based: Applying
Simulation Training To
Reduce Mortality

QUALITY SUMMIT

Wed., June 15
8:00am-2:30pm
*The Hilton at Easton -
Columbus*

OHA ANNUAL MTG

June 13 – 15
*The Hilton at Easton -
Columbus*

OHA QUALITY PROGRAMS TEAM

Collaborating for a Healthy Ohio



Amy Andres
Senior Vice President of
Quality and Data



James Guliano
Vice President of Quality
Programs



*Rosalie
Weakland*



*Ellen
Hughes*



*Ryan
Everett*



*Carol
Jacobson*



*Andrew
Detty*



*Rhonda
Major-Mack*



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

James V. Guliano, MSN, RN-BC, FACHE
Vice President, Quality Programs
james.guliano@ohiohospitals.org

Ohio Hospital Association

155 E. Broad St., Suite 301
Columbus, OH 43215-3640

T 614-221-7614
ohiohospitals.org



HelpingOhioHospitals



@OhioHospitals



www.youtube.com/user/OHA1915

Kennedy Health: Our Sepsis Initiatives

Presented by:

- *Cindy Hou, DO, MBA, FACOI*
- *Marianne Kraemer, RN, MPA, ED.M, CCRN*

February 17, 2016

About Kennedy Health

Fast Facts

- 2014 revenue: \$540 million
- 4,470 associates in all of the hospitals and subsidiaries
- More than 900 physicians

Total Number of Licensed Beds: 607

- 196 - Kennedy - Cherry Hill
- 181 - Kennedy - Stratford
- 230 - Kennedy - Washington Township



Kennedy Health's Sepsis-Related Initiatives

- **Kennedy's Sepsis Committee**
- **Kennedy's Sepsis on the Floors Task Force**
- **Participation in the New Jersey Hospital Association's (NJHA) Statewide Sepsis Collaborative**

Kennedy Health's Sepsis Committee

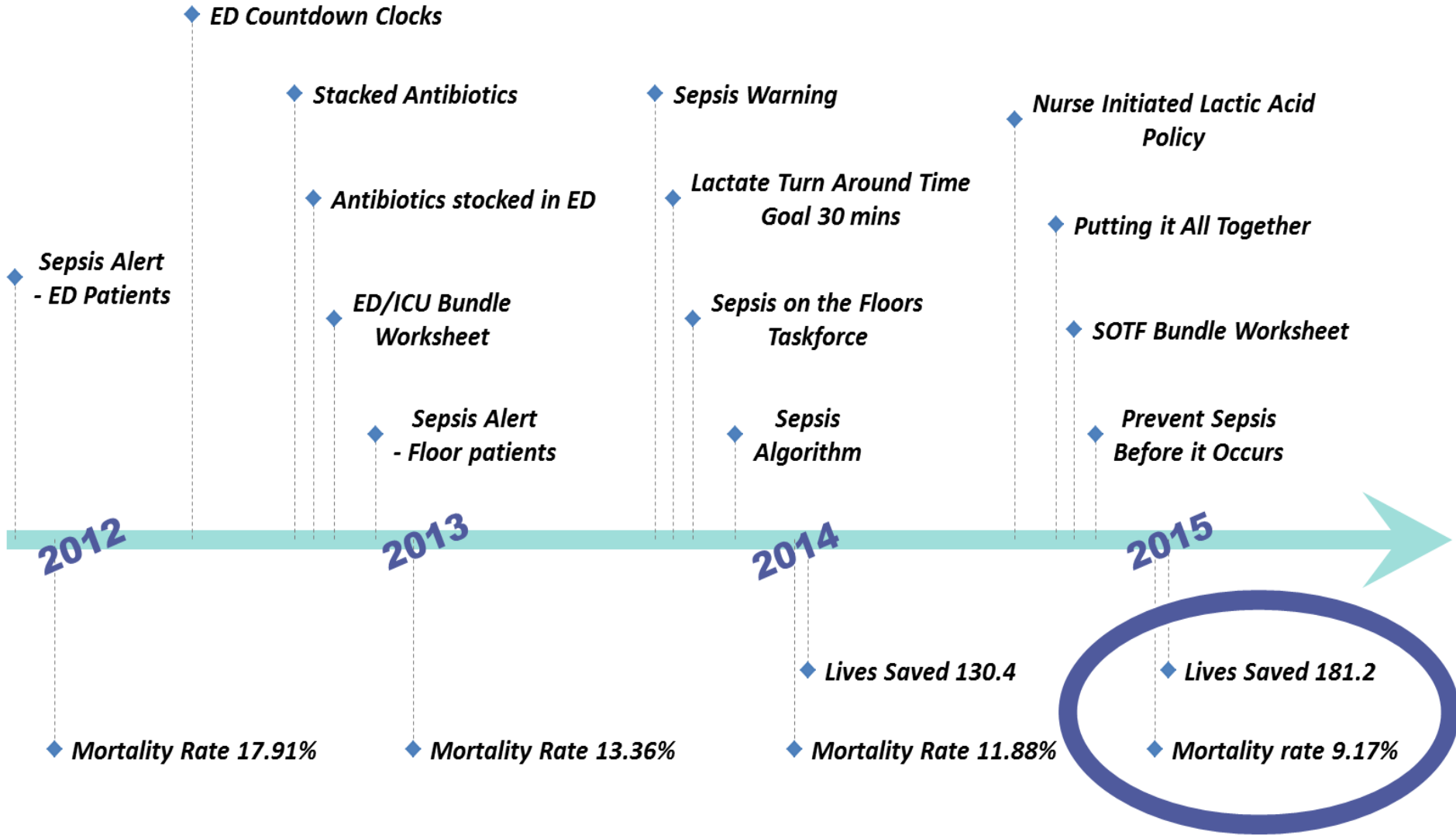
A multi-disciplinary collaboration:

- Chief of Emergency Medicine
- Chief Medical Officer
- Chief of Medicine
- Chief Patient Safety & Quality Officer
- ED/ICU Nursing
- Laboratory/Microbiology
- Nursing Administration
- Performance Improvement
- Pharmacy
- Physicians in ED/Pulmonary/CC/ID/IM

Kennedy Health's Sepsis Committee: Changes We Tested

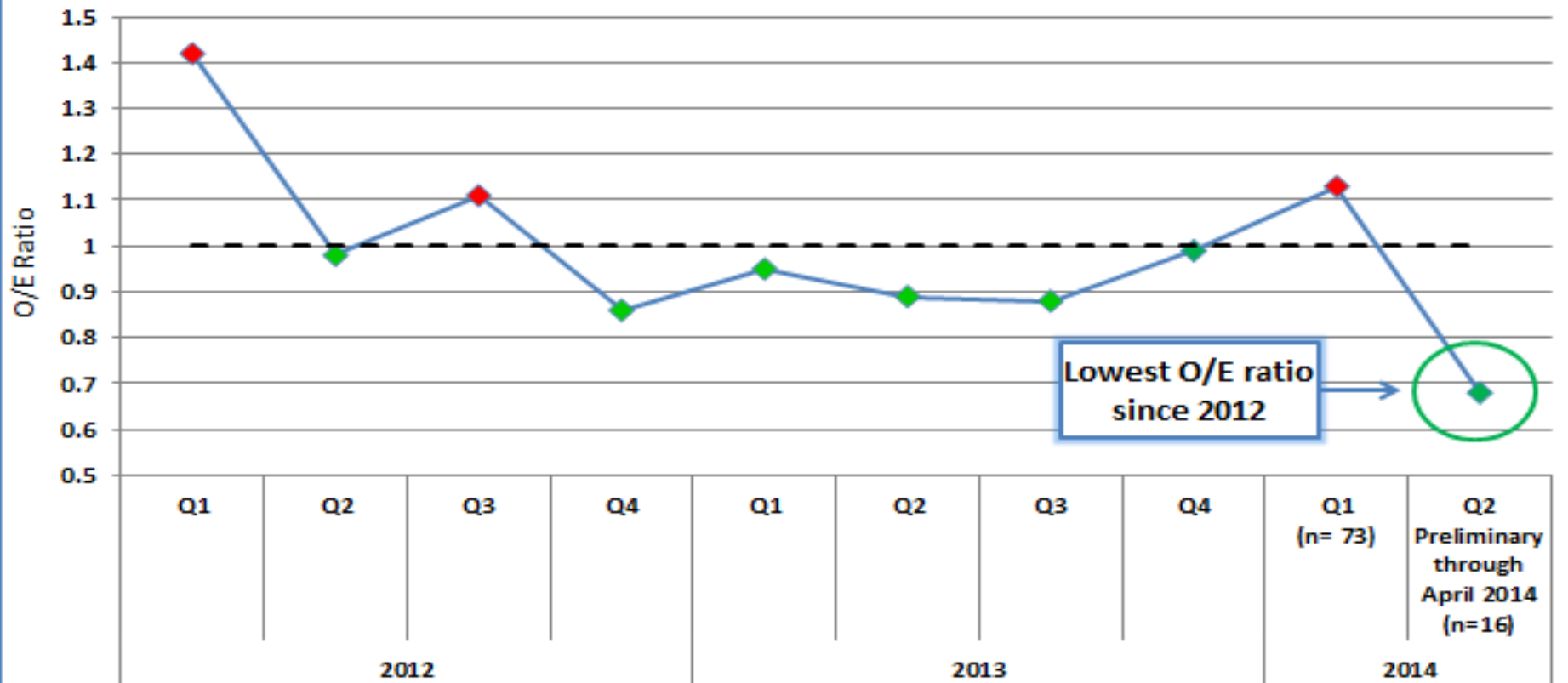
- **Sepsis Alert – ED, floor**
- **ED Countdown Clocks**
- **Stacked antibiotics**
- **Antibiotics stocked in ED**
- **ED/ICU Bundle Worksheet**
- **Sepsis Warning**
- **Lactic Acid Turnaround Time Goal: 30 minutes**

Results



Sepsis Mortality *Observed/Expected Ratio*

ALL SEPSIS MORTALITY OBSERVED/EXPECTED RATIO



Data Source: Crimson

*Not risk adjusted

*Cases identified for Sepsis Workgroup - Lactate >4 or on Vasopressors or BP <90 systolic w/ fluid resuscitation

17

The “Meeting Before the Meeting”

Before task force was created, a brainstorming session was held, including:

- **Donna Cybulski, RN Educator; Dr. Cindy Hou; and Dr. Kelly Schiers, DO**
- **Role of nurse aides**
- **Review of Sepsis Powerpoint taught by RN Educators: Tom King, RN, and Erin Cangelosi, RN**

Timeline of a few Kennedy Health Committees/Task Forces



10/10/12 – 1st CDiff Task Force Meeting

1/19/13 – 1st CLABSI Task Force Meeting

7/3/14 – 1st Sepsis on the Floors Task Force Meeting

**11/3/14 – 1st Antimicrobial Stewardship
Committee Meeting**

**1/14/15 – 1st CLABSI & CAUTI
Task Force Meeting**

Kennedy Health's Sepsis on the Floors Task Force

A Multi-disciplinary, System-wide (3 Hospitals) Collaboration:

- Laboratory/Microbiology
- Performance Improvement
- ED/ICU/Floor Nursing
- Nurse Managers
- Chief Nursing Officers
- Corporate Directors of Nursing
- Infection Control Practitioners
- ID Physician/Fellows
- IM Physician
- Pulmonary/Critical Care Physicians/Fellows

Sepsis on the Floors Task Force: Goals

- **Decrease Mortality due to Hospital-acquired Sepsis**
- **Improve Recognition of Sepsis, Severe Sepsis, and Septic Shock in general, and with respect to Hospital-acquired Sepsis**
- **Provide Evidence-Based Care**
- **Promote Nurse-driven Lactic Acid Policy**
- **Foster Collaboration Among RN and Medical Staff**
- **Educate with Joint RN and Physician Lectures**

Sepsis on the Floors Task Force: Obstacles and Challenges

- **Improve Recognition – Teach Sepsis**
- **Identify Key Players – RN Aide/Tech, and Escalate from RN to Physician**
- **Empower RN To Call RRT's/Sepsis Alerts, and to Draw Lactic Acids**
- **Call-In Number -> Webex**

Early Recognition of Sepsis

STEP 1

*CNA/Tech
Assesses Patient
Upon Arrival
and Each Time
Vital Signs
are Taken*

Respiratory Rate > 20	YES	NO
Heart Rate > 90	YES	NO
Temperature < 36 (96.8) or > 38 (100.4)	YES	NO

If you circled "YES" to **ONE** or **NONE**, the evaluation is complete. No further action is necessary.

BUT, if **TWO** or **THREE** are "YES," then **ALERT** the nurse to perform Step 2.

STEP 2

*RN Assesses
Patient After
Being Alerted
by CNA/Tech*

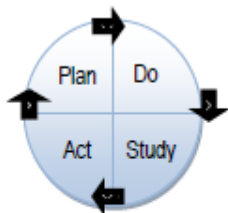
Check blood pressure and lab work

Is MAP < 65	YES	NO
Is WBC < 4 or > 12	YES	NO

If **BOTH** of the above are "NO," then page the Primary Team or overnight Intern to alert them SIRS Criteria has been met for this patient, and draw a STAT Lactate. If no CBC done, call doctor for STAT CBC. If no response received, call RRT.

If **EITHER** of the above are "YES," then immediately call a **RAPID RESPONSE** for Sepsis Evaluation.





PDSA WORKSHEET

Team name: Sepsis Committee	Start date of test: Q4, 2013	Test completion date: Q2, 2015	PDSA Test #
Overall team/project - Aim Statement: lactate acid turn around time to 30 minutes			
Objective of first test: determine barriers to turn around times for lactate			

PLAN: What do you plan to do in this testing?

Look at all time intervals of lactate acid turn around time:

Time order, time sent, time received in lab, time of result, time called to unit

I hope this produces: Identify time place that is causing greatest delay in getting lactate results back within 30 minutes of order time

Steps to execute: Write the steps that you are going to take in this cycle/test. Include the population you are working with and the time limit that you are setting to complete this study.

What List steps necessary to complete test	Who Person Responsible	When Timeframe	Where Department/Unit
1. Lactate is ordered	Physician	When sepsis suspected	ED
2. Lactate order seen and drawn	ED RN	When order noted	ED -EDIS
3. Lab sent to lab: specimen slip punched to receipt time	ED staff/tech	When RN notifies tech to take specimen to lab	ED to lab
4. Lab receives specimen	Lab staff	Once notified specimen in receiving area	Lab
5. Results of test known to lab	Lab staff	As soon as machine runs test	Lab
6. Lab notifies ED RN of result	Lab staff	Immediately upon completion of test	Lab to ED

What measure do you plan on using to assess the success of this test?

- All data points put on spread sheet
- Review of those results greater than 30 minutes
- Review which step caused total time to be greater than 30 minutes

DO: What actually happened?

What did you observe? Gaps at all points of the lab draw to resulted

Did everything go as planned? No—found gaps in time of the lab draw

Did you have to modify the plan? Went back and looked at the barriers in each of the steps to best determine areas of improvement.

STUDY: After implementation study the results. Record if plan worked and if goal was met.

Did the results match your predictions? Yes No

What did you learn? Important to review the entire process when there are delays in outcome; recognized the human error: forgot, didn't look for order; didn't anticipate order

Did you meet your measurement goal? Goal was to improve TAT and once data was reviewed we could determine the fall out areas.

Compare the results to your previous performance: Improvement No Improvement
Improvement was noted since we could figure out the time delays.

ACT: Based on what you learned, what will you do?

Adapt: Improve the change and continue testing plan.
Plans/changes for next test:

xAdopt: Select changes to implement on a larger scale and develop an implementation plan and plan for sustainability.
Adopted the changes found by the data review.

Abandon: Discard this change idea and try a different one (begin new PDSA).

Rev 7.2015.CN/EF

Nurse Initiated Order for Lactic Acid

The RN can order a lactic acid test:

- When two or more of the SIRS (Sepsis Inflammatory Response Syndrome) criteria are recognized on a patient admitted to the general M/S, tele, intermediate floor or ICU
- When the patient came from the ED and but a lactic acid was normal within 3 hours of arrival, or a lactic acid was not drawn by the ED

SEPSIS: PUTTING IT ALL TOGETHER

SEPSIS

SEPSIS is TWO of the following, plus a source of infection:

- Temperature < 96.8 or > 100.4
- Heart rate > 90
- Respiratory rate > 20
- WBC > 12 or < 4
- Bandemia > 10%

If you have identified Sepsis, draw a STAT Lactate in accordance with RN Initiated Lactate Audit Policy.

Call a physician immediately if lactate > 2.

SEVERE SEPSIS

SEVERE SEPSIS is Sepsis (see left column) plus evidence of organ damage/dysfunction. End-organ damage is any of the following:

- Lactate > 2
- Altered mental status
- Acute kidney injury
- Elevated troponin levels
- Acute respiratory distress syndrome
- New/Worsened elevation of ALT and AST
- Urine output < 0.5 ml/kg/hr
- New/Worsened platelet count < 100

Call an RRT for sepsis evaluation in your patient.

SEPTIC SHOCK

SEPTIC SHOCK is Severe Sepsis (see middle column) plus hypotension despite a 30 ml/kg NSS IVF bolus.

Call an RRT if this is your patient. If your patient remains hypotensive, after the above bolus, he/she will be transferred to the ICU.

 KENNEDY
HEALTH

SEPSIS FLOOR WORKSHEET	Rapid response called [] NO [] YES _____ (time)	Patient Sticker
DATE: _____	Sepsis Alert called [] NO [] YES _____ (time)	
Time of 1st STAT lactic acid: _____	[] Initial labs Time drawn _____ [] Serum lactic acid: Time Ordered _____ Time Drawn _____ RESULT: _____ [] Blood Cultures x 2 Time 1 _____ Time 2 _____ [] Initial fluid resuscitation: MAP _____ (MAP = [2(DP) + SP] ÷ 3) Patient weight (kg) _____ X 30 ml = _____ ml NSS OVER 1 HOUR Start time _____ Time of completion _____ [] Antibiotic (name) <i>Infusion must be completed collaboratively between floor and ICU. Antibiotics may run concurrently- check drug to drug compatibility (see back)</i> 1st _____ Time _____ [] Floor [] ICU 2nd _____ Time _____ [] Floor [] ICU 3rd _____ Time _____ [] Floor [] ICU	
Achieved within First Hour Time of 1st STAT lactic acid + 1 hour = _____ Time _____	[] Continuous Infusion Rate NSS @ _____ ml/hour (start immediately after bolus complete) [] Additional Fluid Resuscitation 1000 ml every 30 minutes or until MAP > 65 <i>Fluid resuscitation managed collaboratively by Floor or ICU RN</i> Time _____ Amount _____ MAP _____ Time _____ _____ Amount _____ MAP _____ Time _____ Amount _____ MAP _____ Time moved to ICU _____ Central Line Placed: YES / NO Time _____ If no, why not? Floor Intake _____ Output _____	
Achieved by Third Hour Time of 1st STAT lactic acid + 3 hours = _____ Time _____	Repeat lactic acid _____ (ensure repeat lactic acid by 6 hrs) Improved Lactic Acid ___ Yes ___ No <i>Vasopressors for hypotension (MAP < 65) that does not respond to initial resuscitation</i> Time _____ Drug _____ Conc _____ Time _____ Drug _____ Conc _____	
Achieved by Sixth Hour Time of 1st STAT lactic acid + 6 hours = _____ Time _____		

Floor RN Signature _____ Date/Time _____

ICU RN Signature _____ Date/Time _____

TIME IS TISSUE! PATIENT MUST HAVE ALL TASKS COMPLETED WITH 6 HOURS FROM TIME OF 1ST VITAL SIGNS TO 2ND Lactic Acid.

Floor - Send worksheet with patient to **RECEIVING UNIT**

NOT A PERMANENT PART OF THE RECORD

Revised 3/15



Understanding Sepsis

What is Sepsis?

Sepsis is a toxic response to an infection. Every year, severe sepsis strikes more than a million Americans. According to the Centers for Disease Control (CDC), up to 50 percent of these people die — far more than the number of U.S. deaths from prostate cancer, breast cancer and AIDS combined. Sepsis occurs when the body is fighting an infection, like pneumonia or a urinary tract infection (UTI). Sepsis is a medical emergency that requires early detection and treatment.

What are Some Signs and Symptoms of Sepsis?

- a fast heart rate
- fever
- breathing too quickly
- low blood pressure
- too little urine
- mental confusion

How Is Sepsis Treated?

With antibiotics. Patients are also often given IV fluids.

How can Sepsis be Prevented?

- ❖ If you have an infection and generally don't feel well, see your primary healthcare provider.
- ❖ Ask people to wash their hands to prevent the spread of germs.
- ❖ Get your flu shot!
- ❖ If you have certain medical conditions, or are elderly, ask your doctor or nurse if you should get a pneumonia vaccine.

How Can I Get More Information?

Visit the Centers for Disease Control & Prevention (CDC) website:

[http://www.cdc.gov/sepsis/.](http://www.cdc.gov/sepsis/)

PREVENT SEPSIS BEFORE IT OCCURS!

PREVENT CLABSIs and CAUTIs
Follow Central Line & Urinary Catheter Policies.
Remove all lines and Foleys if not medically necessary.



PREVENT CDIFF
Choose appropriate antibiotic dose, duration, and stop date. Use PPIs and H2 blockers when medically indicated.



PREVENT SURGICAL SITE INFECTIONS
Follow SCIP protocol.
Practice appropriate post-op incisional care.



REMEMBER:

- Wash your hands. Every time – everyone!
- Proactively manage high-risk patients.
- Educate patients about infection prevention.

PREVENT ASPIRATION PNEUMONIA
Maintain 30 degree elevation for feeding and oral care.



PREVENT PERITONITIS
Be aware of constipation, obstruction, and abdominal perforation.



Hand Hygiene Initiatives: Wash Your Hands – Every Time, Everyone

- **Long-range Strategy, Pre-requisite Lecture and Sim-Lab on Handwashing, with WHO 5 Moments taught at the Medical School - ongoing.**
- **2015 - Receipt of Kennedy Health's Hand Hygiene Policy by Housestaff.**
- **Secret Hand Hygiene Surveillance from Infection Control - ongoing.**

Pro-actively Manage High-Risk Patients

- **Round Again!**
- **What Can You Do *Now* to Prevent Deterioration Later?**
- **Sign-out Vulnerable Patients for Heightened Awareness.**
- **Call Someone!**
- **RRT!**

Educate Patients (and their Families) About Infection Prevention

- **The informed patient is more likely to be compliant with therapy, and can be a “co-pilot” in preventing infection.**
- **The informed family member can also learn how to prevent infection.**

The Association of Devices with Sepsis

- **Patients can acquire device-related infections, and become septic from this.**
- **Any device foreign to the human body is a risk factor for infection, but the risk can be decreased with attention to infection prevention at insertion, maintenance, and removal when no longer necessary.**

CLABSI, Defined

- **Central-line bloodstream associated infection.**
- **Patient gets fevers, chills, the line may/may not externally look infected. Septic.**
- **No other explanation for what is causing the bloodstream infection (eg. Does NOT have UTI/pneumonia, etc.).**
- **Improper line insertion technique, improper care of the line.**
- **Preventable! If you prevent a CLABSI case, you prevent a case of sepsis.**

CLABSI Prevention:

Preventing Infections throughout the Life Cycle of a Central or PICC Line



Before Insertion:
Evaluate Peripheral IV options, IV to PO meds, and line necessity

Line Insertion Bundle:
Perform Hand Hygiene, Time-Out, Upper Site Preferred, Chlorhexidine Prep, Maximal Barrier Precautions, US Guidance

Maintenance Bundle:
Execute Hand Hygiene, Hub Care, Site Care, Tubing Care, # Line Days and Line Site

Line Removal:
Ask daily if line is absolutely necessary. Remove central lines before leaving ICU!

THE KENNEDY CLABSI TASK FORCE, 2013



MK.330-C
9/13



Wash Your Hands!



Scrub
the
Hub!



Change Dressing
Every Seven Days or
if Loose or Soiled!



Change Tubing
Every Four Days!



Document
Daily!

Central Line Precautions



MK.330-A
11/14

CAUTI

- **Catheter-associated urinary tract infection.**
- **Fever, with foley, and may have bladder discomfort (or post-foley, has dysuria, urgency, etc.)**
- **People with CAUTI's may become septic.**
- **Therefore, if you prevent a CAUTI, you prevent a case of sepsis!**

Indicators For Indwelling Catheters - Refer To Nursing Policy U1:

1. Bladder Outlet Obstruction
2. Incontinent AND a Stage 3-4 Sacral Pressure Ulcer
3. Close Monitoring of Urine Output (Critically Ill)
4. Immediate Post-Op Period (only up to 48 hours)
5. Patient Request at End-of-Life
6. Irrigating of the Bladder or Instilling Medication
7. Neurogenic Bladder Dysfunction and Urinary Retention that cannot be drained by any other means
8. Patient with an Epidural Catheter



Prevent Catheter-Associated Urinary Tract Infections (CAUTIs)

HAND HYGIENE

INSERTION	MAINTENANCE	REMOVAL	RE-INSERTION
<ul style="list-style-type: none"> • Indicators for foley • Peri-Care prior to insertion • Each insertion attempt requires new kit • Alternatives: <ul style="list-style-type: none"> - Straight cath - Urinal - Texas cath 	<ul style="list-style-type: none"> • Red seal intact • Peri-care • Keep bag below the bladder & above floor • Empty bag before transport • Stat lock present • Proper technique if hand irrigation needed (U-1 Policy) 	<ul style="list-style-type: none"> • Reassess daily if foley is needed • Assess for constipation, a risk factor for urinary retention • Reassess if catheter is chronic 	<ul style="list-style-type: none"> • Reassess indicators of foley • Foley policy for re-insertion • Bladder scan and straight cath x 2

Kennedy CLABSI and CAUTI Task Force, 2015



Prevent Catheter-Associated Urinary Tract Infections (CAUTIs)

HAND HYGIENE

INSERTION

- Indicators for foley
- Peri-Care prior to insertion
- Each insertion attempt requires new kit
- Alternatives:
 - Straight cath
 - Urinal
 - Texas cath

MAINTENANCE

- Red seal intact
- Peri-care
- Keep bag below the bladder & above floor
- Empty bag before transport
- Stat lock present
- Proper technique if hand irrigation needed (U-1 Policy)

REMOVAL

- Reassess daily if foley is needed
- Assess for constipation, a risk factor for urinary retention
- Reassess if catheter is chronic

RE-INSERTION

- Reassess indicators of foley
- Foley policy for re-insertion
- Bladder scan and straight cath x 2

Kennedy CLABSI and CAUTI Task Force, 2015



Additional Nursing Initiatives

- **Device infection drill down with key stakeholders.**
- **Lessons learned shared through shift huddles, department news letters, safety call reports.**
- **Urinary catheter rounds: shift nursing supervisor rounds with charge nurse.**
- **Charge nurse and nursing supervisor rounds: all patients discharged from ICU to intermediate unit to assess transition status.**
- **For 2016: initiated antibiotic rounds with ICP and primary RN.**

Infection Control and Prevention Drill-Down Case Review

The following data points used for discussion and review of any device related/non-device infections.

- **Attendees:**
- **Date of hospital admission**
- **Date of drill down:**
- **Reason for case review**
- **Unit/ location of patient when device inserted:**
- **Date /time of device insertion:**
- **Date of positive cultures:**
- **Antibiotics used:**
- **Review of bundle elements—met/unmet:**
- **General discussion of clinical course:**
- **Lessons learned:**
- **How information to be disseminated back to clinical staff:**

This form is not part of the permanent record. Review of information is shared at Patient Safety Committee.

Prevent Clostridium Difficile Infection

- **Hand hygiene**
- **The environment**
- **PPI stewardship**
- **Antibiotic stewardship!**

Antibiotics: A Risk Factor for CDiff

High Risk for CDiff

- Clindamycin (Cleocin®)*
- Ceftriaxone (Rocephin®)*
- Ciprofloxacin (Cipro®)*
- Levofloxacin (Levaquin®)*
- Cefepime (Maxipime®)
- Ceftazidime (Fortaz®)
- Cefuroxime (Ceftin®)
- Ertapenem (Invanz®)
- Meropenem (Merrem®)

* Highest Association with CDiff

Medium Risk for CDiff

- Piperacillin/tazobactam (Zosyn®)*
- Amoxicillin/clavulanic acid (Augmentin®)*
- Ampicillin/sulbactam (Unasyn®)
- Amoxicillin (Amoxil®)
- Ampicillin
- Azithromax (Zithromax®)
- Aztreonam (Azactam®)
- Cefazolin (Ancef®)
- Cephalexin (Keflex®)
- Dalfopristin/-quinupristin (Synercid®)

Low Risk for CDiff

- Amikacin (Amikin®)
- Daptomycin (Cubicin®)
- Doxycycline (Vibramycin®)
- Fosfomycin (Monurol®)
- Gentamicin
- Linezolid (Zyvox®)
- Nitrofurantoin (Macrobid®)
- Polymixin (Colistin®)
- Rifampin (Rifadin®)
- Trimethoprim/-sulfamethoxazole (Bactrim®)

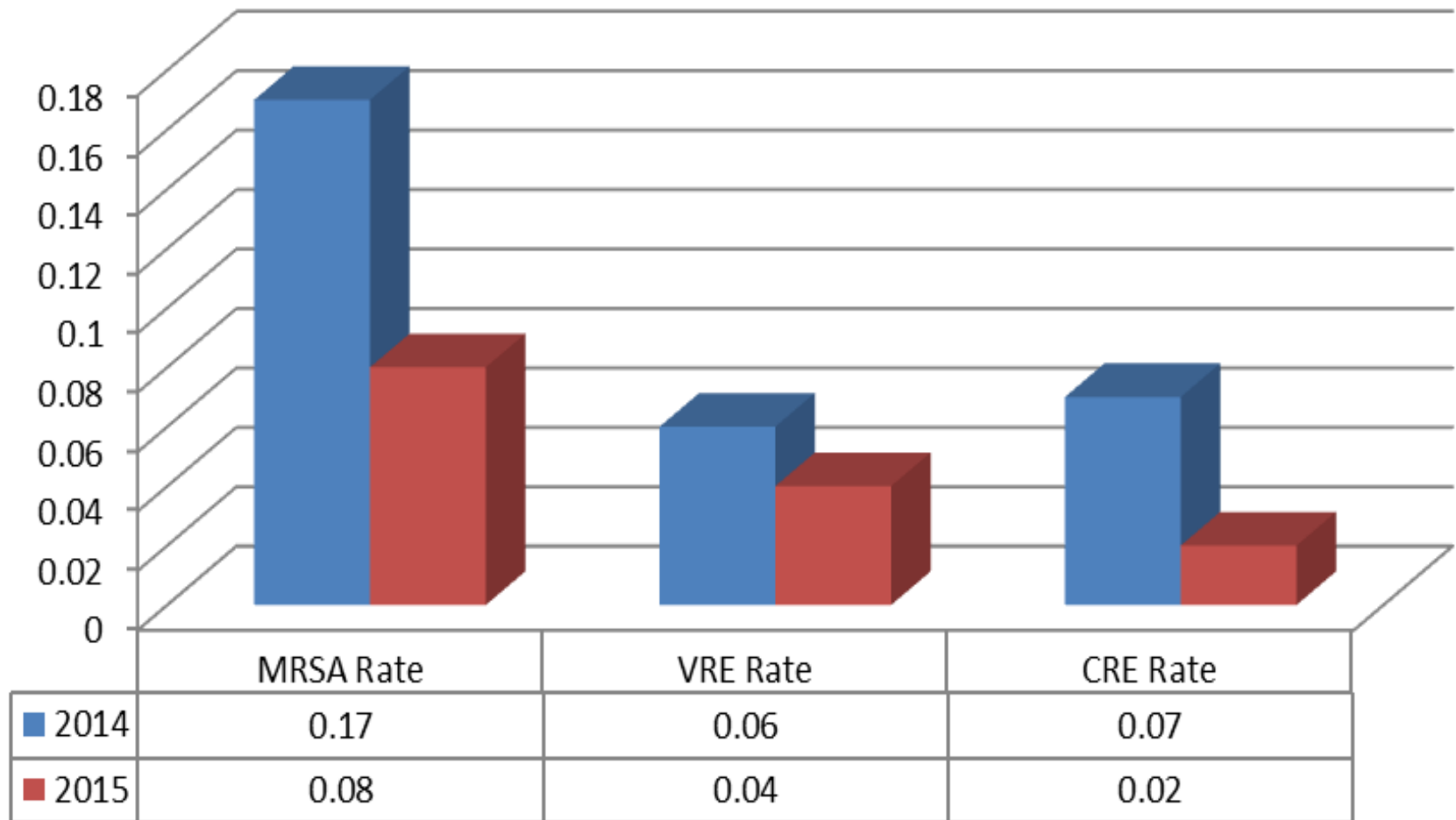
Kennedy CDiff Task Force, 2015



The Intersection of Antimicrobial Stewardship and Sepsis

- **In November 2014, Kennedy Health created an Antimicrobial Stewardship Committee.**
- **In 2015, hospital-acquired MRSA, VRE, and CRE all decreased in terms of the rates as well as the absolute numbers of patients affected.**

Kennedy Health: MRSA/VRE/CRE Rates per 1,000 Patient Days



NEW POLICY!!!

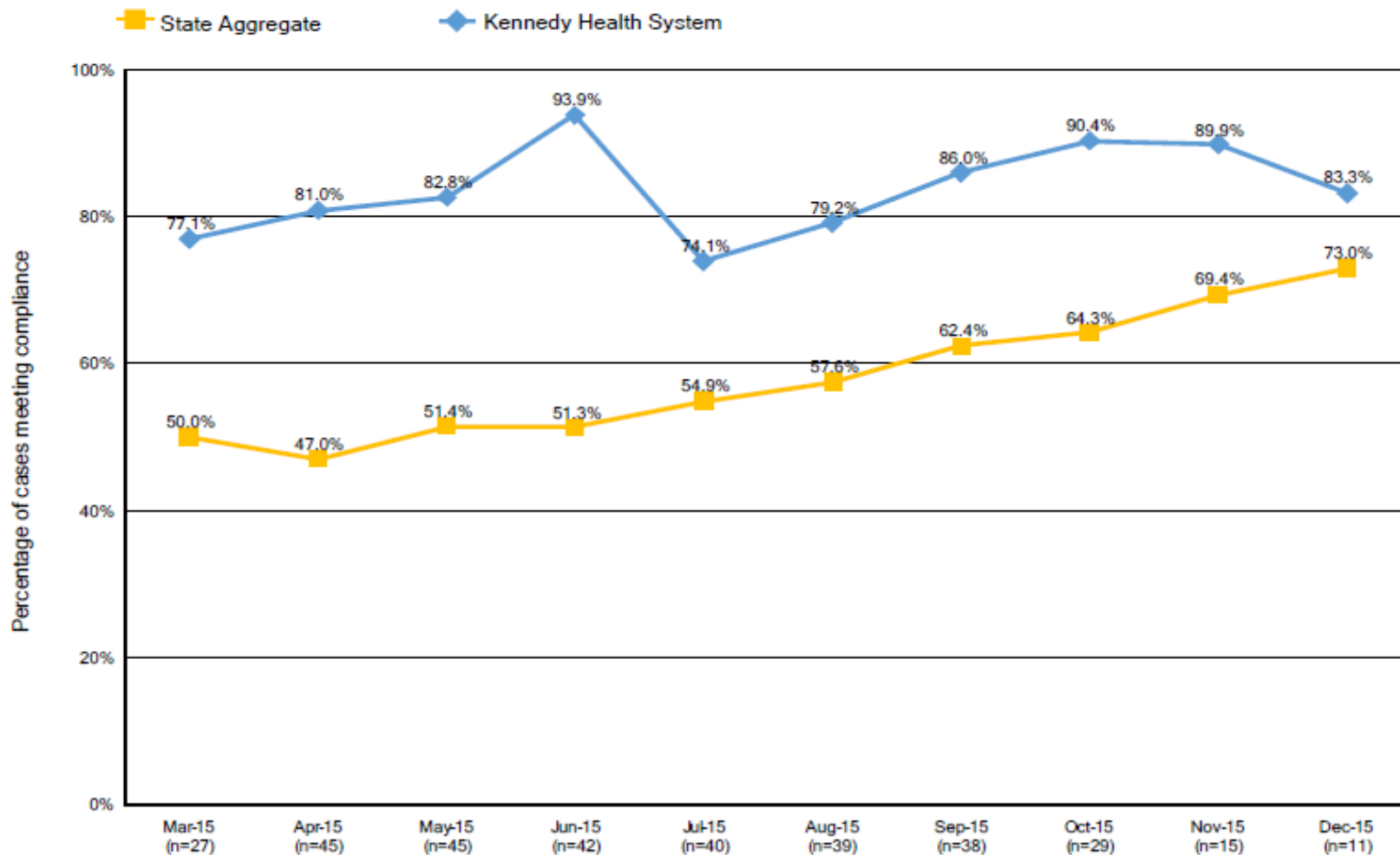
B5 - Nurse Initiated Ordering of Blood Cultures

B5 - Nurse Initiated Ordering of Blood Cultures:

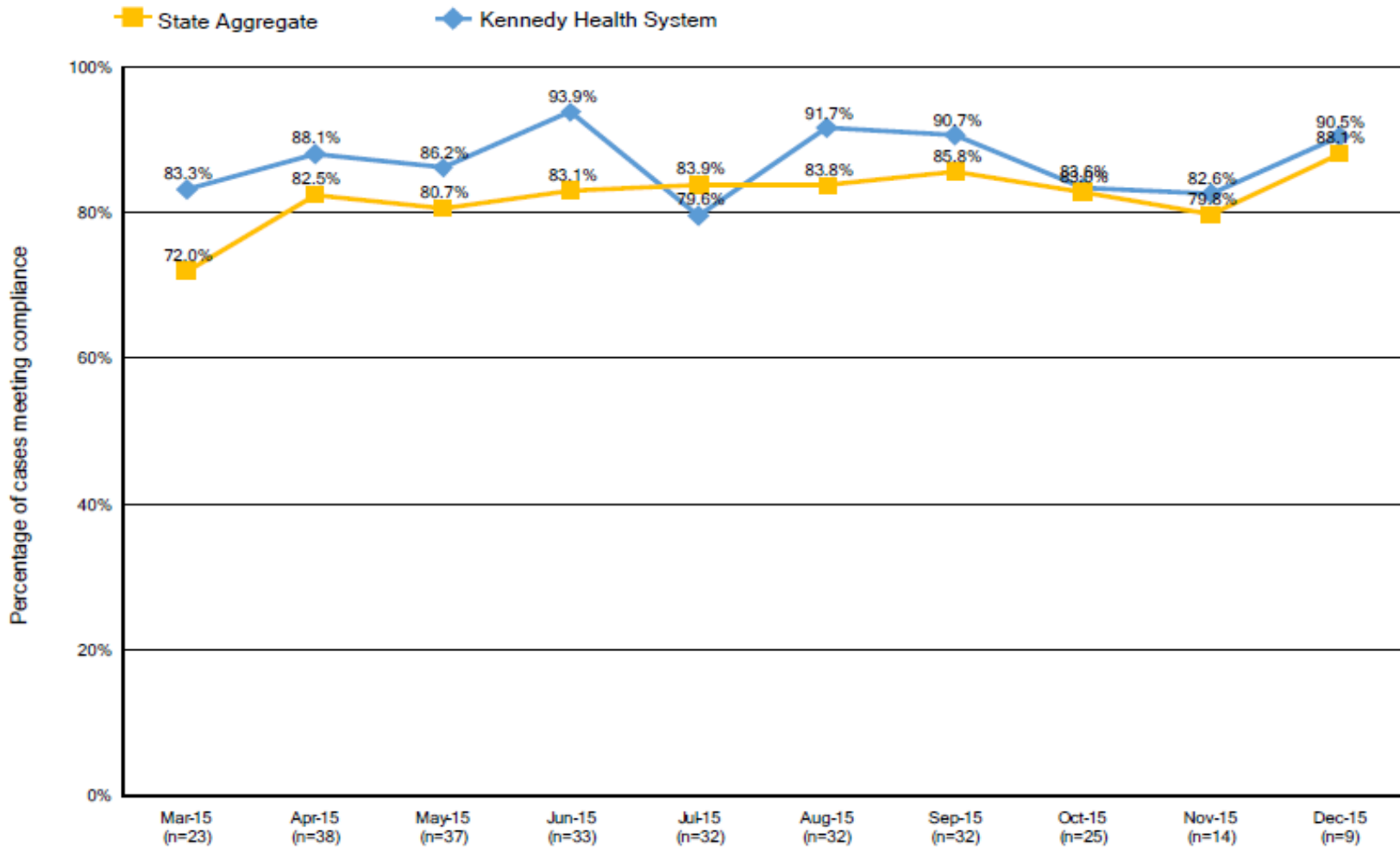
1. Nurse may initiate ordering of blood cultures if patient meets 2 or more SIRS criteria. Remember that the diagnosis of sepsis starts with the recognition of two Systemic Inflammatory Response Syndrome (SIRS) criteria including:
 - a. Respiratory rate >20
 - b. Heart rate >90
 - c. Temperature $<36^{\circ}\text{C}$ (96.8°F) or $>38^{\circ}\text{C}$ (100.4°F)
 - d. Mean Arterial Pressure (MAP) <65
 - e. WBC <4 or >12
2. RN draws STAT blood cultures (*unless* blood cultures were already drawn within the last 24 hours) peripherally x 2 PRIOR to giving antibiotics

Severe Sepsis Resuscitation 6 Hour Bundle for Floor Patients					
Data Collection Tool					
Patient Name: _____			<input type="checkbox"/> Washington <input type="checkbox"/> Stratford <input type="checkbox"/> Cherry Hill		
MRN: _____ ACCT: _____			Recorded by: _____		
DOB: _____			Doctor: _____		
UNIT: _____			Date/Time: _____		
Floor: Timing/Therapeutics					
Admit Time: Date: _____ Time: _____			Sepsis Alert: Date: _____ Time: _____		
Time of Recognition: Date: _____ Time: _____			Bundle Start: Date: _____ Time: _____		
Time of RRT: Date: _____ Time: _____			Bundle End: Date: _____ Time: _____		
SIRS Criteria	<input type="checkbox"/> HR >90	<input type="checkbox"/> RR > 20	<input type="checkbox"/> T >100.4 F	<input type="checkbox"/> WBC >12	<input type="checkbox"/> Bands >10%
	<input type="checkbox"/> PaCO2 <32	<input type="checkbox"/> T <96.8 F	<input type="checkbox"/> WBC <4		
Septic Diagnosis/Source: <input type="checkbox"/> PNA <input type="checkbox"/> UTI <input type="checkbox"/> ABDOMINAL <input type="checkbox"/> SSI <input type="checkbox"/> BACTEREMIA <input type="checkbox"/> OTHER: _____					
Severe Sepsis, above plus an indicator of end organ dysfunction: <input type="checkbox"/> SBP < 90 mmHg (date: _____ time: _____) <input type="checkbox"/> Creatinine >2 mg/dl or UOP > 0.5ml/kg/hour for >2hrs <input type="checkbox"/> Bilateral pulmonary infiltrates with a new or increased O2 <input type="checkbox"/> Bilirubin >2 mg/dl <input type="checkbox"/> ↑ ALT and AST requirement to keep SaO2 .90% <input type="checkbox"/> Platelet count <.100,000 <input type="checkbox"/> Bilateral pulmonary infiltrates with PaO2/FIO2 ration ,300 <input type="checkbox"/> INR >1.5 or a PTT >60 sec <input type="checkbox"/> Lactate > 2 mmol/L <input type="checkbox"/> Altered Mental Status <input type="checkbox"/> ↑ Troponin <input type="checkbox"/> AKI <input type="checkbox"/> ARDS					
Septic shock criteria, above plus one: <input type="checkbox"/> Lactate ≥ 4 mmol/L <input type="checkbox"/> SBP <90 mmHg or MAP < 70 despite fluid resuscitation (30cc/kg initial IVF bolus) <input type="checkbox"/> use of vasopressors					
Lactate: Date: _____ Result Time: _____ Result: _____ <input type="checkbox"/> not done Ordered: _____ Observed: _____ Lactate 6 hours: Y N N/A Result: _____ Lactate ordered by Nurse Protocol <input type="checkbox"/> Lactate ordered by physician <input type="checkbox"/>					
Fluids given on floor: _____ mL First Fluid Administration: Date: _____ Time: _____ (Within bundle) Excluded: Y N Crystalloid only required if hypotension or lactate ≥4. 30 mL/kg Given: Y N N/A Cultures: Date: _____ Time: _____ <input type="checkbox"/> Not Done <input type="checkbox"/> Ordered by RN <input type="checkbox"/> Ordered by physician					
First dose of antibiotics Date: _____ Time: _____ <input type="checkbox"/> Not Given following recognition: _____ Pt. previously on ABX? Y N					
CVC inserted: Date: _____ Time: _____ Site: <input type="checkbox"/> UPPER <input type="checkbox"/> LOWER <input type="checkbox"/> ProCESS Trial <input type="checkbox"/> Refusal Inserted in: <input type="checkbox"/> Floor <input type="checkbox"/> ICU <input type="checkbox"/> Not Inserted <input type="checkbox"/> Arise Trial <input type="checkbox"/> Surviving Sepsis <input type="checkbox"/> Unknown <input type="checkbox"/> Not Stated					
Critical Care: Timing/Therapeutics					
Transfer to ICU: Date: _____ Time: _____ (First set of vitals)					
Weight: _____ kg					
Focused Exam Done within 6 Hours (Use CMS Guidelines for Time): Y N N/A					
Fluids in remaining 6 hours of bundle time: _____ mL					
Vasopressors started in ICU (if within 6 hour window) Date: _____ Time: _____ <input type="checkbox"/> Not given <input type="checkbox"/> N/A					
CVP first transduced: Date: _____ Time: _____ <input type="checkbox"/> Not done Patient vented: <input type="checkbox"/> YES <input type="checkbox"/> NO CVP reading ≥8 Date: _____ Time: _____ <input type="checkbox"/> not achieved at 24 hours Goal in 6: <input type="checkbox"/> Goal in 24: <input type="checkbox"/>					
ScVO2 sent Date: _____ Time: _____ <input type="checkbox"/> Not done Goal in 6: <input type="checkbox"/> Goal in 24: <input type="checkbox"/> ScVO2 reading ≥ 70% Date: _____ Time: _____					
Disposition:					
Discharge Disposition: <input type="checkbox"/> Home <input type="checkbox"/> ECF <input type="checkbox"/> Expired <input type="checkbox"/> Rehab <input type="checkbox"/> Hospice <input type="checkbox"/> Code/RRT Death <input type="checkbox"/> Comfort Care <input type="checkbox"/> Acute Care					

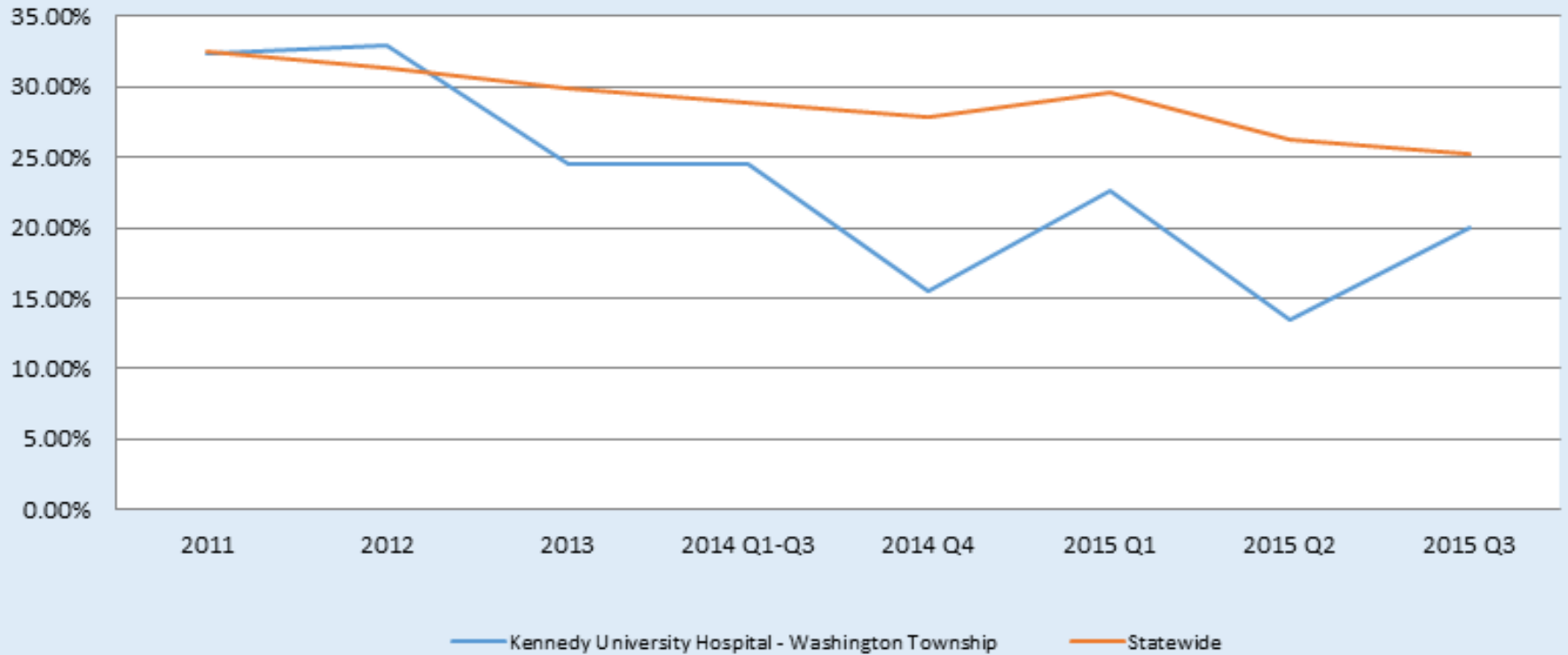
3 Hour Bundle Total



3 Hour Bundle Case Survival



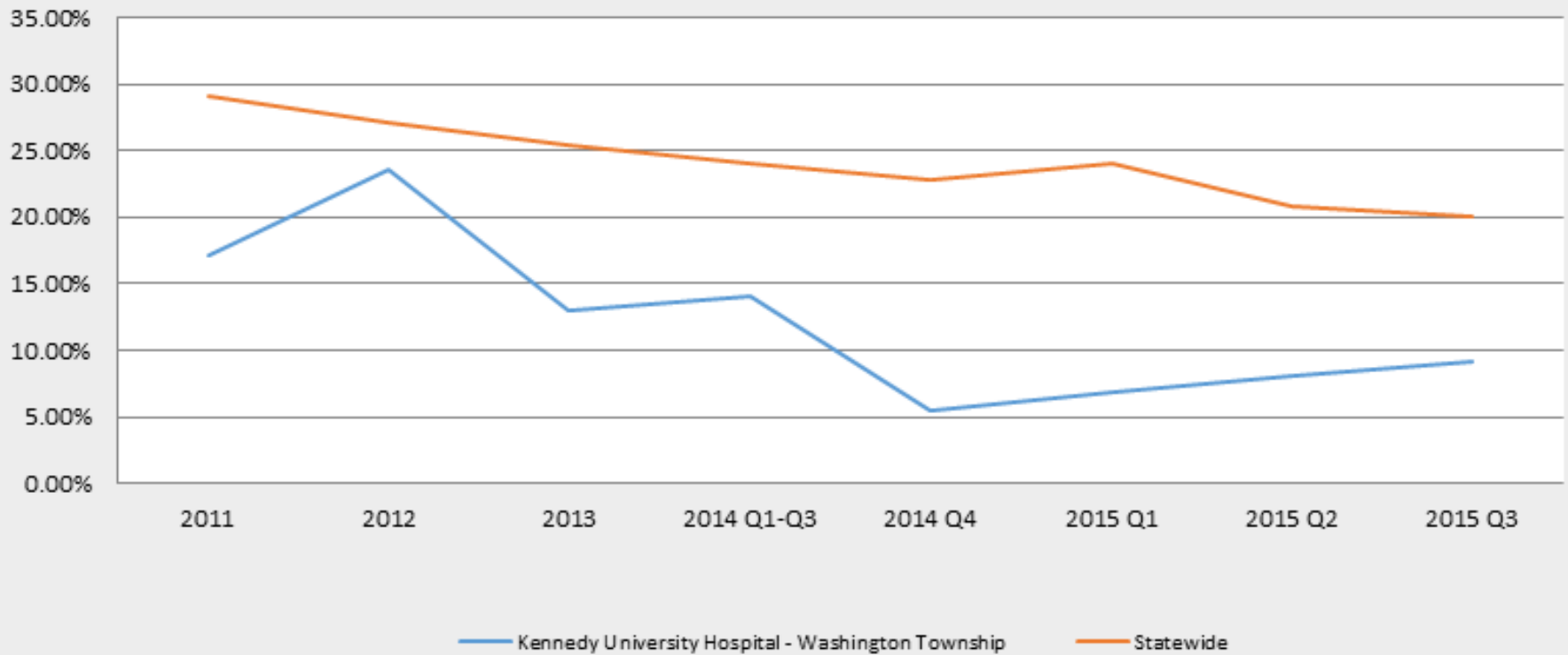
No Exclusion - Severe Sepsis Mortality Rate Trend Report



No Exclusion

	2011	2012	2013	2014 Q1-Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3
Kennedy University Hos	32.35%	32.92%	24.48%	24.52%	15.45%	22.60%	13.48%	20.00%
Statewide	32.56%	31.29%	29.94%	28.91%	27.86%	29.63%	26.30%	25.22%

V66.7 Excluded - Severe Sepsis Mortality Rate Trend Report



V66.7 Excluded	2011	2012	2013	2014 Q1-Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3
Kennedy University Hos	17.09%	23.62%	12.93%	14.07%	5.56%	6.84%	8.13%	9.18%
Statewide	29.15%	27.02%	25.44%	24.00%	22.80%	24.00%	20.80%	20.07%

Subanalysis of Data

Examine data by 3 ICD9-codes – sepsis, severe sepsis, and septic shock. If a patient had sepsis/severe sepsis, the more severe indicator was used. Data sheet – Chris Driggers; Data analysis via SPSS.

Is the incidence of hospital-acquired sepsis decreasing over time?

Present on Admission (POA)-Sepsis vs Hospital-Acquired Sepsis – Incidence. Over the years, the proportion of patients who have POA-sepsis has increased with decrease in HO-sepsis. ($p < 0.0001$)

Crosstab

			DISCHARGE YEAR					Total
			2010	2011	2012	2013	2014	
POA OR HO	POA	Count	600	713	1057	1555	1974	5899
		% within DISCHARGE YEAR	83.6%	85.1%	88.2%	91.0%	90.9%	88.9%
	HO	Count	118	125	142	154	197	736
		% within DISCHARGE YEAR	16.4%	14.9%	11.8%	9.0%	9.1%	11.1%
Total		Count	718	838	1199	1709	2171	6635
		% within DISCHARGE YEAR	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Questions ...

- **If you identify sepsis earlier, can the cascade to severe sepsis and septic shock be prevented?**
- **The more that you understand sepsis, will there be more sepsis diagnoses, and fewer severe sepsis and septic shock diagnoses?**

Combined sepsis = POA-Sepsis + HO-Sepsis. Over the years, the proportion of patients with sepsis has increased compared with decrease in severe sepsis and septic shock. (p<0.0001)

Crosstab

			DISCHARGE YEAR					Total
			2010	2011	2012	2013	2014	
SEPSIS CATEGORY	Sepsis	Count	313	348	624	933	1315	3533
		% within DISCHARGE YEAR	43.6%	41.5%	52.0%	54.6%	60.6%	53.2%
	Severe Sepsis	Count	172	217	271	341	387	1388
		% within DISCHARGE YEAR	24.0%	25.9%	22.6%	20.0%	17.8%	20.9%
	Septic Shock	Count	233	273	304	435	469	1714
		% within DISCHARGE YEAR	32.5%	32.6%	25.4%	25.5%	21.6%	25.8%
Total		Count	718	838	1199	1709	2171	6635
		% within DISCHARGE YEAR	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Initiatives in the Pipeline

- **Pre-hospital interventions – ER meeting with EMS for eventual goal of “sepsis warnings” before coming to the hospital.**
- **Outreach to Rowan-SOM for integration of sepsis into the Medical School curriculum.**
- **The Intersection of Antimicrobial Stewardship and Sepsis – the Role of Infectious Diseases.**
- **Spread our messages to patients and to other hospital systems.**

How to Contact Us



Cindy Hou, DO, MBA, FACOI
c.hou@kennedyhealth.org



Marianne Kraemer, RN, MPA, Ed. M, CCRN
m.kraemer@kennedyhealth.org