Jefferson Health

Jefferson Health New Jersey: Sepsis and Antimicrobial Stewardship

David Condoluci DO, MACOI
SVP/Chief of Quality and Safety
Jefferson Health New Jersey

February 8, 2018

Conflict of Interest

- I have no conflict of interest to disclose

Objectives

- To review new criteria for sepsis
- To go over guidelines for sepsis bundles
- To go over the integration of sepsis treatment and antibiotic stewardship

Jefferson Health

13 Hospitals

- Abington Hospital
- Abington – Lansdale Hospital
- Aria – Bucks County Hospital
- Aria – Frankford Hospital
- Aria – Torresdale Hospital
- Jefferson Hospital for Neuroscience
  - *part of Vickie and Jack Farber Institute for Neuroscience at Jefferson*
- Jefferson Cherry Hill Hospital
- Jefferson Stratford Hospital
- Jefferson Washington Township Hospital
- Methodist Hospital
- Physicians Care Surgical Hospital
- Rothman Orthopaedic Specialty Hospital
- Thomas Jefferson University Hospital
  - *Sidney Kimmel Cancer Center at Jefferson (NCI-designated)*

BEST HOSPITALS U.S.News & WORLD REPORT HONOR ROLL 2017-18

6,000 physicians/practitioners

7,200 nurses

MAGNET RECOGNIZED AMERICAN NURSES CREDENTIALING CENTER

Abington Hospital, Jefferson Hospital for Neuroscience and Thomas Jefferson University Hospital are Magnet-designated hospitals

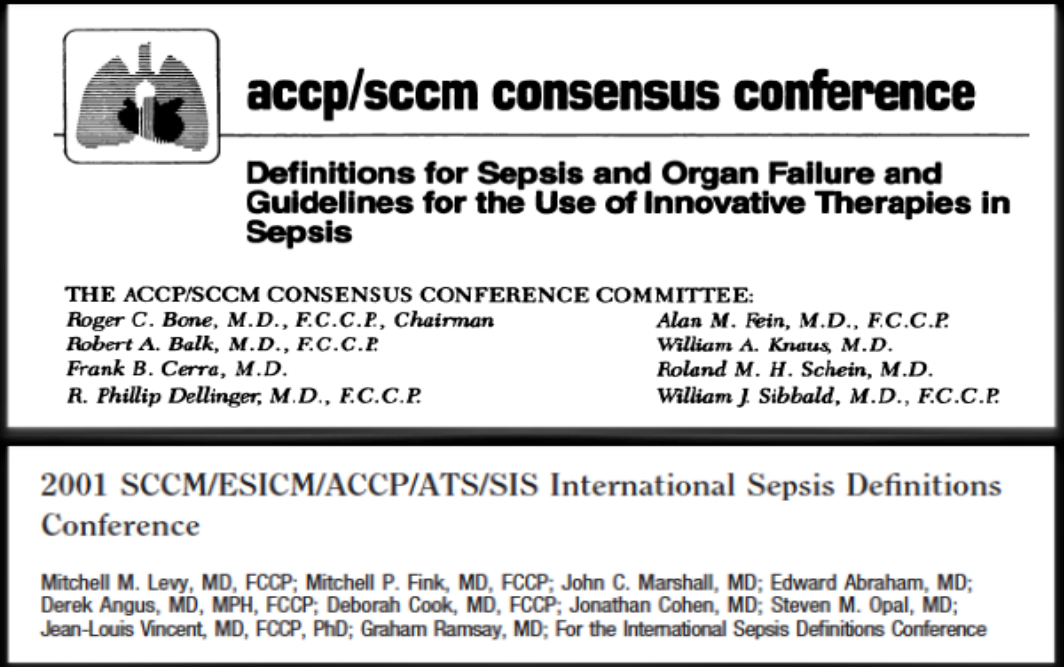
50+ outpatient and urgent care locations

Over **3.6 million** patient interactions annually

Jefferson Health®

HOME OF SIDNEY KIMMEL MEDICAL COLLEGE

Issues with the 1991 and 2001 Definitions



accp/sccm consensus conference

Definitions for Sepsis and Organ Failure and Guidelines for the Use of Innovative Therapies in Sepsis

THE ACCP/SCCM CONSENSUS CONFERENCE COMMITTEE:

Roger C. Bone, M.D., F.C.C.P., Chairman
Robert A. Balk, M.D., F.C.C.P.
Frank B. Cerra, M.D.
R. Phillip Dellinger, M.D., F.C.C.P.
Alan M. Fein, M.D., F.C.C.P.
William A. Knaus, M.D.
Roland M. H. Schein, M.D.
William J. Sibbald, M.D., F.C.C.P.

2001 SCCM/ESICM/ACCP/ATS/SIS International Sepsis Definitions Conference

Mitchell M. Levy, MD, FCCP; Mitchell P. Fink, MD, FCCP; John C. Marshall, MD; Edward Abraham, MD; Derek Angus, MD, MPH, FCCP; Deborah Cook, MD, FCCP; Jonathan Cohen, MD; Steven M. Opal, MD; Jean-Louis Vincent, MD, FCCP, PhD; Graham Ramsay, MD; For the International Sepsis Definitions Conference

- SIRS – based
- "Severe Sepsis" is problematic
- Different assessment criteria yield different results

Sepsis/Severe Sepsis

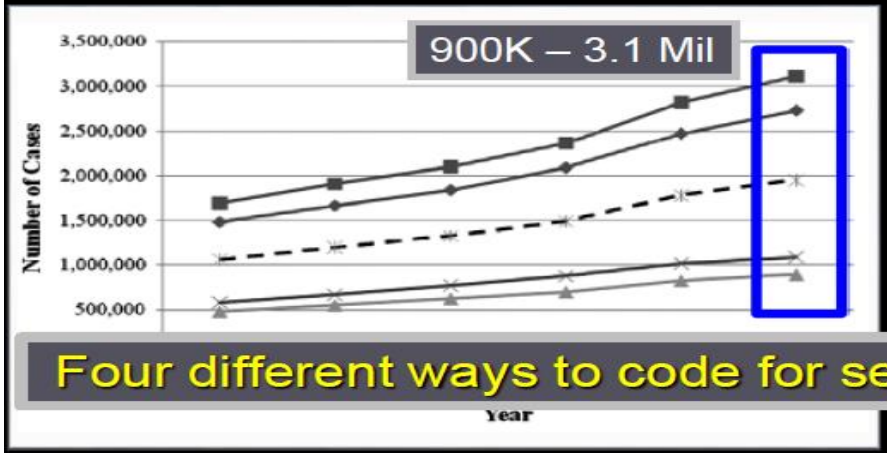
- Confusing
  - Most people say “sepsis” when they mean “severe sepsis”
  - What the initial two task forces called “sepsis” is what most people call “infection”

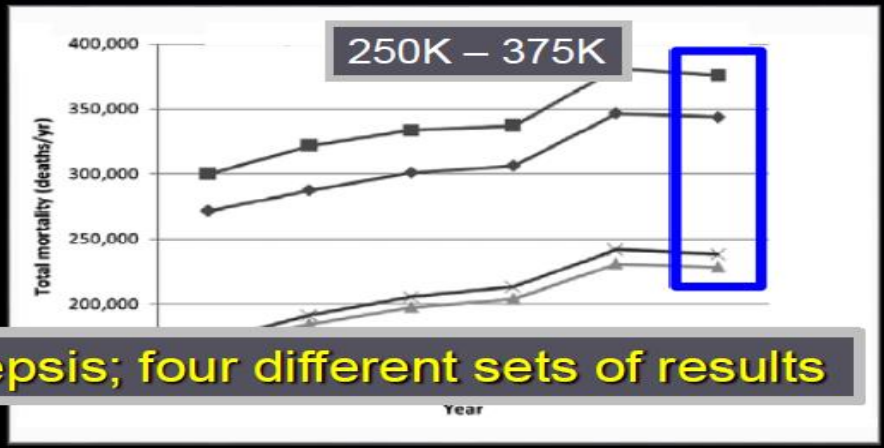
Different Criteria, Different Results

Benchmarking the Incidence and Mortality of Severe Sepsis in the United States*

David F. Gaieski MD[1]; J. Matthew Edwards, MD[1]; Michael J. Kallan, MS[2]; Brendan G. Carr, MD, MA, MS[1–3]

Crit Care Med 2013; 41: 1167-1174





Four different ways to code for sepsis; four different sets of results

Angus — Wang — Dombrovskiy — Martin — Mean Weighted

Original Investigation | CARING FOR THE CRITICALLY ILL PATIENT

Assessment of Clinical Criteria for Sepsis For the Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3)

Christopher W. Seymour, MD, MSc; Vincent X. Liu, MD, MSc; Theodore J. Iwashyna, MD, PhD; Frank M. Brunkhorst, MD; Thomas D. Rea, MD, MPH; André Scherag, PhD; Gordon Rubenfeld, MD, MSc; Jeremy M. Kahn, MD, MSc; Manu Shankar-Hari, MD, MSc; Melvyn Singer, MD, FRCP; Clifford S. Deutschman, MD, MS; Gabriel J. Escobar, MD; Derek C. Angus, MD, MPH

IMPORTANCE The Third International Consensus Definitions Task Force defined sepsis as "life-threatening organ dysfunction due to a dysregulated host response to infection." The performance of clinical criteria for this sepsis definition is unknown.

OBJECTIVE To evaluate the validity of clinical criteria to identify patients with suspected infection who are at risk of sepsis.

DESIGN, SETTINGS, AND POPULATION Among 1.3 million electronic health record encounters from January 1, 2010, to December 31, 2012, at 12 hospitals in southwestern Pennsylvania, we identified those with suspected infection in whom to compare criteria. Confirmatory analyses were performed in 4 data sets of 706 399 out-of-hospital and hospital encounters at 165 US and non-US hospitals ranging from January 1, 2008, until December 31, 2013.

EXPOSURES Sequential [Sepsis-related] Organ Failure Assessment (SOFA) score, systemic inflammatory response syndrome (SIRS) criteria, Logistic Organ Dysfunction System (LODS) score, and a new model derived using multivariable logistic regression in a split sample, the quick Sequential [Sepsis-related] Organ Failure Assessment (qSOFA) score (range, 0-3 points, with 1 point each for systolic hypotension [≤100 mm Hg], tachypnea [≥22/min], or altered mentation).

MAIN OUTCOMES AND MEASURES For construct validity, pairwise agreement was assessed. For predictive validity, the discrimination for outcomes (primary: in-hospital mortality; secondary: in-hospital mortality or intensive care unit [ICU] length of stay ≥3 days) more common in sepsis than uncomplicated infection was determined. Results were expressed as the fold change in outcome over deciles of baseline risk of death and area under the receiver operating characteristic curve (AUROC).

RESULTS In the primary cohort, 148 907 encounters had suspected infection (n = 74 453 derivation; n = 74 454 validation), of whom 6347 (4%) died. Among ICU encounters in the validation cohort (n = 7932 with suspected infection, of whom 1289 [16%] died), the predictive validity for in-hospital mortality was lower for SIRS (AUROC = 0.64; 95% CI, 0.62-0.66) and qSOFA (AUROC = 0.66; 95% CI, 0.64-0.68) vs SOFA (AUROC = 0.74; 95% CI, 0.73-0.76; $P < .001$ for both) or LODS (AUROC = 0.75; 95% CI, 0.73-0.76; $P < .001$ for both). Among non-ICU encounters in the validation cohort (n = 66 522 with suspected infection, of whom 1885 [3%] died), qSOFA had predictive validity (AUROC = 0.81; 95% CI, 0.80-0.82) that was greater than SOFA (AUROC = 0.79; 95% CI, 0.78-0.80; $P < .001$) and SIRS (AUROC = 0.76; 95% CI, 0.75-0.77; $P < .001$). Relative to qSOFA scores lower than 2, encounters with qSOFA scores of 2 or higher had a 3- to 14-fold increase in hospital mortality across baseline risk deciles. Findings were similar in external data sets and for the secondary outcome.

CONCLUSIONS AND RELEVANCE Among ICU encounters with suspected infection, the predictive validity for in-hospital mortality of SOFA was not significantly different than the more complex LODS but was statistically greater than SIRS and qSOFA, supporting its use in clinical criteria for sepsis. Among encounters with suspected infection outside of the ICU, the predictive validity for in-hospital mortality of qSOFA was statistically greater than SOFA and SIRS, supporting its use as a prompt to consider possible sepsis.

JAMA. 2016;315(8):762-774. doi:10.1001/jama.2016.0288

Editorial page 757

Author Audio Interview at jama.com

Related articles pages 775 and 801

Supplemental content at jama.com

Author Affiliations: Author affiliations are listed at the end of this article.

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The CRISMA Center

University of Pittsburgh

Departments of Critical Care and Emergency Medicine

Seymour CW, Liu VX, Iwashyna TJ et al.

Assessment of Clinical Criteria for Sepsis

For the Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3)

JAMA 2016; 315: 762-774

ESICM

Society of Critical Care Medicine

Summary (I)

- Sepsis is defined as life-threatening organ dysfunction caused by a dysregulated host response to infection
- Septic shock is defined as a subset of sepsis in which profound circulatory, cellular and metabolic abnormalities are associated with a greater risk of mortality than with sepsis alone

Summary (II)

- Outside the ICU, patients with suspected or presumed infection who are highly likely to have poor outcomes can be clinically identified using qSOFA
  - SBP < 100mm Hg
  - RR > 22 breath/min
  - Altered mental status
- In the ICU, patients with suspected or presumed infection who are highly likely to have poor outcomes can be clinically identified by the presence of 2 or more SOFA points

Summary (III)

- Patients with septic shock can be clinically identified if, despite adequate resuscitation,
- They require vasopressors to maintain MAP ≥65 mmHg

AND

- Their serum lactate level is > 2 mmol/l

Sepsis

- Sepsis Mortality Project
- Sepsis on the Floors Task Force

Key Components of Sepsis: “ABCDE”

- **A**wareness. Think sepsis! **A**ntimicrobial Stewardship.
- **B**uy-in and support.
- **C**ommunication.
- **D**ata. Sepsis bundle, feedback, concurrent review.
- **E**mpowerment.

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

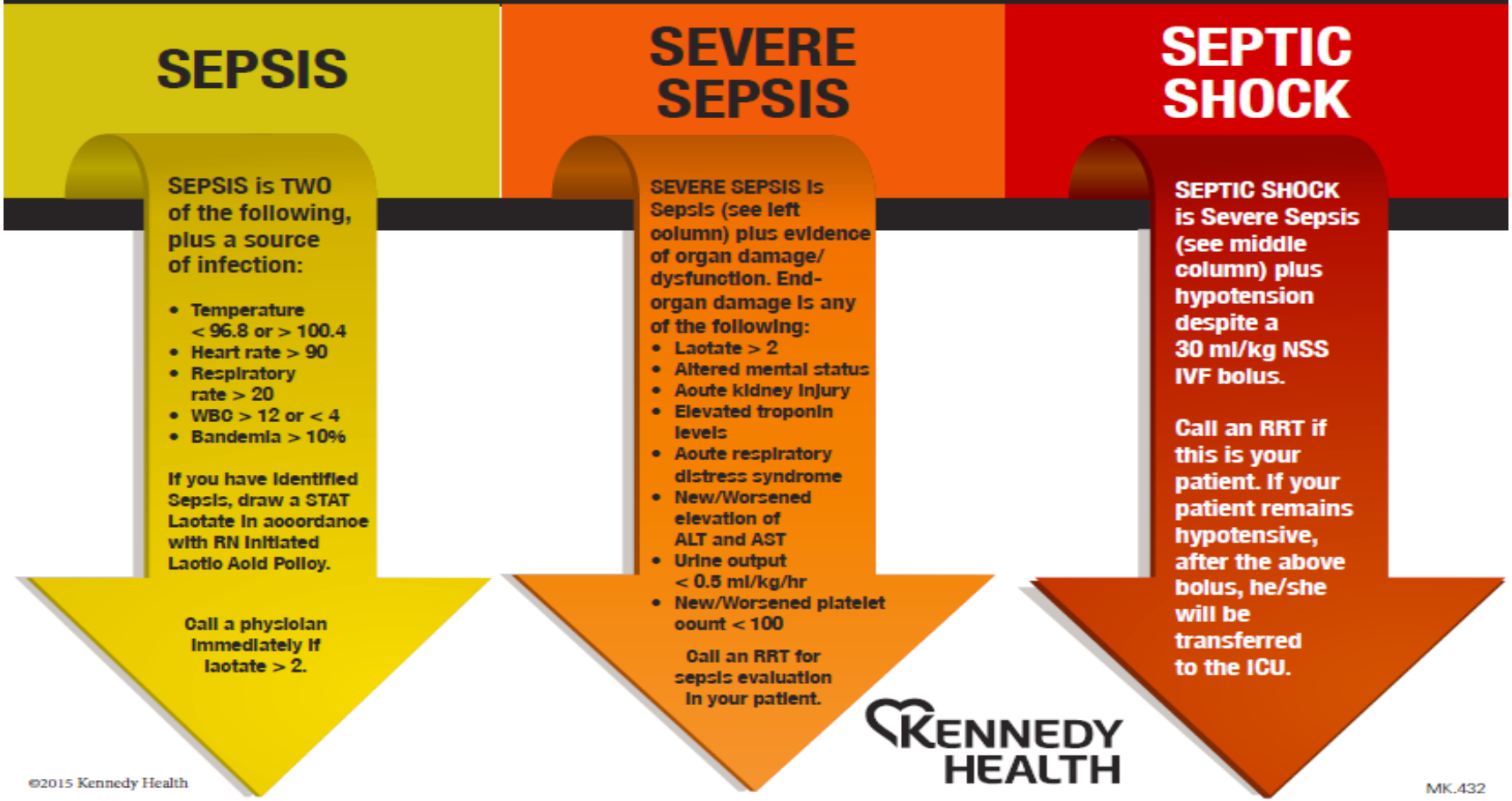
Check blood pressure and lab work		
Is MAP < 65	YES	NO
Is WBC < 4 or > 12	YES	NO

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.

KENNEDY UNIVERSITY HOSPITAL

SEPSIS: PUTTING IT ALL TOGETHER



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KENNEDY HEALTH

MK.432

The Right Antibiotic Makes a Difference!

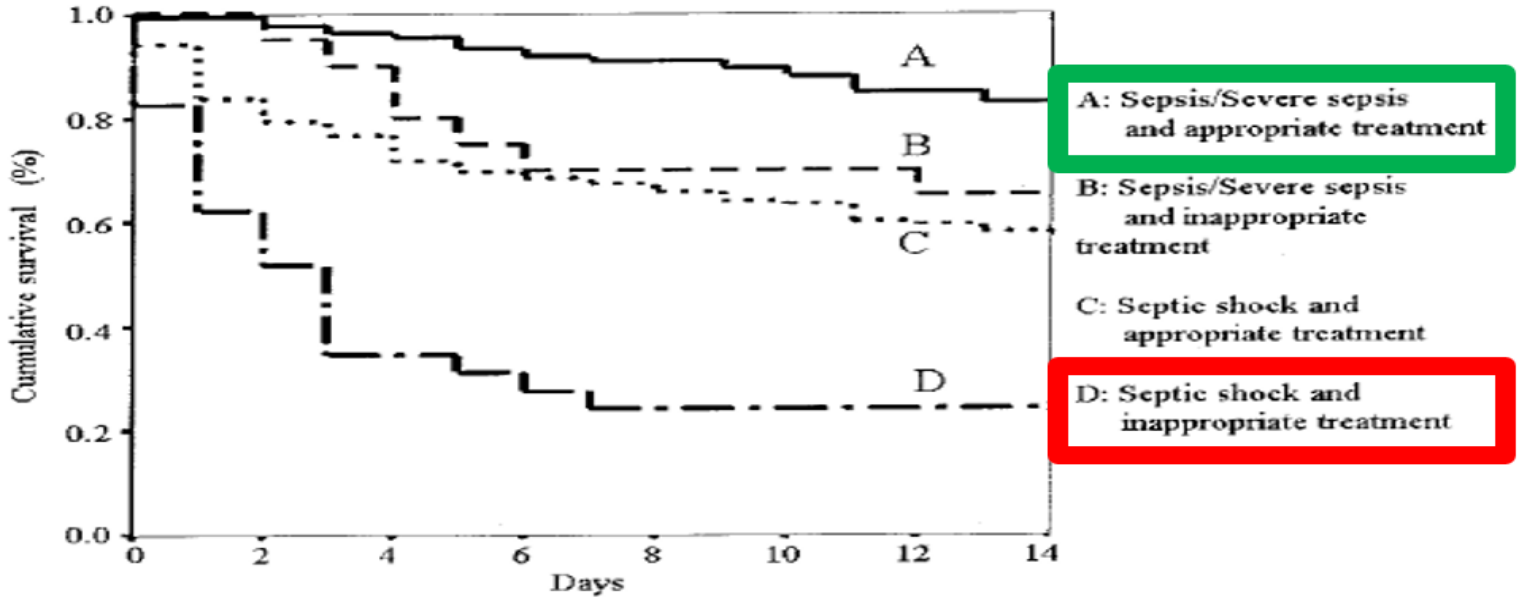
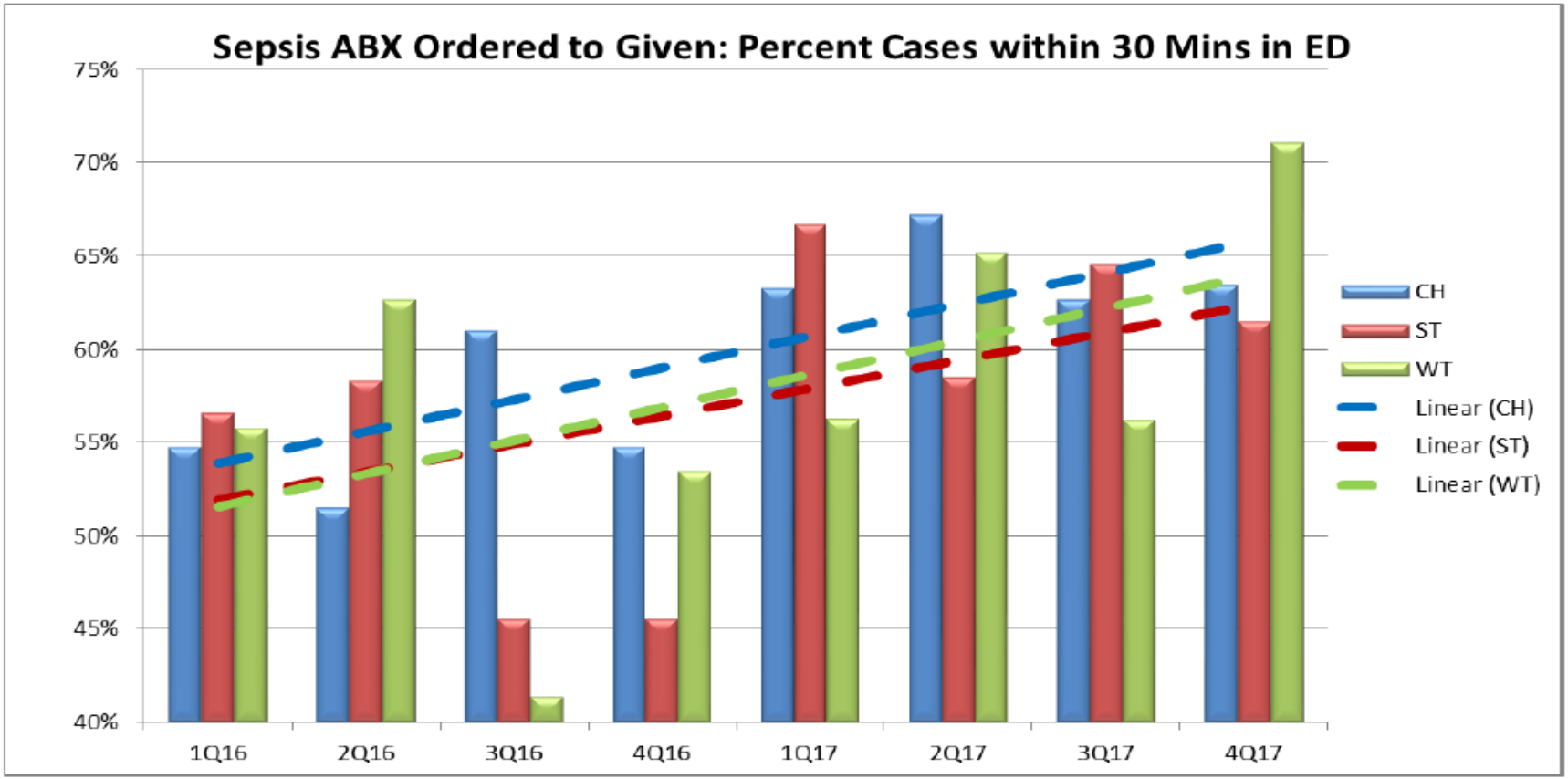


FIGURE 2. Survival rate according to the presence of shock and empiric antibiotic treatment (log-rank test, $p < 0.001$).

CHEST 2003; 123:1615–1624,


Sepsis ABX Ordered to Given: Percent Cases within 30 Mins in ED
75%
70%
65%
60%
55%
50%
45%
40%
1Q16
2Q16
3Q16
4Q16
1Q17
2Q17
3Q17
4Q17
CH
ST
WT
Linear (CH)
Linear (ST)
Linear (WT)

Antibiotic Ordered Time to Given Time in the ED

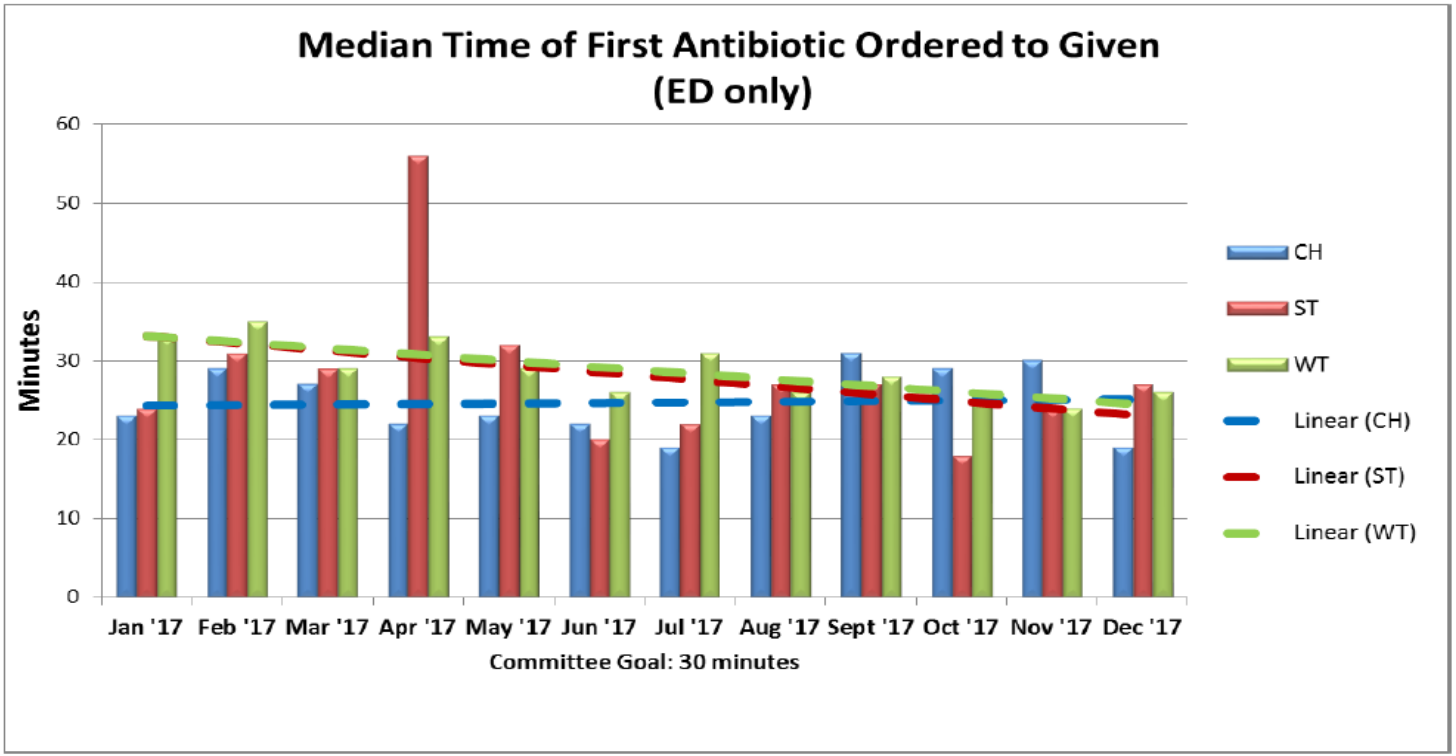
Compliance rate for antibiotics being administered within 30 minutes.

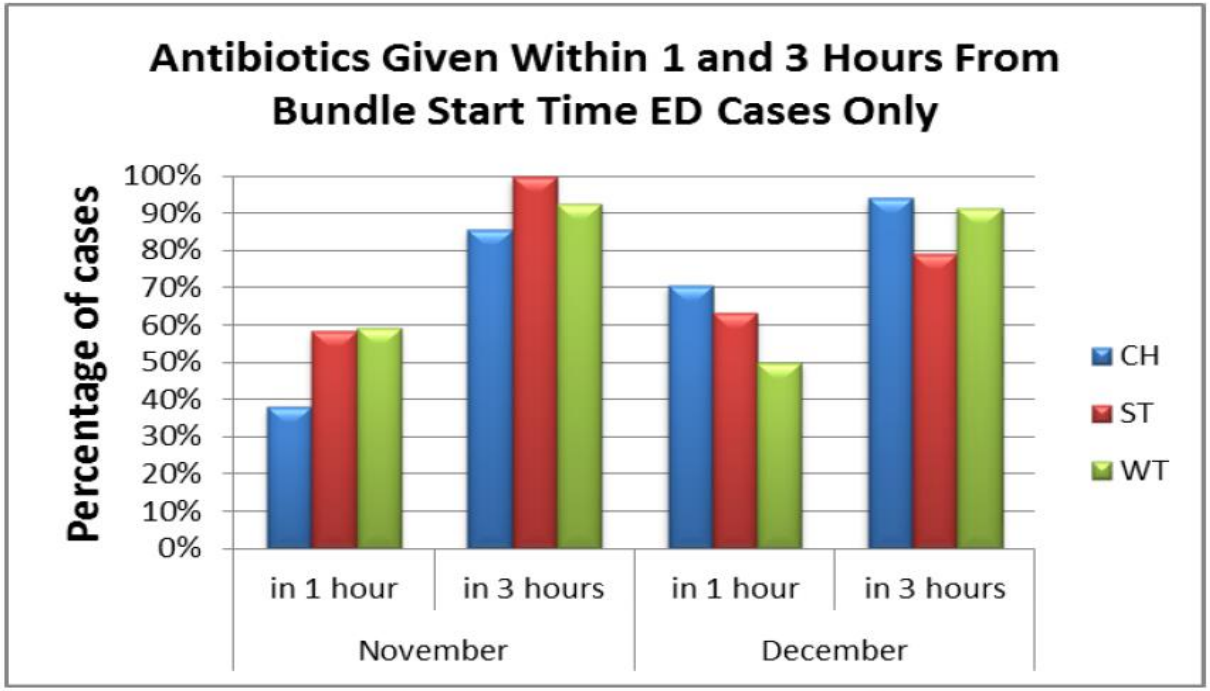
	CH	ST	WT
1Q16	34/62 (54.8%)	30/53 (56.6%)	67/120 (55.8%)
2Q16	17/33 (51.5%)	21/36 (58.3%)	37/59 (62.7%)
3Q16	36/59 (61.0%)	26/57 (45.6%)	24/58 (41.4%)
4Q16	37/64 (54.8%)	26/57 (45.6%)	31/58 (53.5%)
1Q17	62/98 (63.3%)	54/81 (66.7%)	72/128 (56.3%)
2Q17	39/58 (67.24%)	31/53 (58.49%)	116/178 (65.17%)
3Q17	42/67 (62.69%)	31/48 (64.58%)	81/144 (56.25%)
4Q17	33/52 (63.46%)	32/52 (61.54%)	81/114 (71.05%)

Average minutes for antibiotic to be administered.

	CH		ST		WT	
	Severe Sepsis	Septic Shock	Severe Sepsis	Septic Shock	Severe Sepsis	Septic Shock
1Q16	33:57	39:00	35:46	34:06	40:04	30:38
2Q16	35:36	27:23	37:28	27:18	28:56	28:28
3Q16	34:26	34:37	41:14	30:36	54:58	35:11
4Q16	30:08	35:43	37:12	36:20	34:35	37:39
1Q17	32:11	27:53	34:37	27:55	39:31	34:12
2Q17	26:39	30:13	30:01	26:25	31:37	25:20
3Q17	28:31	23:42	32:54	29:16	37:19	21:58
4Q17	24:13	24:37	28:17	32:12	27:10	29:25

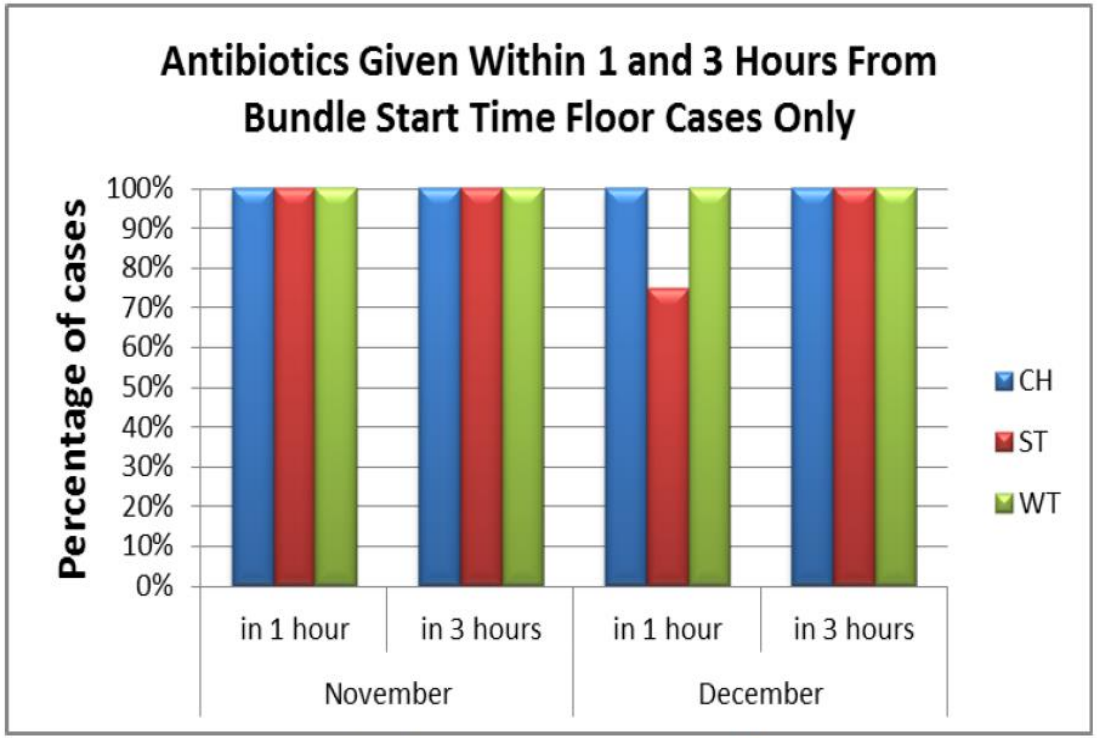
Sepsis Committee Goal is 30 minutes from order time to administration time.


Median Time of First Antibiotic Ordered to Given (ED only)
Minutes
60
50
40
30
20
10
0
Jan '17
Feb '17
Mar '17
Apr '17
May '17
Jun '17
Jul '17
Aug '17
Sept '17
Oct '17
Nov '17
Dec '17
Committee Goal: 30 minutes
CH
ST
WT
Linear (CH)
Linear (ST)
Linear (WT)



CH *n*= 21
ST *n*= 12
WT *n*= 27

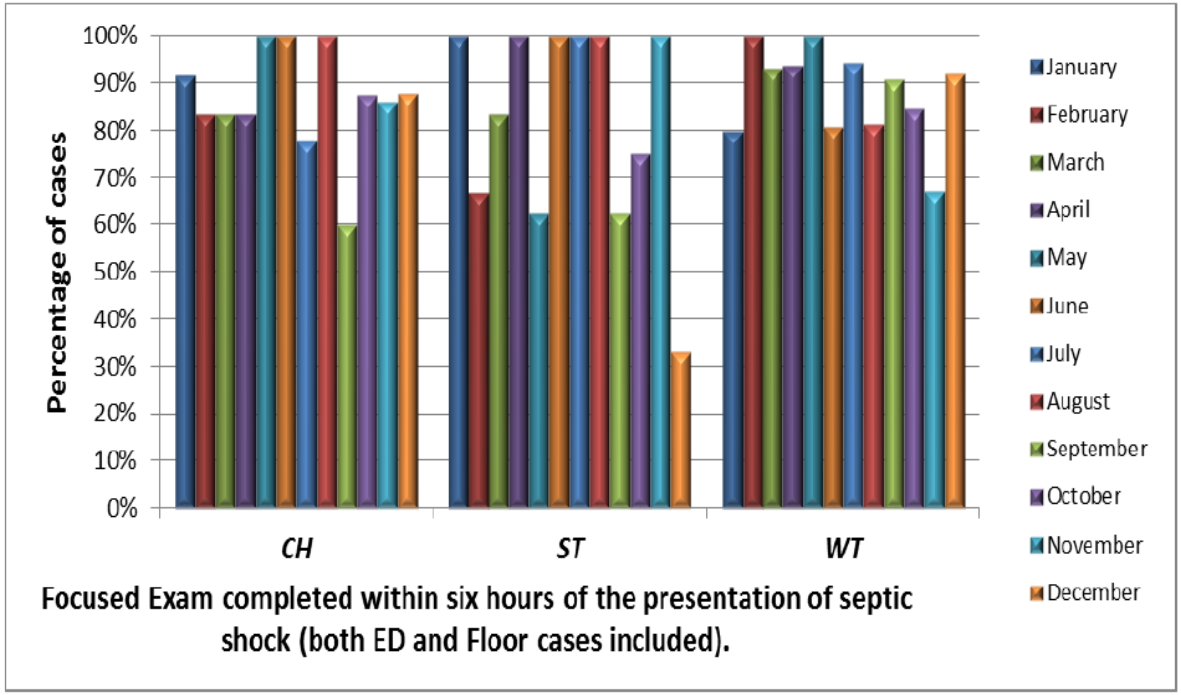
CH *n*= 17
ST *n*= 19
WT *n*= 46



CH *n*= 1
ST *n*= 3
WT *n*= 7

CH *n*= 4
ST *n*= 4
WT *n*= 4

FOCUSED EXAM

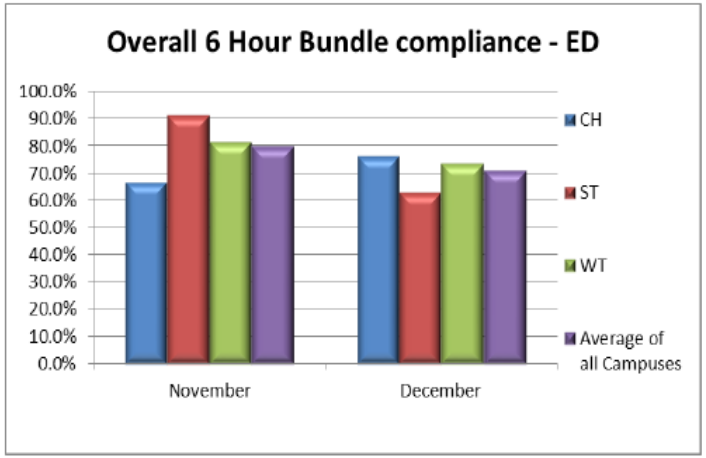


Focused Exam completed within six hours of the presentation of septic shock (both ED and Floor cases included).

Attestation statement: "I attest that I have performed a physical examination of this patient. A sepsis focused exam was completed."

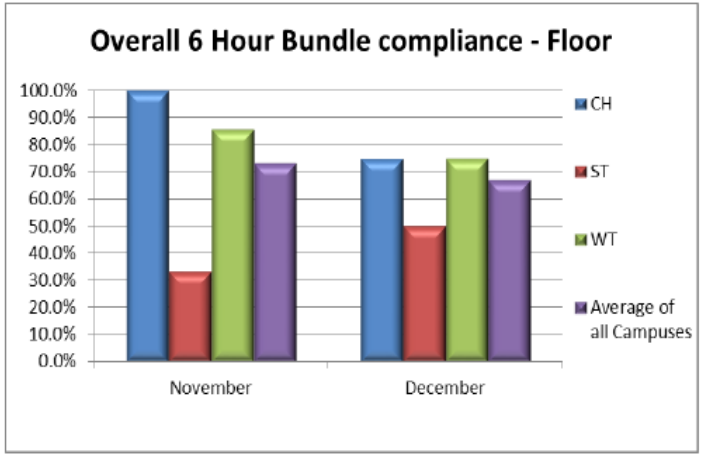
Effective Date: April 10, 2017

BUNDLE COMPLIANCE



CH *n*= 21
ST *n*= 12
WT *n*= 27

CH *n*= 17
ST *n*= 19
WT *n*= 46

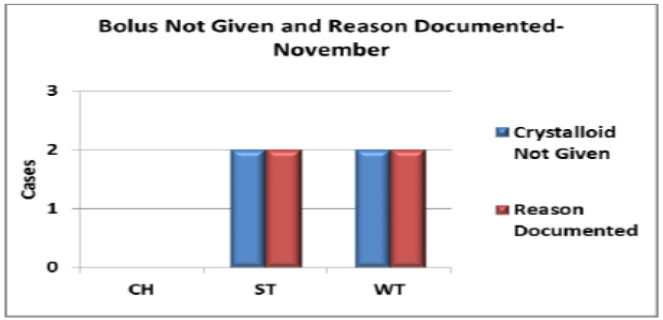


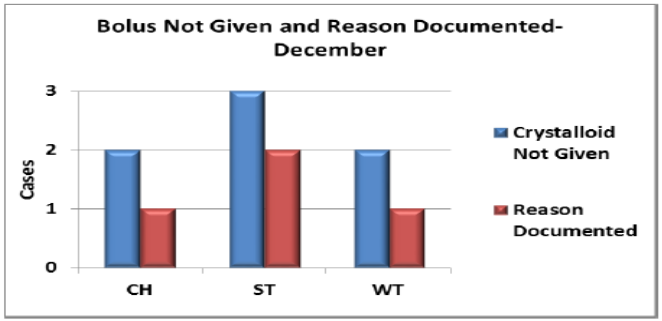
CH *n*= 1
ST *n*= 3
WT *n*= 7

CH *n*= 4
ST *n*= 4
WT *n*= 4

Overall Bundle Compliance includes Focused Exam and Repeat Lactate if indicated.

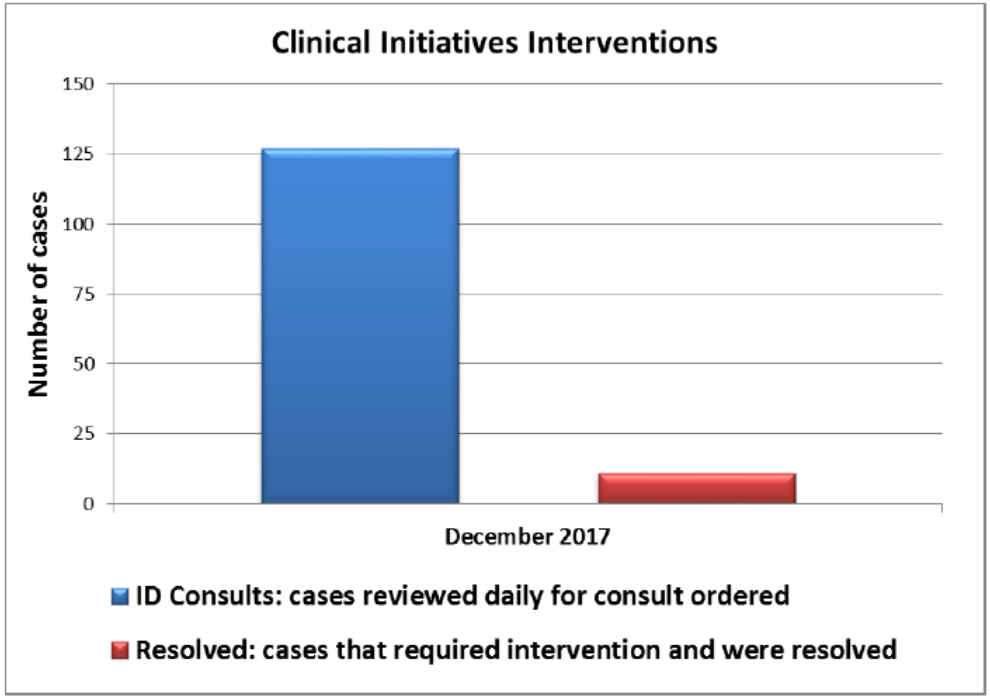
BOLUS NOT GIVEN AND REASON DOCUMENTED



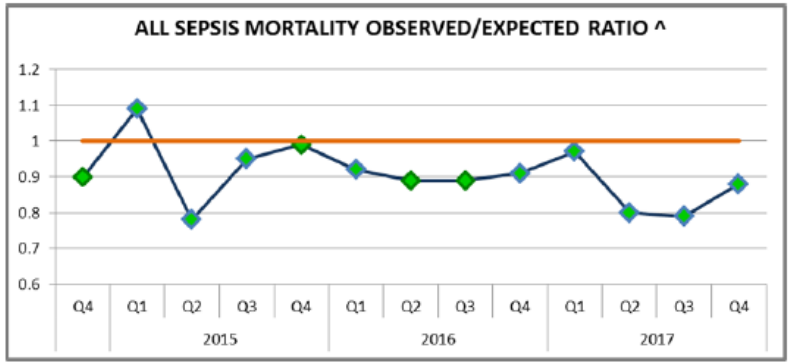


	NOVEMBER	DECEMBER
CH	No cases	• 1 case with reason given (ESRD) • 1 case with no reason given (88783899)
ST	• 2 cases with reasons given (hypoxia, ESRD)	• 2 cases with reasons given (CHF, age) • 1 case with no reason given (88692678)
WT	• 2 cases with reasons given (pulmonary edema, volume overload)	• 1 case with reason given (ESRD) • 1 case with no reason given (88763503)

CLINICAL INITIATIVES INTERVENTIONS

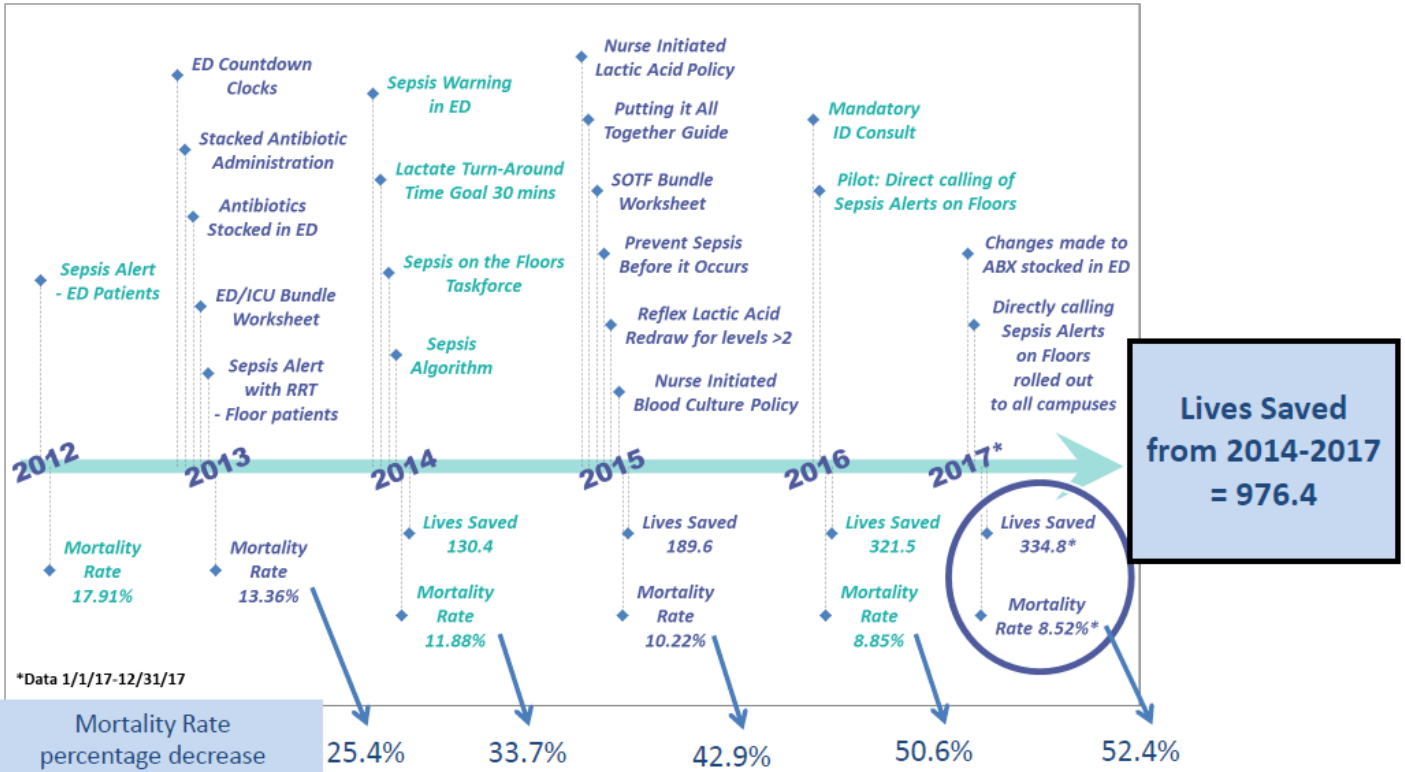


ALL SEPSIS MORTALITY RATE (%): Oct-Dec 2017 ^					
Facility	Total Cases	Mortality Cases	Observed	Expected	O/E
Total	818	73	8.92	10.14	0.88
Washington	460	44	9.57	10.40	0.92
Stratford	149	9	6.04	6.71	0.9
Cherry Hill	209	20	9.57	12.11	0.79



SEPSIS MORTALITY														
	2014		2015 ^				2016 ^				2017 ^			
Rate	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Observed	11.23	9.98	11.86	7.52	8.36	9.24	9.68	8.93	8.54	8.24	10.01	7.44	7.49	8.92
Expected	10.59	11.09	10.88	9.64	8.80	9.33	10.52	10.03	9.60	9.05	10.32	9.30	9.48	10.14

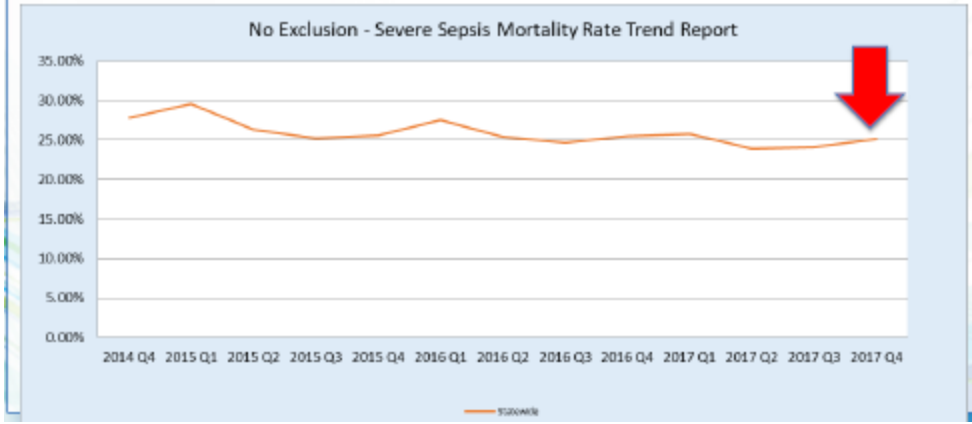
Data Source: Crimson ^ FY2015Q1-3 refreshed 11/2/17 using Crimson Sepsis ICD-9 template. FY2015Q4-FY2017Q2 refreshed 11/2/17 using Crimson Sepsis ICD-10 template. FY2017Q3-present refreshed 1/22/18 using Crimson Sepsis ICD-10 template.



2015-2017 data refreshed using Crimson template which auto-updates with ICD-10 coding. For the year 2015, the ICD-9 template utilized per advise of the Crimson advisor, as it maps the corresponding ICD-10 coding for the 4th quarter.

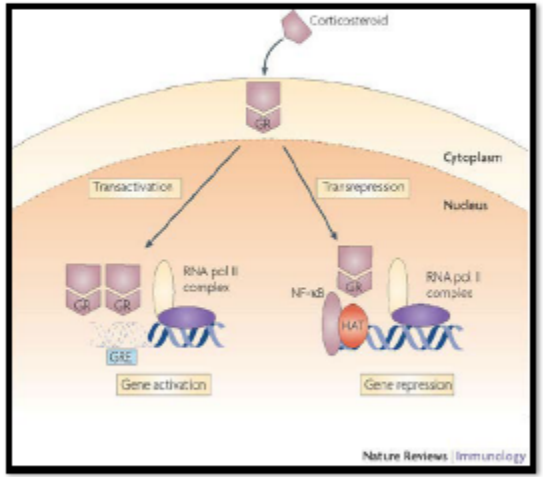
Statewide Sepsis Mortality

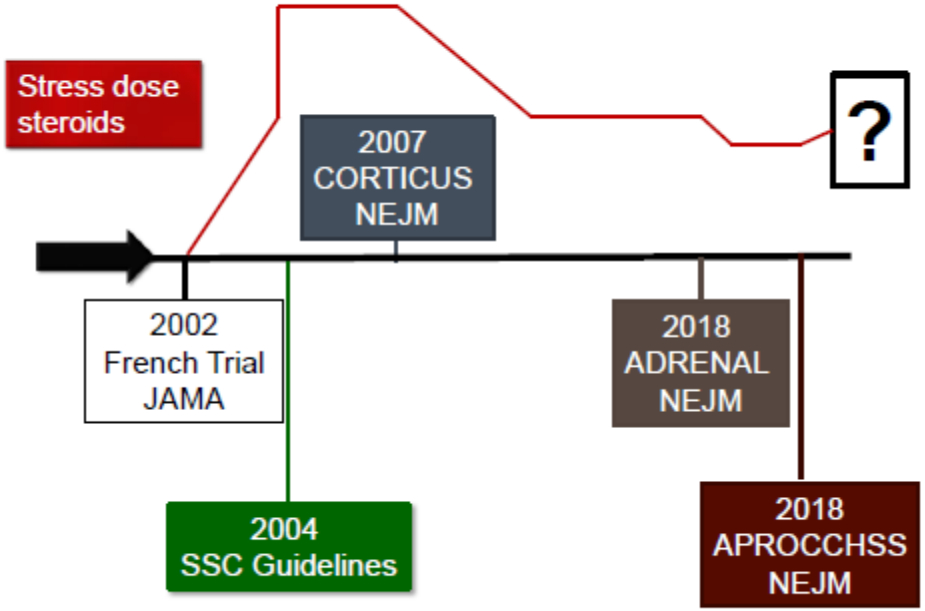
- Q3 and Q4 Sepsis Mortality Reports have been sent
- Q4 data may be incomplete due to the DOH data vendor change



Severe Sepsis/Septic Shock

- Glucocorticoid receptors
  - reduction in number
  - reduction in affinity




Stress dose steroids
2007 CORTICUS NEJM
?
2002 French Trial JAMA
2004 SSC Guidelines
2018 ADRENAL NEJM
2018 APROCCHSS NEJM

What do we know?

- Low dose steroid therapy reduces time to reversal of septic shock
- Still controversial as to whether or not there is a meaningful reduction in mortality.
- The more severely ill and hemodynamically unstable the patient is the more likely to benefit from stress-dose steroids.

2004

1. Intravenous corticosteroids (hydrocortisone 200–300 mg/day, for 7 days in three or four divided doses or by continuous infusion) are recommended in patients with septic shock who, despite adequate fluid replacement, require vasopressor therapy to maintain adequate blood pressure.
2. Some experts would use a 250-µg ACTH stimulation test to identify responders (>9µg/dL increase in cortisol 30–60 mins post- ACTH administration) and discontinue therapy in these patients. Clinicians should not wait for ACTH stimulation results to administer corticosteroids.
3. Some experts would decrease dosage of steroids after resolution of septic shock.
4. Some experts would consider tapering the dose of corticosteroids at the end of therapy.
5. Some experts would add fludrocortisone (50 µg orally four times per day) to this regimen.
6. Doses of corticosteroids >300 mg hydrocortisone daily should not be used in severe sepsis or septic shock for the purpose of treating septic shock.
7. In the absence of shock, corticosteroids should not be administered for the treatment of sepsis. There is, however, no contraindication to continuing maintenance steroid therapy or to using stress dose steroids if the patient's history of Corticosteroid administration or the patient's endocrine history warrants.

2008

1. We suggest that intravenous hydrocortisone be given only to adult septic shock patients after it has been confirmed that their blood pressure is poorly responsive to fluid resuscitation and vasopressor therapy
2. We suggest that the ACTH stimulation test not be used to identify the subset of adults with septic shock who should receive hydrocortisone
3. We suggest that patients with septic shock should not receive dexamethasone if hydrocortisone is available
4. We suggest the daily addition of oral fludrocortisone (50µg) if hydrocortisone is not available and the steroid that is substituted has no significant mineralocorticoid activity. Fludrocortisone is considered optional if hydrocortisone is used
5. We suggest that clinicians wean the patient from steroid therapy when vasopressors are no longer required
6. We recommend that doses of corticosteroids comparable to >300 mg of hydrocortisone daily not be used in severe sepsis or septic shock for the purpose of treating septic shock
7. We recommend that corticosteroids not be administered for the treatment of sepsis in the absence of shock. There is, however, no contraindication to continuing maintenance steroid therapy or to using stress-dose steroids if the patient's endocrine or corticosteroid administration history warrants

2012

1. We suggest not using intravenous hydrocortisone as a treatment of adult septic shock patients if adequate fluid resuscitation and vasopressor therapy are able to restore hemodynamic stability (see goals for Initial Resuscitation). If this is not achievable, we suggest intravenous hydrocortisone alone at a dose of 200 mg per day
2. We suggest not using the ACTH stimulation test to identify the subset of adults with septic shock who should receive hydrocortisone
3. We suggest that clinicians taper the treated patient from steroid therapy when vasopressors are no longer required
4. We recommend that corticosteroids not be administered for the treatment of sepsis in the absence of shock
5. When low-dose hydrocortisone is given, we suggest using continuous infusion rather than repetitive bolus injections

2016

1. We suggest against using IV hydrocortisone to treat septic shock patients if adequate fluid resuscitation and vasopressor therapy are able to restore hemodynamic stability. If this is not achievable, we suggest IV hydrocortisone at a dose of 200 mg per day

Surviving Sepsis Campaign 2016

- We suggest against using IV hydrocortisone to treat septic shock patients if adequate fluid resuscitation and vasopressor therapy are able to restore hemodynamic stability. If this is not achievable, we suggest IV hydrocortisone at a dose of 200 mg per day

Surviving Sepsis Campaign

Jefferson Health New Jersey

- Track all major stewardship initiatives and antibiotic use.
- Antibiotic use was high for high-risk antimicrobials for *C.diff*, total number of antibiotics per patient could be high, and *C.diff* was high.
- Mandatory ID Consult for any patient:
    1) with sepsis, severe sepsis, and septic shock
    2) on 3 or more antibiotics
    3) who has *C.diff*.

Clinical Infectious Diseases, Volume 58, Issue 1, 1 January 2014, Pages 22–28

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®)

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®)

*** Highest Association with CDiff**

Kennedy CDiff Task Force, 2015

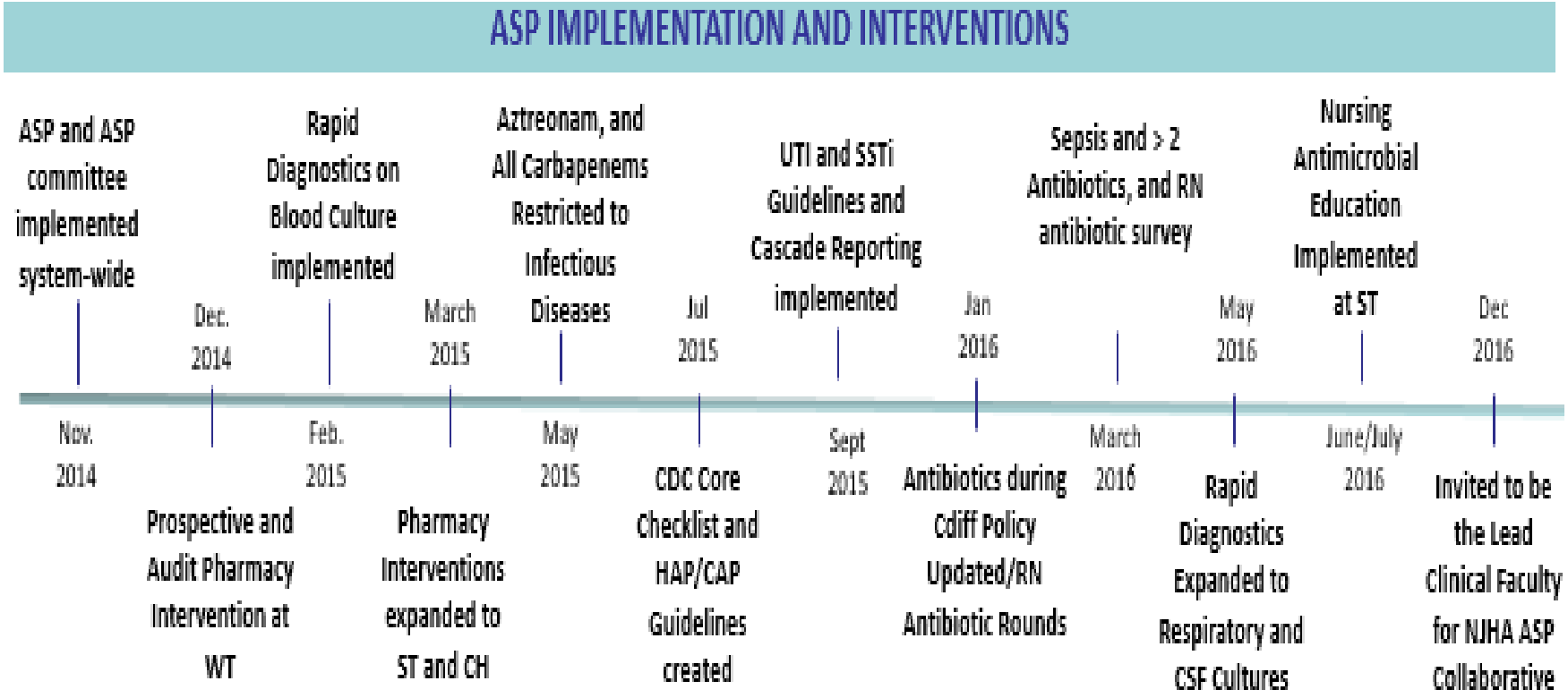
KENNEDY HEALTH

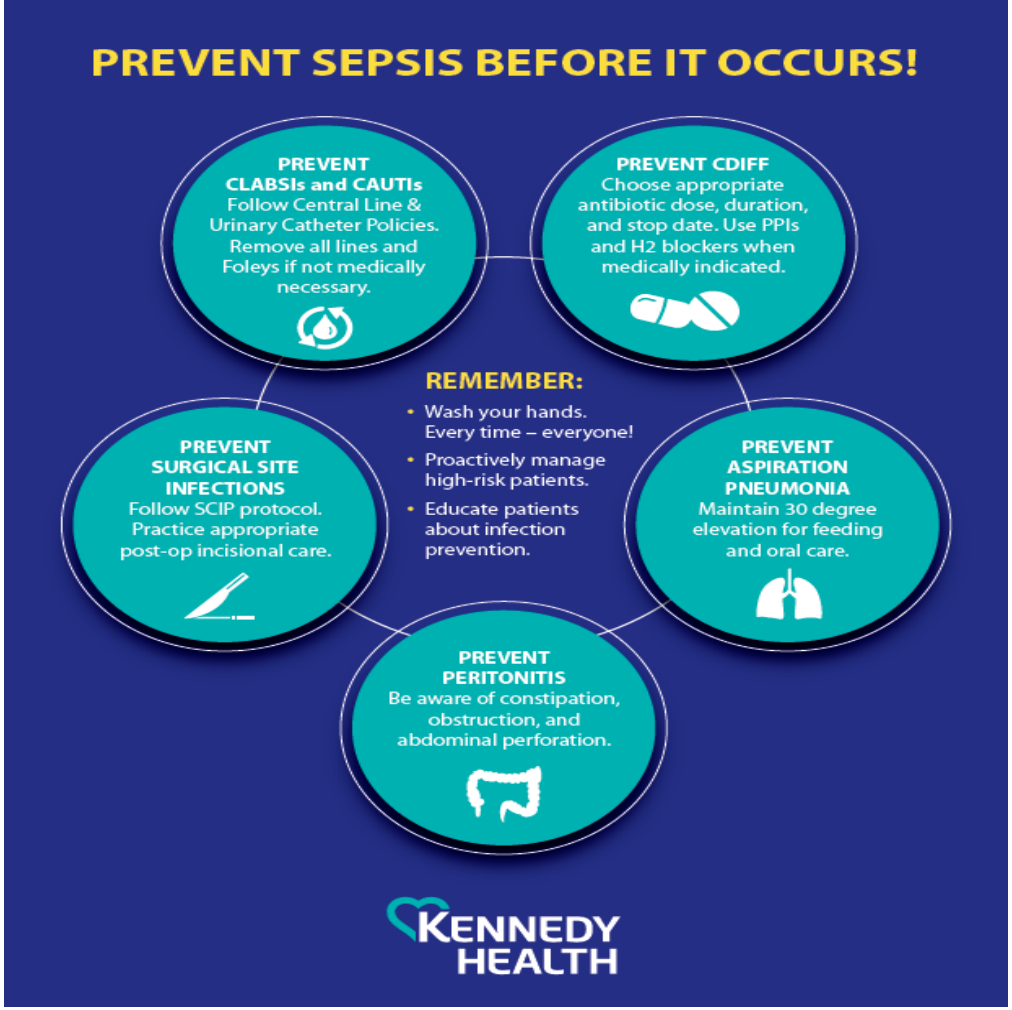
MK.497

Examples of Stewardship for Sepsis

- Antibiotic indication for all antimicrobials.
- 48-hour antibiotic time-out.
- Vancomycin kinetics by Clinical Pharmacy/ID Pharmacist.
- Microbiology and rapid diagnostics – PCR to identify pathogen in +blood cultures, viral vs. bacterial pathogens (CNS, GI, Respiratory).

Jefferson Health New Jersey ASP Milestones




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.
REMEMBER:
• Wash your hands. Every time – everyone!
• Proactively manage high-risk patients.
• Educate patients about infection prevention.
PREVENT SURGICAL SITE INFECTIONS
Follow SCIP protocol. Practice appropriate post-op incisional care.
PREVENT ASPIRATION PNEUMONIA
Maintain 30 degree elevation for feeding and oral care.
PREVENT PERITONITIS
Be aware of constipation, obstruction, and abdominal perforation.
KENNEDY HEALTH

Jefferson Health New Jersey
Integrated Model of Stewardship and Sepsis

Relevance of Devices

- Patients can acquire device-related infections -> sepsis.
- Infection prevention at insertion, maintenance, and removal when no longer necessary.
- Avoiding and removing lines decreases risks for MDRO acquisition and is a form of antimicrobial stewardship.

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 catheter
  - Urinal
  - Texas catheter

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 for Foley
- Bladder scan and straight catheter x 2
- Check U1 (Foley) Policy for reinsertion

KENNEDY HEALTH

Kennedy CLABSI and CAUTI Task Force

MK 590 - 1/17
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DIAGNOSIS AND INFECTIONS SPECIFIC INTERVENTIONS ***Does your facility have specific interventions in place to ensure optimal use of antibiotics to treat the following common infections?***	**ACTION PERFORMED**	
K. Community-acquired pneumonia	❑ Yes	❑ No
L. Urinary tract infection	❑ Yes	❑ No
M. Skin and soft tissue infections	❑ Yes	❑ No
N. Surgical prophylaxis	❑ Yes	❑ No
O. Empiric treatment of Methicillin-resistant Staphylococcus aureus (MRSA)	❑ Yes	❑ No
P. Non-C. Difficile infection (CDI) antibiotics in new cases of CDI	❑ Yes	❑ No
Q. Culture-proven invasive (e.g., blood stream) infections	❑ Yes	❑ No

CDC. Core Elements of Hospital Antibiotic Stewardship Programs. Atlanta, GA: US Department of Health and Human Services, CDC; 2014. Available at **http://www.cdc.gov/getsmart/healthcare/implementation/core-elements.html.**

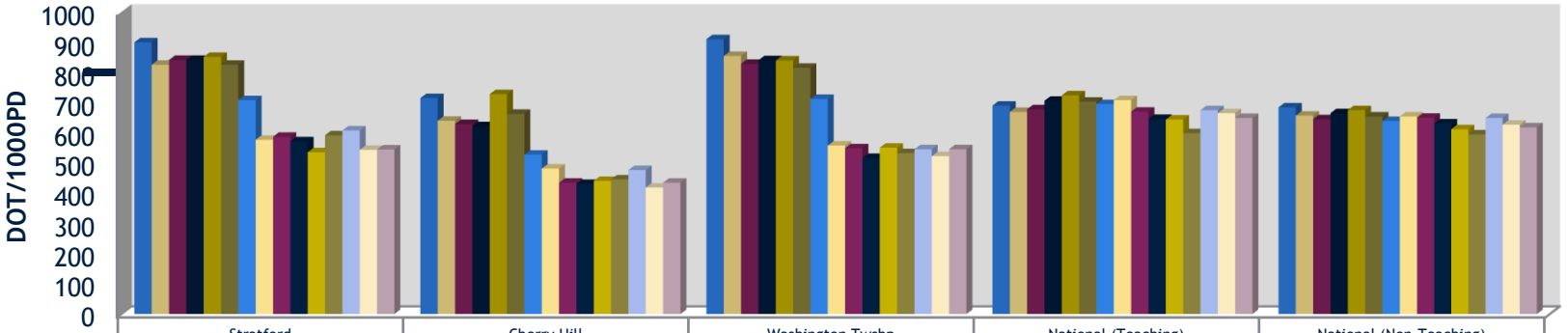
Jefferson Health

Outcomes Data from Jefferson Health New Jersey

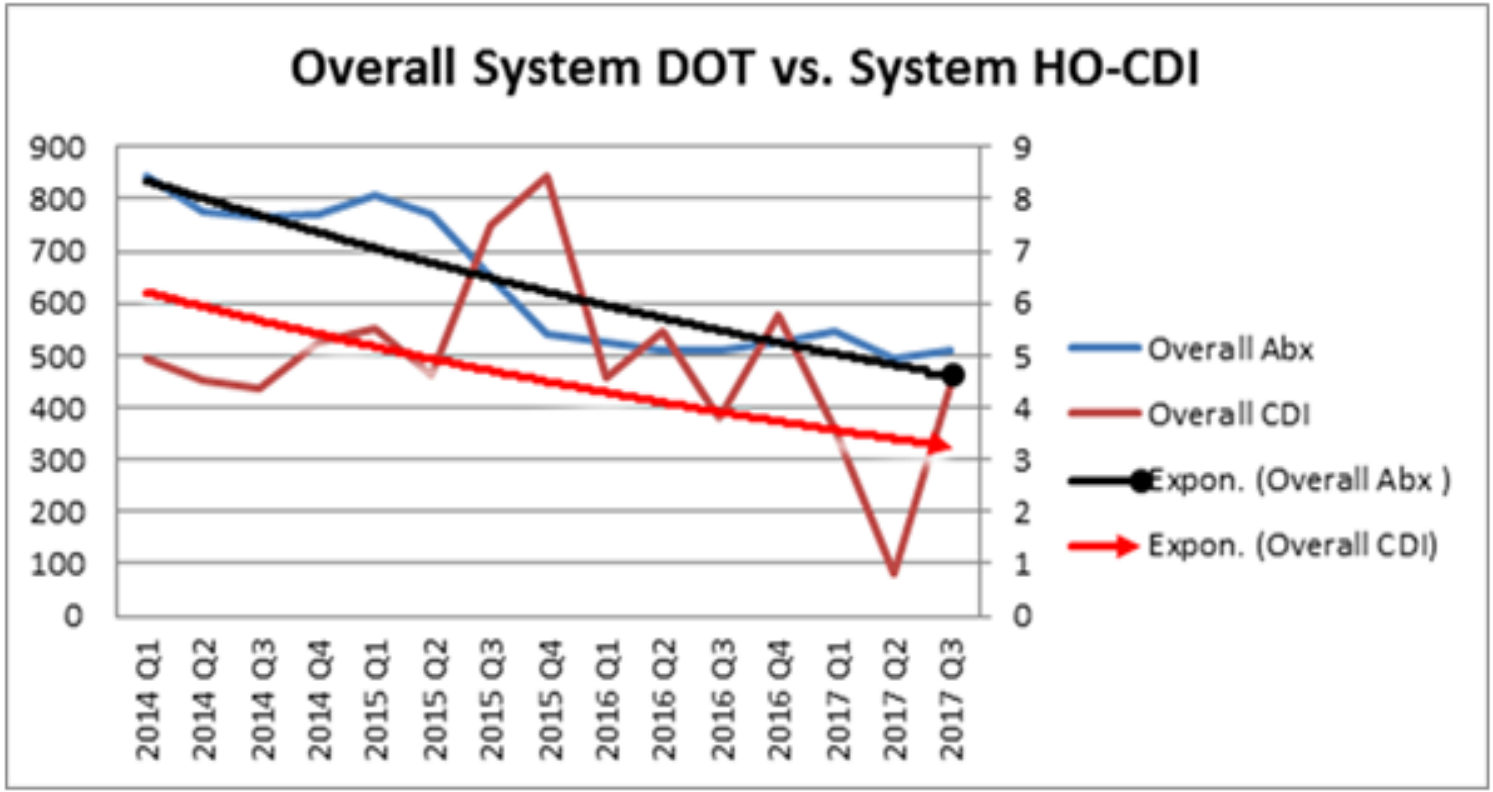
Overall Data

- DOT from vendor
- Average antibiotic DOT from national customers of vendor (2016-Quarter 3 2017) = 647.8 or 650 DOT/1000PD (average)
- **All three campuses are below expected national average.**

Overall Antibiotics



	Stratford	Cherry Hill	Washington Twshp	National (Teaching)	National (Non-Teaching)
2014 Q1	900	716	910	691	685
2014 Q2	826	641	855	670	658
2014 Q3	842	630	829	679	646
2014 Q4	842	623	841	707	666
2015 Q1	852	729	840	725	676
2015 Q2	826	664	816	704	655
2015 Q3	709	529	713	696	640
2015 Q4	578	483	559	709	655
2016 Q1	588	436	550	671	651
2016 Q2	573	432	518	647	632
2016 Q3	537	442	552	645	613
2016 Q4	593	447	534	600	596
2017 Q1	609	478	547	676	650
2017 Q2	545	420	524	666	628
2017 Q3	546	436	547	650	619


Overall System DOT vs. System HO-CDI
900
800
700
600
500
400
300
200
100
0
9
8
7
6
5
4
3
2
1
0
2014 Q1
2014 Q2
2014 Q3
2014 Q4
2015 Q1
2015 Q2
2015 Q3
2015 Q4
2016 Q1
2016 Q2
2016 Q3
2016 Q4
2017 Q1
2017 Q2
2017 Q3
Overall Abx
Overall CDI
Expon. (Overall Abx)
Expon. (Overall CDI)

Awards And Accolades: Jefferson Health New Jersey

Thank You

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