New York State
Partnership
for Patients

Passage to Excellence
Our Sepsis Journey

St. Catherine of Siena Medical Center

St. Catherine of Siena Medical Center

- 311 bed community hospital
  - Voluntary medical staff leadership
  - Hospitalist & Intensivist Program
  - 23 bed Critical Care Unit

- Active Emergency Department
  - >29,000 patients per year
  - 35% admission rate
  - All ED Physicians Emergency Trained and Board Certified

- Critical Care Intensivist Program

- Large nursing home catchment area, admissions from > 40 facilities

- Average patient age is greater than 80

January 2019

Hospital Sepsis Team

- **Laurie Yuditsky, MBA, BSN, RN, CPHQ Director of QA/PI, Sepsis Team Chair/Coordinator**
- **James O'Connor, Executive Vice President and Chief Administrative Officer**
- **Michelle Goldfarb, MBA, RN, CPHQ, CPPS, VP Quality, Patient Safety, Regulatory Affairs**
- **Dr. Mickel Khlat, DO, MBA, Chief Medical Officer**
- **MaryJane Finnegan, MSN, RN, Chief Nursing Officer**
- **Dr. James Ryan, MD, FACEP, Director Department of Emergency Medicine**

Hospital Sepsis Team

- Mary Heiman, BS, MT (ASCP), Administrative Director Laboratory Services
- Pat Butera, MBA, BSN, RN, Director Clinical Services
- Gayle Romano MSN, BSN, FNP, RN, Director Critical Care, ED, and CCL
- Sinead Suszczynski MSN, RN, WHNP-BC, CPHIMS, Director Education/Clinical Informatics
- Bonnie Morales MBA, BS, RN, CCRN-K, Director Employee Health and Infection Prevention and Control
- Lisa Koshansky BSN, RN, Nurse Manager Critical Care
- Rob Hackmack RN, Nurse Manager Emergency Room
- Anna Bisceglia, BS, RN, Nurse Manager
- Marigrace Lomonaco, BSN, RN-C, Nurse Manager
- Amie Pace-McCarthy, BSN, RN, Nurse Manager
- Gary Grabkowitz, RPh, Director of Pharmacy
- Melissa Wright, RPh, Clinical Pharmacy Coordinator
- Colleen Klein MSN, GNP, Clinical Development Coordinator
- Dr. Joshua Bozek, DO, Director of QA/PI, Department of Emergency Medicine
- Hospitalists and Intensivists
- Staff nurses, PCAs, laboratory technicians, phlebotomists, etc.

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Project Description

Sepsis remains a leading cause of illness and death in the US with annual costs estimated at $20 billion. Sepsis affects more than just our patients. Most of us know someone that has succumbed to this dangerous condition. If left untreated, or if treatment is delayed, sepsis has the potential to cause devastating illness or death. Severe sepsis and septic shock are the gravest manifestations of sepsis and since 2014, NYS has required its hospitals implement evidenced based protocols to facilitate early recognition and treatment. Sepsis is recognized by the CDC as a leading cause of death in US Hospitals. Our responsibility is to learn from past successes and failures, utilizing PDSA methodology to further improve the care we provide to our patients. There is no single department or individual responsible for our success, but rather a hospital-wide multidisciplinary team approach which focused on what sepsis is, required diagnostic testing, necessary treatments, and why these bundles of care prove to have positive outcomes. In 2011 we began our Sepsis Journey, and since then we have improved early recognition of the septic patient and have seen significant advancement in the quality of care that is provided to our patients. This is evident in the improvement of our 3hr and 6hr bundle compliance, as well as a decrease in sepsis related mortality rates. Communication, accountability, collaboration, as well as knowledge are the cornerstones of this successful performance improvement initiative.

Project Implementation

- **2010-2011**
  - Established a Sepsis Steering Committee with 4 members
  - Educated nurses and physicians – via didactics and simulation training, with a special focus on the Emergency Department and Critical Care
  - Developed a paper screening tool to be used in triage to focus on early identification of sepsis
  - Promoted collaboration between ED and Critical Care staff to improve transitions in care
  - Began participating with GNYHA "Stop Sepsis Collaborative"
  - Developed a data collection tool, reviewed cases, and monitored compliance with a focus on the initial lactic acid draw and trending, as well as blood culture collection before antibiotic administration
  - Developed paper based order sets and mandated their use by Hospitalists
  - Sepsis initiative and compliance of elements reported at Infection Prevention and Control meetings
- **2012-2013**
  - Implemented/optimized EMR
  - Held informal one on one discussions of case scenarios as well as discussions with team members, including presentations at meetings to foster excitement in the process and further improve accountability
  - The EMR teams developed electronic based sepsis order sets, sepsis screening tools, and nurse/physician BPAs(best practice advisories) based on successful paper tools from prior years.

Project Implementation

- **2012-2013 (continued)**
  - Lactic acid > 4 is reported as a critical value and staff education provided
  - Expanded the Core Sepsis Committee to be multidisciplinary with a focus on hospital-wide participation, including nursing, physicians, MLPs, education/clinical development, laboratory, administration, and pharmacy
  - In process of building an Intensivist Model for Critical Care
  - Participated with CHSLI system Core Sepsis team to standardize effective processes throughout the system
  - Developed a DRG Tracking tool to improve case recognition (PN, sepsis, UTI, FUO, etc.)
- **2014-2015**
  - Hospital-wide Sepsis education (class tutorials, SIM training, and computer based education)
  - Optimized EMR, developed sepsis screening tools in triage, admission and shift assessment and developed documentation reminders in the Required Documentation Tab
  - Developed electronic Sepsis short order set to promote ease of use during emergency room visits as well as RRTs
  - 100% case review with a mini-RCA for all case failures to determine causative factors to direct improvement strategies
  - Developed a Pyxis reminder for obtaining blood cultures prior to antibiotic administration
  - Developed system wide protocols, available on intranets for easy staff access

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Project Implementation

- **2016-2017**
  - Implement Code Sepsis for inpatients during RRTs (laboratory attendance)
  - ID Sepsis reference badge cards developed and distributed to clinical and support staff
  - Sepsis education provided at hospital orientation for all employees
  - Focused sepsis education is included in departmental training
  - Developed a paper based Sepsis handoff communication tool
  - Presented improvement strategies at GNYHA
  - Developed sepsis educational materials for patients that are included in their admission packet
  - Sepsis initiative included in Infection Prevention, Nursing, P&T, Nursing/Pharmacy workgroup, Med Safety Committee, and Departmental Committee meetings
  - Sepsis Reassessment elements built into note templates and attached to BPAs for nursing and physicians

- **2018**
  - Worked collaboratively with Antimicrobial Stewardship Committee to improve sepsis order sets, infection specific antibiotic recommendations incorporated
  - Developed patient satisfaction survey focused on effective sepsis education and staff's caring towards the patient – mailed monthly
  - Increased focus on community outreach (Health Fair, EMS education, Catholic Health Network)
  - Required Computer based learning modules with interactive case scenarios
  - Ongoing monitoring, track/trending data including order set utilization

Tools & Resources

The Sepsis Screening tool criteria combined with recent VS prompt the Sepsis Advisory BPA to alert. Physicians can go directly to the Sepsis Order set from their Sepsis Advisory BPA.

Vital Signs

Tools & Resources

The Timeline is used as a reminder for required tasks as well as a handoff communication tool during shift handoffs and during RRT/ Code Sepsis to ensure all required bundle of care elements are provided

Timeline for Sepsis Management
(To follow patient to ensure all elements are completed)

SIRs – two of following: T>38 or <96.5, rigors, HR>90, R>20, WBC<4 or >12, or bands>10%
Sepsis – SIRs plus a suspected infection (only have to suspect, ex-dysuria, cough, cellulitis, abd pain, etc
Severe sepsis – LA >2, or organ dysfunction (AMS, delirium, ARDS, Platelets<100, bilirubin>2, Creatinine>2, acute respiratory failure, SBP<90 or Map<65, INR>1.5 or aPtt>60sec)
Septic shock – Is severe sepsis plus hypotension that is unresponsive to a 30ml/kg crystalloid bolus or a LA ≥ 4, Hypotension is defined a SBP <90 or Map<65 or 40mmHg drop below baseline)

Element to complete	Enter time due	✓ When done
Time Zero – • hemodynamically unstable and/or resp. failure on arrival, or inpt change in status • Pt has suspected infection, time of sepsis protocol orders, may have SIRs	Enter time zero here	
TIME ZERO		
Lactic Acid drawn **STAT**		
Blood culture drawn **STAT** (1 set prior to antibiotics)		
Antibiotic given **STAT** (*after Blood c/s*) (see below for which to give first)		
Repeat Lactic acid in 2hrs from initial collection time, (*before pt leaves ED*) (if LA>2, continue to trend every 2-3 hrs until <2)		
If lactic acid is ≥4 or pt develops septic shock must get or have received N/S or LR 30ml/kg bolus (within 2-3hrs)		
Document bolus *end time*, then repeat VS (T,HR,R,BP) and document, tell MD bolus is completed and to do sepsis reassessment (.sepsisreasessment) (*time of vitals must be after bolus end time*)		
If hypotension is not responsive to fluid bolus (30ml/kg) vasopressors must be started w/in 6 hrs (do not wait until pt goes to ICU to administer)		

*Physicians must document refusal of blood work, antibiotics, IV fluids, vasopressors, or family wishes of comfort care only as soon as they are aware

3 hr bundle:
• lactic acid
• blood c/s before abx,
• broad spectrum abx (give Zosyn, Rocephin, Levaquin, Primaxin, Meropenem first, if ≥ than one

6hr bundle (3 hr bundle completed, then additional elements completed w/in 6hrs as needed)
• Repeat all lactic acids if result is >2
• 30ml/kg infused w/in 6hrs if hypotensive or LA≥ 4, and MD reassessment completed
• If hypotension persists after 30ml/kg crystalloid bolus-must initiate vasopressors w/in 6hrs

This is not a part of the Medical Record – reference material only

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Tools & Resources

This patients bolus has been completed, document repeat set of vital signs and notify provider the bolus is completed for a physician reassessment.

Last LACTICACIDLE=4.1 Collected on 8/26/2016 3:06 PM
Prev LACTICACIDLE=4.5 Collected on 8/26/2016 12:03 PM

Document Repeat Vital Signs- Temp, BP, Pulse and Respirations ↖

RN BPA Reminder

Acknowledge Reason

Notify Provider | Chart Review

The patients bolus has been completed, reassessment may need to be documented.

Provider reassessment using .sepsisreassess is needed on any sepsis patient with a lactic acid of ≥4 or any patient with a MAP <65 or Systolic BP <90 after initial 30cc/kg IVF bolus.

The recent clinical data is shown below.
Vitals:

	08/26/16 1000	08/26/16 1115	08/26/16 1235	08/26/16 1457
BP:	92/50	92/50	92/50	
Pulse:	98	98	98	
Resp:	24	24	24	
Temp:	(!) 100 °F (37.8 °C)	(!) 100.4 °F (38 °C)	(!) 100.6 °F (38.1 °C)	
SpO2:				
Weight:				83.9 kg (185 lb)

The recent significant labs are shown below:

Component	Value		Date/Time
LACTICACIDLE	4.1		08/26/2016 1506
LACTICACIDLE	4.5		08/26/2016 1203
BANDS	0.5		08/26/2016 1203
WBC	12		08/26/2016 1203

Physician BPA Reminder

Acknowledge Reason

Documenting Reassessment if necessary | Chart Review

IV bolus completion reminder built into EMR for nursing and a sepsis reassessment reminder for physicians

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Tools & Resources

St. Catherine of Siena Medical Center
Catholic Health Services
At the heart of health

St. Catherine of Siena Medical Center
Satisfaction Survey

Please respond based on your experience with the care provided to you during your recent hospitalization. Please circle the appropriate response that answers the question:

1. Were you provided education on your diagnosis of sepsis/infection? **Yes or No**

2. Was the education provided in a manner in which you could understand? **Yes or No**

3. Do you know the signs and symptoms of sepsis/infection and when to seek medical attention? **Yes or No**

4. Did the staff have compassion towards your needs? **Yes or No**

5. Is there anything that we could have done to improve your stay in our hospital? **Yes or No** If yes, please share your thoughts below.

Comments:_____

_____

_____

Thank you for your time and feedback. Please return in the attached envelope.

Patient Name (optional)_____ Phone optional)_____
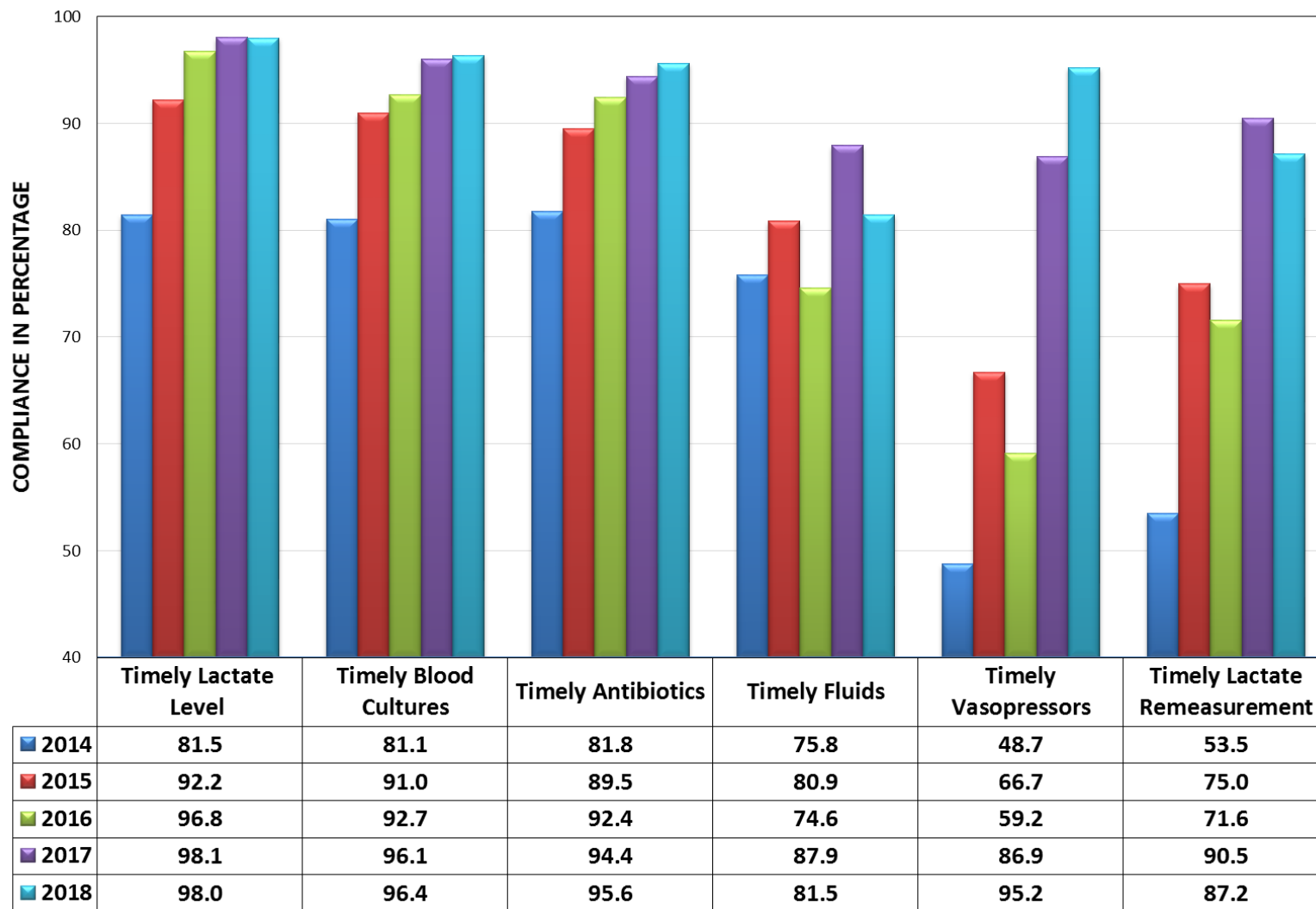
Survey completed by if other than patient (optional)_____

Survey is mailed monthly to patients with diagnosis of severe sepsis or septic shock

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Successful Strategies &Tips

- 100% chart review including sepsis, severe sepsis, and septic shock to ensure no cases are missed and the standard of care is met
- Mini-RCA for case failures with focused sepsis team(sepsis coordinator, CMO, Directors ED, critical care and hospitalist program) to identify causative factors and develop improvement plans as well as plan for specific staff remediation requirements
- Cases failures are reviewed with involved staff/providers to provide education and identify contributing factors
- Sepsis case review and compliance discussed at staff meetings
- Education needed to have an expanded focus beyond than the nurse and physician; we educated lab, pharmacy, patient care assistants, radiology, transport personnel, and others
- Staff empowerment to Speak Up and promote accountability using the Timeline for Sepsis Management as a handoff communication tool
- Sepsis Coordinator presence at RRTs promoting Code Sepsis if indicated
- LMS includes case scenarios, must have 90% passing to get credit
- Ideal body weight may be used if BMI>30, this verbiage was built into order set to improve documentation
- Emergency department and Critical Care collaboration regarding initiation of vasopressors
- Sepsis Reassessment elements built into note templates

Outcomes & Data

SEPSIS 3-HOUR & 6-HOUR BUNDLE ELEMENTS
2014 to 2018 Q3

	Timely Lactate Level	Timely Blood Cultures	Timely Antibiotics	Timely Fluids	Timely Vasopressors	Timely Lactate Remeasurement
2014	81.5	81.1	81.8	75.8	48.7	53.5
2015	92.2	91.0	89.5	80.9	66.7	75.0
2016	96.8	92.7	92.4	74.6	59.2	71.6
2017	98.1	96.1	94.4	87.9	86.9	90.5
2018	98.0	96.4	95.6	81.5	95.2	87.2

Outcomes & Data

| 3 Hour Bundle	2014	2018	*p*-value
Overall 3-Hour Bundle Compliance	61.9	93.1	**0.021**
Timely Lactate Level	81.5	98.0	**0.045**
Timely Blood Cultures prior to Abx Administration	81.1	96.4	**0.024**
Broad Spectrum Abx within 3 hours	81.8	95.6	**0.002**
6 Hour bundle	2014	2018	*p*-value
Overall 6-Hour Compliance	47.6	79.8	**0.037**
Timely Crystalloid Administration	75.8	81.5	**0.600**
Timely Vasopressor Administration	48.7	95.2	**0.038**

Outcomes & Data

Sepsis 3hr and 6hr Bundle Compliance vs. Mortality

2017 SCSMC Mortality Rate 17.0%, NYS Mean 24.7%

■ 3hr Bundle Compliance   ■ 6hr Bundle Compliance   ■ Mortality

2015 & 2016 "Highest Performer", 2018 Q3 NYS 99th Percentile Ranking 3hr Bundle Compliance, NYS Mean 65.8%
2015 & 2016 "Highest Performer", 2018 Q3 NYS 99th Percentile Ranking 6hr Bundle Compliance, NYS Mean 36.9%
2015 & 2016 "High Performer" Adult Sepsis Risk Adjusted Mortality
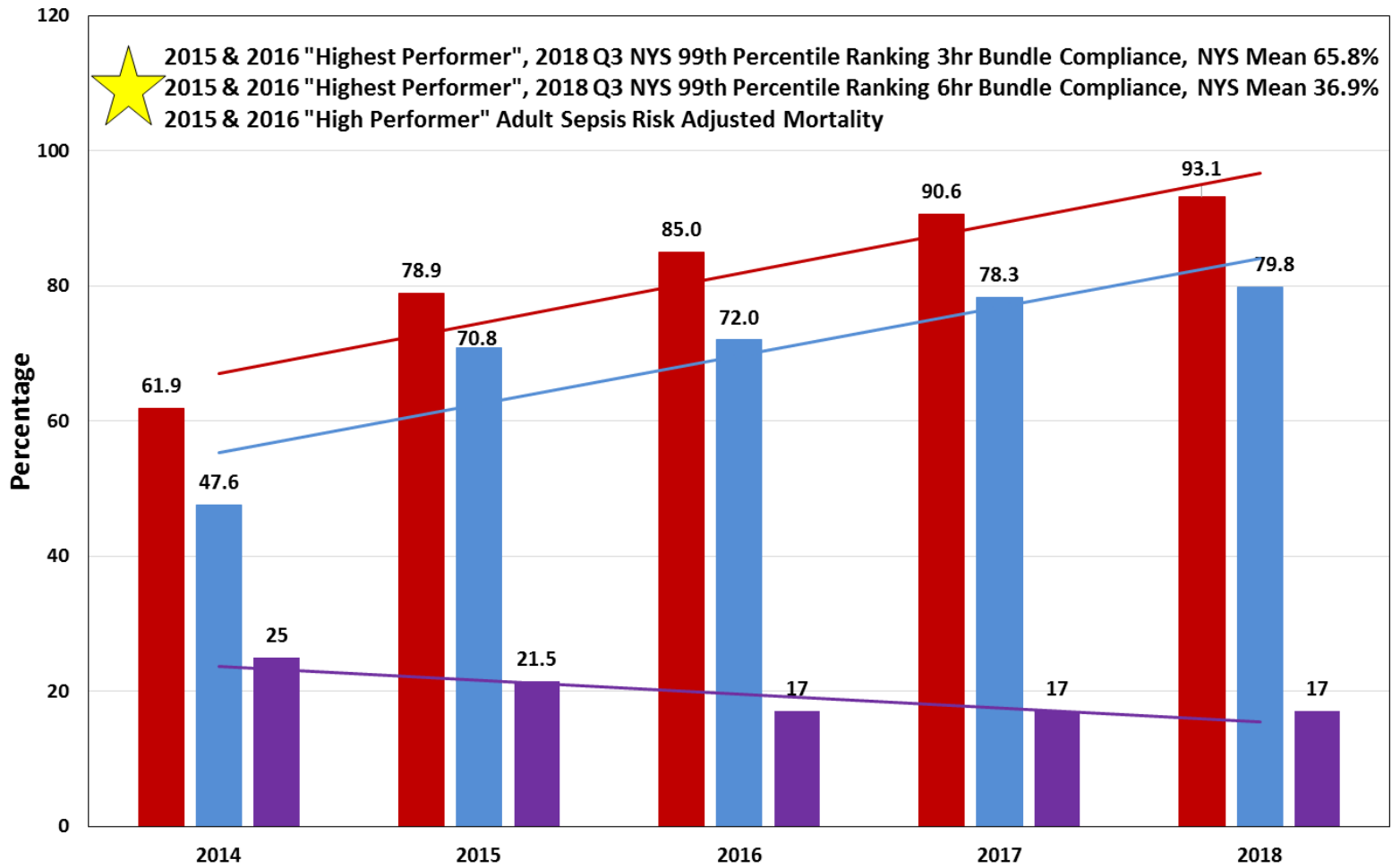
Outcomes & Data

- Treat approximately 120 patients with sepsis, severe sepsis or septic shock monthly

- 90% of these patients arrive through the emergency department

- More than 50% of these have either severe sepsis or septic shock

- From 2014-2018 our 3-Hour bundle compliance increased by 47.45% and our 6-Hour bundle compliance increased by 88.24%. These are statistically significant improvements (p-values 0.021, 0.037)

- Decreased mortality can be attributed to significant improvements in our bundle compliance with an almost perfect negative correlation of both bundles (-0.97539, -0.91108).

Challenges & Barriers

- Lack of infection recognition due to atypical presentation such as: abdominal pain, seizures, overdose, AMS without other signs and symptoms, etc
- Antibiotic selection – ordering and/or administration
- Delayed repeat Lactic Acid for levels >2 and <4, Lactic acid <4 is not a critical value and staff is not aware when results post
- Inadequate fluid resuscitation, less than 30ml/kg for patient with a dx of dialysis, morbid obesity, CHF without fluid overload documentation
- Lack of IV fluid stop times documented with a set of vital signs
- Delayed/no vasopressor administration (utilizing MAP vs SBP)
- Sepsis reassessment completed and documented in a timely manner
- Improving Code Sepsis utilization

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Key Lessons Learned

- Monitoring cases concurrently or as close to discharge as possible facilitates timely case discussion with team members when deviations in care are noted. Important to determine why choices in care were made that didn't meet guidelines

- People are the key to change. Promoting staff engagement and open discussion facilitates cooperation by reducing staffs barrier to change. Utilizing these approaches fosters improved education on sepsis signs, symptoms, and protocols which has increasing overall accountability.

- Staff educational awareness and accountability has had an impact on critical thinking resulting in improvements in patient outcomes

- **Track, trend, and evaluate all standard of care deviations to provide one on one feedback to those caregivers that were involved with the deviation**

- Empower staff to speak up by decreasing power distances to enhance teamwork among all members of the healthcare team

- Continue to utilize networking opportunities to gain further ideas for improving and optimizing processes

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Steps for Hardwiring & Spread

- Continue to improve the existing inpatient "Code Sepsis" process while creating a "Code Sepsis" process for the Emergency Department

- Staff empowered to speak-up utilizing Error Prevention techniques, training is mandatory for all staff and physicians

- Continue annual sepsis education for staff and physicians focusing on required elements, how their individual actions impact patient safety and improve outcomes, and that they are a valued member of the sepsis care team

- Reward and recognition of staff and physician contributions that have had a positive impact on patient outcomes

- Work towards ZERO deviations, providing evidence based care, EVERY patient! EVERY time!

Questions ???

Contact Information

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