Sepsis, An Interdisciplinary and Collaborative Approach

Bassett Medical Center
Bassett Medical Center

- 180 bed acute care inpatient teaching facility in Cooperstown, New York is the foundation for the Bassett Healthcare Network
- Offers 24-hour emergency and trauma care, comprehensive cancer and heart care, dialysis and most medical and surgical specialties
- Provides postgraduate residency training programs in Medicine and Surgery through its affiliation with Columbia University College of Physicians and Surgeons (P&S)
- Includes a Medical School campus of Columbia P&S since 2009
- Conducts programs in clinical science, and population and public health studies through The Bassett Research Institute
Hospital Sepsis Team

Team Physician Champions:
Dr. Charles Hyman, Chief-Medicine
Dr. James Kruse, Sr. Attending Physician, Critical Care-Medicine

Team Members:
Dr. Sowmya Boddhula, Sr. Attending Physician
Heather Dygert, Nurse Practice Educator-ICU
Dr. Matthew Jones, Sr. Attending Physician Emergency Services
Peggy Liddle, Nurse Practice Educator-Medicine Unit
Charles Martens, Pharm D, Clinical Pharmacology
Marie Maxson, Director Quality Management and Clinical Effectiveness
Lynette McDaniel, IT Epic Clinical Systems Builder
Carol McManus, Clinical Data Abstraction Coordinator
Dr. Kai Mebust, Sr. Attending Physician Hospitalists
Gabrielle Rocha de Assis, Nurse Practice Educator-ED
David Tooley, IT Programmer Analyst
Martha Twichell, Manager Nursing Education
Jessica Scott, Data Management Specialist, Inpatient Nursing Admin
Dr. Mark Winther, Sr. Attending Physician Emergency Services
Project Description

○ Problem: NYSDOH distributed the first of quarterly hospital-specific data reports on October 31, 2014, and Bassett Medical Center performance displayed > 10% difference below NYS Average for treatment elements of the Modified NQF 3-Hour and 6-Hour Bundles, and mortality rate.

○ Project: A Sepsis Work Group formed composed of physicians, nurses, medical students, house-staff, quality improvement staff, and IT staff. The work group’s goal was to understand and improve the management of septic patients using performance improvement methodologies that;
  ○ focus on real time interventions and alerts
  ○ increase compliance with 3-hour and 6-hour treatment bundles
  ○ reduce patient mortality, and
  ○ foster a culture of safety and continuous quality improvement.
Project Implementation

- To improve bundle performance the Sepsis Work Group;
- Built a Sepsis Best Practice Advisory (BPA) in EMR
  - Possible Sepsis Risk and / or Severe Sepsis Risk
  - Continuous patient surveillance
- Incorporated Columbia medical students Lean Six Sigma (LSS) project to standardize Sepsis Rapid Response and improve administration of antibiotics within 1-hour
- Produced a Sepsis Rapid Response Team simulation video for staff education
- Educate staff using the video in activation of the Sepsis Rapid Response Team for all severe sepsis BPAs that fire for sepsis protocol initiation
  - Defined and educated in role for nursing, medical staff, laboratory phlebotomist (blood cultures) and pharmacist (rapid selection of antibiotics)
Project Implementation

- Built and optimized a Sepsis Order Set in the EMR
- Built flowsheet rows in the EMR to improve Sepsis Rapid Response Team documentation, collect meaningful real time data for analysis, and improve reporting
- Built repeat Reflex Lactate order in EMR for any lactate >2
  - Automatically fires for repeat lactate level within 2 hours
- Built an EMR SmartPhrase sepsis focus note to document perfusion assessment
- Implemented Sepsis Rapid Response Team real time data collection
Possible Sepsis Risk
Recent data suggests your patient may be exhibiting signs of Systemic Inflammatory Response Syndrome (SIRS). If SIRS is present and due to infection, the patient meets criteria for sepsis.

Criteria (at least TWO of the following exists):
- Temp: > 38.9°C (101.9°F) or < 36°C (96.8°F)
- Pulse: > 90
- Resp: > 20
- Cognitive/Perceptual/Neuro: WDL except
- WBC: > 12,000 or < 4,000
- Banded Neutrophil: > 10%

Recent Values:
- Temp: 38.9°C (101°F) (Axillary)
- Pulse: 92
- Resp: 22
- Cognitive/Perceptual/Neuro: WDL except
- Lab: 10/20/14
- 0545
- WBC: 4.9

Possible Severe Sepsis Risk
At least one organ system dysfunction criteria has been met for this patient. Notify the patient’s provider AND call the SEPSIS RAPID RESPONSE TEAM (unless already notified this shift).

Criteria (Patient is suspected of infection and at least ONE of the following exists):
- SpO2: < 90 AND 02 Flow Rate < 60
- Systolic BP: < 90
- MAP: < 70
- Heart Rate: > 100
- Lactate: > 4
- Creatinine: > 2
- Platelet: < 100,000
- Bilirubin Total: > 2
- INR: > 1.5

Recent Values:
- SpO2: 88%
- BP: 80/60 mmHg
- Other

No results found for this basenname: LACTATE, CREATinine, PLT, BILIRUBIN, INR, in the last 168 hours

Acknowledgement reason:
- Sepsis Screening added to WorkList
- Severe Sepsis Follow-Up added to WorkList

Or complete Sepsis Screening immediately
The following actions were applied automatically:
- Initiated: Sepsis Screening
- Initiated: Severe Sepsis Follow-Up
(Last done by Lynette McDaniell on 12/24/2014 at 8:07 AM)
Successful Strategies & Tips

- Assemble an interdisciplinary team of subject matter experts
- Perform in-depth analysis of data using performance improvement methodologies to identify performance improvement solutions and to study the effectiveness of interventions
- Use direct observation and event timelines to identify performance improvement opportunities
- Understand and refine the use of the EMR to initiate and build performance improvement solutions
- Collaborate with other hospital performance improvement or Lean Six Sigma (LSS) projects when feasible, and partnered with Hospitalists in data collection and performance improvement initiatives
- Engage hospital educators (nurse, resident, other) and embed sepsis education into organizational learning infrastructure
  - Annual mandatory education
  - New employee education
  - Resident and House-Staff education
  - Medical and Surgical Grand Rounds
- Monitor and study progress and act to address issues as they develop
Challenges & Barriers

- Addressing the sensitivity and specificity of sepsis alerts as Best Practice Advisories in the EMR
- Constraints for real time monitoring and sepsis data collection to sustain continuous performance improvement
Key Lessons Learned

An interdisciplinary and collaborative approach is essential in making improvements in the care and outcomes for patients with sepsis and severe sepsis.
Outcomes & Data

Bassett Medical Center
New York State Severe Sepsis-Septic Shock Data

Compliance Percentage

- Mortality
- 1hr Antibiotic
- 3hr Bundle
- 6hr Bundle
- NYS Avg

October/November 2017
Steps for Hardwiring & Spread

- Gain executive leadership support to ensure resources and sustainability
- Form a sepsis work group, structure meetings, and provide expectations for accountability and feedback
- Develop tools in the EMR to improve documentation, collect meaningful real time data for analysis, and reporting
- Embed performance solutions and sepsis education into organizational learning infrastructure and EMR education
Contact Information

- Marie Maxson, RN, BS  
  Director Quality Management and Clinical Effectiveness  
  Marie.maxson@bassett.org

- Abby Cassella-Graeser, RN  
  Quality Management Specialist  
  Abby.cassella-graeser@bassett.org