1. Hospital Name
   Mercy Health System

2. Title Of Initiative
   System-Wide Quality Sepsis Care: Outcome-Driven & Sustainable

3. Abstract (Please limit this description to 250 words.)
   Sepsis, a significant healthcare challenge, is a common reason for hospitalization nationwide with a cost of 20 billion dollars per year. The impact results from a mortality rate that is more than eight times higher than mortality rates for other conditions and is the leading cause of death in non-coronary ICU; the 10th leading cause of death overall nationwide.

   The Surviving Sepsis Campaign has provided guidance for sepsis care and studies have demonstrated decreased mortality when sepsis protocols are utilized. Our Health System is committed to providing optimal quality, evidenced-based care to our patients with Sepsis in order to maximize favorable outcomes.

   Our initiatives are described as an interdisciplinary effort involving 3 acute care facilities. Baseline data identified opportunities in key care delivery processes. A comprehensive approach was designed to target the continuum of care from the ED point of entry, to the ICUs, and to all nursing care units until discharge.

   Comparison of baseline data to current monitoring showed statistically significant improvement in both process and outcome measures that were achieved and sustained for a consecutive 18 month period relative to Blood Culture, Antibiotic Use/Selection, Lactate draws and Fluid Resuscitation.

   In addition to the consistency in clinical performance measures, favorable statistically significant decrease in sepsis mortality was demonstrated over a 3 year period by a reduction in Risk-Adjusted Observed/Expected Mortality Ratio from 0.979 to 0.802 with a p-value of 0.008.

   Interventions, achievement, sustainability, and outcomes with reproducible results are detailed in the following submission.

4. What were the goals of your initiative?
   Our goals involved both process and outcome methodologies:
   → Achieve 90% performance with improvement from baseline for all sepsis 3hour bundle metrics
   → Reduce the risk adjusted Mortality, LOS, Readmission and Complication Observed to Expected (O/E) ratios to < 0.95
In October 2015, CMS mandated the monitoring and data submission of Sepsis care and timely performance in terms of 3 hour and 6 hour measure bundles. Measure bundles included evaluation, treatment and reassessment with subsequent intervention against established measures of performance. In response, our Health System took a proactive approach by evaluating the care of patients with Severe Sepsis/Septic Shock during CY 2014. The initial target was set at 90% performance for all clinical measures.

Study Limitations: In the initial collection of baseline data, the encounters were limited to severe sepsis/septic shock patients identified in the ED and transferred to the critical care unit. Retrospective data collection was performed during the baseline study period; variances were not reported and analyzed concurrently.

Expansion of Study Focus: The original study was limited to the ED Physicians and Nursing staff along with the ICU Intensivists and ICU Nursing staff. In the current model, the scope includes the patients that develop Sepsis on the medical/surgical areas. It has the support of Senior Leadership and Management as well as the involvement of a multidisciplinary team in the identification and management of the patient with severe sepsis/septic shock.

Our Health System’s baseline Risk Adjusted O/E Mortality Ratio target of < 1.0 was achieved by a value of 0.979, however, an opportunity is always present from a perspective of continual performance improvement.

5. What were your initiative's baseline data and the results of your initiative?

Baseline Data Methodology:

During the period of Apr 2014 through Dec 2014, patients with the diagnosis of Severe Sepsis and Septic Shock were evaluated according to the criteria endorsed by the Surviving Sepsis Campaign. Care of patients who presented to the Emergency Department of the Health System’s 3 acute care hospitals was evaluated in terms of compliance with the 3 hour Bundle for: Initial Lactate, Blood cultures, Antibiotic Selection and Administration and fluid Resuscitation. A sample size was 30 patients per hospital; the smallest hospital sample size only reached 25 patients due to a decrease in census. Results were analyzed in January 2015; aggregate results for the Health System are as follows:

Health System Sepsis Measures Hospital A, B & C
Patients with Severe Sepsis and /or Septic Shock Baseline, Apr-Dec 2014, Total Patients Evaluated 85
* Lactate: Percentage of lactate measured 12 hr. prior or within 3 hours of Bundle Start Time: 91.8%
* Blood Cultures: Percentage drawn prior to administration of antibiotics; 95.3%
* Antibiotic Administration: Percentage completed within 3 hours of Bundle Start Time:
*Fluid Resuscitation: Percentage of Patients that received equal to or more than 30 mL/kg fluids: 55.3%

Results from each hospital were analyzed by measure to determine any trends by practitioner; none were identified. Appendix Figure 1 displays process capability tools that were reviewed by measure /by hospital. Process Variation was identified in all measures in meeting the goal of less than 3 hour upper specification limit. Timely blood culture collection being drawn prior to the antibiotic administration showed the least degree of variance but identified inconsistencies in documentation. Issues identified included: variation on physician ordering practices, variation in ordering and documentation of fluid resuscitation and in the proper selection and timely administration of antibiotics within 3 hours of meeting SIRS criteria.

3. RESULTS, Current Data: 10/1/15 through 3/31/17, Appendix Figures 4 & 5
Methodology: CMS measures as detailed in the Specification Manual were utilized as measure definitions, inclusion and exclusion criteria. The current data collection included patients found to have Severe Sepsis/Septic Shock on the medical surgical floors as well as those identified in the ED. Variances were identified and involved disciplines were notified and action plans were created and put in place to improve compliance and reduce risk for future variances. Case selection was in accordance with CMS guidelines and by Midas, the Health System’s approved CMS vendor.

Results:
Favorable performance was achieved for the CMS Measures for Initial Lactate, Blood Cultures, Antibiotic Administration and Fluid Resuscitation in comparison to the Health System Target of 90 % by Hospital A, B & C. Appendix Figure 4 displays measure specifics, individual and aggregate Health System performance being favorable in comparison to target for 3 out of 4 measures: Initial Lactate 98.5%, Blood Cultures 96.1%, and Antibiotic Administration 95.9%. Fluid Resuscitation performance did not achieve desired 90% target, evidenced by performance mean of 81.3%.

Current performance during the 18-month period of 10/1/2015 - 3/31/2017 was compared to the baseline data collected during the period of 4/1/2014 - 12/31/2014. P-values were calculated comparing performance by measure using Chi-sq methodology at a 95% confidence interval determining statistical significance; detailed in Appendix Figure 5. Favorable statistical improvement , p-value <0.05, was demonstrated in 3 of the 4 measures: Lactate draws, p-value of 0.002; Antibiotic Administration, p-value of 0.00005 and in Fluid Resuscitation with a p-value of 0.000003 even though the numerical target of 90% was not achieved. Performance with Blood Culture draws pre-antibiotic administration remained constant and favorably above 95%; p-value of 0.7390.

Outcome Data:
Sepsis Risk Adjusted Mortality, LOS, 30 Day Readmission and Complications Rates: 3 yr. Comparison

Methodology: Midas+ Data Vision, retrospective risk adjustment methods assisted our hospitals in evaluating Sepsis Outcomes by providing a reliable and accurate means to compare aggregate hospital performance to 800+ Midas participating facilities. The Midas+ Risk Adjustment Model assigns probabilities and expected values to individual patient encounters for the following variables: Mortality, Length of Stay, 30-day Unplanned Hospital Readmissions and Complications, with individual relative weights in terms of Observed to Expected Ratios. As detailed in the Midas definitions, the model is based on the patient’s gender, age, diagnoses, procedures and co-morbid conditions; the Risk Adjusted Model categorizes patient into various levels of severity/intensity. Lasso Regression and cross validation are utilized by Midas in calculation of this risk adjusted model.

Health System Risk Adjusted Sepsis Outcomes:

In order to compare our Sepsis Outcomes and Risk Adjusted Observed to Expected (O/E) Ratios, Sepsis Risk Adjusted Reports were formulated pulling data from each of the three hospitals for three consecutive fiscal years: FY 2014, FY 2015 and FY 2016. The third 12 month period is the most current year of data available from the Midas Comparative Database System: annual data was used for adequate sample size. These reports detailed: Total # Patient’s with the diagnosis of Sepsis, # Observed, # Expected, and O/E Ratio. From our hospital specific observed and comparative data, p-values were calculated comparing O/E Ratios by Chi-sq methodology at a 95% confidence interval determining statistical significance. The data displayed in Appendix Figure 6 favorably demonstrates all aggregated health system categories were below the targeted Risk Adjusted Observed to Expected (O/E) Ratio of < 1.0 for: Mortality, Length of Stay, 30 Day Readmissions and Complications. When comparing FY 2014 to FY 2016, a favorable statistically significant decrease in Risk Adjusted Mortality was evidenced by a p-value of 0.008. Risk Adjusted 30 Day Readmissions and Risk Adjusted Length of Stay demonstrated favorable decrease yet these were not statistically significant evidenced by p-values of 0.166 and 0.278 respectively. Complications did not show a statistically significant decrease by a p-value of 0.298, yet remains considerably below the target O/E Ratio of 1.0.

6. **Describe the interventions that were instrumental in achieving the results for your initiative.**

INTERVENTIONS: After assessment of our baseline Sepsis data and variance analysis, research, and evidence-based practice, the following system and process changes were implemented with the goal to improve current practice and expand Sepsis Screening to include Medical/Surgical areas to ensure early identification and treatment of severe sepsis.

System Level:
- System–Wide Critical Care/Sepsis Steering Committee was created with major focus on Sepsis and Clinical Standards of Practice. Steering Committee membership included the
following: CEO and CMO of Health System; Physician Champions and Lead Intensivists, CNO, Critical Care Directors, Chairman and Directors of the Emergency Department and System Lead for Quality Improvement.
-Designated a Sepsis Coordinator at each facility to ensure education and follow-up.

Emergency Department:
-Developed a team of engaged sepsis champions at ED Nurse and ED Physician level
-Developed ED EMR Order Sets to ensure standardization of practice
-Created electronic alerts in EMR to notify physicians when patients may be septic based SIRS criteria of vital signs, labs and other factors for early Sepsis recognition and treatment
-Developed method for reflex lactate levels to be drawn in specified time frame.
-Recognized inconsistent documentation of IV fluids from ED to ICU and developed Hand-Off Nursing -Communication to verify volume of fluids the patient received in the ED.
-Identified inconsistent documentation of vital signs after fluid administration and developed order to address vital sign frequency after IV fluid administration.

Critical Care:
-Implemented Severe Sepsis/Septic Shock Checklists to assist physicians in identification of patients with severe sepsis/septic shock and monitoring the completion of required sepsis bundle elements, Appendix Figure 2
-Designed and implemented the Sepsis/Severe Sepsis /Septic Shock Algorithm which is based on the CMS evidence based guidelines for Assessment and Treatment Standardization, Appendix Figure 3
-Raised awareness of Sepsis initiative with CCU nurses and importance of consistent documentation.
-Monitored and provided feedback and education for variances that occurred in CCU/ICU setting.

Medical/Surgical:
-Educated the medical/surgical nurses on the sepsis continuum, and importance of early identification.
-Participated in creation Sepsis Surveillance status board in hospitals’ EMR to display SIRS criteria for nurse review.
-Developed and implemented a severe sepsis screening tool and workflow and educated the medical/surgical nurses and housestaff on use. Nurses are to screen every 12 hours using EMR status board.
-Provided education on the Sepsis protocol including case studies for Attending Physicians, Residents as well as Medical/Surgical Nurses.
-Expanded Rapid Response alert process to include Sepsis and address patients with suspected septic shock on the Medical/Surgical areas.
-Provided pocket cards with Sepsis protocol information to physicians.
-Developed tools to address physician documentation on specific elements of the Sepsis core measure.
Sepsis Coordinator: Utilized experienced RNs with Quality and CMS abstraction experience for position.
- Performed concurrent and retrospective review of cases and report variances to appropriate disciplines as an opportunity for improvement.
- Provided Sepsis Algorithms to the patient care units and physician areas and created Sepsis Screen Savers to highlight specific sepsis information on the computers throughout the hospitals.
- Presented overview of sepsis protocol at monthly Nursing education sessions.
- Participated in multidisciplinary Sepsis Meetings held to discuss variances and practitioner trends.
- Rounded daily with nursing staff to communicate variances and opportunities for improvement to nursing staff with communication tools and emailing Nursing Tip of the Week.

7. How can this initiative be replicated through the region? (Please limit this description to 100 words.)

The previously detailed system and process interventions were duplicated among our Health System's three acute care facilities. This potential for adaptation of these initiatives exists for other hospitals. It is acknowledged that an assessment of a hospital's current and future resources needs to be considered, yet the principals can be reproduced.

Hospitals may not have access to risk adjusted outcome data from a comparative database but unadjusted rates of Mortality, LOS or GMLOS, 30 day Readmissions can be utilized to track outcomes according to national benchmarks or individually set targets based on prior performance and improvement goals.

8. Explain how the initiative demonstrates innovation (Please limit this description to 100 words.)

Sustaining current gains and continually improving performance will remain our Health System's focus for the years to come. We feel that this goal will be supported by our Sepsis infrastructure and key initiatives implemented throughout 2015, 2016 and 2017.

We consider these initiatives our key lessons learned which include:
* Sepsis/Severe Sepsis/Septic Shock Algorithm
* Standardized Evidenced Order Sets for 2 different EMRs
* Concurrent Screening by Nursing for Early Sepsis Identification
* Physician Champions and Sepsis Coordinators

Our Sepsis Program structure will support our existing model of care and provide a means to quickly adapt to future measurement changes.

9. How does this initiative demonstrate collaboration with other providers within the continuum of care? (Please limit this description to 100 words.)
Our Health System's Sepsis initiatives were truly a collaborative approach involving all clinical disciplines with active involvement from ongoing hospital-based Sepsis Teams guided by a System level Sepsis Steering Committee.

Members were collaboratively involved each step of the development and monitoring process from design of Sepsis Assessment/Treatment Algorithm through the monitoring of performance and analysis of variances.

We will continue until perfect process is achieved and sustained in keeping with our Definition of Sepsis Quality:
* Doing the Right Thing: Appropriate/Timely Sepsis Decisions and Interventions
* Doing it Right: Evidence-based Sepsis Algorithms and Order Sets.
* Every Patient/Every Time

10. Explain ways in which senior leadership exhibited commitment to the initiative (Please limit this description to 100 words.)

Health System Leadership demonstrated their commitment through the resource allocation of 3 budgeted RN positions of Sepsis Coordinators.

This was further enhanced by the time and energy of the Physician Directors and Champions who performed peer review and follow up of all variances giving feedback to practitioners on a consistent basis.

The Chief Nursing Officers also committed their support through the endorsement of Concurrent Screening by Nursing for Early Sepsis Identification for patients on all acute nursing units promoting early recognition of sepsis.

Senior Leadership and the Board of Directors provided oversight and continual support of our Sepsis Program.

11. Appendices (i.e., tables and graphs)
System-Wide Quality Sepsis Care: Outcome Driven & Sustainable

2017 DVHC Quality Award

Needs Assessment and Baseline Data

**WHY**
- According to the AHRQ, Severe Sepsis is the 6th most common reason for hospitalization in the nation with a cost of $20 billion per year.
- Severe Sepsis mortality rate is more than 8 times higher than mortality rates for other conditions and the leading cause of non-coronary death in ICU

  CMS adopted Sepsis Measures for all Acute Care Hospitals in October 2015

**Baseline Data Methodology:**
- During the period of April, 2014 through December, 2014 patients with the diagnosis of Severe Sepsis and Septic Shock were evaluated according to the criteria endorsed by the Surviving Sepsis Campaign.
- Care of patients who presented from our 3 Acute Care Hospitals was evaluated in terms of compliance with the 3 hour Bundle for: Initial Lactate, Blood Cultures, Antibiotic Selection and Administration and Fluid Resuscitation.
- A sample size was 30 patients per hospital; the smallest hospital sample size only reached 25 patients due to a decrease in census. Results were analyzed in January 2015
### Baseline Data Results

<table>
<thead>
<tr>
<th>Health System Sepsis Measures Hospital A, B &amp; C Patients with Severe Sepsis and/or Septic Shock</th>
<th>Baseline Apr-Dec 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Patients Evaluated</strong></td>
<td>n= 85</td>
</tr>
<tr>
<td><strong>Lactate:</strong> Percentage of lactate measured 12 hr. prior or within 3 hours of Bundle Start Time</td>
<td>91.8%</td>
</tr>
<tr>
<td><strong>Blood Cultures:</strong> Percentage drawn prior to administration of antibiotics</td>
<td>95.3%</td>
</tr>
<tr>
<td><strong>Antibiotic Administration:</strong> Percentage completed within 3 hours of Bundle Start Time</td>
<td>84.7%</td>
</tr>
<tr>
<td><strong>Fluid Resuscitation:</strong> Percentage of Patients that received equal to or more than 30 mL/kg fluids</td>
<td>55.3%</td>
</tr>
</tbody>
</table>

- In comparison to the 90% targeted performance, the most significant opportunities for improvement were identified in antibiotic administration at 84.7% and in fluid resuscitation at 55.3%.
- No practitioner trends were identified but overall process issues were identified.

### Baseline Data Analysis

#### Process Capability of Hospital C's Antibiotic Admin Interval < 3hrs

<table>
<thead>
<tr>
<th>Process Data</th>
<th>LSL</th>
<th>Target</th>
<th>USL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run</td>
<td>130</td>
<td>180</td>
<td>210</td>
</tr>
<tr>
<td>Sample Mean</td>
<td>148.19</td>
<td>150</td>
<td>152.5</td>
</tr>
<tr>
<td>SIG* (Variation)</td>
<td>135.59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Potential (Within) Capability
  - Cp: 0.67
  - Cpk: 0.67
  - CPU: 0.67
  - CPL: 0.67

- Overall Capability
  - Ppk: 0.67
  - PPM: 0.67
  - PPU: 0.67
  - Cpm: 0.67

#### Process Capability of Hospital A's Adequacy of Fluid Bolus (30 mL/kg)

<table>
<thead>
<tr>
<th>Process Data</th>
<th>LSL</th>
<th>Target</th>
<th>USL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Sample Mean</td>
<td>39.815</td>
<td>39.815</td>
<td>39.815</td>
</tr>
<tr>
<td>SIG* (Variation)</td>
<td>20.01</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Potential (Within) Capability
  - Cp: 0.68
  - Cpk: 0.68
  - CPU: 0.68
  - CPL: 0.68

- Overall Capability
  - Ppk: 0.68
  - PPM: 0.68
  - PPU: 0.68
  - Cpm: 0.68

- Statistical and process capability analysis were conducted for each measure, for each hospital. Process variation was identified in all measures with mean shifting being required in comparison to the specification limits.

- The above graphics demonstrate process variation of patient's care that is not within the specification limits whether it is less than 3 hours for antibiotic administration or consistency in the proper volume for fluid resuscitation of 30/mL/kg.
**Sepsis Monitoring Checklists**

**3-Hour Bundle**
- **Time**
- **Metric**
- **Completed**
- Measure lactate level
  - If result is > 2, send repeat level within two hours – EMR VBG/ABG
- Obtain blood cultures prior to antibiotics or if not done
- Administer broad-spectrum antibiotics
- Initial lactate ≥ 4 or SBP < 90 or MAP < 65?
  - Yes → Give 30mL/kg IV crystalloid bolus and complete 6-Hour Bundle
  - 30mL x ________kg = ________mL NS or LR
- No → stop

**6-Hour Bundle**
- Initial lactate ≥ 2?
  - Yes → Re-measure lactate level after IVF bolus
    - Result is ≥ 4 → document SHOCK
- Hypotensive within one hour after completion of IVF bolus?
  - Yes → Document SHOCK → Start vaspressors
- Hypotensive or lactate ≥ 4 within one hour AFTER completion of IVF bolus?
  - Yes → Document assessment of volume status after IVF bolus
    - Include the following at the end of your History & Physical or as an Event Note if transferred from the floor:
      - “I attest that I performed a focused physical exam post-fluid resuscitation.”

**Sepsis/Severe Sepsis/Septic Shock Algorithm**

**End Organ Dysfunction**
- **Criteria**
  - SIRS + Shock
  - 1 + ≥ 28°C
  - 1 + ≥ 10°C
  - 1 + ≥ 10 x 2R
  - 1 + ≥ 10 x WBC
  - 1 + ≥ 10 x BUN
  - 1 + ≥ 10 x pH

**Volume Assessment**
- Choose 3 of the Two Options below:
  - CVP
  - VAP
  - Capillary refill evaluation
  - This measurement
  - Pulse pressure

**SIRS Criteria**
- ≥ 1 of the following:
  - T > 38°C or < 36°C
  - HR > 90
  - RR > 20
  - WBC > 12
  - WBC < 4
  - Band > 10%
### Health System's Measures for Sepsis/Severe Sepsis/Septic Shock

#### Health System Measures
Severe Sepsis/Septic Shock  
10/1/2015 - 3/31/2017

<table>
<thead>
<tr>
<th></th>
<th>Hospital A</th>
<th>Hospital B</th>
<th>Hospital C</th>
<th>Health System Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Lactate</td>
<td>99.4%</td>
<td>99.4%</td>
<td>96.5%</td>
<td>98.5%</td>
</tr>
<tr>
<td>Blood Cultures</td>
<td>98.3%</td>
<td>95.4%</td>
<td>94.0%</td>
<td>96.1%</td>
</tr>
<tr>
<td>Antibiotic Admin.</td>
<td>94.3%</td>
<td>96.8%</td>
<td>97.0%</td>
<td>95.5%</td>
</tr>
<tr>
<td>Fluid Resuscitation</td>
<td>83.1%</td>
<td>77.3%</td>
<td>82.9%</td>
<td>81.2%</td>
</tr>
</tbody>
</table>

- Target of 90% was exceeded in 3 of the 4 measures by each hospital and a System average of Initial Lactate: 98.5%, Blood Cultures 96.1% and Antibiotic Administration 95.9%.
- Fluid Resuscitation did not achieve target, demonstrated by a Health System Mean of 81.3%.

#### Health System Sepsis Measures Hospital A B & C
Patients with Severe Sepsis and/or Septic Shock

<table>
<thead>
<tr>
<th></th>
<th>Baseline 4/1/2014 – 12/31/2014</th>
<th>Current Data 10/1/2015 – 3/31/2017</th>
<th>Statistical Significance Improvement p-value &lt; 0.05</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lactate:</strong> Percentage of lactate measured 12 hr. prior or within 3 hours of Bundle Start Time; Target 90%</td>
<td>91.8%</td>
<td>98.5%</td>
<td><strong>0.002</strong></td>
</tr>
<tr>
<td>Numerator</td>
<td>78</td>
<td>472</td>
<td></td>
</tr>
<tr>
<td>Denominator</td>
<td>85</td>
<td>479</td>
<td></td>
</tr>
<tr>
<td><strong>Blood Cultures:</strong> Percentage drawn prior to administration of antibiotics within 3 hours of Bundle Start Time; Target 90%</td>
<td>95.3%</td>
<td>96.1%</td>
<td><strong>0.7390</strong></td>
</tr>
<tr>
<td>Numerator</td>
<td>81</td>
<td>440</td>
<td></td>
</tr>
<tr>
<td>Denominator</td>
<td>85</td>
<td>468</td>
<td></td>
</tr>
<tr>
<td><strong>Antibiotic Administration:</strong> Percentage completed within 3 hours of Bundle Start Time; Target 90%</td>
<td>88.7%</td>
<td>95.9%</td>
<td><strong>0.0005</strong></td>
</tr>
<tr>
<td>Numerator</td>
<td>72</td>
<td>446</td>
<td></td>
</tr>
<tr>
<td>Denominator</td>
<td>85</td>
<td>465</td>
<td></td>
</tr>
<tr>
<td><strong>Fluid Resuscitation:</strong> Percentage of Patients that received equal to or more than 30 ml/kg fluids within 6 hours of Bundle Start Time; Target 90%</td>
<td>55.3%</td>
<td>81.3%</td>
<td><strong>0.00003</strong></td>
</tr>
<tr>
<td>Numerator</td>
<td>47</td>
<td>187</td>
<td></td>
</tr>
<tr>
<td>Denominator</td>
<td>85</td>
<td>230</td>
<td></td>
</tr>
</tbody>
</table>

Favorable statistical improvement, p-value < 0.05, was demonstrated in 3 of the 4 measures:
- Lactate draws, p-value of 0.002, Antibiotic Administration p-value of 0.00005
- Fluid Resuscitation p-value of 0.000031 demonstrated improvement yet the numerical target of 90% was not achieved. Performance with Blood Culture draws pre-antibiotic remained constant at 96.1%
Adaptability & Lessons Learned

The previously detailed system and process interventions were duplicated among our Health System’s three acute care facilities. Key lessons learned that contributed to our Sepsis Program’s success included:

- **Sepsis / Severe Sepsis / Septic Shock Algorithm** which provided practitioners with visual decision logic in the evaluation, diagnosis and treatment.

- **Standardized Evidence Based Order Sets** which promoted consistency in treatment in keeping with evidence based standards of care.

- **Concurrent Screening by Nursing for Early Sepsis Identification** for patients on all acute nursing units promoting early recognition of sepsis.

- **Peer Review by Physician Champion** who performs review and follow up of all variances giving feedback to the practitioner on a consistent basis.

- **Dedicated Sepsis Coordinator** who is an experienced RN, skilled in quality measure abstraction. The Sepsis Coordinator provides awareness and focus for the care team, encourages practice that demonstrates compliance with the guidelines, and participates in the ongoing education of staff and physicians; with skills in individual and group presentations. It is the Sepsis Coordinator who provides the "glue" to our Sepsis Program by concurrently monitoring performance, communicating opportunities for improvement; sharing our results and our successes.

- All Adverse Outcomes are favorably below the Observed / Expected ratio of 1.0.

- When comparing FY 2014 to FY 2016, a favorable statically significant decrease in Risk Adjusted Mortality was evidenced by a p-value of 0.008.

- Risk Adjusted 30 Day Readmissions and Risk Adjusted Length of Stay demonstrated favorable decrease yet these were not statistically significant evidenced by p-values of 0.166 and 0.278 respectively. Complications did not show a statistically significant decrease by a p-value of 0.258, yet remains considerably below the target O/E ratio of 1.0.
Our System will continue on the journey in the provision of optimal patient care with the goal of successful outcomes for decreased Mortality, LOS, Readmissions and Complications. We will continue until perfect process is achieved and sustained in keeping with CMS Standards and our Mission

Definition of Sepsis Quality:

Doing the Right Thing: Appropriate and Timely Sepsis Decisions and Interventions

Doing it Right: Evidenced-based Sepsis Algorithms and Order Sets

Every Patient / Every Time: Consistency and Continuity by the Sepsis Program Coordinators & Physician Champions