1. Reduce MHSC sepsis mortality rate by 25% by September 2016
2. Reduce mortality rate among patients transferred to U of U by 25% by September 2016
3. Increase sepsis bundle adherence (3 hour bundle), to 80% adherence by December 2015
4. Increase sepsis early recognition through increase in ability among nurses and providers to identify sepsis

3. Sepsis Early Recognition

Providers and nurses ability to recognize:
- Infection only: 57.1%
- SIRS: 57.1%
- Severe Sepsis: 38.6%
- Septic Shock: 47.9%
- NICOM: 58.9%

Analysis of data to determine focus areas: decrease sepsis mortality rate (MHSC and transfers to U of U), improve adherence with sepsis 3 hour bundle guidelines, improve ability for early recognition of sepsis by nurses and providers

Internal MHSC sepsis management team initiated 6/17/2015
Baseline data reviewed, areas for opportunity identified, goals set

4. IMPROVEMENT DESIGN AND IMPLEMENTATION

- Sepsis management team – start 6/17/15
- Initiation of sepsis screening tools into electronic medical record to assist with early recognition strategies – start 6/17/2015, utilized in EHR 10/6/2015
- Revised sepsis protocol to include nurse driven initiation of NICOM- start 7/29/2015, approved MEC 8/15, initiated on units
- Order sets for 3 hour and 6 hour bundle into electronic medical record- start: 10/6/2015
- Begin screening all patients for sepsis upon arrival to ED- start :7/29/2015
1. Problem: Sepsis Management

Sepsis is the leading cause of death among hospitalized patients nationwide.
- Between 28% and 50% of people who get sepsis die.
- The number of sepsis cases in the United States continues to rise each year.

At MHSC:
- 15.75% of our patients diagnosed with sepsis died between April 2014 and June 2015.
- 14.89% of our patients of which we transferred to U of U with sepsis between April 2014 and June 2015 died.
- 68.82% of our patients diagnosed with sepsis had all elements of the recommended best practice 3 hour bundle initiated.
- Early recognition remains an opportunity for improvement to identify sepsis early, improve outcomes of our patients, and reduce complications that may arise when sepsis has gone unnoticed.

2. Analysis and Investigation-Electronic medical record integration-Order Sets

- Screening tools changed/tweaked per workflow recommendations from frontline users.
  - All patients being screen, requires purposeful assessment and removal of cases for which does not apply.
- Order sets and work flow added to hospital policy for reference.
- Screening tools used on pediatrics- education and changing of screening tools to reflect for adult population only.
- Adjustment of protocol to patient condition necessary.
  - Fluid challenge, bolus for patients in fluid overload.

3. Improvement Design-Electronic medical record integration-Screening Tools

4. Improvement Design-Education program

- Providers and clinical personnel required to complete sepsis education program, available to all employees if interested, education encouraged.
- Pre-assessment to include providers and nurses.
- Providers providing education on different stages of sepsis.
- Hands-on NICOM review, improved NICOM familiarity.
  - Additional NICOM ordered for ED setting.
## Sepsis Bundle Adherence - 3 hr

<table>
<thead>
<tr>
<th>Item</th>
<th>Q3 2015</th>
<th>Severe Sepsis</th>
<th>Septic Shock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lactate</td>
<td></td>
<td>37%</td>
<td>50%</td>
</tr>
<tr>
<td>Culture</td>
<td></td>
<td>68.45%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Antibiotic</td>
<td></td>
<td>37%</td>
<td>50%</td>
</tr>
<tr>
<td>Fluids</td>
<td>N/A</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>47.5%</td>
<td>62.5%</td>
</tr>
</tbody>
</table>

* Q4 Data for Sepsis Bundle Adherence – 3 hr changed in methodology of data collection as the standardized SEP-1 measure was initiated in October 2015. Utilizing data from SEP-1 measure starting with Q4 2015 data.

* Q4 Data for Sepsis Early Recognition - post-assessment survey results obtained in December 2015 included in Q4 2015 data.

## Sepsis Average Length of Stay

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</thead>
<tbody>
<tr>
<td>ALOS (days) - Sepsis</td>
<td>4.991</td>
<td>5.962</td>
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</table>

* Sepsis, any diagnosis, acute inpatient encounters, excludes inpatient deliveries, newborns, and behavioral health

## Sepsis 30-day Readmissions

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</thead>
<tbody>
<tr>
<td>Sepsis 30-day Readmissions</td>
<td>4.43%</td>
<td>10%</td>
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* Sepsis readmissions/total 30-day readmissions - acute care inpatient encounters, excludes inpatient deliveries, newborns, and behavioral health