**The Sepsis Epidemic**
- Every minute a patient presents to the ED with severe sepsis
  - 3750 cases/year
- Mortality ranges from 25% to 50%
  - 500 - 1000 deaths/day = 215K/annually
- National hospital costs of $16.7 billion/year
- Severe sepsis cases set to grow at rate of 1.5% / yr or 1M more cases/yr in U.S. alone by 2020
- Due to use of invasive procedures, elderly, high-risk pts
- Elderly are at increased risk of sepsis
- More prone to infections
- More co-morbidities
- Surviving Sepsis Campaign (SSC) global initiative, developed to improve sepsis management, diagnosis, treatment, & reduce sepsis mortality.
  - 6 hour resuscitation & 24-hour management bundles of sepsis care including early goal directed therapy (Rivers, et., al 2001)

**Barriers to Implementation of EBP Sepsis Screening & Interventions**
- Paper screening tool was inefficient
- Infrequent assessment = missed opportunity for early intervention
- Non specific sepsis symptoms mimic other disease states
- Lack of clinician knowledge regarding identifying sepsis
- No single test to identify septic patient
- Lack of RN / physician / MLP / PCA sepsis care education
- No sense of urgency to treat within “Golden Hour”
- Lack of public awareness of sepsis
- Adoption resistance
- 17 years to impact acceptance evidence based treatment
- Lack of common definitions of sepsis stages
- Skepticism over validity of DMC Cerner® Sepsis Alert

**Methodology**
- Pre and post intervention, non-experimental study design to investigate if educational offerings to RNs, RRT members, physicians, and NPs/PAs influence the identification / treatment of patients at risk for sepsis
- 3 Phases of data collection (n=50 per phase)
  - Baseline phase – the initiation of the sepsis alert
  - Intermediate phase - Before formal education
  - Post intervention phase - 8 weeks post formal education completion
- Data for all 3 phases of study include:
  - Blood cultures obtained
  - Lactate level drawn
  - Time to antibiotic order from Sepsis Alert
  - Time to antibiotic administration

**Process**
- DMC Cerner® Sepsis Alert fires to Emergency Department (ED) or Rapid Response Team (RRT) pager once patient meets criteria
  - ED physician or RRT triages patient
  - RRT, per protocol, draws lactate and fluid resuscitates patient: contacts physician who reviews information and orders Sepsis PowerPlan and STAT antibiotics
  - Pharmacy receives order for fluids, antibiotic(s), and / or vasoactive medication(s)
  - RN receives medications, scans, and administers. Antibiotic goal from order entry = 1 hour

**Interprofessional Collaboration**
- Formation of researcher led interprofessional sepsis committees
- Survey monkey to evaluate knowledge and support of providers regarding evidence-based protocols
- Researcher designed Grand rounds for each site based on the SSC guidelines highlighting the importance of early identification using lactic acid, obtaining blood cultures and timeliness of antibiotic administration
- Brochure and posters to reinforce education at each site
- Change in Rapid Response Team Process & education to support
- Repeated Unit based inservices
- Other
  - Feedback to providers

**Implications for Practice**
- Use of serial lactate will help identify pts early, direct care & improve patient outcomes
- Kumar et al. (2007) demonstrated that every hour antibiotic administration is delayed results in 7.6% mortality. By 1 hr time to antibiotic administration, pt mortality will increase
- Future research will focus on how to improve provider compliance with use of evidence based PowerPlan

**References**
- Nguyen et al., (2007) noted 21% mortality with treatment 40% without sepsis bundle
- Rivers E et al. (2001) landmark article describing early goal directed therapy
- Shorr et al., (2007) noted hospital costs $22K with treatment, $16K without sepsis bundle implementation; 5 day decrease in LOS with sepsis bundle use Surviving Sepsis Campaign: International guidelines for management of severe sepsis and septic shock
- (2008) revisions to Sepsis bundles
- Guerri et al., (2010) described the impact of time to antibiotic on survival in patients with severe sepsis or septic shock in whom early goal-directed therapy was initiated in the ED.
- Saegeer et al., (2011) revealed the impact of a real-time computerized sepsis alert in nonintensive care unit patients
- Shorr, Micek, Jackson, & Kollef, (2007) discuss the economic implications of an evidence-based sepsis protocol to improve outcomes and lower costs

**Table: Sepsis Alert vs Non Alert Patients**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Analysis</th>
<th>Sepsis Alert</th>
<th>Non Alert</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>Routine Days</td>
<td>Ave</td>
<td>20</td>
<td>25</td>
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<tr>
<td>Phase 2</td>
<td>ICU Days</td>
<td>Ave</td>
<td>10</td>
<td>15</td>
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<tr>
<td>Phase 3</td>
<td>Mortality Rate</td>
<td>%</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

**An Interprofessional Approach to Sepsis Care**

Maria Teresa Palleschi, RN, DNP, APRN-BC CCRN and Susanna Sirianni, RN,DNP, ANP-BC, ACNP-BC, CCRN,

**Diagram: Sepsis Alert vs Non Alert Patients**

- Sepsis Alert April – June 2011
- Non Alert April – June 2011

**Graph: Results of Educational Intervention**

- Lactic Acid Completion
- Time to Antibiotic Administration in Minutes
- PowerPlan Use

- Phase 1: Pre-education
- Phase 2: Post-education
- Phase 3: Continued education

**Diagram: Results Blood Cultures**

- Phase 1: Pre-education
- Phase 2: Post-education
- Phase 3: Continued education

**Diagram: Process**

- DMC Cerner® Sepsis Alert fires to ED
- Emergency physician or RRT triages patient
- Sepsis bundle use Surviving Sepsis Campaign: International guidelines for management of severe sepsis and septic shock

**Diagram: Methodology**

- Pre and post intervention, non-experimental study design to investigate if educational offerings to RNs, RRT members, physicians, and NPs/PAs influence the identification / treatment of patients at risk for sepsis
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