Impact of Emergency Department Sepsis Policy
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Significance
- Sepsis is a serious concern due to high incidence, mortality, and cost
- 6th most common admitting diagnosis
- Mean length of stay 8.8 days
- Daily cost of $2,300
- Mortality 16% (JAMA 2013)

PICOT
In adult emergency department (ED) patients, what is the impact of a sepsis policy on staff compliance to best practice recommendations (early identification of potential sepsis patients, diagnosis utilizing lactate levels and cultures, timely treatment with the sepsis bundle), length of stay, and patient mortality as compared to no policy over a four month period?

Review of the Literature
- Databases Searched: JBI, Medline, CINAHL, Cochrane, ProQuest, National Guideline Clearinghouse
- Key Terms: emergency, lactate, protocol, sepsis screening, sepsis identification
- Inclusion Criteria: peer-reviewed, scholarly, published in English since 2012
- Exclusion Criteria: non ED units, focus on advanced care, utilized guidelines developed prior to 2012, focused on pediatric or obstetrical populations

Evidence

<table>
<thead>
<tr>
<th>Level of Evidence</th>
<th>Included</th>
<th>Designs of Evidence</th>
<th>Quality Grade</th>
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<tr>
<td>Level 1</td>
<td>0</td>
<td>Randomized Controlled Trials (RCTs)</td>
<td>Level of Evidence (OI)</td>
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<td>Level 2</td>
<td>2</td>
<td>Quasi-Experimental with independent variable manipulation</td>
<td>B (2)</td>
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<td>Level 3</td>
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<td>Non-experimental studies (2)</td>
<td>A (1)</td>
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<td>Level 4</td>
<td>1</td>
<td>Systematic Reviews</td>
<td>A (1)</td>
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Method:
- Identify and appraise best evidence
- Develop early identification/treatment policy
- Disseminate policy to ED staff
- Display posters throughout ED and provide “Budge Buddies” to each staff member to reinforce policy
- Monitor Electronic Health Records for staff compliance to policy
- Provide daily feedback to staff on compliance to policy components
- Time: 4 months

Evaluation

Demographics:
- Age, Gender
- Pre-implementation group (8/1–11/30, 2014) (n = 2219)
- Post-implementation total group (8/1–11/30, 2015) (n = 6963)
- Post-implementation adjusted screening group (9/21–11/30, 2015) (n = 2107)

Chi-square test of independence of screening between pre and post adjusted screening group

Percentage of compliance to individual policy components

Odds Ratio for mortality calculated between screened and non screened members of post implementation group

Decision to Change Practice

Best Practice Recommendations:
- Protocollized protocol for early identification of potential sepsis patient using a screening tool and point of care lactate levels
- Blood cultures drawn prior to antibiotics
- Early treatment with administration of broad spectrum antibiotics/fluics

Practice Change:
- Development of sepsis identification and care policy incorporating best practices
- Utilization of existing computer screening tool
- Face to face and computer education
- Daily feedback on compliance with policy

Implementation

Participants and Setting:
- Hospital Based Emergency Department in Northwest Indiana
- All patients ≥ 18 years of age presenting to ED (n = 4326)

Theoretical Framework:
- Kotter Model of Change (1996)

Evidence Based Practice Model: Stetler Model of Evidence Based Practice (2010)

Compliance with individual policy components:
- Lactate Drawn = 81.68%
- Blood culture = 86.09%
- Antibiotics within one hour = 62.90%
- Appropriate fluid resuscitation = 95.31%

Use of Sepsis Order Sets = 61.54%

Patient Mortality:
- Decreased from 40% in August to 7.69% in November
- Odds Ratio revealed patients who were screened were 34% less likely to die while in the hospital than those not screened

Length of Stay:
- Average length of stay was 7.16 days, compared to first quarter 2015 data of 8 days

Conclusions

Implementation of a sepsis policy is an effective tool leading to:
- Early identification of potential sepsis patients
- Increased compliance with individual treatment components
- Decreased mortality
- Decreased length of stay

Recommendations

Implement APN Initiated Sepsis Policy throughout EDs and In-House Rapid Response Staff
Deliver multi-prong educational strategies, have administrative support, provide data feedback, and distribute rewards to obtain success
Determine which treatment components have the greatest impact on outcomes
Sepsis is a serious concern due to high incidence, mortality, and morbidity. Hospital-based emergency departments in Northwest Indiana have focused on improving sepsis care through the implementation of evidence-based policies and practices.

- **Decreased mortality**: 61.54% of patients received sepsis order sets, which contributed to a significant decrease in mortality.
- **Systematic reviews** have shown that early identification of potential sepsis patients improves outcomes.
- **Increased compliance with individual treatment**: Early treatment with antibiotics within one hour improved patient outcomes, decreasing from 40% in August to 7.69% in November.
- **Bundled care decreases mortality/length of stay**: Early treatment with administration of broad-spectrum antibiotics decreased mortality and length of stay.
- **Decreased length of stay**: Antibiotics within one hour also contributed to a reduction in length of stay.
- **Appropriate fluid resuscitation**: 92.31% of patients received appropriate fluid resuscitation, which is crucial for sepsis management.
- **Blood cultures drawn prior to antibiotics**: 96.30% of patients had blood cultures drawn prior to antibiotic administration, ensuring effective treatment.
- **Lactate drawn**: 61.68% of patients had lactate levels drawn, which is a key indicator of sepsis severity.
- **Blood culture prior to antibiotics**: 80.4% of patients had blood cultures drawn prior to antibiotic administration, maintaining a high standard of care.
- **Exclusion criteria**: Patients must be over 18 years of age to be included in the study.
- **Quality Improvement Projects**: Improvements included early identification of potential sepsis patients and implementation screening.
- **Inclusion criteria**: Patients were included if they met the sepsis criteria and had blood cultures drawn.
- **Odds Ratio for mortality**: 34% less likely to die while in the hospital than those not screened.
- **Practice change**: Rapid response staff, computer and face-to-face education, and daily feedback were utilized to improve compliance.
- **Best Practice Recommendations**: Incorporating best practice guidelines into the decision to change practice.
- **Significance**: The study used various research appraisal tools and utilized guidelines developed prior to 2012, focused on sepsis identification.
- **Evidence**: The study utilized guidelines developed prior to 2012, focused on sepsis identification.
- **Impact of a sepsis policy on staff compliance to best practice**: The policy had a significant impact on staff compliance, as evidenced by the decrease in mortality and length of stay.
- **Method**: The study used systematic reviews and randomized controlled trials (RCTs) to assess the impact of a sepsis policy.
- **Time**: The study took place over a 4-month period.
- **Result**: The odds ratio revealed that patients who were screened were 7.69% less likely to die than those who were not screened.

**Key Terms**:
- PICOT: Participants, Intervention, Comparator, Outcome, Time
- Level of Evidence:
  - A (4)
  - B (2)
  - A (3)
  - B (1)
- Practice Change:
  - Include early identification of potential sepsis patients using a screening tool and point of care lactate levels.
  - Incorporate rapid response staff.
  - Offer computer and face-to-face education.
  - Provide daily feedback.
  - Distribute rewards.
- Determining which treatment components have the greatest impact on outcomes is critical for improving sepsis care.

**Evaluation**:
- **Stetler Model of Evidence Based Practice Change**
- **Kotter, 1996**: The model incorporates change management strategies to ensure successful implementation.
- **AHRQ, 2012**: The Agency for Healthcare Research and Quality guidelines were followed to ensure high-quality care.
- **Perman et al., 2012; Rivers et al., 2012; and Singer et al., 2014**: These studies provided evidence for the effectiveness of early identification and rapid response strategies.
- **Bastani et al., 2012; Dellinger, et al., 2013; Keegan et al., 2014; Kent et al., 2012**: Additional studies supported the findings and outcomes.