Screen and Intervene: Improved Outcomes From a Nurse-Initiated Sepsis Protocol C935

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Objectives

- Review the background of our sepsis programming
- Outline the purpose and goals of the program
- Discuss the methods, program, and practice changes implemented
- Evaluate the pre & post programming outcome data
Background

Identifying the clinical practice concern

- Staff nurse in ED setting: more patients diagnosed with sepsis
- Poor patient outcomes sparked me to learn more:
  - Seek & read sepsis-related publications
  - Attend nursing conferences: sepsis breakout sessions
  - Ask what was my facility’s practice in identification of sepsis, adherence to sepsis guidelines, & patient outcomes?
- Began graduate school to become a Clinical Nurse Leader (CNL®)
- CNL® Clinical Practicum Project idea was born

What is Sepsis?
What is Sepsis?

- Not caused by the infection itself.
- A complex process resulting from the body’s systemic inflammatory response to an infection.
- This response leads to a cascade of events that is progressive in nature.

The Progressive Stages of Sepsis

- Systemic Inflammatory Response Syndrome (SIRS)
- Sepsis
- Severe Sepsis
- Septic Shock

Performing a literature search

- >750,000 new cases of severe sepsis in N. America per year1
- Overall mortality rate from severe sepsis or septic shock ranges from 30-60%, 10th leading cause of death in US, with total costs est. $17 Billion/year2
- 2004 Surviving Sepsis Campaign developed a sepsis CPG called “Early Goal Directed Therapy (EGDT)”. Updated in 2008 & 2012.
- Evidence indicates a clear survival benefit if EGDT was initiated at or near the time of sepsis recognition3

References:
Performing a literature search

Nursing-Specific Sepsis Studies:

- 2010 before & after interventional study from *Critical Care Medicine*:
  - Examined the impact of the Surviving Sepsis Campaign protocols on hospital LOS in Septic Shock patients
  - Significant limitation to this study was the decreased level of illness severity of the interventional group compared to the historical group likely due to improved education of ED staff leading to earlier sepsis recognition & preventing delays in treatment

- 2010 study from the *International Journal of Nursing Studies*:
  - Evaluated the role of the ED nurse in the recognition and treatment of sepsis
  - Findings: The use of a nurse-driven sepsis protocol combined with training & performance feedback can significantly improve the recognition & tx of patients with sepsis in the ED.

Performing a literature search

Nursing-Specific Sepsis Studies:

- 2010 study from the *International Journal of Nursing Studies*:
  - Evaluated the role of the ED nurse in the recognition and treatment of sepsis
  - Findings: The use of a nurse-driven sepsis protocol combined with training & performance feedback can significantly improve the recognition & tx of patients with sepsis in the ED.

Lighting the spark

- Prior to 2012, MVAH did not utilize a Sepsis Protocol
- ED is a significant portal of entry for Septic patients
- ED RNs are in a position to be at the forefront in the early recognition and care of this cohort of pts.
Asking the research question:

In Emergency Department patients that meet severe sepsis and septic shock criteria, will a nursing education program and implementation of an evidence-based sepsis protocol, compared to usual care, improve patient outcomes and reduce hospital costs and resource utilization?

Getting the ball rolling…

- Buy-in from VA Leadership
- IRB and VA Research & Development Committee Approval

Purpose & Goals of the Project
1. Promote early recognition of patients meeting sepsis criteria
2. Once sepsis is recognized, deliver time-sensitive, EB sepsis interventions

Purpose of the Project

1. Improve patient outcomes
   Halting the progression of sepsis
2. Reduce Hospital Costs and Resource Utilization
   Reduction in Bed-Days-of-Care (BDOC)

Overarching Goals:

Methods
Analysis of Pre-Sepsis Programming Data

IRB approval: Two-year retrospective medical-record review of hospitalized patients with sepsis-related medical diagnoses (2009-2011)

- 120 charts reviewed (22 excluded).
- 98 met sepsis criteria. Of these, 43 pts met severe sepsis or septic shock criteria in the ED.
- “Cast a wide-net”: Pt demographics, location sepsis was first identified, ED data, inpatient data, BDOC, sepsis progression, mortality rates
- Findings led to sepsis program development

Sepsis Programming

Emergency Department

Create ED Sepsis Committee

Nurse-Led Interdisciplinary

- ED NM Chief of Emergency Medicine Pharmacy
- ED Staff Nurses became Sepsis Champions
- Ad Hoc EBP/Magnet Coordinator Nurse Scientist Organizational Improvement

43% nurses volunteered Received additional sepsis education

Buy-in & advocacy was a key factor in implementing successful change in ED
Clinical Project Design: ED

Program objectives included:

- Facilitate early recognition of sepsis
  Strategy → Development of a sepsis nursing education program

- Once sepsis is recognized, initiate EB interventions aimed at halting the progression of sepsis
  Strategy → Formulation of an evidence-based sepsis protocol

ED Nursing Education Program

2-hour Sepsis In-service

- Didactic: pathophysiology of sepsis, stages of sepsis, sepsis protocol overview, & case study using sepsis protocol
- Simulation using computerized manikin in Sim Lab
  - Sepsis Champions modeled implementation of protocol
  - RN Attendees viewed the simulation
  - Debriefing to follow
- Competency Test: >80% to successfully pass

Nurse-Initiated Sepsis Protocol

- Sepsis Screening performed by RN in triage
- Evidence-based care-bundle
- Aligns with sepsis CPG: “Early-Goal-Directed-Therapy”
Nurse-Initiated Sepsis Protocol

If a patient meets sepsis criteria:

- Nursing can initiate diagnostic testing & implement specific EB sepsis interventions
- Collaboration with the Provider
- Some interventions require an MD order (medications, IVF, invasive monitoring)

Bedside Algorithm

- Quick & easy to follow
- Portable
- Reviewed numerous pictorial sepsis algorithms
  - Lots of RN input on design
Nurse-Initiated Sepsis Protocol

- "Went-Live" in ED in June 2012
- Sepsis Champions provide real-time mentoring to staff (RNs & MDs) & ongoing education to new ED staff

- Sepsis committee meetings:
  - Evaluate protocol/programming → modify prn based on evidence; review sepsis cases, identify/eliminate barriers
- Post-programming. ED sepsis chart review:
  - Feedback to staff
  - Aggregate data
  - Individual RN feedback regarding compliance of performance measures

Sepsis Programming

Expansion to ICU

Clinical Project Design: ICU

Goal: standardize sepsis care to the other critical care areas of hospital

1. ICU staff respond to rapid response calls throughout the hospital
2. Receive direct admissions from outside hospitals
Clinical Project Design: ICU

- Gain buy-in & approval
- Modified ED Sepsis Protocol to include ICU staff
- Education to ICU nursing staff:
  - Face to Face/In-services
  - Annual Education: Poster/competency test

Sepsis Programming

Expansion to Acute Care Units

Clinical Project Design: Acute Care

Inpatient Acute Care Nurses
(Medical, Surgical, Cardiac Care, Transplant, Neurology, Orthopedic)

- Buy-In & Approval
- RN representatives from each unit
- Nursing Education/In-Services
A Need for Something Different

- Did not want to encourage use of Sepsis Protocol in this setting
  - Time/resource-intensive
  - Critically-ill patients, potential to deteriorate quickly

- Nursing Education aimed at:
  - Patho & Stages of sepsis
  - Early recognition of sepsis
  - Prompt transfer to ICU setting

Communication to the Provider

Pre-sepsis programming chart review indicated a need to address inpatient communication issues

- In hospitalized patients whose sepsis progressively worsened:
  - Avg. 14.5 hrs. before pt was transferred to ICU
  - Review of “Provider Contact Notes” in these patients indicated the following issues:
    - General lack of sepsis recognition by nurses & providers
    - Inconsistencies among nurses in their communication when relaying concerns to provider

Inpatient Sepsis Guideline

- Outlines stages of sepsis/criteria for each
- SBAR scripting to communicate to provider
- Highlights sepsis terminology (Use the right words to communicate concerns)
- Facilitates standardization of care & promotes patient advocacy
Ongoing Nursing Sepsis Education

- All new RN Hires participate in 1 hour Sepsis education during nursing orientation:
  - Includes an overview of epidemiology, pathophysiology, stages of sepsis, nursing interventions, & case study
  - Provided own copy of Inpatient Sepsis Guideline

ED Sepsis Data Outcomes

Pre-Sepsis Protocol Analysis: 2009-2011
Post-ED Sepsis Protocol Analysis x 2 years
- June 2012-2013
- June 2013-2014

ED Compliance with Sepsis Protocol

- Pre-sepsis protocol
- Year 1 post-sepsis protocol
- Year 2 post-sepsis protocol

<table>
<thead>
<tr>
<th></th>
<th>Pre-sepsis</th>
<th>Year 1</th>
<th>Year 2</th>
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<tbody>
<tr>
<td>Blood Culture obtained</td>
<td>62%</td>
<td>32%</td>
<td>61%</td>
</tr>
<tr>
<td>Antibx admin within 1 hr of recognition</td>
<td>67%</td>
<td>70%</td>
<td>81%</td>
</tr>
<tr>
<td>Other Culture collected</td>
<td>59%</td>
<td>65%</td>
<td>88%</td>
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ED Compliance with Sepsis Protocol

- Pre-sepsis protocol
- Year 1 post-sepsis protocol
- Year 2 post-sepsis protocol

Lactate level collected
IVF administered

Sepsis Progression

Pre-Protocol 2009-2011
1 yr. Post-Protocol June 8 2012-2013
2 yrs. Post-Protocol June 8 2012-2014

Mortality Rate

Pre- Protocol 2009-2011
1 yr post-protocol June 8 2012-2013
2 yr post-protocol June 8, 2013-2014
Hospital Resource Utilization

Average BDOC of Sepsis Patients Treated in ED with sepsis protocol

- **Pre-Protocol**: 11.58
- **1-Year Post Protocol**: 7.42
- **2-year Post-Protocol**: 6.71

↓4.87 days
(42% reduction in avg. BDOC)

**Total Average BDOC**

- **AC**: 6.51
- **ICU**: 5.07

Hospital Costs

Avg. Cost to Care for Sepsis Patient Treated with Protocol*

- **Pre-Protocol**: $18,816.00
- **2009-2011**: $11,374.00
- **June 8, 2012**: $9,871.00

↓48% reduction in costs within 2 years

**Questions??**
Contact Information

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