Improving Sepsis Care: Our Organizational Journey

UVHN Elizabethtown Community Hospital
UVHN Elizabethtown Community Hospital

- Critical Access Hospital affiliated with University of Vermont Medical Center
- 600 square mile service area
- 25 inpatient beds
- Acute and Swing bed care
- 6500 E.D. visits annually
- 81 Average Acute inpatient days per month
UVHN Elizabethtown Hospital Sepsis Team

- Meredith King – Director, Out Patient Services & Infection Prevention
- Heather Reynolds – Director, Quality
- Eve Bailey – Data Analyst
- Grant Martin – Director, Pharmacy
- Kim Coolidge – Nursing Informatics
- Victoria Savage – Nurse Manager, Inpatient
- Bruce Barry – Nurse Manager, ED
- Nancy Ano – Registered Nurse
Project Description

- Create a Sepsis team
- Assess data regarding current performance
- Perform Gap Analysis
- Identify interval goals and objectives
- Organize Tools for Monitoring
- Staff and Provider Education
- Multi Level Case Reviews
  - Committee
  - Department
  - Frontline Staff
Project Implementation

- Early Identification of Sepsis - Both in ED and on Inpatient Unit
- Timely Treatment is initiated
- Warm Handoff including outstanding tests and treatments
- Highlight Reassessment
- Enhance critical thinking skills:
  - Orientation
  - Competencies
NYS PARTNERSHIP FOR PATIENTS

Tools & Resources

UVHN Elizabethtown Community Hospital Med-Surg Sepsis-2016

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Bench mark</th>
<th>Jan</th>
<th>Feb</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
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<tbody>
<tr>
<td>Lactate Measurement</td>
<td>4-6 mg/dL</td>
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<td>Serum Lactate Elevated</td>
<td>&gt;2 mg/dL</td>
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<td>Blood Culture Positive</td>
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<td>Antibiotic Use post-SAPS</td>
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<td>3 Hour Bundle</td>
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<td>Admission Criteria</td>
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<td>Acute Admissions Sepsis worksheet</td>
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<td># of Patients who met Sepsis Criteria</td>
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<td>Antibiotic Selection in Compliance with Protocol</td>
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<td># of Patients with Acute Care Severe Sepsis</td>
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1. Lactate Measurement:
- 4-6 mg/dL
- >2 mg/dL

2. Antibiotic Use post-SAPS:
- Use as per protocol

3. Acute Admissions Sepsis worksheet:
- # of Patients who met Sepsis Criteria
- Antibiotic Selection in Compliance with Protocol
- # of Patients with Acute Care Severe Sepsis

4. 3 Hour Bundle:
- Admission Criteria
- Antibiotic Selection in Compliance with Protocol
- # of Patients with Acute Care Severe Sepsis

5. 3 Hour Bundle:
- # of Patients who met Sepsis Criteria
- Antibiotic Selection in Compliance with Protocol
- # of Patients with Acute Care Severe Sepsis

October/November 2017
**Quick Reference Tools**

**Unknown Source (SIRS + Infection)**
- **Gram Negative + Gram Positive Coverage** +/– Aminoglycoside

<table>
<thead>
<tr>
<th>Gram Negative</th>
<th>Alternative Gram Negative</th>
<th>PLUS</th>
<th>May Consider Adding Aminoglycoside</th>
<th>Neutropenia</th>
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<td></td>
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<td></td>
<td>Patient less than 60 years of age</td>
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<tr>
<td>Ceftriaxone</td>
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<td>Gentamicin 3 mg/kg/dose IV</td>
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<tr>
<td>1-2 grams IV q12h</td>
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<td></td>
<td>Patient greater than 60 years of age</td>
<td>Gentamicin 3 mg/kg/dose IV</td>
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<td>If patient has acute renal failure or GFR &lt;30 ml/min patient should be started on Gentamicin 2 mg/kg loading dose.</td>
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</table>

- If patient has acute renal failure or GFR <30 ml/min patient should be started on Gentamicin 2 mg/kg loading dose.
- After loading doses, frequencies for each individual patient should be verified with pharmacist.

**Severe PCN Allergy:**
- Atemocillin 2g IV q8h or Ciprofloxacin 400mg IV q8h + Gentamicin + Vancomycin

**Community Acquired Pneumonia**
- Pseudomonas Risk (COPD, emphysema, chronic bronchitis, and interstitial or restrictive lung disease) | Consider: Hospital Acquired Pneumonia Regimen
- Ceftriaxone 2 grams IV q24h and Levaquin 750mg IV q24h
- OR
- Ceftriaxone 2 grams IV q24h and Azithromycin 500mg IV q24h

**MRSA Risk Consider Adding:** Vancomycin 10 mg/kg loading dose to max dose of 3,000 mg then dosed by pharmacy

**Surviving Sepsis 3 Hour Bundle Fluid Administration**
- **Initial Fluid Administration**
  - The Severe Sepsis 3-Hour Resuscitation Bundle calls for an initial administration of 30 ml/kg of crystalloid as a fluid challenge in cases of suspected hypovolemia or actual cases of serum lactate greater than 4 mmol/L (36 mg/dl).

  - Fluid resuscitation should be commenced as early as possible in the course of septic shock (even before intensive care unit admission). Requirements for fluid infusion are not easily determined so that repeated fluid challenges should be performed.

<table>
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<tr>
<th>Patient Weight</th>
<th>Recommended Initial IVF Replacement</th>
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<tbody>
<tr>
<td>150 lb (68.18 kg)</td>
<td>2,045 ml</td>
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<tr>
<td>175 lb (79.5 kg)</td>
<td>2,386 ml</td>
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<tr>
<td>200 lb (90.0 kg)</td>
<td>2,727 ml</td>
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<tr>
<td>225 lb (102.3 kg)</td>
<td>3,068 ml</td>
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<tr>
<td>250 lb (113.6 kg)</td>
<td>3,409 ml</td>
</tr>
<tr>
<td>275 lb (125 kg)</td>
<td>3,750 ml</td>
</tr>
<tr>
<td>300 lb (136.4 kg)</td>
<td>4,090 ml</td>
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</tbody>
</table>

*Provider Signature: ____________________________*
Successful Strategies & Tips

- Executive Support
- Institutional Champion
- Strong Management Team Approach: “Silo Elimination”
- Early Adoption Evidence Based Practices
- Engagement of Frontline Staff
- Strong Culture of Safety - Positive Communication
Challenges & Barriers

- Initiation of Broad Spectrum Antibiotics vs ASP
  - “Bug/Drug Match”
- Fluid Resuscitation in the presence of comorbidity
- Reassessment of patients post admission
- Obtaining timely repeat lactate
Key Lessons Learned

- Sepsis treatment and prevention is a team sport
- Importance of Pharmacy Consultation
- Share case reviews and opportunities for improvement with front line staff in real time
- Key on lactates > 2
Outcomes & Data

2016

Acute Admissions: 3 Hour Sepsis Bundle

- Jan
- Feb
- March

2017

Acute Admissions: 3 Hour Sepsis Bundle

- June
- July
- Aug
Steps for Hardwiring & Spread

- Quick Reference tools for Providers and Nursing staff
- Implementation of Sepsis Order Sets
- Implementation of Sepsis Screen on admission forms and shift assessment
- Monthly Updates
- Continuing Education
- Ongoing communication (critique) Sepsis Cases
Contact Information

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Elizabethtown Community Hospital

UVMHealth.org/ECH