

# Nursing Informatics: Reducing Sepsis Deaths through an Integrated Interdisciplinary Approach to Care

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## ABSTRACT

The Early Warning Sepsis and Septic Shock Bundles at UMC El Paso focused on best practice, interdisciplinary education, consistent reinforcement and modification of the EMR to address sepsis. Statistical analysis of early warning signs to include patients throughout the care continuum lead to modifications and custom build in the EMR system to include integration of both the 3-hour & 6-hour Bundles with a team approach throughout the care continuum. AMS (Antimicrobial Stewardship) guidelines were incorporated in the EMR build. A retrospective and concurrent review of EMR documentation and follow-up showed a marked increase (up to and exceeding 50% in early identification of sepsis). The goal to decrease deaths for patients presenting with sepsis was accomplished (zero deaths related to sepsis).

## CHANGE MANAGEMENT & IMPLEMENTATION

- Identifying a need for change
- Modifications in the EMR- interdisciplinary approach
- Data Analysis Validation
- Continuous Improvement Process

The screenshots show the EMR interface for Sepsis Assessment. The 'SITUATION' section includes 'Current Category of Sepsis Measure' (Septic Shock) and 'How Organ Dysfunction (within past 48 hrs)'. The 'RECOMMENDATIONS' section lists '3 HOUR SEPSIS BUNDLE', '3 Hour Blood Cultures', '3 Hour Antibiotics Given', '3 Hour 1st Lactate', and '3 Hour: 30 ml/kg IVF'. The 'OTHER PERTINENT FINDINGS/INTERVENTIONS' section is also visible.

The screenshot shows the 'Assessment' form for Sepsis III. It includes a table for 'Vital Signs Sepsis' with columns for 'Vital Signs' and 'Early Warning Alerts'. The table lists various vital signs and their corresponding alert values. Below the table, there are sections for 'Heart Sounds', 'Heart Rhythm', 'Breath Sounds', 'Peripheral Pulses', 'Capillary Refill', 'Central Pulses', 'Skin Color', 'Skin Description', and 'Skin Turgor'.

## AIMS

- Improve patient outcomes by decreasing sepsis deaths to zero
- Improve clinical workflows to address Sepsis Bundle Core Measures
- Increase Compliance to meet and exceed Sepsis Core Measures through Nursing Informatics modifications in the EMR

## References:

ANCC Critical Care Webinar Series. (2017). Updating Your Practice: The 2017 Sepsis Guidelines. <https://www.aacn.org/docs/EventPlanning/WB0037/sepsis-q-and-a-512tiive.pdf>  
 Institute for Healthcare Improvement. (2018). Plan-Do-Study-Act Worksheet. <http://www.ihl.org/resources/Pages/Tools/PlanDoStudyActWorksheet.aspx>  
 Mind Tools. (2018). Change Management: Making Organizational Change Happen Effectively. [https://www.mindtools.com/pages/article/newPPM\\_87.htm](https://www.mindtools.com/pages/article/newPPM_87.htm)

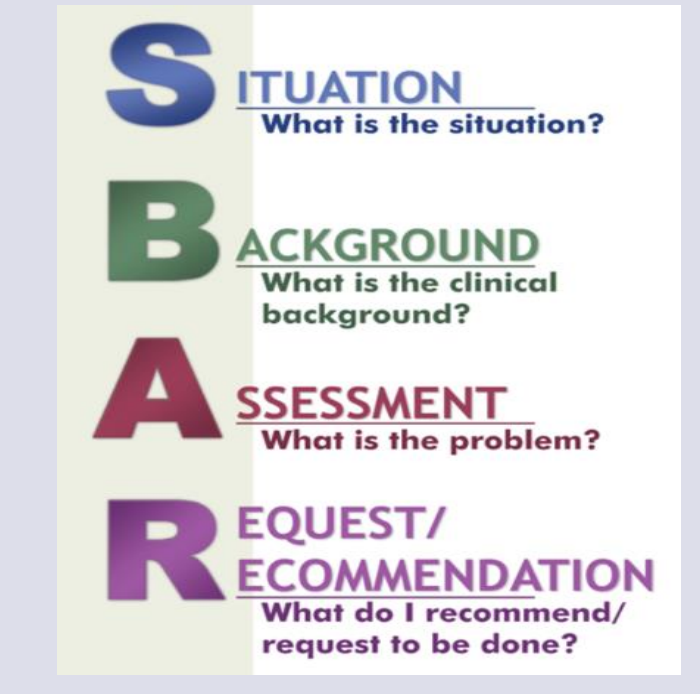
The screenshots show the 'ED Common Infection' form with 'Suspected Sepsis of Undetermined Source' and 'Suspected Sepsis with Identified Source'. Below it is the 'IV fluid Orders' form, which includes a table for 'Patient Weight' and 'Total Volume' for different fluid types. A note states: 'The fluid is available for selection by 1000 ml or 500 ml. For example, for <= 50kg select both NS Fluids to equal 1000ml'.

## Sepsis PowerPlan Orders

- Some Orders are pre-selected
  - Communication Orders for Nursing
  - Lab Orders
- Provider to select additional patient orders as needed
  - Respiratory
  - Medications
  - Antifungals
  - Antiviral Agents
  - Vasoactive Agents
  - Corticosteroids
  - Labs
  - Diagnostic Tests

## INTERVENTIONS

- Customized modifications in Power Forms, Power Plans and Orders utilizing SBAR and PDSA
- Interdisciplinary team meetings weekly with stakeholders to include physicians, nursing, quality, administration, ancillary departments
- Concurrent and Retrospective Data Review
- Data aggregation and analysis with validation
- Simulation of Early Warning Sepsis and Septic Shock Bundles with laminated intervention sheets in each Resuscitation Cart
- Pre and Post Continuous Process Improvement



## RESULTS

- Initially at 14% compliance with all measures
- One year of Change Management and Continuous Improvement
- Data Collection from January 2017 to March 2018
- Two Deaths related to Sepsis in Neuro ICU to Zero Deaths related to Sepsis
- Core SEP1 - Early Management Bundle, Severe Sepsis/Septic Shock 58% to 71%
- Core SEP2 - Severe Sepsis 3 Hour Bundle 77% to 80%
- Core SEP3 - Severe Sepsis 6 Hour Bundle 87% to 95%
- Core SEP4 - Septic Shock 3 Hour Bundle 86% to 95%

## FUTURE IMPROVEMENT MEASURES

- Outpatient Indicators and Identification of Sepsis
- Continuous Process Improvement
- Predictive Analytics