Project Submission:
2009 Delaware Valley Patient Safety Award

DELAWARE COUNTY MEMORIAL HOSPITAL

"Journey through Surviving Sepsis"

Journey through Surviving Sepsis

Abstract

Background
Severe Sepsis/Septic shock is a worldwide growing healthcare challenge. Over 750,000 cases occur in the U.S. each year. The global mortality is very high and can exceed 50%. Early recognition and management of sepsis expedites care, reduces mortality, and decreases length of stay and associated costs.

Objective
The goal was to develop a comprehensive evidence based sepsis care program that would decrease overall sepsis mortality and improve outcomes.

Methods
With the strong support of administration, a Multidisciplinary Sepsis Committee was formed in June 2008 to develop best practices, educate physicians and nurses and implement a sepsis care program. The team met every two weeks to develop to sepsis algorithm, standardized order set, sepsis worksheet, Emergency Department and Rapid Response Team guidelines, a laboratory bundle, resource binder and an extensive education program. Administration committed the resources required to educate more than 250 nurses and physicians. Quality measures were monitored and data collected to evaluate the program.

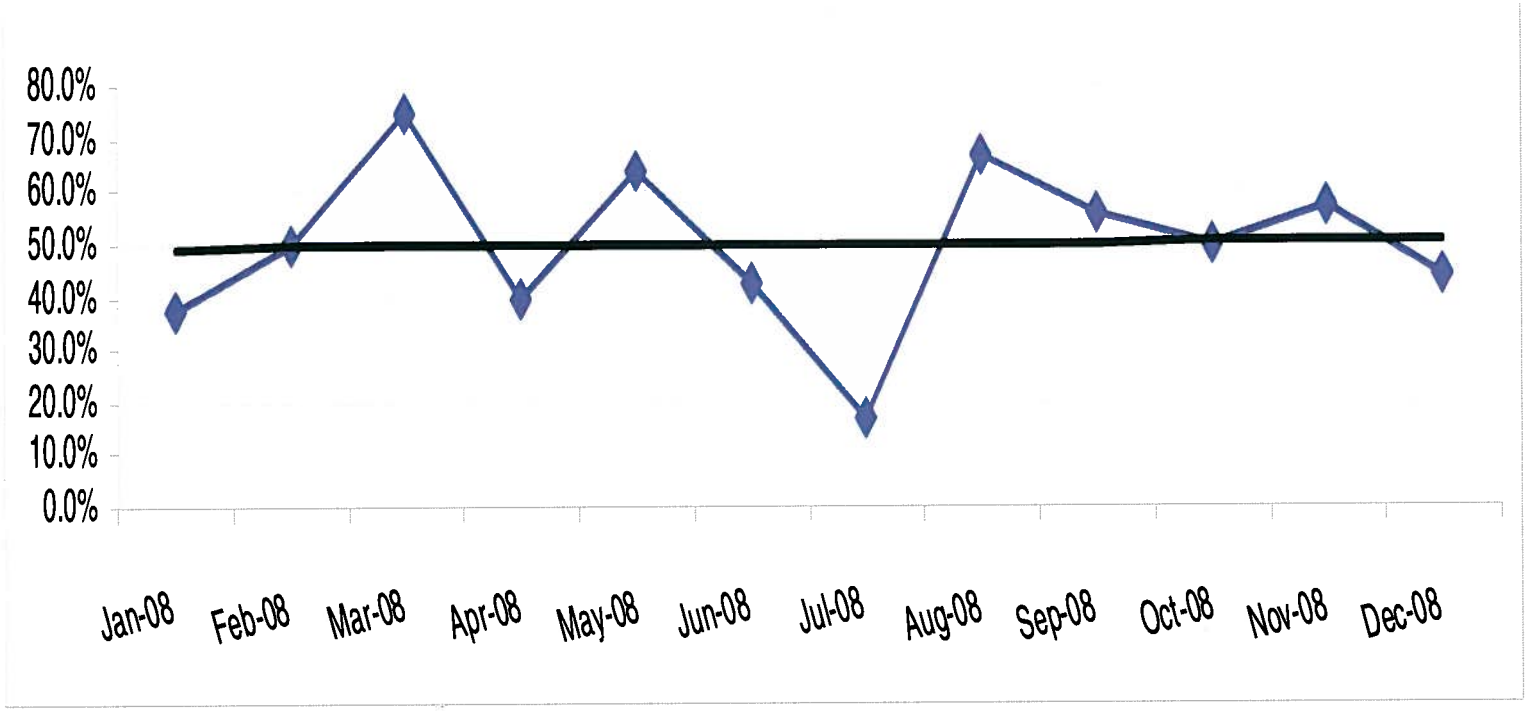
Results
A significant reduction in severe sepsis mortality rate was achieved. Prior to initiating the sepsis program the hospital mortality rate was 66.7%. Currently, nine months into the program, the mortality rate is 28% which is below the national average.

Conclusions
The hospital had a 38% reduction in severe sepsis mortality. Outcomes were improved through early recognition, the use of standardized evidence base guidelines and comprehensive education programs. The hospital has been recognized as a leader in sepsis management. We developed a toolkit that can be easily implemented by other hospitals.

JOURNEY THROUGH SURVIVING SEPSIS

Goal: Implement a comprehensive sepsis care program to decrease mortality by 5% as evidenced by monthly and year to date data

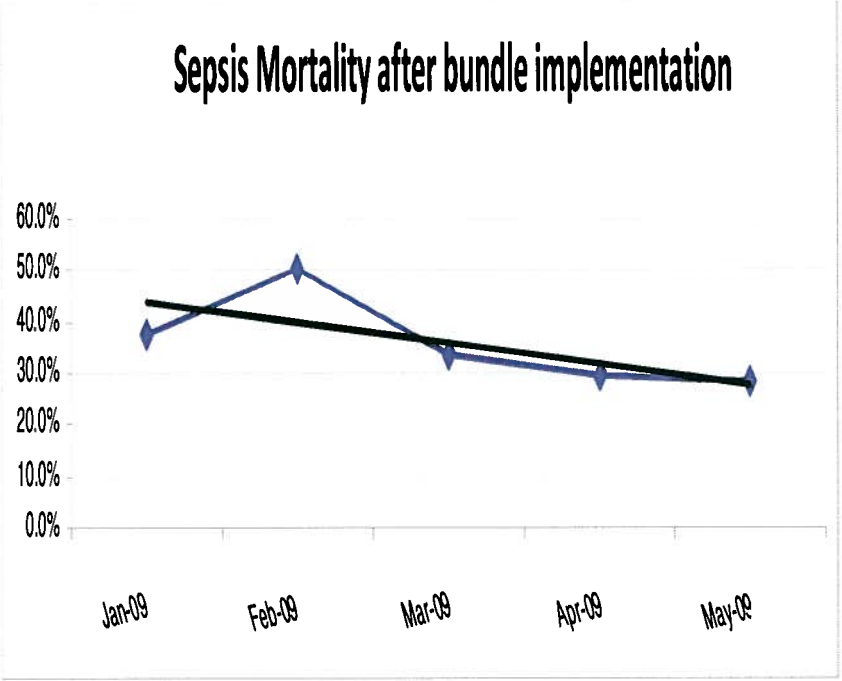
Sepsis Mortality Prior to Implementation of Sepsis Bundle 2008

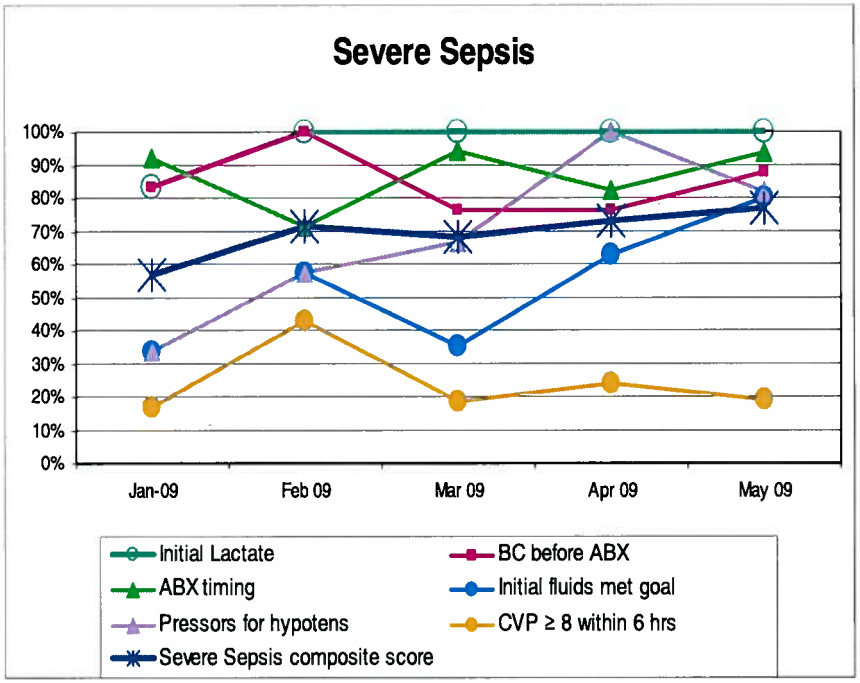


INTERVENTIONS DEVELOPED

- Multiple disciplinary committee that met every 2 weeks
- Algorithm to guide early recognition and care
- Standardized severe sepsis order set
- Pre-emptive guidelines for ED Triage
- Sepsis worksheet to guide early interventions
- Rapid response team guidelines
- Sepsis resource binder
- Lab bundle – sepsis preliminary screen and sepsis comprehensive screen
- Lactate levels >2 were considered critical stat values
- Pharmacy process to expedite antibiotic administration
- Extensive education program for physicians and nurses
- Identify quality measures to monitor (i.e., sepsis bundle)

Results: Decreased mortality significantly to **28.6%;** which exceeded our goal. This is well below the national average.
The hospital show cased the sepsis program and shared information with 10 regional hospitals.





Appendices

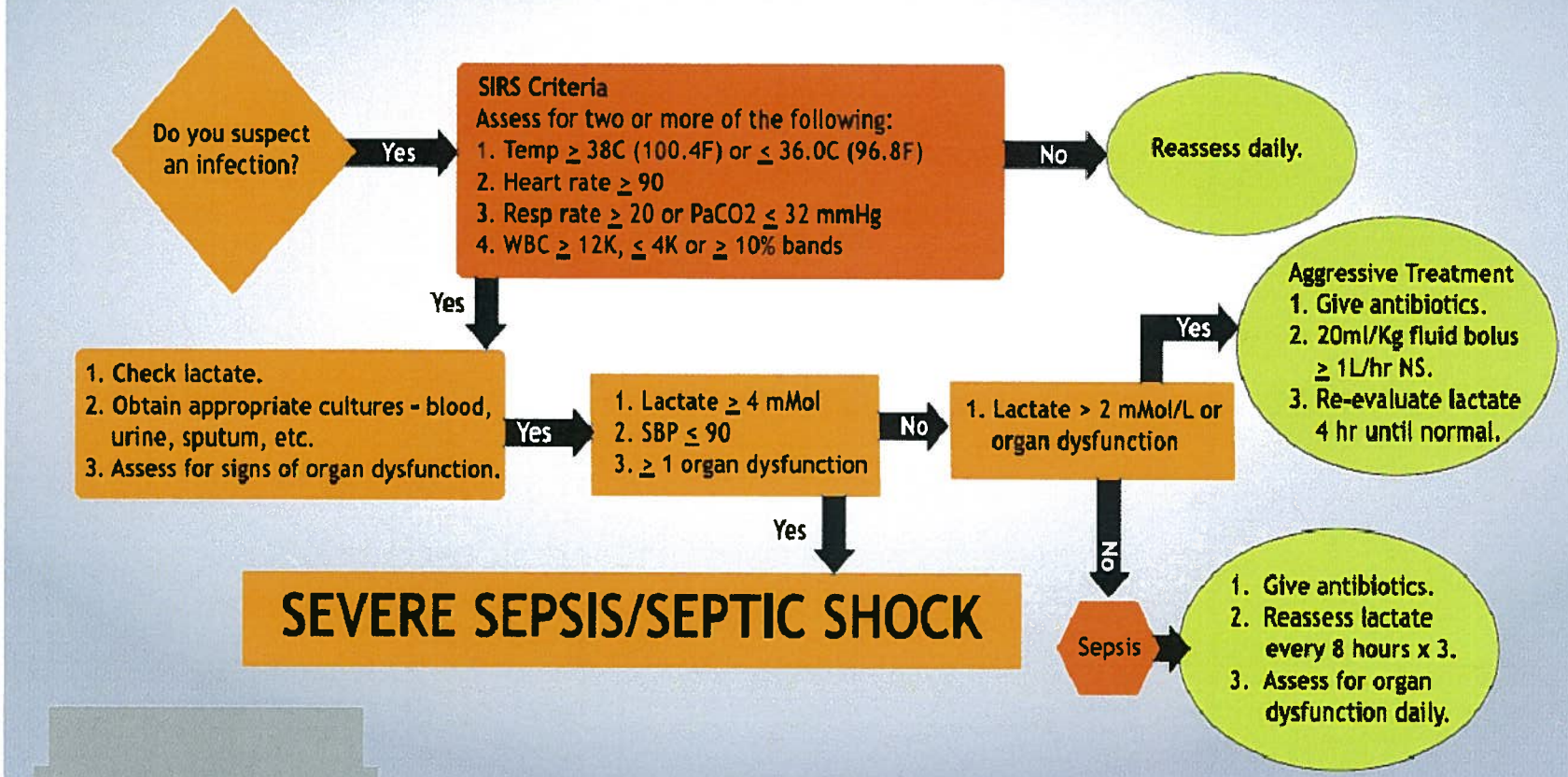
- See attached Sepsis Algorithm

- See attached Sepsis Resuscitation Bundle

STOP SEPSIS BUNDLE

ADULT

Early Recognition



See Other Side for Treatment.

SEVERE SEPSIS/SEPTIC SHOCK

Early Intervention 6-Hour Goals

Give broad spectrum antibiotics.

Initiate SEVERE SEPSIS/SEPTIC SHOCK order set and transfer to an ICU.

Central line placement for CVP/$S_{CV}O2$ monitoring

Supplemental oxygen or mechanical ventilation with VAP Bundle.

	GOAL	IF	THEN
STEP 1: CVP	CVP 8-12	CVP < 8 →	1. Give NS 500 mL bolus over 15 minutes, repeat until CVP 8-12, then continue to maintain fluids.
		CVP ≥ 12 →	2. No action needed.
STEP 2: SBP/MAP	SBP 90-140 MAP 65-90	MAP ≤ 65 or SBP ≤ 90	1. Arterial line placement (preferred). 2. Norepinephrine or Dopamine. 3. Initiate Hydrocortisone 100mg IV every 8 hours if still hypotensive after fluids and pressors.
STEP 3: $S_{CV}O2$	$S_{CV}O2$ ≥ 70	$S_{CV}O2$ < 70 → Hgb < 10	Transfuse PRBC.
		$S_{CV}O2$ < 70 → Hgb ≥ 10	Dobutamine up to 20 mcg/kg/min.

Goals Achieved	Yes	Recheck lactate every 8 hours x 3, then every 24 hours and begin 24-hour bundle indicators.
	No	Reassess Steps 1-4 and consider mechanical ventilation with sedation.

Note: This is a clinical template. Clinicans should use their judgment for individual patient encounters.

SEPSIS RESUSCITATION BUNDLE
The first 6 hours of care

- Serum lactate level with initial work-up
- Blood cultures before administering antibiotics
- Antibiotic administration within 3 hrs of ED arrival or 1 hr of suspected diagnosis in-house

- Initial fluid resuscitation of 20ml/kg of NSS for hypotension or serum lactate level ≥4mmol/L
- Vasopressors (norepinephrine or dopamine) started for hypotension not responsive to fluid resuscitation to maintain MAP ≥65
- Achieve CVP ≥8 for hypotension despite fluid resuscitation or lactate ≥4 mmol/L