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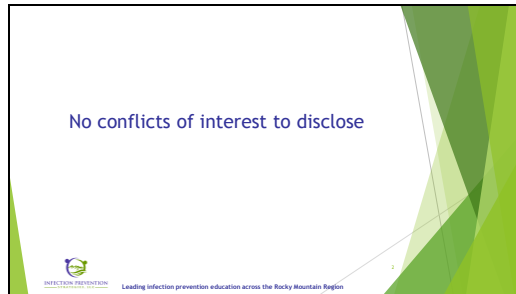
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Slide 2



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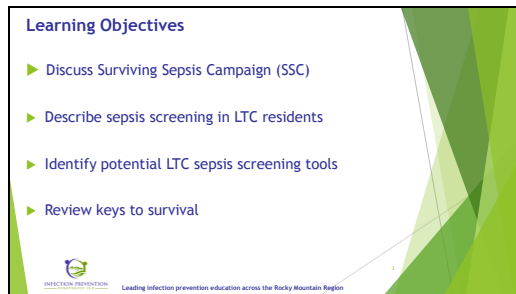
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Slide 3



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Slide 4

### Why Sepsis?

Sepsis is the leading cause of death in non-coronary care intensive care units, with a mortality rate between 20 - 50%

From 2007 - 2009, over 2,047,038 patients were admitted with a sepsis-related illness

- 52.4% of sepsis patients are diagnosed in the ED
- 38.4% are diagnosed on a non-ICU ward
- 12.8% are diagnosed in the ICU

Very BM Intensive Care Med. 2010 Feb;3(2):222-31

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Slide 5

### What is Sepsis?

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Slide 6

### #1 Killer of hospital patients

#### Sepsis Readmission Rates

**Sepsis is the No. 1 killer of hospital patients**

It is estimated that approximately 700,000 people are hospitalized each year for sepsis. It is the leading cause of death in hospital inpatient care, with a mortality rate of 20-50%. Sepsis is a leading cause of death in hospital inpatient care, with a mortality rate of 20-50%. Sepsis is a leading cause of death in hospital inpatient care, with a mortality rate of 20-50%.

Category	Percentage of Hospital Readmissions
Sepsis	15%
Heart Failure	8.7%
Respiratory	8.2%
Stroke	6.7%
Heart Disease	6.6%

Category	Readmitted average length of stay (days)
Sepsis	10.7
Heart Failure	10.1
Respiratory	10.0
Heart Disease	9.9
Stroke	9.8

UPMC

http://jamanetwork.com/journals/jama/article-abstract/2598785

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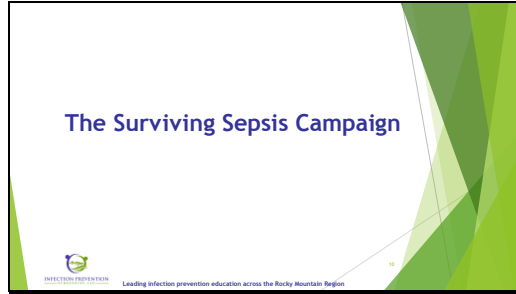
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Slide 10



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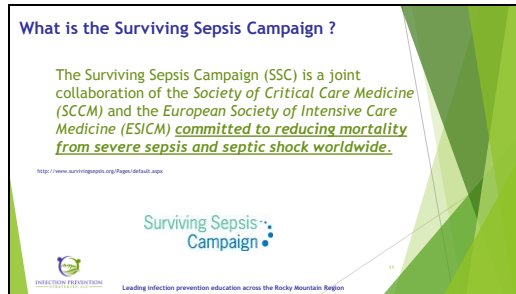
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Slide 11



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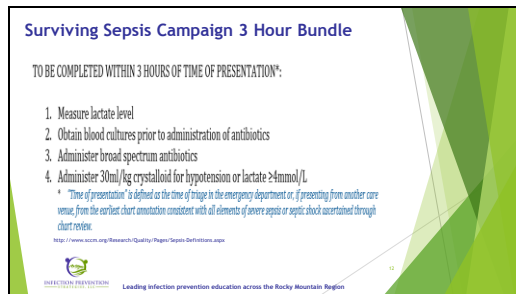
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Slide 12



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Slide 13


**What is sepsis?**

Sepsis is a complication caused by the body's overwhelming and life-threatening response to infection which can lead to:

- ▶ Tissue damage
- ▶ Organ failure
- ▶ Death

It is difficult to predict, difficult to diagnose, and difficult to treat.

Patients who develop sepsis have an increased risk of complications and death and face higher healthcare costs and longer treatment.



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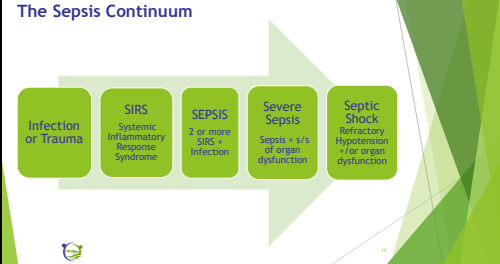
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Slide 14

**The Sepsis Continuum**




**Infection or Trauma**

**SIRS**  
Systemic Inflammatory Response Syndrome

**SEPSIS**  
2 or more SIRS + Infection

**Severe Sepsis**  
Sepsis + s/o of organ dysfunction

**Septic Shock**  
Refractory Hypotension +/or organ dysfunction



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Slide 15


**Systemic Inflammatory Response Syndrome**

**SIRS**  
is an inflammatory state affecting the whole body, frequently a response of the immune system to infection but not always.

↓

**SIRS Criteria**  
Temp:  $<36^{\circ}\text{C}$  ( $96.8^{\circ}\text{F}$ ) or  $>38^{\circ}\text{C}$  ( $100.4^{\circ}\text{F}$ )  
HR:  $>90/\text{min}$   
RR:  $>20/\text{min}$   
WBC:  $<4000/\text{mm}^3$  or  $>12,000/\text{mm}^3$

\*A patient has SIRS with any 2 of the above\*



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Slide 16


**Sepsis**

Sepsis = 2 or more of the SIRS criteria AND a known or **HIGHLY suspected infection**

<http://www.sccm.org/Research/Quality/Papers/Sepsis-Definitions.aspx>

Pneumonia (50%) is the number one infection source, followed by UTI and abdominal infections.

**Not always obvious!**



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Slide 17

**Septic Shock**

Based on the Society of Critical Care Medicine (SCCM) 2016 Guidelines

- ▶ Persistent hypotension requiring vasopressors to maintain MAP  $\geq$  65 mm Hg
- ▶ Initial lactate  $>$ 4 or a lactate  $>$ 2 after adequate volume resuscitation

<http://www.sccm.org/Research/Quality/Papers/Sepsis-Definitions.aspx>



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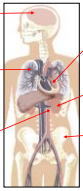
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Slide 18

**Organ Dysfunction**

Acute Organ Dysfunction related to Sepsis



- Neurologic**  
Change in LOC  
GCS  $<$  12
- Respiratory**  
Increasing O<sub>2</sub> requirements  
SPO<sub>2</sub>  $>$ 92%  
Mechanical Ventilation
- Metabolic/Hepatic**  
Lactic Acid  $\geq$  4  
Serum Bilirubin  $>$ 4
- Cardiovascular**  
SBP  $<$  90mmHg  
MAP  $<$  65mmHg  
Need for Vasopressors
- Renal**  
UO  $<$  30ml/hr  
Creat.  $>$ 0.5 from baseline
- Hematologic**  
Platelets  $<$ 100,000  
INR  $>$  1.5

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Slide 22


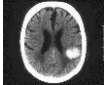
**Sepsis is a medical emergency**



Sepsis is a medical emergency  
and can happen to anyone.  
**SUSPECT SEPSIS. SAVE LIVES.**

**Stroke** **AMI** *Time is tissue!*  
Oxygen won't go where blood  
don't flow

Early goal directed therapy  
(EGDT) is to prevent organ  
dysfunction



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Slide 23

**First steps.....**

Select first step: T F ?

Has your facility instituted facility-wide sepsis work focused on early identification?

Allow Single Choice Only  Shuffle Answers  Allow Retry  Limit Attempts

Allow Multiple Choice

YES

NO

[+ Add another answer](#)

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Slide 24

**Early Identification**

**Understanding Systemic Inflammatory Response Syndrome (SIRS)**

- > Fever of more than 38°C (100.4°F) or less than 36°C (96.8°F)
- > Heart rate of more than 90 beats per minute
- > Respiratory rate of more than 20 breaths per minute
- > White blood cell count (>12,000/μL or < 4,000/μL)

**Any 2 of the above criteria along with a history suggestive of a new infection meets the SEPSIS Criteria = start the SSC 3 hour bundle**

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Slide 25



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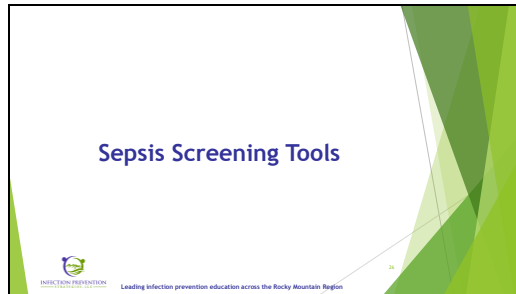
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Slide 26



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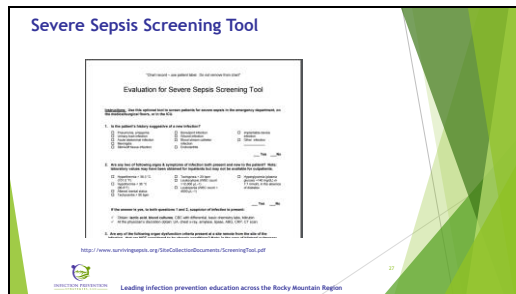
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Slide 27



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Slide 31

### Transferring Tool

The slide displays two documents from the Rocky Mountain Region. The left document is titled 'Transferring Family Health Assessment Tool' and the right is 'Transferring Family Health Assessment Bundle'. Both documents contain detailed instructions and lists of items to be transferred. At the bottom of the slide, the text reads 'Wesley Healthcare, WY, CO, UT' and 'Leading infection prevention education across the Rocky Mountain Region'.

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Slide 32

### Comprehensive Sepsis Treatment

- Labs
  - Lactic acid/lactate
  - Blood cultures
- Antibiotic administration
  - Broad spectrum within 1 hour
- Circulatory assessment and support
  - Fluids, inotropic agents, vasopressors
- Supportive treatment with oxygenation and ventilation

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Slide 33

### IHIs Putting the pieces together

- ▶ Early Recognition
  - ▶ Empower/educate bedside staff
- ▶ Change the Culture
  - ▶ Assessments and Alerts
- ▶ Drive Treatment with Definition
  - ▶ Clear standard
- ▶ Make Early Treatment Easy
  - ▶ Automatic
  - ▶ LTC Bundle

**Make Early Recognition Easy**

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Slide 37

**Misdiagnosis**

Twis Cities jury awards \$20M in malpractice case for woman who died after giving birth



"Nicole's death was wholly preventable and completely unnecessary. We are hopeful that this family may find some closure now that the jury has rendered a verdict that holds the wrongdoers accountable."

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Slide 38

**Sepsis Take Homes**

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Slide 39

**Targets**

- ▶ Save Lives by Reducing Sepsis Mortality
- ▶ Prevent Sepsis and Septic Shock Through Early Recognition and Standardized Treatment Protocols
- ▶ Reduce Sepsis Mortality Rates in CO

***An estimated 482 lives could be saved in CO with a 20% reduction in sepsis and septic shock***

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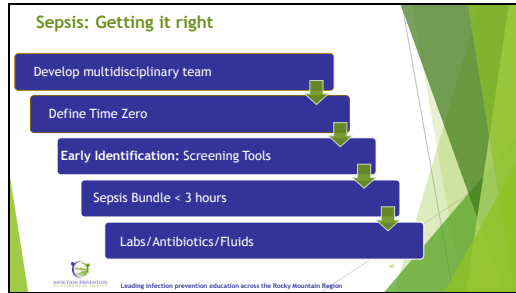
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Slide 40



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Slide 41

**Keys to Survival**

- Early identification - Staff education**
  - Subtle signs and symptoms
  - Don't wait till your patient is hypotensive!
- Timely treat infections with appropriate antibiotics**
  - For every hour antibiotics are delayed in septic shock, the patient's risk of death increases by 7.6%.
  - The single most important intervention in treating sepsis
- Source control**
  - Antibiotics
  - Surgery
- Resuscitation with IV fluids and vasopressors if necessary (hemodynamic bundle)**
- Emergency supportive care for acute organ dysfunction**
  - Ventilator; Continuous Renal Replacement Therapy (CRRT); Prone Positioning

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The slide contains text organized into sections with bold headers and bulleted points. The background features a green and white geometric pattern.

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Slide 42

**Summary**

- Septicemia is the 3<sup>rd</sup> leading cause of death behind heart disease and cancer
- Septicemia was the most expensive diagnosis in 2011 (\$20.3 billion)
- Sepsis burden - 4,600 new patients per day treated in the US
- 500 - 1000 patient's per day die
- 2009 in-patient mortality rate - 16%; > 8X higher than for all other diagnoses (2%)

**Opportunity exists to save lives**

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The slide contains a list of statistics and a concluding statement in bold. The background features a green and white geometric pattern.

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Slide 46



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