

Sepsis Research

1. What is Sepsis?

- ◆ Sepsis is defined as “life-threatening organ dysfunction caused by a dysregulated host response to infection”.
- ◆ Sepsis develops when the chemicals which released into the bloodstream by the immune system to fight an infection cause inflammation throughout the entire body instead.
- ◆ Lungs (pneumonia), kidney (urinary tract infection), skin and gut infections are often linked with sepsis.
- ◆ In sepsis, blood flow to vital organs, such as your brain, heart and kidneys, is impaired. Blood clots can also formed in organs and in the limb circulatory system leading to varying degrees of organ failure and tissue death (gangrene). Severe sepsis can lead to septic shock. Many survivors are left with serious long-term and high risk of infection in the future.



2. How serious is Sepsis to our health?

- ◆ The number of cases worldwide is estimated that sepsis affects millions of people a year. In the developed world approximately 0.2 to 3 people per 1000 are affected by sepsis yearly, resulting in about a million cases per year in the United States. Rates of disease have been increasing. According to the the Centers for Disease Control and Prevention (CDC), the number of sepsis cases in the United States increases every year. In fact, the NIH reports that sepsis causes more U.S. deaths than prostate cancer, breast cancer, and AIDS combined.
- ◆ The risk of death from sepsis is as high as 30%, from severe sepsis as high as 50%, and from septic shock as high as 80%.
- ◆ Seniors, young children and people with weaker immune systems, being treated in an intensive care unit (ICU), having severe skin wounds or physical trauma, exposed to invasive devices and suffered long-term illnesses are at high risk.

3. How should Sepsis be treated?

- ◆ The surviving outcome is influenced by the speed and appropriateness of therapy administered in the initial hours after severe sepsis develops.
- ◆ The early quantitative resuscitation of the septic patient should be performed during the first 6 hrs after recognition.

SURVIVING SEPSIS CAMPAIGN BUNDLES

TO BE COMPLETED WITHIN 3 HOURS:

- 1) Measure lactate level
- 2) Obtain blood cultures prior to administration of antibiotics
- 3) Administer broad spectrum antibiotics
- 4) Administer 30 mL/kg crystalloid for hypotension or lactate ≥ 4 mmol/L

TO BE COMPLETED WITHIN 6 HOURS:

- 5) Apply vasopressors (for hypotension that does not respond to initial fluid resuscitation) to maintain a mean arterial pressure (MAP) ≥ 65 mm Hg
- 6) In the event of persistent arterial hypotension despite volume resuscitation (septic shock) or initial lactate ≥ 4 mmol/L (36 mg/dL):
 - Measure central venous pressure (CVP)*
 - Measure central venous oxygen saturation (Scvo₂)*
- 7) Remeasure lactate if initial lactate was elevated*

*Targets for quantitative resuscitation included in the guidelines are CVP of ≥ 8 mm Hg, Scvo₂ of $\geq 70\%$, and normalization of lactate.