



INFORMATION ABOUT SEPSIS FOR INDIVIDUALS AND FAMILIES

Your doctor or the intensivist (a doctor with special expertise and training in the care of critically ill patients) treating your loved one in the ICU may have told you that the patient has severe sepsis. That may be the reason he or she was taken to the ICU, or the patient may have developed sepsis in the ICU. Whatever the cause, your loved one is seriously ill and you, undoubtedly, have questions. This web page is designed to help you understand sepsis and its treatment.

WHAT IS SEPSIS?

Sepsis is the body's response to infection. Normally, the body's own defense system fights infection, but in severe sepsis, the body's normal reaction goes into overdrive, setting off a cascade of events that can lead to widespread inflammation and blood clotting in tiny vessels throughout the body. The forms of sepsis include severe sepsis, which occurs when acute organ dysfunction or failure results; septic shock, which occurs in severe sepsis when the cardiovascular system begins to fail so that blood pressure drops, depriving vital organs of an adequate oxygenated blood supply; and septicemia, which is sepsis that has an infection in the bloodstream itself.

HOW DOES SOMEONE GET SEPSIS?

Each year, severe sepsis strikes an estimated 750,000 people in the United States alone. The rate of severe sepsis is expected to rise to 1 million cases a year by 2010 as the population ages. Any kind of infection--bacterial, viral, parasitic, or fungal--anywhere in the body can trigger sepsis. Sepsis can strike anyone at any age, although the very old, very young, hospital patients, and people with pre-existing medical conditions may be at greater risk. Risk factors include:

- Having an underactive immune system (such as during chemotherapy or due to the medications used to enable an organ transplant)
- Having had surgery
- Being on mechanical ventilation
- Having a genetic tendency
- Having invasive procedures or IV lines in place to provide fluids

SIGNS AND SYMPTOMS OF SEPSIS

Sepsis is the body's response to an infection. The symptoms can include:

- Fever and shaking chills
- Reduced mental alertness, sometimes with confusion
- Nausea and vomiting
- Diarrhea
- Increased heart rate, greater than 90 beats per minute
- Increased respiratory rate, greater than 30 breaths per minute
- High or low white blood cell count
- Low blood pressure
- Altered kidney or liver function

Sepsis can develop quickly. The sooner it is diagnosed and treated, the better. The most frequent sites of infection leading to sepsis are the lung, urinary tract, abdomen, and pelvis. In up to 30 percent of patients, however, a definite source of infection cannot be identified. The course of the disease may be unpredictable. Some patients may deteriorate quickly, while others suffer from varying degrees of organ dysfunction or failure, but most will recover with treatment.

THE COURSE OF SEPSIS

The course of sepsis is described as a cascade of events. Once sepsis begins, the body reacts with widespread inflammation, clotting, and impaired clot breakdown, which is thought to occur when chemical signals in the immune system go awry.

Under normal circumstances, substances called immune modulators are released to help the body fight infection and heal itself. In a person with sepsis, this process breaks down and the immune regulators go into overdrive. Triggered by the infection, bacteria and other toxins provoke the release of too many of these regulators. They inflame the lining of the blood vessels and activate the blood clotting process, which then triggers another wave of regulator release. The inflammation prompts the release of a substance that stimulates blood clots to form. In the cascade of sepsis, the body's ability to break down the clots is suppressed. One substance that regulates the blood clotting, controls inflammation, and supports "clotbusting," called activated protein C, is decreased in sepsis. As a result of the formation of blood clots and inability to break down the clots, microscopic blood clots begin to form in vital organs, arms and legs, and digits, limiting blood flow and causing tissue damage, which can lead to organ failure or gangrene.

TREATMENT OF SEVERE SEPSIS

Diagnosing sepsis can be difficult. Some of its symptoms, such as fever, rapid pulse, and respiratory difficulty, occur frequently and can be confused as being due to other disorders. The first line of treatment is to identify and eliminate the underlying infection with anti-infection agents or surgery to drain the site of infection. Depending on the patient's condition, other treatments may include fluids, drugs to raise the low blood pressure, mechanical ventilators to support breathing, or dialysis for kidney failure. Your loved one may need additional treatment such as artificial feeding through a tube, pain killers and/or sedative medications, or medication to prevent bleeding from ulcers that can develop in the digestive tract.

Until recently, no single agent or treatment strategy has shown sufficient value for the routine management of patients with sepsis. The most important intervention is rapid diagnosis and then prompt and appropriate treatment. In addition, there are new treatments that have been demonstrated, in research trials, to improve survival in sepsis. Many doctors believe that a drug that has been approved by the Food and Drug Administration (FDA) that increases activated protein C may be a key to the management of severe sepsis, when the risk of dying is high. Steroids have also recently been shown to be valuable in patients with septic shock. Scientists are conducting research every day to find new treatments for this very serious condition.