

# Sepsis

When the human body is invaded by an infectious **organism** (such as a bacterium, fungus, or virus), it fights back with a number of defense systems, including activation of numerous immune cells and molecules that help trap and kill the organism. The battle between the infection and the body's defenses can escalate, and the defenses themselves can unfortunately damage or impair vital organ function. **Sepsis** is a broad term that describes the syndrome of the body trying to fight a potentially serious infection. Sepsis is termed **severe sepsis** when this battle leads to acute vital organ damage. For example, a patient trying to fight pneumonia develops severe sepsis if the pneumonia is complicated by damage to the brain, heart, liver, lungs, or kidneys. Ultimately, death occurs in 20% to 50% of those who have severe sepsis. The most profound form of severe sepsis is **septic shock** (sepsis associated with **hypotension** [low blood pressure] despite replacement of intravenous fluids). The June 17, 2009, issue of *JAMA* includes an article about septic shock.

## SIGNS AND SYMPTOMS

- Temperature above 38°C (101°F) or below 36°C (96°F)
- Heart rate above 90 beats per minute
- Breathing more than 20 breaths per minute
- Low blood pressure
- Decreased urine output
- Change in mental status with confusion or delirium
- Extreme alterations in white blood cell and **platelet** (blood cells that assist in clotting) counts

## CAUSES

Sepsis can be the result of infection that spreads from certain areas of the body. Some of the most common sites are

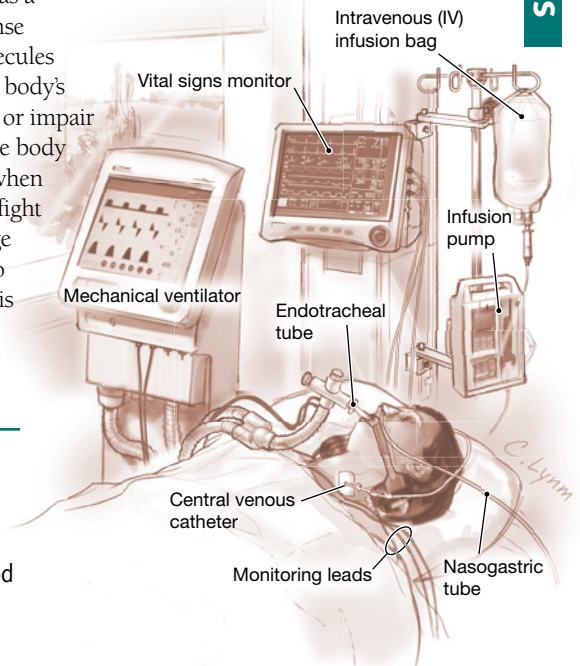
- Lung due to pneumonia
- Skin, including **cellulitis** (infection of the skin), surgical wounds, pressure ulcers (bed sores), or infections around intravenous lines
- Intestines if **perforation** (a hole causing leakage of contents) into the abdominal cavity occurs
- Kidneys due to urinary tract infections
- Brain if **meningitis** (infection of the lining of the brain) occurs
- Bone if **osteomyelitis** (infection of the bone) occurs

## TREATMENT

Sepsis is a medical emergency and is usually treated in an intensive care unit (ICU). Other aspects of treatment may include

- Intravenous fluids and medications to maintain a normal blood pressure
- Medications to treat the infection
- Oxygen therapy
- Mechanical ventilation if necessary to assist with breathing
- Nutritional support
- Corticosteroid therapy to treat the inflammatory process

Patient in intensive care unit



## FOR MORE INFORMATION

- The International Sepsis Forum  
[www.sepsisforum.org](http://www.sepsisforum.org)
- The Surviving Sepsis Campaign  
[www.survivingsepsis.org/sepsis/what\\_you\\_should\\_know](http://www.survivingsepsis.org/sepsis/what_you_should_know)

## INFORM YOURSELF

To find this and other JAMA Patient Pages, go to the Patient Page link on JAMA's Web site at [www.jama.com](http://www.jama.com). Many are available in English and Spanish. A Patient Page on ICUs was published in the March 25, 2009, issue; one on wound infections in the October 26, 2005, issue; and one on ventilator-associated pneumonia in the August 20, 2008, issue.

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