

Fact Sheet: Sepsis

Sepsis is a severe illness caused by infection of the bloodstream and the body's resulting inflammatory response.¹ **Bacteria** in the bloodstream (**bacteremia**) is the most common cause of sepsis, but viruses, parasites and fungi in the blood may also cause sepsis. Sepsis usually results from the spread of an infection from a local site in the body such as the lungs, skin, abdomen, central nervous system or urinary tract.²

The signs of sepsis may include: fever or abnormally low body temperature, chills, fast heart rate, low blood pressure, lethargy, confusion or irritability, skin rash, inability to eat or drink and/or decreased urine output. There may or may not be any signs of a localized infection such as **pneumonia** or **meningitis**.³ Sepsis is a very serious infection that can progress rapidly to septic shock and multi-organ failure due to lack of oxygen delivery to important organs in the body.



Newborns, young children, the elderly and those with weakened immune systems as a result of under-nutrition or infections such as AIDS are at greater risk for developing a serious infection that results in sepsis. Other high-risk groups include people who are in the hospital, and those who have other infections, serious underlying medical conditions or severe injuries such as large burns.⁴

Prompt, appropriate antibiotic treatment in a hospital is crucial in the case of bacterial sepsis. Sepsis is diagnosed by the clinical symptoms present and confirmed by the growth of bacteria from the blood culture. The blood culture may not be positive if the person has recently received antibiotics. A high or low white blood cell count is also suggestive of sepsis, but only the blood culture can truly confirm the diagnosis and the bacteria causing the infection.

The type of antibiotic treatment for bacterial sepsis depends on the age of the patient, the likely causative bacteria and local patterns of **antimicrobial resistance**. For example, for children 2 months to 5 years of age with sepsis, the WHO recommends treatment with intravenous benzylpenicillin and chloramphenicol. A third-generation cephalosporin, such as ceftriaxone, may be necessary instead if

¹ Medline Plus. Sepsis. Accessed at <http://www.nlm.nih.gov/medlineplus/ency/article/000666.htm> on 2/22/08.

² The Cleveland Clinic Health Information Center. Sepsis. Accessed at <http://www.clevelandclinic.org/health/health-info/docs/3800/3887.asp?index=12361> on 2/25/08.

³ Medline Plus. Sepsis.

⁴ The Cleveland Clinic Health Information Center. Sepsis.

there are high rates of resistant bacteria where the patient lives.⁵ Supportive therapy with oxygen, intravenous fluids and medications to increase blood pressure may also be necessary.⁶

Pneumococcus, *Streptococcus pneumoniae*, is an important bacterial cause of sepsis particularly in young children. A study conducted in four developing countries found that 30% of positive blood cultures in sick children 2 and 3 months old contained pneumococcus. One-third of those infants with pneumococcal infection died.⁷ In a study from Kenya, pneumococcus accounted for almost half of all cases of clinically significant bacteremia in children under 5 years of age.⁸

There are ways to reduce the burden of deaths due to sepsis. **Effective, safe vaccines exist against some bacterial causes of sepsis** such as pneumococcus, meningococcus and [Haemophilus influenzae type b](#). Vitamin A and zinc supplementation can reduce the incidence and severity of some diseases such as pneumonia and gastroenteritis in undernourished children that can progress to sepsis.⁹ Early recognition of serious illness and prompt, effective treatment with antibiotics as well as intravenous fluid can prevent progression of disease to sepsis and multi-organ failure.¹⁰

⁵ WHO. Pocket Book of Hospital Care for Children: Guidelines for the management of common illnesses with limited resources 2005. Accessed at http://www.who.int/child-adolescent-health/New_Publications/CHILD_HEALTH/PB/00.PB_full.pdf

⁶ Medline Plus. Sepsis.

⁷ WHO Young Infants Study Group. Ped Inf Dis J 1999; 18(10): S17-S22.

⁸ Brent AJ, Ahmed I, et al. Lancet 2006; 367(9509): 482-8.

⁹ Black RE. J Nutrition 2003; 1485S-1489S

¹⁰ Carcillo JA. Ped Crit Care Med 2005; 6(3 Supp): S157-S164.