

## **PNEUMOCOCCAL BACKGROUNDER**

### **What is pneumococcal disease?**

Pneumococcal disease is a leading source of serious illness in children and adults worldwide. It is caused by a common bacterium, the pneumococcus (*Streptococcus pneumoniae*), that can attack different parts of the body.

When these bacteria invade the lungs, they cause the most common form of community-acquired bacterial pneumonia; when they invade the bloodstream, they can cause an infection called bacteremia; and when they invade the covering of the brain, they cause meningitis. Pneumococci may also cause middle ear infection (otitis media) and sinusitis.

There are more than 90 known subtypes of the pneumococcus, but not all cause serious, invasive disease. The strains included in vaccines are those known to cause invasive disease.

### **Who is at risk?**

Anyone can get pneumococcal disease, but some groups are at greater risk, including:

- Persons 65 years of age and older;
- Very young children;
- Individuals with weak immune systems due to cancer, leukemia, Hodgkin's disease or human immunodeficiency virus (HIV);
- Persons with sickle cell disease or without a functioning spleen;
- Persons who have certain chronic illnesses, such as lung, heart and kidney disease, diabetes or alcoholism;
- Persons living in special communities or environments, such as Alaskan Natives and certain American Indian populations; and
- Residents of chronic or long-term care facilities.

### **How significant is pneumococcal disease?**

According to the Centers for Disease Control and Prevention (CDC), there were over 40,000 U.S. cases of invasive pneumococcal disease in 2005, causing 4,425 deaths. More than half of the cases and nearly all deaths occurred in adults for whom vaccination against pneumococcal disease is recommended. Invasive disease (bacteremia and meningitis) is responsible for the highest rates of death among the elderly and patients who have underlying medical conditions.

### **Can pneumococcal disease be prevented?**

The best way to protect against pneumococcal disease is through vaccination. There are two types of pneumococcal vaccine currently available: a polysaccharide vaccine (used in adults and certain children 2 years of age and older) and a conjugate vaccine (used in children up to 5 years of age). The polysaccharide vaccine has been available in the U.S. for more than 20 years. In

addition to reducing the risk of pneumococcal infection, pneumococcal vaccination is also associated with improved survival, a reduced chance of respiratory failure or other complications, and shorter in-patient stays for adults hospitalized with pneumonia.

### **Who should be vaccinated?**

Vaccination with pneumococcal polysaccharide vaccine is recommended for:

- Persons who are 65 years of age and older;
- Everyone 2 years of age and older with chronic medical conditions, such as diabetes; chronic lung (except asthma), heart, kidney or liver disease, or alcoholism (see recommendations of the Advisory Committee on Immunization Practices [ACIP] for children 24 to 59 months of age);
- Those whose immune systems have been weakened by such conditions as cancer or HIV infection;
- People without a functioning spleen and those with sickle cell disease; and
- Residents of chronic care or long-term care facilities.

Vaccination with the polysaccharide vaccine protects against 23 of the most common *Streptococcus pneumoniae* strains. The polysaccharide vaccine is not recommended for infants and toddlers under 2 years of age, as this age group does not respond to polysaccharide vaccines.

The pneumococcal conjugate vaccine is recommended as part of the routine childhood immunization series for all children at 2, 4, 6 and 12 to 15 months of age. Other children at increased risk include those with sickle cell disease, HIV infection and other immunocompromising or chronic medical conditions. These children should receive pneumococcal conjugate vaccine and, after 2 years of age, pneumococcal polysaccharide vaccine. The pneumococcal conjugate vaccine protects against seven strains of the *Streptococcus pneumoniae* bacterium. For additional information about pneumococcal vaccination in infants and young children, visit the CDC Web site, [www.cdc.gov](http://www.cdc.gov).

### **When is the best time to get vaccinated?**

The polysaccharide vaccine can be administered to adults at any time of year. It can be given in the other arm at the same time as the influenza vaccine. Annual influenza vaccination season is a good time for consumers to discuss the need for pneumococcal disease vaccination with their health care providers.

Both pneumococcal polysaccharide and influenza vaccines are fully reimbursable (no co-pay, no deductible) by Medicare Part B. For infants 2 to 23 months of age, the conjugate pneumococcal vaccine has been incorporated into the routine childhood immunization schedule.

### **How is pneumococcal disease treated?**

Pneumococcal disease has traditionally been treated with penicillin. In recent years, however, pneumococcal strains have emerged that are resistant to penicillin and other commonly used

antibiotics. This resistance makes treatment difficult and may result in longer hospitalizations, the need to use more expensive alternative antibiotics, and increased morbidity and mortality. The treatment complications that result from the emergence of resistant strains places further emphasis on the need for preventing pneumococcal disease through vaccination.

### **What has been the experience with pneumococcal vaccines?**

Pneumococcal vaccines are considered clinically effective and safe. Pneumococcal vaccination of adults with the polysaccharide vaccine is effective in the prevention of invasive pneumococcal disease, offering protection against 23 of the most common pneumococcal types. The pneumococcal subtypes in the vaccine account for nearly 90 percent of pneumococcal disease.

In infants and children, the conjugate vaccine reduces the incidence of invasive pneumococcal disease, pneumonia and middle ear infections. The conjugate vaccine also provides longer-term immune response (immune memory) and reduces disease carriage rates, potentially offering herd immunity benefits (e.g., protection for non-vaccinated individuals) within communities.

The vaccine may cause some local reaction or soreness around the site of the injection; however, these reactions are usually minor and subside within a few days. In children, the conjugate vaccine may cause mild fever, fussiness and decreased appetite.

### **How often is vaccination needed?**

In most adults who are vaccinated at age 65 or older, vaccination is needed only once in a lifetime. However, for adults who are vaccinated before age 65, or for those at highest risk for serious disease, one-time revaccination may be necessary.

In infants younger than 12 months of age, three or four doses of conjugate vaccine are required, depending upon the age the first dose is given. Children 12 to 23 months of age require two doses. Healthy children 24 to 59 months of age require one dose of conjugate vaccine, and those with certain chronic diseases require two doses.

### **Who should not be vaccinated?**

Individuals who have had a previous allergic reaction (e.g., hives, difficulty breathing) to the pneumococcal vaccine should avoid vaccination. The vaccine should also be avoided during radiation therapy or chemotherapy.

Health care providers can choose to delay vaccination of a child with moderate to severe infection until he or she has recovered. However, vaccination can proceed during minor illness, with or without fever, particularly among children with mild upper respiratory tract infections or hay fever.

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