

## **Pneumococcal Vaccine**

Pneumococcus is a bacterium that causes major illness in adults and children. There are over 90 different strains (family members) of pneumococci. Pneumococcal diseases include serious and life-threatening pneumonia (inflammation of lungs), meningitis (inflammation of brain), and sepsis (infection of bloodstream). Pneumococcus also causes ear and sinus infections, bronchitis and bone and joint infections which cause much pain and suffering and loss of economic productivity. In 2005 the World Health Organization (WHO) estimated that 1.6 million people die of pneumococcal disease every year. In the USA children less than two years of age and elderly people are the two largest hit age groups. HIV and other immunodeficiency diseases and growing incidence of antibiotic resistance have further complicated this problem. 30-40% of all strains of pneumococci have developed resistance to commonly used antibiotics such as penicillins. Clearly something has to be done to contain this menace.

### **The role of your immune system in fighting pneumococci**

Following pneumococcal infection for the first time, the body's immune system starts making antibody proteins to fight the infection. Initially immunoglobulin M (IgM) antibody proteins are made (primary immune response). The IgM proteins are large and less efficient in killing the infection. Several weeks later IgG antibody proteins against pneumococci are made (secondary immune response). They are smaller and more effective in killing the bacteria. They coat the outer surfaces of the bacteria (like coating a bitter pill with sugar!). This makes it more palatable for the white blood cells to swallow and kill the bacteria. In this fashion, the infection is localized to the initial site of entry (upper and lower respiratory passages) and is prevented from spreading to rest of the body.

Spleen, an important organ of the immune system located on the left side of stomach plays a crucial role in mounting this antibody response against pneumococci. People with HIV and other immunodeficiency diseases and people born without spleen or whose spleen has been removed following trauma have difficulties in mounting these antibody responses and therefore are more vulnerable. Due to immature nature of the immune system, children less than two years of age have similar difficulties.

### **How does illness due to pneumococci present?**

Pneumococcal infection often starts with cold symptoms. Sometimes it may follow a viral upper respiratory tract infection. Initially the infection is localized to nasal cavities, sinuses and ears in most people; subsequently it may spread to the lungs in others. In people who do not have protective antibodies against the bacteria (from previous infections or vaccinations), the infection may spread further via the blood stream to other organs such as brain, bones and joints to cause infections there which are debilitating and life-threatening. Pneumococcal vaccination prevents this spread (by making protective antibodies) and thereby prevents death and disabilities.

## **How can you help your immune system to fight pneumococci better?**

There are two different kinds of pneumococcal vaccines available in this country: Prevnar for use in young children and Pneumovax for use in older children and adults. Prevnar is given as a series of four injections between the ages of two and fifteen months. Pneumovax is given as a single injection. It can be repeated after 5 years. All adults should receive Pneumovax when they turn 65- especially if they had had their first pneumococcal vaccine before the age of 60. People with HIV, cancer and other immunodeficient conditions and with chronic underlying medical conditions such as diabetes, cirrhosis of liver, chronic lung disease, alcoholism etc. are also prime candidates for receiving pneumococcal vaccination. There are very few side effects from the vaccination. They include redness, soreness and swelling at the site of injection. Occasionally it may cause a large local reaction.

Studies have shown that after the advent of pneumococcal vaccine, the disease burden due to pneumococci and prevalence of antibiotic resistant strains among people who carry the bacteria have decreased significantly in both the elderly and young children. What are you waiting for? Visit [www.cdc.gov](http://www.cdc.gov) to learn more about the illness and the vaccine. Talk to your healthcare provider about getting vaccinated!

### ***About the author:***

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