

The Importance of Vaccines

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Why should I or my child be vaccinated?

Preventing diseases is key to good health. Preventing disease is always better than treating it. Vaccines help prevent infections and save lives. Vaccines are responsible for the control of many infections that were once common in this country, including polio, measles, diphtheria, pertussis, rubella, mumps and tetanus. Some believe that vaccinations are not needed because the diseases do not seem to exist anymore. While such illnesses seem to have disappeared, they will only continue to be controlled if vaccines continue to be used. Every year, there are a few cases of diseases that could have been prevented by a vaccination. If nobody else got vaccinated, those few cases could have spread into thousands.

The immune system recognizes germs as invaders and creates antibodies to fight them. The cells involved in making antibodies remain to fight the germs the next time. This defense is called immunity. Vaccines contain the same germs or parts of germs that cause disease, but the germs used in the vaccines are either weakened or killed. When they are given, vaccine germs are not strong enough to produce the symptoms of the disease but are strong enough for the immune system to produce antibodies against them. The cells that remain prevent re-infection when that disease attacks again. Through vaccination, children build up immunity without enduring the real diseases that vaccines prevent.

Are vaccines safe?

Laws require vaccines to be tested for 10 years or longer by the Food and Drug Administration (FDA) to make sure they are safe and work correctly before they can be used. The FDA and Centers for Disease Control & Prevention (CDC) keep track of vaccines once in use and work to make the vaccines even safer. Problems are monitored through the Vaccine Adverse Event Reporting System (VAERS). Greater concern is not needed for most vaccines because they are effective and cause no or only minor side effects. These side effects are usually soreness at the injection site or fever. Serious reactions usually happen only in people with health problems or allergies to medications or food. This



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information needs to be given to your doctor so that these problems can be avoided. Serious side effects, usually allergic reactions, are so rare that it is hard to calculate risk. While the vaccine may cause some minor reactions that follow the vaccination, many are unrelated events that occur by coincidence. It is very important to tell the difference between true side effects and those that happen by coincidence. One such coincidence involves autism. Vaccines have been blamed for causing autism in children. Many believe that

this is caused by thimerosal, a preservative used in some vaccines that contains mercury. Many studies have looked at the relationship between thimerosal and autism. Those studies found no increase in autism rates in patients that received vaccines containing thimerosal. Vaccines have been shown to be safe and effective in preventing widespread disease. Only through continued and consistent use may we prevent some of the devastating diseases of the past from occurring again.

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Immunization Focus

This year, the For Your Health feature will focus on immunizations. Look forward to specific information on the most common vaccines and why it is critical that you and your family stay up-to-date on your immunizations. Ask your pharmacist about what vaccines you need, even as an adult.

For more information, ask your pharmacist!

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Immunity¹

Diseases commonly impair a patient's immune function for a variable amount of time. This can have numerous consequences, and in the worst cases can lead to death. After the first exposure to an antigen, the body begins to create immunity to prevent future extreme symptoms that occur with a second exposure. There are two different types of immunity: passive and active.

Passive immunity occurs when the patient is directly given antibodies by another source. An example is when a mother gives antibodies to her newborn child through the placenta. A major advantage of this immunity is that it is immediate. On the other hand, passive immunity only lasts a few months, whereas active immunity lasts for years.

Active immunity occurs when a patient develops a disease or infection that exposes the patient to a certain type of antigen. The body then creates antibodies against the antigen, essentially eliminating it. If the patient is exposed again to the same antigen, the body is able to recognize it. A natural immunity to that particular antigen occurs upon re-exposure, thereby causing the patient to have a decreased severity of symptoms.

A second method of developing active immunity is through vaccines. The vaccine tricks the immune system into thinking that the patient has been exposed to the disease, resulting in the creation of antibodies. If the patient is exposed to the same antigen in the future, the immune system will activate more quickly and efficiently to exterminate the antigen from the body.

Vaccine Cycle²

Whether it is polio or seasonal influenza, vaccines play an important role in providing active immunity toward a specific disease. The progression of coordinated vaccination efforts shows how a disease can become prevalent again. First, there is concern about a specific disease, causing the rate of the population receiving vaccinations to steadily increase. As immunizations increase across a population, instances of adverse effects of the vaccine are reported, which causes concern in the remaining patients. Anxiety about the safety of the vaccine then begins to outweigh concerns



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about the consequences of the targeted pathogen. This causes the number of vaccinations to rapidly decline, leading to a second outbreak, and a repeat of this process. Pharmacists possess the ability to influence this cycle. An important way to do this is by educating patients and the public about the safety and importance of vaccines through direct contact, giving community presentations or utilizing available media such as print, Internet, television, etc.

Misconceptions³

Misconceptions about vaccines are prevalent throughout the world. It is a pharmacist's duty to reassure patients by clarifying these misconceptions, which will keep vaccine-preventable diseases low. A few examples of these preventable diseases include influenza, pneumococcal infections, Hepatitis B and Herpes Zoster.

A common misunderstanding about vaccines is that they will cause many adverse effects or even death, thus being worse than the disease itself. Adverse events from vaccines are reported through the Vaccine Adverse Effects Reporting System, also known as VAERS. Pharmacists should educate patients about these adverse effects, made public through the Vaccine Information System (VIS). For example, pharmacists can inform patients that death by the disease state of diphtheria occurs in one in every 20 people, while death associated with the DTaP vaccine has not been demonstrated. It is also important to educate

patients that adverse events due to vaccines are real; however, these events are typically very mild in comparison to the disease itself.

Another common misconception is that deadly diseases rarely seen in the United States no longer warrant vaccination. Therefore, patients believe that children no longer need that particular vaccination. Pharmacists need to stress that if vaccinations are discontinued, the disease may re-emerge, as has been seen with recent outbreaks of measles and mumps.

Pharmacists have a vast amount of knowledge about prescription medications, including vaccines. Educating the public about these misconceptions and having educational materials available to patients will help calm their fears and allow these diseases to be eradicated through the use of vaccines.

References

¹ Centers for Disease Control and Prevention [Internet]. Atlanta (GA): Department of Health and Human Services; 2009 [modified Aug. 7, 2009; cited Nov. 4, 2009]. Available from: www.ncbi.nlm.nih.gov/bookshelf/br.fcgi?book=citmed&part=A57255.

² Centers for Disease Control and Prevention [Internet]. Atlanta (GA): Department of Health and Human Services; 2009 [modified Aug. 7, 2009; cited Nov. 4, 2009]. Available from: www.cdc.gov/vaccines/vac-gen/life-cycle.htm.

³ Centers for Disease Control and Prevention [Internet]. Atlanta (GA): Department of Health and Human Services; 2009 [modified May 29, 2007; cited Nov. 4, 2009]. Available from: www.cdc.gov/vaccines/vac-gen/6mishome.htm#intro.