

# The Doctor Within - Part 8

## Role of Vaccines

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Attempts to create something that could help protect people against disease goes back to at least 1000 AD. That's when the Chinese developed a type of smallpox vaccination that was likely the first ever immunization. Jump to 1796 when Dr. Edward Jenner used cowpox material to create immunity to smallpox. Two hundred years after that, a refined smallpox vaccine effectively halted one of the most devastating diseases ever to hit Planet Earth, ending a 2000-year reign of terror wherein 500 million people died.

Louis Pasteur of France was another immunization pioneer. As far as is known, he was the first to create a vaccine in a laboratory when he developed a vaccine for chicken cholera in 1879. That was followed in 1885 with a rabies vaccine he developed from the spinal fluid of infected rabbits.

During the 1930s, thanks to the science of bacteriology and dedicated researchers, several vaccines or antitoxins were developed against diseases such as anthrax, cholera, diphtheria, plague, tetanus, and typhoid. Over time, more and more vaccines have been developed, each preventing its own brand of illness, disability, and death: polio, whooping cough, rubella, rubeola, mumps, Human Papillomavirus (HPV), Hepatitis A, B and C—and more.

Vaccines typically introduce into the body a tiny piece of the causative organism or a *toxoid*—a modified *toxin*. The toxoid is still antigenic (i.e., it can produce an immune response) but no longer toxic. This stimulates the immune system to create new antibodies. As recently as 2019 a vaccine is being tested for Ebola—a rare but deadly disease also known as viral hemorrhagic fever. Regarding the recent epidemic in the Democratic Republic of the Congo, in April 2020 the WHO reported 3453 cases with 2264 deaths—an over 65 percent death rate.

How does the “Doctor Within” create antibodies—or immune globulins—against a disease?

Briefly, you may recall that two jobs of the immune system are to recognize the “self” and to fight invaders. When something enters the body that is not “self”—such as harmful bacteria, viruses, or fungi—it is called an *antigen*. The immune system compares the antigen against its files to see if it has ever seen that specific antigen before and if an

antibody or immunoglobulin has been created. If yes, the B-cell factories simply begin manufacturing clones of the antibody as fast as possible from the information on file.

If no, the B cells immediately begin developing a new specific antibody (immunoglobulin) for that antigen. Then the B-cell factories begin manufacturing, by the millions, clones of the new antibody. The antibodies (immunoglobulins) attach themselves to the antigen (the invader) and deactivate it. When the antibodies outnumber the antigens, the war is won. This can sometimes be accomplished in just a few days, often before the individual in question has even exhibited any symptoms of illness. Other times it is a longer process, and perhaps 15 percent of the time the immune system simply is unable to fight off the invaders without help--and maybe not at all, especially if underlying health issues have weakened the immune system.

Estimates are that the immune system can create antibodies against a minimum of ten 10 million different antigens. Every time a new antibody is created, information for that immunoglobulin is filed in immune system archives. If that antigen ever shows up again, the immune system instructs the B-cell factories to immediately begin cloning the matching antibody.

Some have said, "I got a shot and still got the flu." That is possible. Typically, a vaccine can only protect against one to three viruses at a time. As such, you may still catch one of the other hundreds. However, there is some evidence that by boosting the immune system to produce new antibodies, you reduce the risk of complications even if you do get sick from a different virus. Not everyone is on board with becoming immunized, however. In 2017-2018 only 37 percent of adults obtained a flu vaccine.

All things being equal, you likely will never get sick from the same virus twice. You can get a relapse if the immune system hasn't yet won the battle before you returned to your usual lifestyle. You can also get another infection on top of the first one from a different virus or a bacterium.

Avoid exposure to antigens (harmful organisms) whenever possible. That's one of the great pluses of social media: you can communicate with someone who has an infectious communicable disease while still protecting your own brain and body. The fewer infections you get, the less work the immune system must do to destroy the organisms.

Bottom line: although not everything is preventable, a great deal is. Use your brain to create and maintain healthy habits—to make it easier for the Doctor Within to do its job and keep you well.

A Longevity Lifestyle Matters.