How Vaccinations Work

by PHILIP F. INCAO, M.D . May 5, 1999 Updated 2006

In order to use vaccinations wisely, we need to understand exactly how they work. Until recently, the mechanism of action of vaccinations was always understood to be simply that they cause an increase in antibody levels (titers) against a specific disease antigen (bacterium or virus), thus preventing infection with that bacterial or viral antigen. In recent years science has learned that the human immune system is much more complicated than we thought. It is composed of two functional branches or compartments that may work together in a mutually cooperative way or in a mutually antagonistic way depending on the health of the individual.

One branch is the humoral immune system (or approximately Th2 function), which primarily produces antibodies in the blood circulation as a sensing or recognizing function of the immune system to the presence of foreign antigens in the body. The other branch is the cellular or cell-mediated immune system (or approximately Th1 function), which primarily destroys, digests and expels foreign antigens out of the body through the activity of its cells found in the thymus, tonsils, adenoids, spleen, lymph nodes and lymph system throughout the body. This process of destroying, digesting and discharging foreign antigens from the body is known as ěthe acute inflammatory responseî and is often accompanied by the classic signs of inflammation: fever, pain, malaise and discharge of mucus, pus, skin rash or diarrhea.

These two functional branches of the immune system may be compared to the two functions in eating: tasting and recognizing the food on the one hand, and digesting the food and eliminating the food waste on the other hand. In the same way, the humoral or Th2 branch of the immune system ětastesî and recognizes and even remembers foreign antigens and the cellular or Th1 branch of the immune system digests and eliminates the foreign antigens from the body. But just as too much repeated tasting of food will ruin the appetite, so also too much repeated stimulation of the ětastingî humoral immune system by an antigen will inhibit and suppress the digesting and eliminating function of the cellular immune system. In other words, over stimulating antibody production can suppress the acute inflammatory response of the cellular immune system! 1

This becomes more clear if we imagine the immune system to be like a balance beam or a see-saw. At one end of the beam is antibody production (Th2), at the other end is the acute inflammatory response of the cellular immune system (Th1). In a healthy person the beam freely swings to the Th1 side when the organism needs to destroy, digest and discharge a particular infection out of the body.

When this has been accomplished, then the beam freely swings back to the Th2 side to produce antibodies, which shuts down the acute inflammatory response before exhaustion sets in, so the ill person can begin recuperating. That is why antibodies increase in the blood only after an acute illness, and not in its earlly stages. A vaccination is like a straitjacket for the immune system because it holds the balance beam permanently (or until it wears off) on the Th2 side in maintaining a certain level of antibodies, which"prevents" the illness because it prevents our own cellular immune system from reacting to the virus or bacterium associated with that particular illness.

This explains the polar opposite relationship between acute discharging inflammations on the one hand and allergies and autoimmune inflammations on the other hand. The more a person has of one, the less he or she will have of the other! A growing number of scientists believe that the increase in America, Europe, Australia and Japan in allergic and autoimmune diseases (which stimulate the humoral or Th2 branch of the immune system) is caused by the lack of stimulation of the cellular or the Th1 branch of the immune system from the lack of acute inflammatory responses and discharges in childhood. 2, 3, 4, 5 We need to identify the factors which cause this shift in the function of the immune system or which cause allergies and autoimmune diseases in childhood to increase!

If we now return to the original question of the mechanism of action of vaccinations, we find what I believe is the key to the puzzle. A vaccination consists of introducing a disease agent or disease antigen into an individualís body without causing the disease. If the disease agent provoked the whole immune system into action it would cause all the symptoms of the disease! The symptoms of a disease are primarily the symptoms (fever, pain, malaise, loss of function) of the acute inflammatory response to the disease.

So the trick of a vaccination is to stimulate the immune system just enough so that it makes antibodies and remembers the disease antigen but not so much that it provokes an acute inflammatory response by the cellular immune system and makes us sick with the disease weíre trying to prevent! Thus a

vaccination works by stimulating very much the antibody production (Th2) and by stimulating very little or not at all the digesting and discharging function of the cellular immune system (Th1). Vaccine antigens are designed to be unprovocative or ĕindigestibleî for the cellular immune system (Th1) and highly stimulating for the antibody-mediated humoral immune system (Th2).

Perhaps it is not difficult to see then why the repeated use of vaccinations would tend to shift the functional balance of the immune system toward the antibody-producing side (Th2) and away from the acute inflammatory discharging side (the cell-mediated side or Th1). This has been confirmed by observation especially in the case of Gulf War Illness: Most vaccinations cause a shift in immune function from the Th1 side (acute inflammatory discharging response) TO the Th2 side (chronic auto-immune or allergic response). 6

The outcome of this line of thought is that, contrary to previous belief; vaccinations do not strengthen or ĕboostî the whole immune system. Instead vaccinations over stimulate the ĕtasting and rememberingî function of the antibody-mediated branch of the immune system (Th2), which simultaneously suppresses the cellular immune system (Th1) thus ĕpreventingî the disease in question.

What in reality is prevented is not the disease but the ability of our cellular immune system to manifest, to respond to and to overcome the disease!

There is no system of the human being, from mind to muscles to immune system, which gets stronger through avoiding challenges, but only through overcoming challenges. The wise use of vaccinations would be to use them selectively, and not on a mass scale. In order for vaccinations to be helpful and not harmful, we must know beforehand in each individual to be vaccinated whether the Th1 function or the Th2 function of the immune system predominates.

In individuals, in whom the Th1 function predominates, causing many acute inflammations because the cellular immune system is over reactive, a vaccination could have a balancing effect on the immune system and be helpful for that individual. In individuals, in whom the Th2 function predominates, causing few acute inflammations but rather the tendency to chronic allergic or autoimmune inflammations, a vaccination would cause the Th2 function to predominate even more, aggravating the imbalance of the immune system and harming the health of that individual. This is what happened in Gulf War Illness.

The current use of vaccinations in medicine today is essentially a ĕshotgunî approach that ignores differences among individuals. In such an approach some individuals may be helped and others may be harmed. If medicine is to evolve in a healthy direction, we must learn to understand the particular characteristics of each individual and we must learn how to individualize our treatments to be able to heal each unique human being in our care.

Vaccinations are usually effective in preventing an individual from manifesting a particular illness, but they do not improve the overall strength or health of the individual nor of the immune system. Instead, vaccinations modify the reactivity of the immune system, decreasing acute discharging inflammatory reactions and increasing the tendency to chronic allergic and auto-immune reactions.

Epidemiologic studies 7 8 9 have shown that as families improve their living conditions, hygiene, nutrition, literacy and education, the risk of life-threatening acute infectious , inflammatory diseases very much decreases. Families with poor living conditions, hygiene, nutrition and literacy would generally be most likely to benefit from vaccinations. Families with good living conditions, hygiene, nutrition and education probably would benefit from vaccinations very little or not at all. Individuals with a tendency to allergic or autoimmune diseases are likely to be harmed by vaccinations.

Side effects of vaccination are usually allergic or autoimmune inflammatory reactions caused by the shift of the immune systemís reactivity from the Th1 side to the Th2 side. Modern medicine is just beginning to recognize this. 10 Modern medicine has not scientifically measured the risk/benefit ratio of any vaccine. 11 Research into the risks of vaccines is very inadequate, according to two comprehensive reports on vaccines by the U.S. Institute of Medicine in 1991 and 1994.

My preceding explanation of how vaccinations affect the immune system is true also in animals. Vaccinations cannot make animals healthier, but only good handling, environment and nutrition can make animals healthy and resistant to disease. Vaccinating pigs may prevent them from having illness from one particular strain of virus but will not improve their overall resistance to other illnesses nor even to other strains of the same virus.

It is important to remember that an infection with a particular virus or bacterium does not necessarily cause illness unless the resistance of the individual is low (see Dr. Incao's article "Not a Battle, but a Housecleaning") . In the case of Japanese Encephalitis Virus (JEV), most infections cause no symptoms and less than 0.1% of infected individuals develop severe encephalitis. 12 Individuals living in poor conditions, with poor hygiene, nutrition and education are at higher risk of serious illnesses from JEV or any other infection. In such individuals a vaccination would most likely be helpful.

Very often the media exaggerate and sensationalize the extent of such outbreaks. Each individual should freely decide, based on knowledge and not on fear and hearsay, whether he or she or a child would benefit from a vaccination.

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