



IT'S YOUR HEALTH

Misconceptions about Vaccine Safety

The Issue

Misconceptions about vaccine safety may cause a decrease in the number of Canadians who are immunized against vaccine-preventable diseases such as measles, polio, and mumps. This could possibly result in epidemics of diseases that are seldom seen these days in developed countries.

Background

The successful use of vaccines in preventing disease means that most parents of young children in Canada today have never seen a life-threatening case of diphtheria or polio. The continued success of immunization programs depends on a high level of public participation due to confidence in the safety of vaccines.

Unfortunately, a small minority of people actively oppose immunization. Their messages, which are often dramatic and misleading, receive wide publicity through print, radio, television, and the Internet. This can cause confusion for people who want to make responsible, informed decisions about immunization for their children and themselves.

Common Misconceptions about Vaccines

Here are some common misconceptions about vaccines, followed by the facts:

Misconception: *Vaccines are not safe.*

The Facts: Vaccines are among the safest tools of modern medicine. You may have some swelling or tenderness at the spot where you get the needle, or a mild fever, but these reactions are most often minor and temporary. Serious side effects can happen, but are extremely rare. For example, severe allergic reactions occur in Canada less often than once per 100 000 doses of vaccine.

On the other hand, the diseases that vaccines fight pose serious threats. Diseases such as polio, diphtheria, measles, and whooping cough can lead to paralysis, pneumonia, choking, brain damage, heart problems, and even death. The dangers of vaccine-preventable diseases are many times greater than the risk of a serious adverse reaction to the vaccine.

Misconception: *Vaccines don't work.*

The Facts: When there is an outbreak of a disease, some people who have been immunized get sick. This can lead to the idea that vaccines don't work. Every individual is different, and about 10 to 15 per cent of people vaccinated will not develop immunity to the disease.

However, immunization does reduce the risk of severe disease. Immunization is the most effective way to prevent illness and to reduce the risk of transmitting infections to those around you.

Misconception: *Vaccines are linked to chronic diseases such as autism, multiple sclerosis (MS), and Crohn's disease.*

The Facts: These are false claims made by anti-vaccine books and Web sites. Recent research using the best scientific methods, and reviews of studies from around the world, provide strong evidence that:

- MMR (measles, mumps and rubella) vaccine does not cause autism or inflammatory bowel disease (Crohn's).
- Hepatitis B vaccine does not cause multiple sclerosis (MS) or relapses of pre-existing MS.
- Pertussis (whooping cough) vaccine does not cause brain damage.
- Childhood vaccines do not increase the risk of asthma.
- Vaccines do not cause sudden infant death syndrome (SIDS).

Misconception: *Vaccines weaken the immune system.*

The Facts: Vaccines strengthen the immune system to protect children and adults from specific diseases. Scientists estimate that the immune system can recognize and respond to hundreds of thousands, if not millions, of different organisms. The vaccines recommended for Canadian children and adults use only a small portion of the immune system's "memory."

Misconception: *There are many serious side effects from vaccines.*

The Facts: The vast majority of vaccine adverse events are minor and temporary, like a sore arm or mild fever. These can often be controlled by taking acetaminophen. More serious adverse events occur rarely - about one per thousand to one per million doses,

and some are so rare that the risk cannot even be accurately assessed.

In Canada, serious side effects, like Guillain-Barré Syndrome, from the flu vaccine occur very rarely – about one for every million shots administered. Influenza infection can also cause Guillain-Barré syndrome. Other serious adverse events of vaccines include severe allergic reactions, low platelets in the blood (making people bleed easily), etc. The vast majority of side effects from vaccines are minor and temporary.

Misconception: *Vaccines are not necessary because the diseases are gone.*

The Facts: You are not safe from a vaccine-preventable disease just because it is uncommon in Canada. Travelers can carry diseases from country to country, and if you are not immunized you could be at serious risk. It is also important to realize that some people cannot have vaccines because of certain medical conditions or severe allergies. When you are vaccinated, you help protect the people who can't have vaccines.

Experience from other countries shows that diseases return quickly when fewer people are immunized. For example, in 1994 there were 5,000 deaths from diphtheria in Russia after the organized immunization system was suspended. Previously, Russia (like Canada) had only a few cases of diphtheria each year, and no deaths. Unless a disease has completely disappeared, there is a real risk that small outbreaks can turn into large epidemics if most of the community is not protected.

Misconception: *Vaccines contain toxic substances.*

The Facts: Every batch of vaccine in Canada is tested for safety and quality before it is released for public use. The main ingredient in most vaccines is the killed or weakened germ (virus or bacterium), which stimulates the immune system to recognize and prevent future disease. Some vaccines

also contain extremely small amounts of preservatives or antibiotics to prevent bacterial contamination.

One preservative called thimerosal has received a lot of attention because it contains a trace amount of mercury. The amount of mercury present in thimerosal is minute, does not accumulate in the body and is much less toxic than other forms of mercury. Today, most vaccines in Canada do not contain thimerosal. Canada's National Advisory Committee on Immunization (which includes recognized experts in the fields of paediatrics, infectious diseases, immunology, medical microbiology, internal medicine and public health) has reviewed the latest science and concluded, "there is no legitimate safety reason to avoid the use of thimerosal-containing products for children or older individuals." The vaccines that Canadian children and adults receive are safe.

Misconception: *Some Vaccines aren't safe because they are released too soon.*

The Facts: Canada, like many other countries worldwide, exercises tight scrutiny or regulatory oversight over vaccines. All vaccines intended for use by Canadians are subject to the provisions of the Food and Drugs Act and the Food and Drug Regulations. Prior to market authorization of a new vaccine, the manufacturer must file a submission with scientific and clinical evidence that demonstrates that the vaccine's health benefits outweigh the risks and that the vaccine is effective and of suitable quality for Canadians.

As part of the approval process, Health Canada experts conduct an on-site evaluation of the manufacturer's facilities to assess the quality of the vaccine manufacturing process and to determine that the manufacturer is able to carry out the necessary quality controls for the vaccine. The manufacturer must also provide samples of at least three batches or "lots" of the vaccine for testing in Health Canada laboratories.



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After Health Canada's evaluation, if the conclusion is that the benefits of the vaccine outweigh its risks, then the vaccine is granted market authorization and can be sold in Canada.

Because some vaccines may be needed urgently to deal with outbreaks of a specific disease, such as a pandemic influenza, Health Canada has mechanisms to complete the review of submissions for these vaccines in a short period of time. In certain cases requirements for some types of data may be eliminated or reduced. However, regardless of the urgency with which the vaccine is needed, it will not be authorized until Health Canada has completed its review and determined that the benefits of making the vaccine available outweigh any risks. Authorized vaccines are also subject to ongoing lot evaluations by Health Canada before they are released on the Canadian market for use by Canadians.

Minimizing Your Risk

There is no reason to suffer from a disease if there is a safe and effective way to prevent it. Take steps to protect your family against vaccine-preventable diseases.

If you have concerns about vaccines, talk to your doctor, pediatrician, or other health care provider. You can also find reliable, science-based information about vaccine safety on Web sites produced by Health Canada, the Public Health Agency of Canada, the Canadian Immunization Awareness Program, the Canadian Paediatric Society, and the World Health Organization (WHO). These organizations have the facts about vaccines and vaccine safety.

Government of Canada's Role

Health Canada regulates vaccines through a rigorous licensing process that includes an extensive pre-market review of information about the product's quality, safety and effectiveness. Once a vaccine is on the market, the Public Health Agency of Canada (PHAC) monitors adverse events following immunization with the help of provinces and territories and works with Health Canada to assess emerging safety concerns. In addition, PHAC monitors and analyzes the incidence of vaccine preventable diseases, identifies risk factors, develops guidelines for the control of vaccine-preventable diseases, and works with the provinces and territories during emergency situations to help ensure that outbreaks of disease are contained.

The Public Health Agency of Canada and Health Canada also participate in public information initiatives, such as the Canadian Immunization Awareness Program, and work globally with other countries to develop and implement disease-reduction or eradication strategies.

Need More Info?

For general information about immunization, visit the following Web sites:

Visit the Public Health Agency of Canada's Immunization & Vaccines Web section at:
www.phac-aspc.gc.ca/im/index-eng.php

Canadian Immunization Awareness Program at:
www.immunize.cpha.ca

Canada

For related *It's Your Health* fact sheets on vaccine safety visit:
[www.hc-sc.gc.ca/hl- vs/iyh-vsv/alpha-eng.php#v](http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/alpha-eng.php#v)

For more information about vaccines and the NACI recommendations, visit the web section:
www.phac-aspc.gc.ca/naci-ccni/index-eng.php

For the *Canadian Immunization Guide, 7th edition, 2006* visit:
[www.phac- aspc.gc.ca/publicat/cig-gci/index-eng.php](http://www.phac-aspc.gc.ca/publicat/cig-gci/index-eng.php)

For information on Influenza and Influenza vaccines visit the following Web sites:

FightFlu.ca at: www.fightflu.ca

It's Your Health, Influenza at :
[www.hc-sc.gc.ca/hl-vs/iyh-vsv/diseases-maladies/flu- grippe-eng.php](http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/diseases-maladies/flu-grippe-eng.php)

Health Canada – Influenza :
www.hc-sc.gc.ca/hc-ps/dc-ma/influenza-eng.php

Public Health Agency of Canada – Influenza :
[www.phac-aspc.gc.ca/influenza/index- eng.php](http://www.phac-aspc.gc.ca/influenza/index-eng.php)

Other Web sites of interest include the following:

The Canadian Pediatric Society's "Caring for Kids" Web site at:
www.caringforkids.cps.ca/index.htm

World Health Organization Vaccines, Immunization Web site:
www.who.int/topics/vaccines/en/

U.S. Centers for Disease Control and Prevention's National Immunization Program Web site :
www.cdc.gov/vaccines/

For additional articles on health and safety issues go to the *It's Your Health* Web section at:
www.healthcanada.gc.ca/iyh
You can also call toll free at
1-866-225-0709