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Child Immunization Series - Number 50d
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Childhood Vaccines:
What is in the Vaccines and Why

What is in my child's vaccines?

Vaccines are made with ingredients that make them safe and effective.

Each vaccine contains a small amount of the disease germ (virus/bacteria/toxin), such as the pertussis, measles or chickenpox virus, pneumococcal bacteria, or tetanus toxin. The germs in the vaccine are either dead, weakened, or made inactive, and cannot harm your child in any way. These germs help your child's immune system to build protection against disease.

Some of the other ingredients in routine childhood vaccines include saline, formaldehyde, aluminum salts and antibiotics. Each item in a vaccine plays an important role in keeping vaccines safe and effective. They have not been linked to disease or illness.

> The ingredients in vaccines are there to keep them safe and stable. They make sure the vaccine is effective and gives your child the best protection possible.

What is thimerosal and why is it in some vaccines?

In BC, and except for the flu vaccine, thimerosal has not been used in any routine childhood vaccines since 2001.

Thimerosal is a type of mercury (ethyl mercury) used in very small amounts in some vaccines. If it was not used, the vaccine could 'go bad' and make a person ill. Ethyl mercury is not the same type of mercury that causes pollution (methyl mercury).

Thimerosal is used to stop the growth of germs (bacteria) in vials that contain many doses of a vaccine. These multi-dose vials are usually used for adult vaccines.

Studies have shown no link between use of vaccines with thimerosal and harm in children. These studies are posted on the Institute of Medicine of the National Academies website at www.iom.edu/CMS/3793/4705.aspx.

Why do vaccines contain ingredients like saline or antibiotics?

Vaccines contain ingredients that keep them safe and stable, and that give your child better protection from disease. Here are some of the ingredients in vaccines.

Saline. Saline is a mixture of salt and water. It is the base of many vaccines. Most of the liquid in vaccines is saline. The rest of the ingredients are in very small amounts.

Formaldehyde. Some vaccines are made from live germs (bacteria/viruses), which need to be killed. Other vaccines are made from toxins that need to be changed so they are safe to use. Formaldehyde is used to do this, and then most of it is removed. The tiny amount left in the vaccine cannot cause harm.

Aluminum salts. Aluminum salts are used in some vaccines to help the vaccines work better and give us better immunity.

Aluminum is one of the most common elements in the earth's crust and is found in air, food and water. All children are exposed to aluminum in the environment and even in breast milk and infant formula. The amount of aluminum in a vaccine is similar to that in infant formula. This very small amount is very safe for children.

Antibiotics. Antibiotics are used in some vaccines to prevent contamination when the vaccine is being made. They are used in very small amounts. Neomycin is one of these antibiotics.

Other ingredients. Sugars, amino acids and proteins help keep vaccines stable and safe when they are being shipped and stored. Albumin and gelatin are used to keep vaccines stable so they do not break down. Albumin is a protein, and the gelatin used is the same type of gelatin in the food we eat.

The vaccine is purified to remove all cells (human or animal) from the product. So while human or animal cells may be used in the process of making the vaccine, no blood, serum or cells are left once the vaccine is purified. Only trace amounts of proteins may remain behind.

What vaccines contain egg and why?

Two vaccines contain egg protein, because they are grown in egg culture. One vaccine is for influenza (flu); the other is called MMR and is for the diseases of measles, mumps and rubella. The amount of egg protein in the MMR shot is not harmful for children with egg allergies. A child with severe egg allergies should not get influenza vaccine.

An allergic reaction after getting a shot is rare – only a one in a million chance. If this happens, it is most likely to occur in minutes after the shot is given. This is why you are asked to stay at the clinic or doctor's office for 15 minutes after the shot. The doctor or nurse is prepared to treat these reactions.

For more information

Institute of Medicine of the National Academies:
www.iom.edu/CMS/3793/4705.aspx

Public Health Agency of Canada:
www.phac-aspc.gc.ca/im/index.html

The Children's Hospital of Philadelphia:
www.chop.edu/consumer/jsp/division/generic.jsp?id=75699

More HealthLink BC Files on childhood immunization:

#50a Your Baby's Immune System and Vaccines

#50b The Benefits of Vaccinating Your Child

#50c Childhood Vaccines are Safe

#50e Getting Ready for Your Child's Shots

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For deaf and hearing-impaired assistance, call 7-1-1 in B.C.

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