PLAIN TALK ABOUT CHILDHOOD IMMUNIZATIONS

This booklet was developed by Public Health - Seattle & King County, Snohomish Health District, and the Washington State Department of Health. We would also like to acknowledge receiving assistance from the following public and private agencies:

Children's Hospital and Regional Medical Center
Healthy Mothers, Healthy Babies Coalition of Washington
Immunization Action Coalition of Washington
Junior League of Seattle
National Network for Immunization Information
Program for Appropriate Technology in Health (PATH)
Rotary International
State of Alaska Immunization Program
U.S. Centers for Disease Control and Prevention
Whatcom County Health & Human Services

TABLE OF CONTENTS

1. A MESSAGE TO PARENTS

Dear Parents,

Thank you for your interest in learning more about immunizations. As parents we are asked to make many important decisions concerning our children. Some of the most difficult decisions can be about their health care. To have your child immunized is one of these decisions.

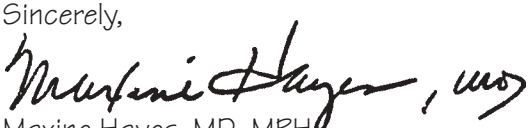
We all want to make the right choices and do what is best for our children. As a community, we also need to protect the public's health. We recommend that you have your child immunized, but ultimately the decision is yours.

We designed this booklet in response to requests by parents, health care professionals, school nurses, child care providers and others to:

- provide more information about immunizations and the diseases they prevent, much in the same way you look for informationon car seats, bicycle helmets, and age-appropriate toys;
- balance the benefits and risks of immunization and assist you in making an informed decision;
- clarify inaccuracies or misinformation about immunizations and vaccine-preventable diseases.

We have arranged the information so you can read each section independently. We use a question and answer format in many areas, but may not have included all the answers you need. We encourage you to discuss these issues with a health care professional or your local health department.

Sincerely,



Maxine Hayes, MD, MPH
Health Officer, Washington State Department of Health

DICTIONARY OF TERMS

AAFP:	American Academy of Family Physicians
AAP:	American Academy of Pediatrics
ACIP:	Advisory Committee on Immunization Practices (Federal vaccine advisory committee to CDC/NIP)
CDC:	U.S. Centers for Disease Control & Prevention
CIS:	Certificate of Immunization Status form
DTaP:	Diphtheria, tetanus, and acellular pertussis vaccine
FDA:	U.S. Food and Drug Administration
Flu:	Influenza
Hep A:	Hepatitis A
Hep B:	Hepatitis B
Hib:	*Haemophilus influenzae* type b
IPV:	Inactivated polio vaccine
MMR:	Measles, mumps, and rubella vaccine
NIP:	National Immunization Program (a program of the U.S. Centers for Disease Control & Prevention
OPV:	Oral polio vaccine
PCV:	Pneumococcal conjugate vaccine
SIDS:	Sudden Infant Death Syndrome
Td:	Tetanus/diphtheria vaccine
VAERS:	Vaccine Adverse Event Reporting System
Var:	Varicella (chickenpox) vaccine
VIS:	Vaccine Information Statement

2. THE FACTS ABOUT VACCINE-PREVENTABLE DISEASES

DIPHTHERIA, TETANUS, & PERTUSSIS

Diphtheria is easily spread through coughing or sneezing, and can cause paralysis, breathing and heart problems, and death.

Tetanus (lockjaw) occurs when a tetanus germ, usually found in soil, dust or manure, enters the body through a cut or puncture wound. It can cause muscle spasms, breathing and heart problems, and death.

Pertussis (whooping cough) is spread through coughing or sneezing, and can cause very long spells of coughing that make it hard for a child to eat, drink, or even breathe. Pertussis can cause lung problems, seizures, brain damage and death, especially in infants less than one year of age.

HAEMOPHILUS INFLUENZAE TYPE B

Hib disease can cause meningitis (inflammation of the brain and spinal cord), infections of the joints, skin and blood, brain damage, and death. It is most serious in infants under one year of age.

HEPATITIS A

Hepatitis A is a liver disease caused by the hepatitis A virus. The virus is shed in the stool of infected persons. It is usually spread by close personal contact and sometimes by eating food or drinking water containing the virus. A person with hepatitis A can easily pass the disease to others within the same household.

HEPATITIS B

Hepatitis B is an infection of the liver. It can be passed from an infected mother to her newborn during childbirth and from one person to another through blood or body fluids or by intimate contact. The hepatitis B virus can cause liver damage, liver cancer and death. It is the second most common cause of liver cancer worldwide.

INFLUENZA

Influenza is a contagious viral disease that may cause a sudden onset of fever, chills, muscle aches, cough, sore throat, headache, and may lead to severe pneumonia. Flu is spread through sneezing, coughing or direct contact with the infected individual. Children and/or family members with

certain long-term health problems, such as asthma or diabetes are especially at risk for serious complications from the flu. Such complications include pneumonia, dehydration, meningitis, and even death.

MEASLES, MUMPS, & RUBELLA

Measles, mumps and rubella spread from person to person very easily, through coughing, sneezing, or just talking.

Measles causes a high fever, rash, and cold-like symptoms. It can lead to hearing loss, pneumonia, brain damage, and even death. Measles spreads so easily that a child who has not been immunized will most likely get the disease if exposed to it. In fact, the measles virus can remain in the air (and be contagious) for up to two hours after a person with the disease has left the room.

Mumps can cause headache, fever, swelling of the glands of the jaw and neck, and swelling of the testicles in adolescents and adults. It can lead to hearing loss, meningitis (inflammation of the brain and spinal cord) and brain damage.

Rubella (German measles) causes a slight fever and a rash on the face and neck. Pregnant women who get rubella can lose their babies, or have babies with severe birth defects such as hearing loss, heart problems and mental retardation. This is known as congenital rubella syndrome, or CRS.

PNEUMOCOCCAL DISEASE

Pneumococcal disease is the leading cause of bacterial meningitis (swelling of the brain and spinal cord) among children ages 5 years and younger. It can also cause serious infections of the lungs (pneumonia) and the blood (bacteremia). The disease is spread from person to person through respiratory droplets.

POLIO

Polio causes fever and may progress to meningitis and/or lifelong paralysis. Polio can be fatal. Persons infected with the polio virus shed the virus in the stool and can transmit the virus to others.

VARICELLA

Varicella (chickenpox) is a very contagious disease causing rash and fever. It is spread by coughing and sneezing or direct contact with drainage from the rash. Among children, a common complication is bacterial infection of skin lesions. Varicella can lead to serious complications such as inflammation of the brain and pneumonia, and rarely "flesh-eating" bacterial infection or death. Varicella is more serious in adults and persons with impaired immune systems. If a woman has this disease while pregnant, it can cause birth defects and infant death.

Immunizations Save Lives

Immunization is one of the greatest medical success stories in human history - and has saved millions of lives in the 20th century.

Many serious childhood diseases are preventable by using vaccines routinely recommended for children. Since the introduction of these vaccines, rates of diseases such as polio, measles, mumps, rubella, diphtheria, pertussis (whooping cough), and meningitis caused by *haemophilus influenzae* type b have declined by 95 to 100%. Prior to immunization, hundreds of thousands of children were infected and thousands died in the U.S. each year from these diseases. In underimmunized populations of the world, 600,000 children die from pertussis and almost one million die from measles each year.

Without immunizations, the diseases we are now protected from will return to sicken and even kill many infants and children. Many of the children who survive could suffer from chronic health problems or disabilities for the rest of their lives.

Immunizations Prevent the Spread of Disease

Diseases are spread through communities by infecting unimmunized people as well as the small percentage of people for whom immunizations do not work. Individuals who are unimmunized increase the risk that they, and others in their community, will get the diseases vaccines can prevent. For some highly contagious diseases, such as measles, even a small number of unimmunized or underimmunized people can lead to an outbreak of disease.

The biggest cause of the 1989-1991 measles epidemic in the U.S. was failure to vaccinate preschool children on time. This measles epidemic was responsible for 55,000 cases and more than 120 deaths. Nearly half of those deaths were in children under age five, most of whom had not been immunized.

Eleven cases of measles in 1995 in Whatcom County, WA, occurred when an unimmunized college student returned from an out-of-state visit.

Twelve cases of measles occurred in King County in 2001, representing the largest outbreak of the disease in Washington State in over a decade (see page 40, Measles Outbreaks in Washington State).

In 1998, all of the cases of measles in the U.S. came from other countries. Dangerous infectious diseases largely under control in the U.S. are only "a plane ride away", so we must all remain protected by being immunized.

Immunizations are Safe

Immunizations are extremely safe and getting safer and more effective all the time as a result of medical research and ongoing review by doctors, researchers, and public health officials. Immunizations are given to keep healthy people well, and are held to the highest safety standards. But that doesn't mean that vaccines are risk-free.

All vaccines may have possible side effects (see the "Compare the Risks" Table in this booklet, pages 32-36). Most of these effects are quite mild, such as pain or soreness where the shot is given. Serious side effects,such as an allergic reaction known as "anaphylaxis" occurs very rarely (about one time in 500,000 doses). An anaphylactic reaction includes hives, difficulty breathing, and low blood pressure. The reaction can be treated.

According to Paul Offit, MD, Director of the Vaccine Education Center at Children's Hospital of Philadelphia, "...choosing to avoid vaccines is simply a choice to take a different risk. Unvaccinated children are at risk for many diseases including meningitis caused by Hib, bloodstream infections caused by pneumococcus, pneumonia caused by measles, deafness caused by mumps, and liver cancer caused by hepatitis B virus. When you compare the risk of vaccines and the risk of diseases, vaccines are the safer choice."

Immunizations Are Strong Protection

Immunization is the single most important way parents can protect their children against serious diseases. There are no effective alternatives to immunization for protection against serious and sometimes deadly infectious diseases.

Despite the known benefits of breastfeeding, such as enhanced protection of the infant against some colds, ear infections and diarrhea, breastfeeding does not prevent vaccine-preventable diseases. Unlike vaccines, breastfeeding does not stimulate the infant's own immune system to produce the antibodies needed to fight very specific diseases. Fortunately, vaccines do not interfere with the beneficial immunity gained from breastfeeding, just as breastfeeding does not hinder the effectiveness of immunization.

In addition, the use of vitamins or herbs does not provide specific protection against the many viruses and bacteria that cause vaccine-preventable diseases. Although these substances may have beneficial effects, they cannot replace the protection provided by vaccines. Immunizations work naturally by using the body's own immune system, making it stronger and teaching it to fight serious diseases.

Children who have not been immunized are at far greater risk of becoming infected with serious diseases. For example, a recent study showed that children who had not received the measles vaccine were 35 times more likely to get the disease.

And, Did You Know . . .

- Infants are more vulnerable to disease because their immune systems cannot easily fight off disease-causing bacteria and viruses. Moreover, the effects of disease are often more serious in infants than in older children.

- Many of the diseases that vaccines prevent cannot be effectively treated or cured.

- Even if a disease is not currently present in a community, the bacteria and viruses that cause it have not gone away. Disease outbreaks can and do occur in communities that are not protected by immunization.

- With the increase in international travel and foreign adoption, serious vaccine-preventable diseases uncommon in the US, are literally only a plane ride away.

- The number of recommended immunizations has increased because we are now able to safely protect children from more serious diseases than ever before.

- About 75% of children in Washington State are immunized by the age of two; but in some areas, the rate is as low as 57%.

- Vaccines paid for with public funds are provided at no cost at most clinics in Washington State. (You may be charged a small administrative fee.)

3. THE IMMUNE SYSTEM AND HOW VACCINES WORK

The immune system is the defense mechanism in each person that helps the body fight disease. Medical science has found an effective way to help the immune system fight disease through the use of vaccines.

• When you get an infection, your body reacts by producing substances called antibodies. These antibodies fight the invading antigen (virus or bacteria) and help you get over the illness. The antibodies usually stay in your system, even after the disease has gone, and protect you from getting the same disease again. This is called immunity.

• Newborn babies often have immunity to some diseases because they have antibodies from their mothers (known as maternal antibodies). But this immunity is only temporary and may not occur at all if the mother is not immune. We can keep children immune to many diseases, even after they lose their mothers' antibodies, by immunizing them.

• The viruses and bacteria that cause disease are killed or weakened, then used to make the vaccines.

• Vaccines make the body think it is being invaded by a specific disease, and the body reacts by producing antibodies. Then, if the child is exposed to the disease in the future, he or she is protected.

• "Live" vaccines are made from weakened forms of disease-causing viruses. These live vaccines (measles vaccine, for example) are extremely effective. They usually provide life-long immunity following only one or two doses. Other vaccines are "inactivated" (killed), and require multiple doses to build up the immune response (for example, inactivated polio vaccine). Some inactivated vaccines require booster doses throughout life, such as tetanus and diphtheria.

? QUESTION: *Do vaccines decrease the immune system's natural ability to fight disease?*

ANSWER: No. As a matter of fact, vaccines strengthen the immune system by preparing it to defend against serious disease-causing bacteria and viruses. In contrast, if a child is *not* vaccinated and then becomes exposed to a disease-causing germ, he may not be strong enough to fight the disease. Additionally, there is a greater likelihood that his ability to fight off a second infection resulting from the "natural disease" will be reduced. For example, a previously healthy child with a measles infection is more likely to develop pneumonia or encephalitis, both of which can become severe enough to cause long-term health problems or even death.

" The immune system is constantly working to protect us from bacteria and viruses in our environment," states Dr. Jeff Duchin, Public Health-Seattle & King County. "Immunizations strengthen our immune defenses against a *specific* infection. Immunizations do *not* interfere with our ability to fight off other infections that we are not immunized against."

In fact, vaccinated children have been shown to suffer fewer infections, overall, than unvaccinated children. A study conducted in Germany of 496 vaccinated and unvaccinated children found that "…children who received immunizations against diphtheria, pertussis, tetanus, Hib, and polio within the first 3 months of life had fewer infections with vaccine-related and -unrelated [bacteria and viruses] than the nonvaccinated group" (Offit, P. et al, 2002).

A 2002 report published by the Institute of Medicine's Safety Review Committe, revealed a similar conclusion: "…multiple vaccinations do not increase the risk of young children developing various infections, ranging from colds and ear infections to pneumonia and meningitis." (The Safety Review Committee was established by the Institute of Medicine [IOM], an independent expert committee whose purpose is to review immunization safety concerns. The IOM was created by the Centers for Disease Control and Prevention and the National Institutes of Health.)

? QUESTION: *I heard that the less you " bombard" the immune system at one time, the better, so you would not give several vaccines on the same day. Is this true?*

ANSWER: No. Receiving more than one childhood immunization at the same time does not harm a child's immune system. A review of clinical studies by the IOM in 2002 revealed no association between childhood immunizations and immune system problems. While there is clearly much more to learn about the immune system, some things we do know. Scientific data show that giving a child several vaccines at the same time has no adverse effect on a normal immune system. The immune system of a newborn can recognize and respond to hundreds of thousands, if not millions, of different organisms. According to a study published in the January 2002 issue of Pediatrics, scientists estimate that a child could receive up to 10,000 vaccines in one day and still not "use up" his or her immune response. A child receiving 11 vaccines in one day would "use up" less than one percent of his/her immune system (Offit, P.A. et al).

According to William Atkinson, MD, U.S. Centers for Disease Control and Prevention, "The immune system is an extremely capable system. It can manage and respond to literally millions of antigens (foreign substances) at the same time. Take for example, walking outside on a spring day with flowers and trees in bloom. Through your mouth, nose and lungs, your immune system will constantly respond to multiple antigens (like pollen and dust) as it does its work in your bloodstream. In the same way, in daily interactions, you may be exposed to multiple cold viruses and your body will respond successfully. But some infections can cause severe illness and death even in persons with healthy immune systems. We can help the immune system ward off the serious infectious diseases that immunizations can prevent.

? QUESTION: *Is the method of injecting vaccines harmful for the body?*

ANSWER: No. Injecting the vaccines is a safe method that has been used for decades. Just as injecting infection-fighting antibiotics for illness is okay, so it is for giving vaccines. Vaccines are not injected directly into the bloodstream. Most vaccines are injected deep into the muscle or into the fat layer just below the skin. In addition, the syringe and needle used for an immunization are sterile and are only used once and then thrown away, so there is no possibility for the spread of infection by getting immunized.

Other methods for administering vaccine may soon become available, (such as by being sprayed into the nose or even eaten with food). The method used to administer vaccine, whether by injection or other route, is tested for safety and effectiveness before it is used in the general population.

? QUESTION: *I have heard that some people get diseases that they have been vaccinated against. How could this be true?*

ANSWER: Modern vaccines are extremely effective, but are not perfect. For example, a vaccine that is 90% effective means that one in every ten people who is vaccinated is not fully protected from the disease. Should disease affect a community, those that are unprotected are likely to be infected - which includes those who were not vaccinated and the 10% of people who were vaccinated but for whom the vaccine didn't work. The 10% for whom the vaccine did not work may still have *partial* immunity; if infected, these individuals may experience a milder form of the disease. Because most diseases that vaccines

prevent are transmitted from person-to-person, the more people in a community who are immunized, the less likely that disease will be transmitted and "find" the few that are unprotected.

Most vaccines require more than one dose to reach maximum immunity. Some, like tetanus and diphtheria, require booster doses every 10 years throughout life to continue that immunity.

? QUESTION: ***Isn't it true that because of better hygiene and sanitation, vaccine-preventable diseases began to disappear before vaccines were introduced?***

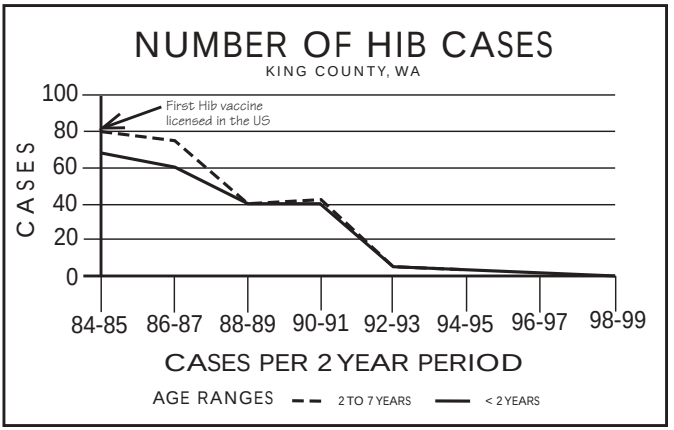
ANSWER: No. Many infectious diseases became better controlled as living conditions and hygiene improved, however they remained serious threats due to periodic outbreaks in vulnerable populations. It wasn't until the introduction of vaccines that we saw a dramatic drop in the rates of vaccine-preventable diseases.

Combating diseases often takes a combined approach. Several factors have helped the work of vaccines including:

- better nutrition,
- less crowded living conditions and better sanitation,
- more effective antibiotics and other treatments.

In spite of these advances, vaccine-preventable disease outbreaks still occur because of lack of immunization or incomplete immunization. Diseases like measles and pertussis are highly contagious, regardless of hygiene and living conditions.

Dr. Jeff Duchin, Public Health - Seattle & King County, states, "Immunizations have led to a dramatic decrease in serious childhood infections, such as Hib disease, that could not have been accomplished through improvement in sanitary conditions alone."

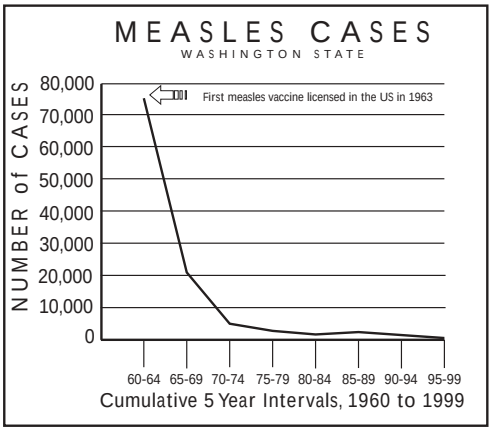


The incidence of measles, pertussis, *Haemophilus influenzae type b* (Hib) and other vaccine-preventable diseases has decreased dramatically, directly due to immunizations.

The Hib vaccine was directly responsible for decreasing the incidence of Hib disease and Hib meningitis. Once the leading cause of death among young children, Hib disease has dropped more than 95% since the vaccine was introduced (see chart page 12). Sanitation is not that much better now than in the early 1990's; clearly, sanitation alone cannot account for the dramatic drop in Hib disease.

The graph below illustrates the decline in measles cases in Washington State since measles vaccine became available. Prior to the licensure of measles vaccine in 1963, there were 500,000 cases and 500 deaths from measles in the United States. In 1999, only about 100 cases were reported and no deaths occurred from measles in the U.S.

According to the CDC, the largest outbreaks of measles since 1993 have occurred in populations that refuse vaccination for religious or philosophic reasons. Most outbreaks have involved limited spread from measles imported from outside the United States.



? QUESTION: ***Is it better to become immune from natural infections rather than through vaccination?***

ANSWER: No. Vaccine-preventable diseases can be deadly; they can cause permanent disabilities, such as brain damage from measles or pertussis, liver cancer from hepatitis B infection, or paralysis from polio. And some vaccines (such as tetanus and Hib), are better at creating immunity than natural infection. Vaccines provide protection from disease without risking the serious adverse effects of that illness.

4. TO WAIT OR NOT TO WAIT

Parents frequently ask why immunizations are given so early in life. You may wonder if you can wait until your child is entering school to get the required immunizations. You may also wonder about the risk if your child does not receive all recommended immunizations.

? QUESTION: **Who determines the childhood immunization schedule?**
ANSWER: The Advisory Committee on Immunization Practices (ACIP) consists of 12 immunization experts who are selected by the Secretary of the U.S. Department of Health and Human Services (HHS). The goal of the ACIP is to provide advice to the HHS and the Nation in reducing the incidence of vaccine preventable diseases and to increase the safe usage of vaccines. The ACIP develops written recommendations for the scheduling and appropriate use of childhood and adult vaccines. Through a collaborative process, the ACIP, American Academy of Pediatrics and the American Academy of Family Physicians, establish the recommended childhood immunization schedule. It is then left to individual states to determine which vaccines are required for entry into childcare settings and school.

? QUESTION: ***Is it okay to wait until my child is getting ready to start school to get all his or her immunizations?***
ANSWER: No, because waiting puts your child at increased risk for serious diseases. Many vaccine-preventable diseases are more severe and pose the greatest risk for complications in infants and very young children. Waiting until kindergarten, or even until after the first birthday, to have your child immunized can put him/her at unnecessary risk when he/she is most vulnerable.

Maternal antibodies fade during the first year, when the child is also more frequently exposed to other children and adults who may be infected with these diseases.

- Infants who are 6-7 months old are at the peak age to get Hib disease.
- Of the six individuals hospitalized because of pertussis in King County in 1998, all were younger than six months, and one death occurred.
- During the 1990 measles epidemic, 49% of the 352 cases in

Washington State were in children younger than four years of age. The majority of these children could have received measles vaccine at 15 months of age, but did not. Now, children routinely get measles vaccine as early as 12 months (and sometimes as early as six months in outbreak situations).

? QUESTION: *Can my child catch up if he or she is behind in immunizations?*

ANSWER: Yes, but it is best to stay as close as possible to the recommended schedule. An interruption in the schedule **does not** require a child to start the series over for any vaccines. However, until the entire vaccine series is received, the individual will not have the maximum protection against the disease. If a child is behind on the immunization schedule, a catch-up schedule can be determined by the child's doctor, nurse, or clinic.

? QUESTION: *Are immunizations okay even if my child has a minor illness?*

ANSWER: Yes! Immunizations can be given and should be requested during any visit to your doctor or nurse, even if your child has a minor illness, such as mild fever, a cold, diarrhea, or is taking antibiotics. The vaccine will still be effective. It will not make your child's illness worse. Receiving all immunizations when they are due is an important way to complete each vaccine series on time and avoid extra visits.

? QUESTION: *Are there times that vaccines should NOT be given?*

ANSWER: Yes, sometimes there are medical reasons for not giving a vaccine or for delaying it. These are referred to as "contraindications" and "precautions". In general, a child should not receive an immunization if he or she:

- Has a medical condition that could be made more severe, or even life-threatening if the vaccine were given. Example: A child has a severe allergy to a vaccine component (e.g. neomycin, gelatin) that would cause a serious reaction, such as difficulty breathing, low blood pressure or shock, if the vaccine were given.
- Has a medical condition which could reduce the ability of the vaccine to produce the desired immunity (such as severe illness). Example: A child has recently received blood products (such as immune globulin, or a blood transfusion), and the antibodies in the blood could damage a live vaccine, such as measles vaccine.

In most instances, vaccines may be given if a child is breastfed, has an ear infection, is taking antibiotics, has mild diarrhea or has milk allergy. Infants or children living in a household with a pregnant woman may receive *all* vaccines, including live vaccines (such as MMR and varicella). Check with your health care provider if you have specific questions regarding these or other circumstances.

5. QUESTIONS & ANSWERS ABOUT SPECIFIC VACCINES

(Also see "Compare The Risks" section of this booklet, pages 32-36)

HEPATITIS A

? QUESTION: *If the hepatitis A virus is most commonly transmitted through contact with the stool of infected people, why should people who are careful to be clean need to be vaccinated?*

ANSWER: Cleanliness - such as hand washing after using the bathroom or changing diapers - is an excellent preventive measure, although it is not 100% effective. People infected with the hepatitis A virus often transmit the illness to others 1-2 weeks before they even begin to feel sick. And children often do not show any symptoms of illness at all, so they can unknowingly spread the virus. About one-third of the cases in the U.S. occur in children younger than 15 years of age. In addition, hepatitis A can be spread through contaminated food and water.

Routine hepatitis A vaccination for children is only recommended for those living in areas with high rates of hepatitis A. Call your local health department or health care provider to find out whether hepatitis A vaccine is recommended for your child.

HEPATITIS B

? QUESTION: *I know that most people who get hepatitis B are adults. Why is it recommended that the hepatitis B vaccine series be given to infants?*

ANSWER: National immunization recommendations call for the routine immunization of **all infants** against hepatitis B because:

1. Children are much more likely to develop severe and often fatal consequences of hepatitis B virus infection if they become infected when they are very young.

2. In the U.S., thousands of children younger than age ten years, were infected with hepatitis B virus each year before the vaccine was routinely recommended for children in 1991. Some children are infected from another family member, but others become infected from persons outside of the home with whom they have had contact.

3. It is impossible to predict who will be exposed to hepatitis B in the future. **Approximately 30% of those who become infected with hepatitis B do not know how they got the disease.** Most of these cases are probably a result of being bitten, scratched, sharing a utensil, or having some other type of contact with blood or body fluid of an infected playmate or family member.

IN ADDITION:

• The earlier in life a child is exposed to the disease, the more likely he/she will become a chronic (lifelong) carrier. Adding hepatitis B to the already established immunization schedule helps us reach more people before they become chronic carriers.

• Hepatitis B virus infects 200,000 Americans annually; thousands of the victims are adolescents and young adults. About 10,000 people each year suffer sever liver damage (cirrhosis) or liver cancer caused by hepatitis B virus. In the US, more than 1.25 million people are chronically infected and at least one-third of those were infected as infants or children.

• There is no specific treatment for acute hepatitis B. The virus can cause liver damage, liver cancer and death.

• Unfortunately, vaccinating just high-risk individuals against hepatitis B has not proven to be an effective method for decreasing the incidence of this disease.

? QUESTION: Does hepatitis B vaccine cause multiple sclerosis (MS) or SIDS (Sudden Infant Death Syndrome)?

ANSWER: No.

Multiple sclerosis (MS): Analyses by the World Health Organization, U.S. Institute of Medicine and the Medical Advisory Board of the National Multiple Sclerosis Society conclude that there is no evidence that the hepatitis B vaccine causes MS or other neurological diseases.

MS is an autoimmune disorder in which a person's antibodies attack the body's own myelin (a sheath that covers the nerves). MS is a life-long illness which fluctuates through periods of exacerbation (symptoms worsen) and remission (symptoms subside). The cause of MS is unknown, but the most widely held belief among medical experts is that patients are genetically at risk for the disease and some environmental factors can "trigger" disease exacerbation.

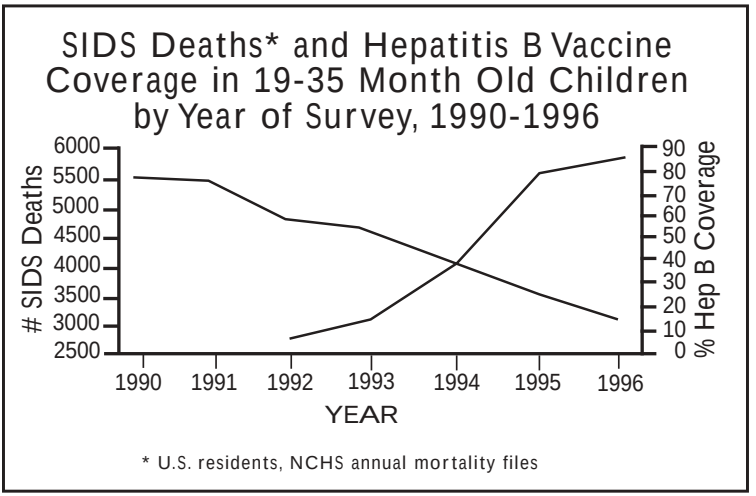
There is no evidence that hepatitis B vaccine increases the rate of MS in otherwise healthy individuals. A study by the French National Drug Surveillance Committee revealed that recipients of over 60 million doses of hepatitis B vaccine given between 1989-1997 were less likely to have neurological disease, including MS, than the general population. Hundreds of millions of persons worldwide have been immunized with the hepatitis B vaccine without developing MS or any other autoimmune disease. The National Multiple Sclerosis Society supports the wide and general use of hepatitis B vaccine.

In May 2002, the Safety Review Committee of the IOM published a report of their findings regarding the possible association between hepatitis B vaccine and multiple sclerosis and related disorders. Following a thorough analysis of the studies of hepatitis B vaccine-exposed populations compared to unvaccinated patients with MS, **the Committee concluded that the evidence did not support a causal relationship between hepatitis B vaccine and multiple sclerosis.** For a copy of the full IOM report, visit www.cdc.gov/nip/news/iom-hepb-5-2002/iom.htm

Sudden Infant Death Syndrome (SIDS): Since 1991, infants have been receiving hepatitis B vaccine starting as early as the first day of life. If SIDS were somehow related to hepatitis B vaccination, we would expect to see an *increase* in SIDS deaths since 1991. However, this is not the case. **In fact, there has been a steady *decrease* in the numbers of newborn deaths as the number of hepatitis B vaccinations have increased** (see graph below).

Almost all infants are vaccinated during the first year of life. Because vaccines are usually given at ages 2, 4, and 6 months, there is a measurable chance of any event or death occurring within 24 hours of vaccination by coincidence alone. It is similar to saying that eating bread causes car crashes, because most car drivers who are in accidents could probably be shown to have eaten bread within the past 24 hours.

The Institute of Medicine reports: "All controlled studies that have compared immunized versus non-immunized children have found either no association...or a *decreased* risk...of SIDS among immunized children."



DIPHTHERIA, TETANUS AND PERTUSSIS

DTaP vaccine protects against diphtheria, tetanus and pertussis (whooping cough). Of these diseases, pertussis (also known as the "100-day cough") currently poses the most serious threat to infants and children in the United States. Complications of pertussis in infants include pneumonia, convulsions, and in some cases brain damage or death.

Since 1995, there has been a sustained increase in the number of pertussis cases in Washington State. In 1999 and 2000, there were 739 and 458 confirmed cases reported statewide. There have been 4 pertussis-related deaths reported since 1996, and all four were infants.

Nationally, a total of 17 pertussis-related deaths were reported to the CDC in 2000. All of the deaths occurred among infants whose symptoms began before they were four months of age.

Of additional concern is the major epidemic of diphtheria that has been in progress in the former Soviet Union since 1990. The decline in the former Soviet Union's diphtheria vaccination rates has resulted in an increase from 839 cases in 1989 to nearly 50,000 cases and 1,500 deaths from diphtheria in 1995, the last year for which we have confirmed statistics. This poses a serious concern of importing cases of diphtheria into the United States.

? QUESTION: *What is the difference between the old "whole-cell" DTP vaccine and the new acellular DTaP vaccine?*

ANSWER: The new vaccines for pertussis, available since 1997, are known as "acellular" vaccines. They contain only the specific parts of the pertussis bacteria thought to be important for immunity. These differ from the old "whole-cell" vaccines that contain whole, killed pertussis organisms. Although effective, "whole-cell" vaccines were associated with a higher frequency of local reactions (e.g. redness, swelling, pain at the injection site) and fever. Doctors and nurses in the U.S. now use only acellular pertussis vaccine.

? QUESTION: *What are the side effects of the DTaP vaccine?*

ANSWER: Most children who receive the DTaP vaccine will have no adverse reactions or experience only minor discomfort. This is a major advantage over the previously used whole cell DTP vaccine, which was associated with a higher frequency of adverse reactions. The most common reactions are soreness, swelling, and redness at the injection site. These reactions are more common following the fourth and fifth doses of the vaccine. Usually these reactions last from one to two days. Serious reactions are reported rarely with the acellular pertussis vaccine.

? QUESTION: *How effective is the DTaP vaccine and is it worth getting?*
ANSWER: A full series of shots protects approximately 80 children out of 100 from getting severe pertussis (similar to the old whole cell DTP vaccine). Approximately 95 out of 100 children will be protected from diphtheria, and virtually 100% of children will be protected from tetanus after the full DTaP series is given.

Children vaccinated with DTaP who do become ill with pertussis almost always have a milder illness than if they had not been vaccinated. A full primary series of four DTaP shots by age 18 months is recommended, with a booster dose given between 4-6 years of age.

- Because it is so contagious, the possibility of a child getting severe pertussis when exposed is far greater than the chances of experiencing a severe adverse reaction from the vaccine.
- Children, especially young infants, who catch pertussis are often critically ill.
- Insufficiently immunized children contribute to higher rates of pertussis disease in some communities.
- Most individuals who have had a full series of DTaP or DTP vaccine are protected from diphtheria, tetanus and severe pertussis for many years.

MEASLES, MUMPS AND RUBELLA

? QUESTION: *Is there any evidence to indicate an association between the MMR vaccine and autism?*
ANSWER: No. In fact, the best available science indicates that the development of autism is completely unrelated to use of the MMR or any other vaccine. Experts in behavioral and developmental disorders agree that autism is most likely a genetic disorder that occurs before birth, although research continues on its exact cause. A working group organized by the National Institutes of Health in 1995 reached a consensus that autism is a genetic condition.

Typically, symptoms of autism first appear in children from 18-30 months of age. MMR vaccine is usually given to children 12 to 15 months of age. Although autism may be detected during the weeks or months following MMR vaccination, this does not necessarily mean that the disorder was caused by the vaccine.

One small review of 12 children conducted in England in 1998 by Wakefield and colleagues seemed to suggest such a link but has since been disproven by many other, larger studies:

1999: Researchers in the United Kingdom (Brent Taylor, et al.) studied the records of 498 children with autism born between 1979-98. They found that the percentage of children with autism who received the

MMR vaccine was the **same** as the percentage of children who were not autistic who received the vaccine. They also found no difference in the age of diagnosis of autism in vaccinated and unvaccinated children.

2001: A study in California demonstrated that although a dramatic increase in the number of cases of autism was reported between 1980-1994, the percentage of children who received the MMR vaccine remained the same (Dales, L. et al.).

2001: The Institute of Medicine's (IOM) Immunization Safety Review Committee concluded that the evidence does not support a link between MMR and autism at the population level. Other leading medical groups, such as the American Academy of Pediatrics and the World Health Organization and British Health Authorities, have reached similar conclusions.

2002: Bazian, an independent medical research group, conducted the most comprehensive and in-depth analysis of over 2,000 scientific studies spanning over 50 years of research on the possible association between MMR and autism. Only the highest quality studies that met specific standards were selected and analyzed. **The study concluded, definitively, that there is no evidence of a connection between MMR and autism or inflammatory bowel disease** (Donald, A. et al.).

The researchers also considered the study by Wakefield and colleagues, which initially raised the question of a possible association between MMR and autism. They found several flaws in the Wakefield study: 1) there were only 12 children involved in the study; generalizations about the causes of autism cannot be made with such a small number of cases; 2) parents were surveyed up to 8 years after their child was vaccinated, and 3) it lacked a control group. A control group is an essential element of the scientific process. Because Wakefield's study did not compare children who were vaccinated with MMR with those who were not vaccinated, it is impossible to reach the determination that MMR caused autism.

? QUESTION: Is it safer to give the combined MMR vaccine as three separate shots?

ANSWER: No. Giving the MMR as three separate vaccinations at three different times would leave children unnecessarily exposed to the serious diseases the MMR vaccine prevents measles, mumps and rubella. Delaying vaccination could also lead to an increase in the number of measles, mumps and rubella cases and related complications, such as pneumonia and brain damage.

According to the CDC, if rubella vaccine were delayed, 4 million children would be susceptible to rubella for 6 to 12 months. This could allow preventable cases of congenital rubella syndrome (CRS) to occur when infected children transmit the disease to pregnant women. One of the few known causes of autism is CRS. Thus, if rubella infection can be prevented in pregnant women, there is a greater chance of preventing autism.

POLIO

? QUESTION: *Is it still worth being immunized against polio?*
ANSWER: Yes! Although wild polio disease has been eliminated from the United States since 1979, it still exists in other countries. Efforts are underway to eliminate polio worldwide. However, as long as polio exists in the world, our children need protection. Diseases which are largely under control in the United States are only a plane ride away.

? QUESTION: Are there two different types of polio vaccines?
ANSWER: Yes. They are live, oral polio vaccine (OPV) and inactivated polio vaccine (IPV) which is injected. OPV was the vaccine of choice for routine immunization of most children in the United States from 1963 to the mid-1990's. However, as of January 2000, an all-IPV schedule was recommended for children in the U.S. OPV is no longer available in the U.S.

? QUESTION: Why isn't OPV used in the United States any longer?
ANSWER: OPV has been associated with a very rare occurrence of paralysis in people who receive the vaccine and in those with whom they have had contact. Approximately eight cases of vaccine-associated paralytic polio (VAPP) occurred in the U.S. each year when OPV was the primary vaccine in use. This represented about one case per 2.5 million doses administered. The last case of VAPP was reported in 1999.

Because wild polio virus has been eliminated from the U.S. and other countries in the Western Hemisphere, an all-IPV schedule is now recommended. IPV cannot cause polio because it does not contain live polio virus.

CHICKENPOX

? QUESTION: *Chickenpox (varicella) isn't a very serious disease. Why vaccinate?*

ANSWER: Complications from varicella disease, such as pneumonia and encephalitis, "flesh-eating" bacterial infection and death can and do occur in children and adults. Before chickenpox became available in 1995 in the U.S., 7,200 children were hospitalized and 50 children died each year. **Most of the hospitalizations and deaths occurred in previously healthy children.**

Vaccinating against the illness during childhood will help reduce the incidence of the disease (and related complications) in later years. Varicella vaccine also reduces the risk of "shingles", a painful nerve and skin disease caused by reactivation of the varicella virus later in life.

? QUESTION: *Does immunity from the varicella vaccine last?*

ANSWER: Available data indicate that protection from varicella vaccine should last for at least 20 years. Experience with other live viral vaccines (like measles, mumps and rubella vaccine) has shown that post-vaccination immunity remains high throughout life. Studies are ongoing to determine how long protection from varicella vaccine lasts and whether booster doses may be needed in the future. Even if an immunized individual develops chickenpox after being exposed to the disease, the illness will be much milder than if the person had never been vaccinated

PNEUMOCOCCAL DISEASE

? QUESTION: *What is pneumococcus? Is there a pneumococcal vaccine for children?*

ANSWER: Pneumococcus is a bacteria that is the most common cause of pneumonia, meningitis, sepsis (bloodstream infection causing shock), sinusitis, and ear infection in children under two years of age.

The pneumococcal polysaccharide vaccine, which has been used in the United States since 1983, is not recommended for children under two years of age because it is ineffective in this age group.

A *new* pneumococcal conjugate vaccine that can be used in children under two years of age became available in 2000. This vaccine targets the 7 most common types of pneumococcus that cause the majority of invasive disease in this age group. In the past, pneumococcal infections could be treated effectively with certain antibiotics. However, many of these infections are becoming resistant to antibiotics. Preventing pneumococcal infection through vaccination is even more important for this reason.

INFLUENZA DISEASE

? QUESTION: *Why is my child's doctor encouraging me to have my one year-old vaccinated against the flu? I thought flu vaccine was only recommended for the elderly.*

ANSWER: Infants 6-23 months of age are encouraged to receive the flu vaccine because this age group has a much higher likelihood of hospitalization if they get the flu, similar to that of adults with high-risk medical conditions. Children and/or family members with certain long-term health problems, such as asthma or diabetes, are also at risk for serious complications from the flu.

An annual flu shot is also recommended for the following groups, according to the CDC:

- Women who will be past their 3rd month of pregnancy during flu season (November through April);
- Everyone 50 years of age or older;
- Anyone whose immune system is weakened because of cancer treatment or HIV/AIDS;
- Anyone (including family members and children) living with or coming in close contact with people who have serious chronic health conditions;
- Anyone who wants to reduce their chance of catching the flu.

6. THE ADOLESCENT HEALTH VISIT: SHOTS AREN'T JUST KIDS' STUFF!

Although infant and child immunization programs in the United States have greatly decreased the occurrence of many childhood infections, vaccine-preventable diseases such as hepatitis A and B, measles and rubella continue to affect adolescents and young adults.

In order to protect adolescents and young adults from these serious vaccine-preventable diseases, the ACIP, AAP and AAFP all strongly recommend an **adolescent health visit at 11 to 12 years of age.** This visit will enable parents and their health care providers to discuss the recommended vaccines and decide which immunizations their child needs. An adolescent health visit, of which immunizations are a part, also helps to affirm that child's lifelong commitment to good health.

? QUESTION: *Which vaccines are recommended for my adolescent?*
ANSWER: The recommended vaccines for adolescents are MMR, tetanus/diphtheria, and possibly varicella (chickenpox) and hepatitis B. Contact your doctor, nurse or clinic for information about scheduling your adolescent for these vaccinations.

Immunizations Recommended for Adolescents

- **Hepatitis B** (if no prior immunization or history of the disease)
- **MMR** (measles/mumps/rubella) 2nd dose (if not previously given)
- **Td** (tetanus/diphtheria) booster
- **Varicella** (if no prior immunization or history of the disease)
- **Hepatitis A** (if no prior immunization or history of the disease)

7. LEGAL REQUIREMENTS AND CONSIDERATIONS

? QUESTION: *What are the legal requirements for immunizing children?*

ANSWER: Federal law requires that before immunizations are given, parents or guardians must have: (1) information in writing (Vaccine Information Statements) about the risks and benefits of vaccination, and (2) an opportunity to ask questions and obtain additional information about vaccinations from their health care provider.

It is the responsibility of each state to determine which vaccines are required by law. States require vaccination because they have a responsibility to protect the entire population of the state as well as individuals. The legal requirements for childhood immunizations vary from state to state. In Washington State the requirements are defined in the Washington State Immunization Law RCW28A.210 (visit the website: www.doh.wa.gov/cfh/immunize/schools.htm).

The law requires parents or guardians to give their child care program or school a completed Certificate of Immunization Status (CIS) form for each child before attending. CIS forms are available from child care facilities, schools and health departments. Parents or guardians are encouraged to keep records of immunizations to validate the CIS document.

To legally attend child care or school, children must:

- be fully immunized for their age **or**
- be in the process of catching up on late immunizations **or**
- have a signed exemption from vaccination for medical, religious or personal reasons on the CIS form.

If a family signs a certificate of exemption, a child who is not fully immunized may be excluded from attending child care or school when cases of certain vaccine-preventable diseases occur or during outbreaks of vaccine-preventable diseases.

Maintaining your child's immunization record is a lifelong responsibility.

8. VACCINE SAFETY

Often parents have concerns about vaccine safety. In licensing vaccines, the U.S. Food and Drug Administration (FDA) has developed scientific criteria for approving vaccines and for monitoring side effects once approval has been given.

Approval of Vaccines

The approval process for a biological product such as a vaccine is based on federal regulations and involves clinical trials in three phases.

Phase One: Studies concerned primarily with learning more about the safety of the product with a few study volunteers.

Phase Two: Studies are usually longer and involve more study volunteers, designed to demonstrate the ability of a vaccine to induce the production of antibodies, as well as to further evaluate side effects and risks.

Phase Three: Studies involving a very large number of study volunteers for longer time. They provide verification that a vaccine is effective in preventing a particular disease as well as information on risks vs. benefits. Clinical trials have been ongoing for years before a vaccine is ever licensed.

After completing the three phases, the manufacturer submits the safety and effectiveness data to FDA in an application for licensure to sell the product. FDA has the responsibility to review the clinical studies data, the facilities to be used and the methods to be used in the manufacture of the product for safety and effectiveness. On average, it takes over five years from the time of application for licensure until FDA approval of a product.

Monitoring Vaccine Safety

After a product is approved for sale, FDA continues to monitor vaccine safety and effectiveness by various means, including on-site inspection of the manufacturing facility. The U.S. FDA staff reviews manufacturers' testing of vaccines for their safety, potency, and purity. As a protective measure, the U.S. FDA staff may repeat some of the tests themselves.

VACCINE ADVERSE EVENTS REPORTING SYSTEM (VAERS)

This is a national system operated by the FDA and CDC for reporting any possible adverse reactions following immunizations. The system receives reports from healthcare providers, patients, parents or anyone who witnessed or even just heard of a *possible* adverse reaction that occurred after the receipt of any vaccine. Since 1988, health care providers who give vaccines and vaccine manufacturers are *required by law* to report *certain* serious adverse events, and may report *any* reaction or event.

A VAERS report does not mean the vaccine caused the adverse event. It only means the vaccination *preceded* the adverse event. VAERS is intended to look for trends and pinpoint the need to investigate further. After vaccines are released for distribution, the FDA conducts reviews of the weekly VAERS reports.

If VAERS is to work, the public should report any serious adverse event following any vaccine given. Report forms may be obtained by calling (800) 822-7967, or contact your clinic or health department.

? QUESTION: *How do we know VAERS works?*
ANSWER: VAERS is an effective system for monitoring vaccine safety. Shortly after rotavirus* vaccine became available in 1999, cases of bowel obstruction among some infants who had received the vaccine were reported to VAERS. Although these reports did not provide sufficient evidence to determine if there was a relationship between the vaccine and the bowel disorder, the CDC recommended that use of the rotavirus vaccine be suspended pending further evaluation. The CDC's actions were a direct result of the data obtained through VAERS.

In October 1999 the ACIP recommended that rotavirus vaccine no longer be used because of the strong association between the bowel disorder and the vaccine. Medical experts agree that continued research is needed to clarify the relationship between the bowel disorder and the vaccine.

*Rotavirus is the most common cause of severe diarrhea in infants and young children in the United States.

VACCINE SAFETY DATALINK PROJECT (VSD)

Judgements about whether a vaccine was truly responsible for an adverse event cannot be made from VAERS reports because of incomplete information, such as laboratory results. As a result, researchers are also using **large-linked databases** (LLDBs) to study vaccine safety. The **Vaccine Safety Datalink** project is an example of an

LLDB. It was established in 1990 by the CDC to study rare side effects associated with vaccines. Four large health maintenance organizations (HMOs) supply the CDC with medical and vaccination records of over six million people (all identifying information is removed to protect patient confidentiality). This large amount of medical data enables researchers to conduct planned vaccine safety studies and examine potential relationships between specific vaccines and adverse events.

? QUESTION: *Are there certain vaccine lots that have been associated with more adverse events than other lots?*

ANSWER: Each lot of vaccine undergoes rigorous testing before it is released. FDA officials routinely monitor vaccine lots using VAERS data and other information. VAERS accepts **all** reports of **any** adverse event that has occurred following vaccination. Larger lots (i.e. one million doses) are likely to receive more adverse event reports than smaller lots (i.e. 10,000 doses). The fact that there are more reports for a particular lot does not mean that the lot is unsafe, **or** that the vaccine caused the event. Occasionally, VAERS information has been misinterpreted, leading to unsubstantiated media reports about "unsafe lots" of vaccine.

The FDA has the legal authority to immediately recall a vaccine lot if the number of reports indicate that it may be unsafe, requiring further investigation.

? QUESTION: Do vaccines cause chronic disease, such as diabetes, Crohn's disease, and cancer?

ANSWER: **After decades of vaccine use in the United States, available research shows no reliable evidence proving that vaccines cause chronic illness.** Vaccine safety research, including research into theories linking vaccines to chronic diseases, is being conducted on a regular basis in the United States and overseas to assure that the public is receiving the safest possible vaccines.

Occasionally, researchers have published articles about their studies supporting theories about vaccine and chronic illness; however, when other researchers attempt to duplicate their results (the test of good research), they often cannot. Medical conclusions about vaccine safety and the causes of disease must be judged on the quality of the scientific research and evidence.

Because no vaccine is without risk, when medical and public health professionals recommend vaccines for infants and children, they must balance the scientific evidence of benefits, costs, and risks. This balance changes as diseases are controlled or eliminated.

9. VACCINE INGREDIENTS

? QUESTION: *Why do vaccines contain "additives"? Are they harmful?*
ANSWER: Tiny amounts of three types of substances are added to vaccines to ensure that the vaccine is sterile, effective and safe. The following ingredients may be used in the preparation of some vaccines:

- ***Adjuvants*** increase the vaccine's ability to stimulate the body's immune system to fight off disease. Adjuvants also help promote a quicker, more potent and persistent immune response to disease. Some examples of adjuvants include aluminum gels or salts.
- ***Stabilizers*** help maintain the vaccines' effectiveness even when they are exposed to dramatic changes in the environment (such as temperature, light, humidity, etc). Stabilizers include monosodium glutamate (MSG) and 2-phenoxyethanol.
- ***Preservatives*** are used to prevent bacteria or fungus from contaminating the vaccine, which could cause serious infections in anyone receiving the vaccine. Antibiotics, (i.e. neomycin and streptomycin), formaldehyde and thimerosal may be used for this purpose.

If you want specific information on the additives used in a particular vaccine, ask your doctor or nurse for a copy of the vaccine's package insert. Each vaccine comes with an insert listing every ingredient. The insert also lists every known reaction ever reported, regardless of how minor.

? QUESTION: *What is thimerosal?*
ANSWER: Thimerosal is a mercury-based preservative used since the 1930's that prevents vaccines from becoming contaminated with bacteria or fungi. When more than one dose of vaccine is contained in a vial (known as a "multidose" vial), there is a higher risk that the vaccine could become contaminated. Multi-dose vials typically have rubber-like stoppers. Health care workers must puncture the stopper with a needle to withdraw a dose of the vaccine; hence, the stopper encounters multiple punctures as subsequent doses are withdrawn. This can allow bacteria to enter the vial and contaminate the vaccine. If vaccine from a contaminated vial is then injected into a child, this could lead to a serious infection. Preservatives are not needed for vaccines in single-dose vials.

Thimerosal is made of thiosalicylic acid and a form of mercury called "ethylmercury." Ethylmercury is processed by the body and eliminated quickly through the urine. More information is known about methylmercury, because this form of mercury accumulates in the body and remains bound to body tissues for longer periods of time. Federal safety standards for mercury are based on studies performed on methylmercury.

? QUESTION: *Can my child have vaccines that don't contain thimerosal?*
ANSWER: Yes! All routinely recommended childhood vaccines are now thimerosal-free. Other vaccines (e.g. influenza; tetanus and diphtheria vaccine for children seven years of age and older and adults) continue to use thimerosal as a preservative in trace amounts.

? *QUESTION: What prompted the recommendation that thimerosal be removed from childhood vaccines?*
ANSWER: There has been a public health effort to reduce exposure to mercury from all sources. Exposure to mercury is cumulative and toxic levels of mercury exposure have a wide range of adverse health effects.

In July 1999, the U.S. Public Health Service, the American Academy of Pediatrics and the vaccine manufacturers agreed that thimerosal should be removed from childhood vaccines as a precautionary measure. Their concern was based on the possibility that some infants who received several vaccines in the first six months of life might exceed the acceptable limits of mercury set by one federal agency.

There has been no evidence that receiving multiple thimerosal-containing vaccines in the first six months of life has harmed an infant. However, because of the theoretical possibility that problems with the nervous system could occur, vaccine manufacturers were asked to stop using thimerosal as a preservative.

Single-dose vials have largely replaced multidose vaccine vials and do not require the use of preservatives. Other preservatives that don't contain mercury can be used in some vaccines.

? QUESTION: *Has the thimerosal in vaccines shown to be harmful to children?*
ANSWER: No; studies have not shown any evidence that the mercury contained in vaccines cause harm. In October 2001, the U.S. Institute of Medicine (IOM) concluded that the evidence does not support that thimerosal exposure through the recommended childhood immunization schedule has caused neurodevelopmental disorders. Some swelling and redness at the injection site may, however, occur for those who are allergic or sensitive to thimerosal.

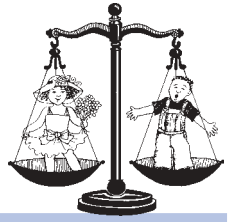
For more information on thimerosal, visit CDC's National Immunization Program at www.cdc.gov/nip or call their Hotline at 1-800-232-2522 (English), 1-800-232-0233 (Spanish) or 1-800-243-7889 (TTY).

10. COMPARE THE RISKS: DISEASE VS. IMMUNIZATION

Risk of Disease and Serious Complications	Risk of Serious Reaction From Being Immunized
Haemophilus influenzae **type b (Hib)**	**Hib Vaccine:**
Hib disease • Before vaccine Hib was the leading cause of bacterial meningitis (1 in 200) among children under 5 years of age in the United States. 20,000 children in the US under age 5 got severe Hib disease each year and nearly 1,000 people died. • 60% of cases occur in children younger than one year • Neurologic damage: up to 45 in 100 children with invasive Hib disease • Death: 1 in 20 children with invasive Hib disease	No known association between Hib vaccine and serious adverse events
Polio:	**Inactivated Polio Vaccine:**
38,000 cases per year prior to vaccine, including 21,000 cases with paralysis. 58,000 cases in 1952. During 1970s, several outbreaks in the U.S. in non-immunized populations, none in United States since 1979. • *Permanent paralysis:* 1 in 100 • *Death:* 1 in 20 children and 1 in 4 adults with paralytic polio.	No known association between IPV and serious adverse events.

* The above statistics are for the United States unless otherwise indicated.

COMPARE THE RISKS: DISEASE VS. IMMUNIZATION



Risk of Disease and Serious Complications	Risk of Serious Reaction From Being Immunized
Measles:	**MMR Vaccine:**
Prior to the introduction of vaccine, 400,000 reported cases per year. In 1989-91 epidemic: 55,622 cases due to large number of unimmunized children, 45% less than 5 years old; 20% hospitalized, 123 deaths. • *Pneumonia:* 1 in 20 • *Encephalitis(brain fever):* 1 in 1,000 • *Thrombocytopenia:* 1 in 6,000 • *Death:* 1 to 3 in 1,000	Thrombocytopenia (bleeding tendency from temporary decrease in blood platelets): about 1 in 30,000
	MMR Vaccine - Measles component:
	Severe allergic reaction: less than 1 in 1,000,000.
Mumps:	**MMR Vaccine - Mumps component:**
Cases: 200,000 per year before vaccine became available, currently 3,000-5,000 per year • *Encephalitis:* 2 in 100,000 • *Testicular swelling:* 1 in 5 adults • *Deafness:* 1 in 20,000 • *Death:* 1 in 3,000 to 1 in 10,000	Severe allergic reaction: less than 1 in 1,000,000
Rubella:	**MMR Vaccine - Rubella component:**
12.5 million cases in 1964-65, including 2,100 infant deaths, 11,250 fetal deaths, and 20,000 newborns born with congenital rubella syndrome (see below). • *Arthritis* (usually temporary): 7 in 10 adult women. • *Thrombocytopenia:* 1 in 3,000. • *Congenital Rubella Syndrome* (deafness, cataracts, mental retardation)in 1 in 4 infants if women infected in early pregnancy.	Arthritis (usually temporary): Up to 1 in 4, usually teenage or adult women (not children). Severe allergic reaction: less than 1 in 1,000,000

COMPARE THE RISKS: DISEASE VS. IMMUNIZATION

Risk of Disease and Serious Complications	Risk of Serious Reaction From Being Immunized
Diphtheria:	**DTaP Vaccine - Diphtheria component:**
15,000 deaths in U.S. each year. Outbreak in Washington State during 1970s; 40 cases in U.S. 1980-93. With decreased immunizations, over 50,000 cases in the former Soviet Union and Eastern Europe in 1995. • *Death*: 1 in 10	No known association between diphtheria vaccine and serious adverse events.
Tetanus:	**DTaP Vaccine - Tetanus component:**
Prior to vaccine, 600 cases and 180 deaths per year in U.S. 50-100 cases per year in the United States: more than 500,000 deaths per year worldwide. • *Death:* 1 in 3	• Severe neuritis (inflammation of the nerves): 1 in 100,000 • Severe allergic reaction: 1 in 1 million
Pertussis:	**DTaP Vaccine - Pertussis component:**
(Whooping Cough): Prior to vaccine, 200,000 cases and 8,000 deaths per year in U.S. Over 400 confirmed cases in King County, WA in 1999. 69% of all U.S cases less than 5 years old, and almost half of these were younger than 12 months old. • *Pneumonia:* 1 in 8 • *Convulsions/seizures:* 1 in 100 • *Death:* 1 in 500	• Fever greater than 105° F: 1 in 16,000 doses • Prolonged crying for 3 hours or more: 1 in 1,000 doses • Seizure or convulsions: 1 in 14,000 doses • NOTE: The Institute of Medicine concluded that there is no evidence that pertussis vaccine causes SIDS (Sudden Infant Death Syndrome)

COMPARE THE RISKS: DISEASE VS. IMMUNIZATION

Risk of Disease and Serious Complications	Risk of Serious Reaction From Being Immunized
Hepatitis B:	**Hepatitis B Vaccine:**
An estimated 200,000 - 300,000 people infected each year in the U.S. Nine of 10 infants infected at birth will become lifelong carriers of the disease, and one out of four of these infants will ultimately die of liver failure. • *Hospitalizations per year:* 11,000 • *Deaths per year:* 4,000 - 5,000	Severe allergic reaction: 2 in 100,000 doses.
Varicella:	**Varicella Vaccine:**
Prior to vaccine, 3 -4 million cases per year in United States; 12,000 hospitalized with complications. Nine out of ten people in a household who have not had chickenpox already will catch the virus if exposed to an infected household member. Disease is more severe and complications more frequent in adolescents and adults, and in those with weakened immune systems. Complications: • Bacterial infection of skin lesions and scarring • Pneumonia • Brain inflammation • Reactivation of varicella virus as Herpes Zoster (shingles) in later life • *Hospitalizations:* 3 in 1,000 cases • *Deaths:* 100 per year in the U.S., mostly in healthy children and adults.	Seizure caused by fever: less than 1 in 1,000 people vaccinated. Pneumonia is very rare.

COMPARE THE RISKS: DISEASE VS. IMMUNIZATION

Risk of Disease and Serious Complications	Risk of Serious Reaction From Being Immunized
Hepatitis A: • 125,000-200,000 cases in U.S. each year. • 10-15% of cases have prolonged or recurring disease lasting up to 6 months. • Deaths: 70-100 per year in U.S.	**Hepatitis A Vaccine:** No known association between hepatitis A vaccine and serious adverse events.
Pneumococcal Disease: *Streptococcus pneumoniae* is the leading cause of bacterial meningitis in the U.S. Children under 2 years are at highest risk for serious disease. In children under 5 years of age, pneumococcal infection causes: • Meningitis: over 700 cases per year • Bacteremia (blood infection): 13,000 cases per year • Ear infections: 5,000,000 per year • Deaths: 200 per year It can also lead to pneumonia, deafness and brain damage.	**7-valent conjugate vaccine:** No known association between pneumococcal conjugate vaccine and serious adverse events. **23-valent polysaccharide vaccine:** Severe allergic reaction: Less than 1 in 10,000 doses

11. TIPS ON EVALUATING IMMUNIZATION INFORMATION ON THE INTERNET

Recent studies show that over half of all adults in the US are online and over 80% use the Internet to search for health information. In addition, more than half of the visitors to online health sites believe that the information they find is truthful (Wolfe RM, et al, 2002).

Unfortunately, many websites with a focus on childhood immunizations may not offer reliable, science-based information. As you conduct your search for vaccine information on the Internet, you may want to consider the following tips to help you determine whether the information you find is accurate and trustworthy.

1. The ownership of the site should be clear.

Is the name of the organization or individual posting the information in clear view? Look for highlighted text that tells you more about the author of the site. In some programs, the ownership can be found by clicking "View" and then "Document Source" or "Document Information."

2. The information provided should be based on sound scientific study.

Scientists discover truth by testing their findings repeatedly, to be sure that their thinking and methods are not flawed, influenced by their own assumptions, or marred by special circumstances. Studies with hundreds of participants or cases bear more weight than descriptions of a single case. The most useful studies compare the findings in one group of people or cases with the findings in another group (*control groups*). A mark of sound scientific study is that the findings are endorsed by groups or institutions dedicated to science, such as professional associations or universities.

3. The site should carefully weigh the evidence and acknowledge the limitations of the work.

Think: What does the *weight* of the evidence indicate? If conclusion #1 is found in three studies, but conclusion #2 is found in 30 studies, which is more likely to point to truth? Be wary of people who proclaim that they, and only they, have discovered the "hidden truth." The scientific approach takes time, and often, answers are slow in coming or don't come at all. This can be very frustrating if the answers will have an impact on our - or our children's - health and well-being. Solid researchers, however, are not

afraid to address the weaknesses as well as the strengths of their findings, to say that the findings were inconclusive, or to say that additional research is needed before any conclusions can be drawn. A scientifically sound web site will reflect these circumstances.

4. Beware of "junk science" and suggestions of "conspiracies."

The hallmarks of junk science are hasty, and often sensational, claims that other scientists have not seen, reviewed, or verified. Media attention does not necessarily mean a claim is true. "Conspiracy" theories often offer a quick and exciting answer to a puzzle. *Think*: If I take apart the pieces of "evidence," do they really fit together again?

5. The individuals or group providing the information should be qualified to address the subject matter.

Beware of information attributed to unnamed "noted researchers" or "world-renowned scientists." A researcher who has done good, solid work would insist that his or her name be attached to that work, even if it's controversial. Who stands behind the information? What educational background do they have that relates to the health topic area? What other work have they published, and where?

6. Arguments should be based on facts, not conjecture.

Beware of sites that mix fact with fantasy, without distinguishing between the two. As with junk science, the resulting "theories" can be sensational but are not scientifically sound.

7. The motives of the site should be clear.

Is the site a sales and promotional device? There is nothing wrong with selling books and tapes, or enlisting you in a cause, but motives should be clear.

8. The information provided should make sense.

Is it too good to be true? ("Rub peanut butter on your knees and you'll never have cancer!") Or too awful to be true? ("Millions die when injected with vaccines!") *Then it probably isn't true.*

9. One sign of a scientifically sound Internet site is that it contains references from and to recognized peer-reviewed publications.

10. You should be able to obtain additional information if you need it.

Is an e-mail or postal address, or a telephone number, provided for further information? Is a reading list or source list provided? Is the reading available through a public library, or is the list a source of income for the site owner?

If government documents or publications are referenced, remember that they are usually available *free* or at *low cost* through the publishing agency or the Superintendent, Government Printing Office, in Washington, DC, toll-free telephone 1-888-293-6498; fax (202) 512-1262.

Tips On Evaluating Immunization Information On The Internet excerpted from: Centers for Disease Control & Prevention; National Vaccine Program Office (2002) [Electronic version]. Retrieved July 10, 2002 from http://www.cdc.gov/od/nvpo/tips.htm

12. NEWS STORIES

Miss America's Hearing Loss

Heather Whitestone McCallum, Miss America 1995, is deaf. Ms. McCallum had an infection with high fever in 1974, when she was 18 months old. A media item reported that an immunization had caused the fever and subsequent deafness, but this was a false report.

The real cause of her illness, according to Ms. McCallum and her pediatrician, was *Haemophilus influenzae* b (Hib) infection. She was treated with gentamicin, one of the powerful antibiotic drugs used for this life-threatening infection. Unfortunately, hearing loss is one of the possible side effects of gentamicin, particularly in infants. Deafness is also a common result of Hib meningitis infection.

Had Ms. McCallum been born after 1985, she could have been immunized against the Hib infection and her disability prevented. Hib infections have been reduced by 90% since the vaccine was made available in 1985.

Measles Outbreaks in Washington State

King County Outbreak in 2001

In the first few months of 2001, 12 cases of measles were reported to Public Health – Seattle & King County. This represented the largest outbreak of the disease in Washington State in over a decade. If more people had been unimmunized, this outbreak would have been much more difficult to contain. King County had not reported more than 10 cases of measles since 1991, and fewer than six cases per year had been reported before 2001. The individuals who developed measles ranged in age from 14 months to 39 years.

The outbreak occurred in two distinct geographic areas: (1) Southwest King County, and (2) at a school in the Capitol Hill neighborhood of Seattle. In Southwest King County, several of the cases attended the same showing of a movie and were likely exposed to measles while at the theatre. The 14-month old was not exposed at the theatre, however her parents reported that they often took her to a mall that was near the theatre. Thereafter, the 39 year-old grandparent of the toddler also developed measles.

The measles outbreak that occurred at the Seattle school was traced to the travels of a student from Korea, a country known at the time to be experiencing a large measles outbreak. Upon returning to school, the unimmunized student fell ill with measles. Three additional students subsequently became infected.

Although all of the individuals who became infected with measles were old enough to have received at least one MMR, three were completely unimmunized. None of the persons younger than 17 years had received the recommended two doses of MMR after their first birthday. Similarly, the adult cases were either unimmunized or had no documentation of having been immunized against measles disease.

Western Washington University

Western Washington University experienced a measles outbreak in February 1995. With 11 confirmed cases, MMR shots were given to over 9,000 students, faculty and staff to provide protection from the disease and its potential complications.

The first case was exposed to measles while vacationing in California. The student returned to campus, became ill, and then exposed others.

Classes and events were canceled to halt the spread of the disease. Students had to show proof of measles immunization in order to attend classes and campus events. Those who chose not to be immunized were not allowed back into classes and campus activities until two weeks after the onset of rash in the last diagnosed case of measles. With quick action, the measles outbreak was controlled.

Clark County

Clark County in southwestern Washington experienced a measles outbreak beginning in March, 1996. The outbreak began when an exchange student, who was infected while overseas, returned to Clark County. Over 30 measles cases were confirmed, eight of whom were children under age three years. Six of the children had never been immunized against measles. This is yet another example of how vulnerable an unimmunized population is, especially during a disease outbreak.

A Mother and Child with Pertussis

A resident of Snohomish County, Mary has three sons. She got pertussis (whooping cough) a week before the birth of her second child. She caught it from her oldest son's friend, who visited one day with racking coughs. After recognizing the telltale whoop in the cough,

Mary discussed the issue with the friend's mother, who indicated she did not believe in immunizations.

Mary was seriously ill for six months and passed the disease on to her newborn son, who was hospitalized with pertussis at one week of age. (The child who originally infected Mary was also seen in the emergency room for pertussis-related seizures.)

"My baby would cough 40 to 50 times in a row until he turned blue and threw up," Mary said. "'I quite literally did not let go of him for the first six to nine months because I was afraid he was going to die."

The first five years of his life have been full of bouts with infections and an uncontrollable cough. Many people who had been exposed to Mary and her son had to be treated with antibiotics, because of their increased susceptibility to pertussis - especially young children and those over 60.

The out-of-pocket cost to the family was extraordinary, even though both parents had excellent health insurance coverage. The community cost included many hours of investigation of contacts and the cost of the needed antibiotics . . . and this was a healthy pregnancy.

Some Parents Believe Vaccination Scare Stories, With Deadly Results

A growing number of American families are getting bad - sometimes even fatal - medical advice from the Internet. For Suzanne and Leonard Walther of Murfreesboro, TN, a simple and well-intentioned Internet search turned into their worst nightmare.

The Walthers were looking for information on the safety of vaccines for their new baby, Mary Catherine. What they found were sensational sites dedicated to alarming parents. These sites, short on science and long on inflammatory rhetoric, claim vaccines are linked to just about anything affecting children - allergies, autism, juvenile diabetes and attention deficit disorder. Claims are even made that vaccines are the cause of shaken baby syndrome, the AIDS epidemic and sudden infant death syndrome.

Even though many of the sites are listing misinformation about vaccines without scientific basis, parents concerned about their children are understandably susceptible to such claims. The scare tactics worked with the Walthers, and they decided not to immunize their daughter. It was a choice they lived to regret.

Days before Mary Catherine's first birthday, she was stricken with a form of meningitis that had been nearly eliminated in this country and

that could have been prevented by a simple vaccination. Before the vaccine became available in the late 1980s, one in every 20 infected children died from complications related to this disease, and 15 to 20 percent of the survivors suffered permanent brain damage.

Mary Catherine was lucky. She survived, but her ordeal certainly prompted her parents to question health information they find on the Internet.

Tom and Patsy Morris of Columbus, GA, had a similar experience. In their case, it was a news story that drove their decision not to complete their son's series of the pertussis vaccination in the early 1990s. A year later, Nickolas was close to death with whooping cough. He too survived, but the ordeal weighs heavily on his parents, who thought they were making an informed decision based on sound scientific information.

These stories are cautionary tales of a dangerous trend: junk science fueling the fears of well-meaning parents. While the Internet has become an excellent resource for health information, it also grants access to false, misleading and distorted information that can confuse even the most well-educated consumer.

There are few areas where the impact of a health scare can be as devastating as with vaccines. It's easy to be afraid of everyday childhood ailments that almost everyone has seen or heard about. But it's difficult to fear deadly diseases such as "wild" type polio . . . that most new parents in our country, and many young pediatricians, have never seen. Americans take for granted that these diseases have been eradicated, never to return. Ironically, the global public health and philanthropic communities are spending enormous amounts of money and effort to ensure that underdeveloped countries - where children and adults regularly die from diseases we no longer fear - have access to the vaccines some are urging us to shun. All it takes is well-organized media and Internet scare campaigns to convince some parents not to vaccinate their children. Unfortunately, electing not to vaccinate your child can have long-term consequences that go beyond just your child's illness. Unvaccinated children can collectively rejuvenate long-dormant diseases and trigger lethal epidemics.

The recent measles outbreak in Ireland provides a vivid example of this phenomenon. An isolated study conducted by a Scottish researcher, Andrew Wakefield, and reported in 1998, claimed that the measles, mumps and rubella vaccine (MMR) could be linked to autism. The study has been refuted by further research and has been criticized as being

very limited because it used too few cases to make any scientifically valid generalizations about the causes of autism. Only 12 children were included in the study. In addition, there were inadequate groups of control children, and the study did not identify the time period during which the cases were identified.

An expert committee from the U.K. Medical Research Council reviewed this study shortly after its release and concluded that there was no evidence to link the MMR vaccine with autism. The Centers for Disease Control and Prevention and the U.S. Food and Drug Administration confirm that the vast body of scientific evidence shows no link between autism and vaccines.

Unfortunately, as a result of the momentary loss of confidence in the MMR vaccine, vaccination levels declined, and Dublin experienced a sudden outbreak of measles in epidemic proportions. As of Sept. 30, 2000, Ireland had reported 1,523 cases of measles, including several deaths, as compared to 148 cases for the whole of 1999.

In the United States, nearly everyone had measles before immunization was available. Between 1953 and 1963, 3 to 4 million measles cases and an average of 450 measles-associated deaths were reported each year. In 1999, there were only 86 cases of measles in the United States, and none resulted in death.

Make no mistake: The consequences of ignoring safe and effective immunizations are real and can be lethal. The effort to undermine vaccines seeks to capitalize on a distorted perception of risk. Vaccines on rare occasions do cause side effects. But in the final analysis, vaccines represent infinitely far less risk than the diseases they prevent. As Suzanne Walther said, "I don't want my child to be the one in 3 million" who has a bad reaction to a vaccine. "But I also don't want mine to be the one in 10 that dies if they get the disease. I'd rather take my chances with the one in 3 million than the one in 10."

This article was written by Betty Bumpers and Rosalynn Carter, co-founders of Every Child by Two, an organization promoting early vaccination of children. It is reprinted from the Immunization Action Coalition's "Unprotected People" series.

A Mother's Experience With Pneumococcal Meningitis

The following testimony was presented to Washington State legislators in support of continued funding for pneumococcal conjugate vaccine.

"My name is Kim and I live in Spokane, Washington. I have 3 young daughters, Amanda, 10; Cassie, 8; and Maddy, 6. When Maddy was 2 1/2 months old she contracted pneumoccocal meningitis.

That morning she had been very lethargic and I could not get her to nurse. I called our doctor's office and told them her symptoms. I was told to come in mid-morning. By 10:00, she was moaning as I lifted her in or out of her car seat. This seemed strange and confusing. I took her to the appointment and seemed to get right in to be seen. The nurse took her vitals, and said, "I don't like the way she is moaning". The doctor came in, touched the top of her head, left the room, quickly came back and said, "I think she has meningitis and I have an ambulance coming to take you to the hospital."

Wow, what a whirlwind after that. A trip in the ambulance, having her given oxygen, she was having seizures. They quickly took her away to a room and immediately started doing tests. She was whisked away to have a spinal tap. We were told that they were going to be giving her high doses of different antibiotics to try to control whatever she had. It was 3 days before they knew for sure that she in fact had meningitis. Our poor little baby, 2 1/2 mo old, lay in that bed, with ART lines in her chest and groin, on a respirator, IV's, and she had to have a blood transfusion. She stayed in that hospital for 12 days. Twelve long sleepless nights of waiting, hoping, and praying for her to get better and strong enough to go home.

Two days after she was released from the hospital, we went to the follow-up with her pediatrician. That is where we learned that she was deaf. The results of the ABR test done in the hospital showed no signs of hearing. That was the start of the journey that we are on now. Physical therapy to strengthen her muscles, sign language classes and speech therapy 4 days a week for communication needs.

Maddy now has the Clarion cochlear implant and is doing very well. She is mainstreamed into kindergarten with an interpreter and continues speech therapy 4 days a week. There are many times we stop and think of what Maddy's life would be like had she not gotten meningitis. The emotion, stress, and cost of education and rehab have been very high. I speak to your hearts to please allow all children access to this vital vaccine. If it can prevent other families from going through what we have gone through, it is worth it 100%."

Chickenpox Claimed The Life Of My Son Christopher

Reprinted below is the testimony of Rebecca Cole, presented to the US House of Representatives at the August 3, 1999 Congressional Hearing on vaccine safety. Excerpted from the Immunization Action Coaliton "Unprotected People" series.

"My name is Rebecca Cole, and I am the mother of five children. I am not a doctor and cannot give medical advice, but I can share my personal experience with you.

I have faced the worst nightmare any parent can possibly face. There is no experience on earth that compares to the horror and devastation of losing a child. It is shattered dreams, crushed wishes, and a future that suddenly vanishes before our eyes. It cannot be wished away, slept away, prayed away, or screamed away. It is darkness, agony, and shock. It leaves our hearts broken, bleeding, and bursting with pain, and it changes us forever.

My life changed forever on June 30, 1988, when I had to stand by helplessly as an infectious disease claimed the life of my oldest child, Christopher Aaron Chinnes, at the age of 12. Christopher was a beautiful little boy who had light blonde hair and deep, brown eyes. He was full of compassion, joy, and energy. He loved baseball, and every living creature on the earth. He wanted to be a scientist or doctor. I can honestly say that my son was one of the most beautiful human beings I have ever known, and I am proud to have been his mother.

Christopher was born a very healthy child, but at the age of eight he developed asthma. It was never a problem for him, and it never kept him from doing the things he loved. But on June 16, 1988, four years after he was diagnosed, he suffered his first and only severe asthma attack. He had to be hospitalized and was treated with all of the normally prescribed drugs, including corticosteroids (anti-inflammatory drugs used in asthma, arthritis, allergies, etc.). He was released four days later with several medications to finish at home, and he was well on his way to recovery.

On June 23, exactly one week after the asthma attack, he broke out with the chickenpox. "Don't worry, you'll get over it," I told him.

What I didn't know was that the corticosteroid had lowered his body's immune response and he could not fight the disease. The chickenpox began to rampage wildly through his young body. As I drove him to the emergency room on June 27, my four younger children watched silently in shock and horror as their brother went into seizures, went blind, turned gray, and collapsed due to hemorrhaging in his brain.

That afternoon Christopher was flown from Camp Lejuene's Naval Hospital to East Carolina University's Medical Center, but the chickenpox

was uncontrollably sweeping through him like a wildfire, and there was nothing anyone could do. The next day Christopher suffered a cardiac arrest and slipped into a coma.

As my beautiful little boy lay swollen beyond recognition and hemorrhaging from every area imaginable, including out into the blisters on his skin, I learned that a vaccine existed, but was not yet licensed by the FDA. A vaccine that could have prevented the unimaginable suffering of my child, and all who knew him.

On June 30, 1988, exactly one week after breaking out with chickenpox, Christopher passed away. He died. He wasn't injured. He wasn't left acting differently. He wasn't crippled. He died. My priceless little boy lay on a cold steel table, swollen beyond recognition, cold, and dead. Gone from me. Gone from life itself. I cannot hold him, kiss him, see his smile, or listen to his laughter as he chases a ball or bullfrog. Instead, I visit a grave. The chickenpox virus destroyed every organ in his body, and it cut pieces from the hearts of everyone who witnessed its devastation.

No one is sure just what dose of corticosteroid it takes to lower an individual's resistance, and most people on these valuable drugs do well when they get the chickenpox. Without knowing for sure though, who would want to take a chance. Do not take anyone off of corticosteroids suddenly! The drug has to be withdrawn slowly. Consult your doctor for more information, and don't get scared, be informed.

Please don't get the impression that only those who are immunosuppressed can have problems with chickenpox. Anyone can. In fact about half of those who suffer complications or die each year are normal healthy people.

Vaccines prevent countless deaths each year. Without them the number of valuable human beings we'd lose would be staggering. We have and will not ever reach perfection. We must remember that the benefits of our vaccines far outweigh the risks. Especially for those who are ill or immunosuppressed like Christopher was. There are innocent children and adults who come in contact with the public everyday who would die if they were exposed to the diseases we can prevent. If everyone around them is vaccinated, they are also protected. We owe it to them and to ourselves as a nation to achieve the highest level of protection possible.

We must win the worldwide war against infectious disease, and vaccines are our most powerful weapons. We cannot win, however, if we do not use them. Leaving any population unprotected is like surrendering to a defeatable foe. We must never surrender!"

13. REFERENCES

2000 Red Book, Report of the Committee on Infectious Diseases. 25th ed. Elk Grove Village, IL: American Academy of Pediatrics.

Armstrong, G., Mast, E., Wojczynski, M., et al. (2001). Childhood hepatitis B virus infections in the United States before hepatitis B immunization. Pediatrics, 108, 1123 - 1128.

Centers for Disease Control and Prevention. (2002). Epidemiology and Prevention of Vaccine-Preventable Diseases (The Pink Book), 7th Edition. U.S. Department of Health and Human Services.

CDC officials help physicians answer DTP safety questions. (1995). American Academy of Pediatrics News, March, 9-10.

Dales, L., et al. (2001). Time trends in autism and MMR immunization coverage in California. Journal of the American Medical Association, 285, 1183-1185.

Decline in Haemophilus influenzae Type b Meningitis-Seattle & King County, Washington, 1984-89. (1990). MMWR,39,(8).

Donald, A., & Muthu,V. (2002). Measles. Clinical Evidence. BMJ Publishing. Available at www.clinicalevidence.com. Accessed July 10,2002.

Epi-Log, Seattle-King County Department of Public Health, vol. 2, no.4.

Evans, Alfred S. (1989). Viral Infections of Humans, Third Edition. Plenum Publishing: NY.

Evans, Alfred S. & Brachman, Philip S. (1991). Bacterial Infections of Humans, Second Edition. Plenum Publishing:NY.

Humiston, Sharon G., & Good, Cynthia. (2000). Vaccinating Your Child: Questions and Answers for the Concerned Parent. Peachtree Publishers: Atlanta.

Immunization Safety Review Committee, Institute of Medicine. *Immunization Safety Review: Hepatitis B Vaccine and Demyelinating Neurological Disorders*. (2001). Washington, DC: National Academy Press. Available at www.nap.edu/books/0309084695/html/index.html. Accessed July 10, 2002.

Immunization Safety Review Committee, Institute of Medicine. *Immunization Safety Review: Measles-Mumps-Rubella Vaccine and Autism.* (2001). Washington, DC: National Academy Press. Available at www.nap.edu/catalog/10101.html. Accessed July 10, 2002.

Immunization Safety Review Committee, Institute of Medicine. *Immunization Safety Review: Multiple Immunizations and Immune Dysfunction*. (2002). Washington, DC: National Academy Press. Available at www.nap.edu/catalog/10306.html. Accessed July 10, 2002.

Immunization Safety Review Committee, Institute of Medicine. *Immunization Safety Review: Thimerosal - Containing Vaccines and Neurodevelopmental Disorders*. (2001). Washington, DC: National Academy Press. Available at: www.nap.edu/catalog/10208.html. Accessed July 10, 2002.

Margolis, Harold. (1990). The Road Ahead-Future Policy for the Elimination of Hepatitis B Transmission in the United States. 24th National Immunization Conference Proceedings, May 21-25.

National Network for Immunization Information Available at www.immunizationinfo.org. Accessed July 10, 2002.

Offit, Paul A. (2002). Vaccines and autism. Vaccine Education Center, Children's Hospital of Philadelphia. Available at www.immunize.org/catg.d/p2065.htm. Accessed July 10, 2002.

Offit, Paul A., & Bell, Louis A. (1998). What Every Parent Should Know About Vaccines. Macmillan: NY.

Offit, P.A., Quarles, J., Gerber, M.A., et al. (2002). Addressing parents' concerns: Do multiple vaccines overwhelm or weaken the infant's immune system?'Pediatrics, 109, 124-129. Available at www.aap.org/family/multvaccines.htm. Accessed July 10, 2002.

Otto, S., Mahner, B., Kadow, I., et al. (2000). General non-specific morbidity is reduced after vaccination within the third month of life–the Greifswald study. Journal of Infectious Disease, 41, 172-175 [Medline].

Outbreak of Poliomyelitis – Dominican Republic and Haiti. (2000). MMWR,49(48), 1094.

Pertussis Deaths – United States. (2000). –MMWR, 51(28), 616-618.

Plotkin, Stanley A., & Orenstein, Walter P. (1999). –Vaccines, Third Edition. W.B. Saunders: Philadelphia.

Priven, J. (1997). The Biological Basis of Autism. Current Opinion in Neurobiology,7, 708-12.

Rodier, P.M., Hyman, S.L. (1998). Early environmental factors in autism. MRDD Research Reviews, 4, 121-128.

Research Strategies for Assessing Adverse Events Associated with Vaccines: A Workshop Summary. (1994). Institute of Medicine. National Academy Press.

Rivara, Frederick P. (1994). Epidemiology & Prevention of Pediatric Traumatic Brain Injury. Pediatric Annals 23(1).

Sanford, Jay P. (1995). Tetanus - Forgotten But Not Gone. The New England Journal of Medicine, 332(12), 812-813.

Standards for Pediatric Immunization Practices. (1996). U.S. Department of Health and Human Services, Public Health Service.

Taylor, B., Miller, E., Farrington, C.P., Petropoulos, M.C., Favot-Mayaud, I., Li, J., Waight, P.A. (1999). Autism and measles, mumps, and rubella vaccine: No epidemiological evidence for a causal association. Lancet, 353, 2026-2029.

US Centers for Disease Control and Prevention. Six common misconceptions about vaccination. (2002). www.cdc.gov/nip/publications/6mishome.htm. Accessed July 19, 2002.

US Centers for Disease Control and Prevention, National Immunization Program. Vaccine Information Statements. (2002) Available at www.cdc.gov/nip. Accessed July 10, 2002.

US Centers for Disease Control and Prevention. (2001). Parents Guide to Childhood Immunization. US Government Printing Office.

Vaccine Education Center at The Children's Hospital of Philadelphia. Available at'www.vaccine.chop.edu. Accessed July 10, 2002.

Wakefield, A.J., et al. (1998). Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children. Lancet, 351, 637-641.

What Parents Need To Know About Vaccination And Childhood Disease: Guidelines For Parents. (1994). American Academy of Pediatrics.

Wolfe R.M., Sharp, L.K., & Lipsky, M.S. (2002). Content and design attributes of antivaccination web sites. Journal of American Medical Association, 287, 3245-3248.

14. IMMUNIZATION RESOURCES

American Academy of Pediatrics
www.aap.org/family/parents/vaccine.htm

Bill and Melinda Gates Children's Vaccine Program
www.childrensvaccine.org

Children's Hospital of Philadelphia www.vaccine.chop.edu/index.shtml

Food and Drug Administration (FDA) vaccine safety and regulations
www.fda.gov/cber

Healthy Mothers, Healthy Babies Coalition of Washington
Hotline: 1-800-322-2588 (services available in many languages)
www.hmhbwa.org

Immunization Action Coalition (612) 647-9009 or www.immunize.org

Institute for Vaccine Safety at Johns Hopkins www.vaccinesafety.edu

National Network for Immunization Information
www.immunizationinfo.org

Public Health - Seattle & King County (206) 296-4774 or
www.metrokc.gov/health

Snohomish Health District (425) 339-5220 or (425) 775-3522
www.snohd.org

U.S. Centers for Disease Control and Prevention
National Immunization Program website www.cdc.gov/nip
National Immunization Program Hotlines: English: 1-800-232-2522
Spanish: 1-800-232-0233
TTY: 1-800-243-7889

Washington State Department of Health Immunization Program
(360)236-3595 or www.doh.wa.gov/cfh/immunize

Hooray for Me!

Do you have questions about...

Check with your doctor, nurse or clinic if you have questions or concerns about immunizations.
If you need help finding health care for your child, call Healthy Mothers, Healthy Babies at 1-800-322-2588 (voice) or 1-800-833-6388 (tty relay).
Services are available in many languages.

Washington State Department of Health

Fifth Edition 2002 DOH pub# 348-080
Christine Thomas Design & Illustration cmtartist@aol.com