Immunizations

Hilliard Pediatrics, Inc. - Dr. Tim Teller, MD

Introduction

This information is designed to supplement the American Academy of Pediatrics handouts about each of the vaccines. It is very important to read the information in those handouts. However, some additional information is available only here. Each of the vaccines is expected to protect against or prevent specific illnesses. Our decision to recommend the vaccines is based on scientific data on the effectiveness of the vaccines balanced by the information on side effects of the vaccines. The following information will help you be better informed about what to expect from the vaccines and what to do if any side effects occur.

Schedule

While the schedule will vary somewhat between doctor's offices, the vaccine schedule we follow is:

- In the hospital at birth: Hepatitis B (1 shot)
- 2 months: Pediarix (DaPT/IPV/Hepatitis B), Prevnar, HIB, and Rotarix (3 shots and drops in the mouth)
- 4 months: Pediarix (DaPT/IPV/Hepatitis B), Prevnar, HIB, and Rotarix (3 shots and drops in the mouth)
- 6 months: Pediarix (DaPT/IPV/Hepatitis B), Prevnar, and HIB. (3 shots)
- 12 months: MMR, Varivax ("chicken pox"), and Hepatitis A (3 shots)
- 15 months: DaPT, Prevnar, and HIB (3 shots)
- 18 months: Hepatitis A (1 shot)
- 5 years: DaPT and IPV ("Kinrix") and MMR, and Varivax ("Proquad") (2 shots)
- 11 years: DaPT ("Boostrix") and Menveo (meningitis) (2 shots)
- 11-14 years: Gardisil (HPV vaccine) 2 shot series, with the 2nd dose given 6-12 months after first dose (if started at age 15 or after, it becomes a 3 shot series)
- 16-17 years: Menveo (Meningitis) booster dose. Typically at least 3 years after the first and before senior year of high school.
- 13-18 year: if not previously received, the above vaccines are given.

The Vaccines

- The **hepatitis B** vaccine protects against a viral infection which can cause liver failure and lead to liver cancer. It is a series of 3-4 shots given during the first year of life with no boosters. No serious side effects have been associated with the hepatitis B vaccine, and most children receiving the vaccine will have only simple discomfort for a few minutes after receiving the shot. Some mild fussiness, soreness, or swelling and redness at the shot site may start in the first 24 hours after the shot and should be gone within 48-72 hours. Because a fever is very unusual after this immunization, any fever noticed after the hepatitis B vaccine

is very likely due to one of the other vaccines given that day. This vaccine is required for school aged children in Ohio for grades K-8 and is recommended for all ages, including adults. Most infants will now receive the first hepatitis B vaccine in the birth hospital and complete the series as part of the combination Pediarix vaccine.

- The **rotavirus (Rotarix)** vaccine is a vaccine that protects against the most common severe viral vomiting and diarrhea illness. The vaccine reduces the chances that a child will have the illness in the first 2 years of life. If the child does become ill with the virus sometime after receiving the vaccine, they are less likely to become as ill as they would have without the protection of the vaccine. The vaccine is given as a series of drops in the mouth given at 2 and 4 months of age. Side effects are unusual but can include stomachache or brief vomiting or diarrhea.
- The **polio** vaccine protects against a viral infection that causes paralysis of the nerves. The IPV typically causes no side effects except discomfort at the site of the shot. Currently, most infants will receive the IPV as part of the combination Pediarix vaccine.
- The **HIB** vaccine protects against meningitis and epiglottitis (a throat infection) due to a bacterium called Haemophilus influenza, type B. This vaccine has dramatically reduced the chances of a young child having bacterial meningitis. This is a series of 4 shots. No booster doses are needed. This vaccine is not known to cause any significant side effects. Your child may have some simple discomfort from the shot. Any fever or fussiness at the time of the HIB vaccine is likely due to the DaPT or Pneumococcal shot also given at the same time.
- The **DaPT** is a 5 shot vaccine series to protect against 3 separate illnesses: diphtheria (a severe respiratory illness), tetanus ("lockjaw"), and pertussis or whooping cough (a severe respiratory illness). The DaPT is given at 2, 4, 6, and 15 months, and 4-6 years. A booster of the diphtheria, pertussis, and tetanus (**dapT or 'Boostrix'**) is given at 11 years. The latest DaPT (acellular) vaccine is associated with fewer and less severe side effects than the previously-used DPT. If side effects are going to occur, they are typically seen in the first 48-72 hours after the shot. Less than 1 in 10 children will have a fever, and it is usually 100.5 to 103 degrees. Only 1 in 1000 children have a fever higher than 103 degrees. About 1 in 4 children will be fretful or fussy after the shot. About half the children will have redness or swelling at the site of the injection or will have a small lump underneath the skin (this lump may last for weeks). About 1 in 10 children have a change in their sleep habits (usually an increase in their sleep). Nearly all children will have initial discomfort with the shot.
- **Prevnar** is a vaccine to protect children 5 years and under against a bacteria called Strep pneumoccous. This bacteria causes many cases of meningitis, pneumonia, and bacteremia (blood stream infections), as well as some ear and sinus infections (it does not cause Strep throat). Prevnar is given as a series of shots at 2, 4, 6, and 15 months. It is recommended for all children before (and for some children, after) their 2nd birthday. It is a killed vaccine (there is no live germ in the shot). Side effects of Prevnar are very similar to the DaPT: it is possible to have a fever, redness or swelling at the site of the shot, drowsiness, irritability, restless sleep, or decreased appetite in the first 3 days after the vaccine. Serious allergic reactions are very rare.
- The **MMR** is a vaccine to protect against 3 separate illnesses: measles, mumps, and rubella ("German measles"). The MMR is given as 2 shots, one at 12 months and one at 4-6 years of age. The mumps and rubella vaccines do not cause common side effects, though a few

children will have achy or swollen joints 2 weeks after the rubella vaccine. Less than 1 in 5 children receiving the measles vaccine will have a 101-103 degree fever and a splotchy, non-itchy red rash on the body for 2-3 days (these usually occur 10-14 days after the vaccine). If this occurs, the child is not contagious and the only treatment that may be needed is acetaminophen (Tylenol) or ibuprofen (Motrin or Advil) for fever. Children with a history of life-threatening allergic reaction to eggs were previously felt to be at risk to severely react to the MMR. Further research now shows that even a history of severe allergic reaction to eggs has not predicted which children will have a severe allergic reaction to the MMR. If your child has a history of allergic reaction to eggs, discuss this with us before any MMR vaccines are given. Please note that a lot has been written about the accusation that the MMR vaccine causes autism. There is absolutely no scientific evidence that this is true. Many US and international research studies have looked at this issue and none has found a link between receiving the MMR and developing autism. In addition, no protection from developing autism has been scientifically demonstrated from giving the MMR as three separate shots (whether at the same time or at 3 separate visits). Because there remains a very real risk of *not* vaccinating with the MMR (a child could become very sick or die from measles, mumps, or rubella) and there is *no* scientific evidence to believe there is risk of developing autism after the MMR vaccine, we currently strongly recommend your child receiving the MMR vaccine at the regularly scheduled times.

- The chicken pox vaccine or "**Varivax**" protects against chicken pox and the dangerous conditions that can occur with chicken pox: Staph or Strep bacterial skin infections, pneumonia, and meningitis or encephalitis. The first time the vaccine can be given is at the 12 months of age. Children will receive the vaccine at 12 months and 5 years of age. The vaccine is sometimes given in the same injection as the MMR vaccine (at the 5 year check-up). Children (and adults) after their 13th birthday who have never had chicken-pox or the vaccine will need 2 shots, 1-2 months apart. Children past their 5 year check-up who have only received one dose will need a booster dose. After the first vaccine, only about 1 in 5 children will ever have chicken pox. These children are very likely to have a mild case with 10-30 pox, no fever, and no itching (instead of 300-500 pox, 3 days of fever, and a week of severe itching in a typical case of chicken pox). The other 4 out of 5 children will never have chicken pox or shingles. After the second dose, about 1 out of 50 children will ever have chicken pox. The vaccine is very safe. About 7 of 100 children will have a "pox" like rash within a month after the shot. These children that develop a rash after the shot have a very small chance of spreading the chicken pox virus to someone else (they are minimally contagious), and if they do, the chicken pox is very likely to be mild. About 1 in 10 children will have a 100-101 degree temperature for a day or two within a month after the shot.
- The **hepatitis A** vaccine is a 2-shot series that protects against hepatitis A, an infection of the liver. Each year in the U.S., 20,000 to 30,000 are infected with and 100 people die from hepatitis A. The vaccine will routinely be given between the ages of 12-23 months of age with the 2 shots being given at least 6 months apart. Children not vaccinated by 2 years of age can be vaccinated at later visits. It is a "killed" vaccine (with no live germs in the vaccine). Side effects include soreness at the site where the vaccine is given, headache, decreased appetite, and tiredness for 1-2 days following the vaccine.

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- **Menveo** is a meningitis-protection vaccine now given routinely at 11 years of age and at 16-17 years of age (before senior year of high school). The vaccine helps prevent the leading cause of bacterial meningitis, Neisseria meningitis, during the pre-teen through young adult years. The vaccine is given as one shot with a booster before Senior Year of high school to further protect young adults during the last year of high school and through college. The protection is expected to last 10 years. About ½ of those receiving the vaccine will have redness and pain at the site of the shot. A very small percentage will develop a fever. A serious nervous system disorder called Guillain-Barre Syndrome has been reported among persons receiving Menveo. So far, it is not possible to tell if the vaccine is a factor, although it appears that those receiving the vaccine have been no more likely to have Guillain-Barre than someone not receiving the vaccine. Anyone who has had Guillain-Barre should talk with the doctor before receiving Menveo.
- **Gardisil 9** is a human papilloma virus (HPV) vaccine that prevents cervical cancer, genital warts, men from spreading the virus to women, and head and neck cancer. The vaccine is given to 11-18 year old females and males. The HPV vaccine is a two shot series (if the first shot is given prior to 15 years of age) with the 2nd dose given 6-12 months after the first dose. We often give the vaccine at consecutive annual checkups. If started after 15 years of age, a 3rd dose is required, with the 2nd and 3rd doses given 2 and 6 months after the first dose. The vaccine can cause pain, redness, and swelling at the site, as well as fever or dizziness within a few days after the vaccine.

What to Expect at Each Immunization Visit and What You Can Do

Remember that most children are fretful for a few minutes after any immunizations and then are fine afterwards. The common side effects and what to do for them are listed below.

Visit	You Might Expect	What to Do	Call if These Occur
2 months 4 months 6 months 15 months	Intermittent fever (100.5-102.9), fussiness, drowsiness, redness or swelling at the leg during the first 72 hours after the immunizations.	Offer Tylenol® as often as every 4 hours (or Motrin® every 6 hours if 6 months or older) as needed for fever, fussiness, or redness or swelling. For the correct dose, please see the FEVER handout.	A fever of 103 degrees or greater. A fever that begins more than 72 hours after the immunization. A fever that persists beyond 72 hours after the immunization. More than 3 hours of fretful crying.
12 months	Low grade fever and non-itchy rash a week or two after the immunizations. Less likely would be a fever	No special treatment required. If child is uncomfortable with the fever, offer Tylenol® or	A fever of 103 degrees or greater. A fever that lasts more than 3 days.

Immunizations

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Visit	You Might Expect	What to Do	Call if These Occur
	(100.5-102.9), fussiness, drowsiness, redness or swelling at the leg during the first 72 hours.	Motrin®	
5 years	It is possible, but less likely that a 100.5-102.9 fever, fretfulness, or redness or swelling at the leg will occur during the first 3 days after the immunizations.	No special treatment is required. If the child is uncomfortable offer Tylenol® or Motrin®.	A fever of 103 degrees or higher. A fever that lasts more than 72 hours after the immunization.
11-18 years	Brief discomfort. Pain at the site and dizziness afterwards are common. Fever or rashes are uncommon.	No special treatment. Offer Tylenol® or Motrin® for discomfort.	A fever of 103 degrees or greater. A fever that lasts more than 3 days.

A note about **preventatively giving Tylenol®** to young infants: Giving Tylenol at least ½ to 1 hour before immunizations can decrease the discomfort felt by infants when they receive their shots. The dose of **Tylenol® infant suspension** is **1.25mL** of the 160mg/5mL **oral suspension** at the 2 month check-up. You can give this dose before you leave the house or when you first arrive at the office after we confirm the proper dose based on their weight. The dose for older infants and children (and children that weigh 12 pounds or more) can be found on the Medication Dosages page above. Giving a dose before the immunizations will not prevent all the side effects listed above. The reason is that the dose will have left your child's system by 4 hours, and it is not unusual for the fever, drowsiness, or redness or swelling to occur more than 4 hours after the shots. To prevent or decrease the chances of these later side effects, a dose of Tylenol® can be given every 4 hours for the first 24 hours. Considering the fact that most infants do not have any side effects, it is very reasonable to simply wait and see if any of the side effects do occur and then give Tylenol®. It is NOT recommended to use Motrin for infants less than 6 months of age. One very small study in Italy found that infants given a medicine similar to acetaminophen or Tylenol® before the vaccines decreased how well the vaccine worked to protect them against the illness. Further studies are needed to see if acetaminophen or Tylenol® does the same thing.

Children older than 6 months of age can be given **ibuprofen** (Motrin®, Advil®, generics) before an appointment in which they will receive vaccines and every 6 hours after as needed for fever, pain, or swelling at the site of the shot(s).

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Note that if your child is sick with a mild illness, it will not interfere with the vaccines in any way. If more significant illnesses are present, we will discuss with you whether we should do the vaccines at a later date (later well child check or a later vaccine-only visit).

State of Ohio Immunization Requirements (2019)

Vaccine	Daycare, Head Start, & Pre-Schools	Kindergarten	Older Grades
DaPT/DT	4 doses	4 doses (5 if all 4 given before the 4th birthday)	1st-12th grade: 4 doses 7th-12th grade: 1 booster
Polio (IPV/OPV)	3 doses	4 doses	1st-12th grade: 4 doses
MMR	1 dose	2 doses (1st on or after 1st birthday)	1st-12th grade: 2 doses
HIB	3 or 4 doses (depends on vaccine type)	No requirement	No requirement
Hepatitis B	3 doses	3 doses	1st-12th grade: 3 doses
Varicella (chickenpox)	1 dose	2 doses	1st-3rd grade: 2 doses 4th-7th grade: 1 dose
Meningococcal (MCV4)	N/A	N/A	7th-12th grade: 1 dose 12th grade: 2 doses

Note: Although a similar schedule as above is not listed on their website, the Ohio Department of Health requires that children attending child care, Head Start, and Pre-School are required to be immunized against Hepatitis A, Pneumococcal disease (Prevnar) and Rotavirus.

Resources

For more information, https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/immunization/immunization or call 1-800-282-0546.

Please be very cautious about information you read about vaccines from unofficial sources. Much of the unofficial information on the Internet and from other sources is inaccurate, half-true, or simply wrong. For information that you can trust regarding vaccines, the following resources should prove helpful.

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- http://www.healthychildren.org/English/safety-prevention/immunizations/Pages/default.aspx at Healthy Children
- http://www2.aap.org/immunization/ at American Academy of Pediatrics Immunization Initiatives
- http://www.immunizationinfo.org at National Network For Immunization Information
- http://www.cdc.gov/vaccines/default.htm at Centers For Disease Control, National Immunization Program
- https://www.chop.edu/centers-programs/vaccine-education-center at Children's Hospital of Philadelphia Vaccine Education Center
- http://www.pkids.org at Parents of Kids with Infectious Diseases
- http://www.voicesforvaccines.org at Voices for Vaccines
- http://www.vaccinateyourbaby.org at Vaccinate Your Baby