

CHILD HEALTH ASSOCIATES

Vaccines

Vaccine history, how they work, vaccination schedule, individual vaccine information, risks and benefits, and more!



Content Outline

- 01 Vaccine History
- 02 Development Cycle
- 03 How Vaccines Work
- 04 Risks and Benefits
- 05 Vaccine Schedule
- 06 Combination Vaccines
- 07 Individual Vaccine Information
- 08 Significant Reactions
- 09 More Information and Resources





Vaccine History

Childhood vaccines protect from serious diseases, caused by viruses and bacteria that have injured and killed many children and adults over the years.

- The AAP made the first vaccine recommendations for children in the late 1930s.
- Vaccination programs have led to the eradication of smallpox, the elimination of poliomyelitis in the Americas, and the control of diseases like measles, rubella, tetanus, diphtheria, and *Hemophilus influenzae* type B in the United States and other parts of the world.
- By the 1960s, vaccines against polio, measles, mumps, and rubella were available. The effect was nearly immediate, with cases of polio and measles dropping by over 90%.

Vaccine Development Cycle

A multi-step process



DISEASES
STUDIED AND
INGREDIENTS
TESTED

FDA
APPROVAL
FOR
CLINICAL
TRIALS

TRIALS BEGIN
IN 3 PHASES
OF
PROGRESSION
FOR VACCINE
SAFETY AND
EFFICACY

MANU-
FACTURING
BEGINS AND
FDA
PERMISSION
GRANTED FOR
DISTRIBUTION

MEDICAL
SPECIALISTS
REVIEW THE
SCIENCE AND
MAKE
RECOMMENDATIO
NS TO THE FDA.

THE AAP
REVIEWS DATA
AND DECIDES
WHETHER TO
INCLUDE VACCINE
ON
RECOMMENDED
SCHEDULE

VACCINE
ADMINISTERED
AND
CONTINUED TO
BE MONITORED
FOR SAFETY
AND SIDE
EFFECTS

IMPACT OF IMMUNIZATION

2-3 million
Deaths prevented annually



How Vaccines Work

Immunity from Disease

When a child gets sick with one of these diseases, the immune system works to fight off said infection and produces immunity, which keeps a child from getting the same disease again.

Immunity from Vaccines

Vaccines are made with the same bacteria or virus that cause the disease, but it has been weakened or killed to make them safe. A child's immune system responds to a vaccine the same way it would if the child had the disease, but this way, the child will develop immunity without having to first get sick.



Risks and Benefits



Benefits

- After vaccination, it typically takes a few weeks for protection to develop, but that protection can last a lifetime.
- A baby's immune system is not fully developed at birth therefore they face a greater risk of becoming infected and getting seriously ill - vaccines help teach the immune system how to defend against germs.
- Vaccines can prevent common diseases that used to seriously harm or even kill infants, children, and adults.
- The recommended vaccination schedule balances when a vaccine will work best at certain ages and with spacing between doses to keep children healthy and active.
- Getting a disease is much more likely to harm a child than a vaccine - getting protection against these is the biggest benefit to the health of a child.
- Getting one or more doses of vaccines, gives the immune system memory a boost to provide further immunity.

Risks

- Just like any other medication, vaccines can cause side effects but most often, these are mild localized reactions such as redness, tenderness, or swelling at the injection site or a mild fever up to 48 hours post administration.
 - Often appears soon after a shot is given and resolves on its own within a day or two.
- Severe reactions can occur but are less likely to happen
 - Among the most serious reactions to vaccines are severe allergic reactions to a substance in a vaccine. These reactions are very rare, occurring in less than one in a million shots and occur shortly after a vaccine is given where medical staff are trained in response.
- The risk of any vaccine causing serious harm or death is extremely low.

DID YOU KNOW?

The United States had nearly
2,000 cases of measles in 2025



Vaccine Schedule

2 months

Vaxelis (*DTaP, Hib, Polio, Hepatitis B*)
Pneumococcal-20
Rotavirus

4 months

Vaxelis (*DTaP, Hib, Polio, Hepatitis B*)
Pneumococcal-20
Rotavirus

6 months

Vaxelis (*DTaP, Hib, Polio, Hepatitis B*)
Pneumococcal-20
Rotavirus

12 months

MMR
Varicella
Hepatitis A

14 months

Pentacel (*DTaP, Hib, Hepatitis B*)
Pneumococcal-20

18 months

Hepatitis A

4/5 years

Proquad (*MMR, Varicella*)
Quadracel (*DTaP, IPV*)

9 years

HPV

11 years

Tdap
Meningitis ACYW

16 years

Meningitis B
Meningitis ACYW

17-20 years

Meningitis ACYW

21 years+

Tdap

Please note, the vaccine guidelines are in accordance with the American Academy of Pediatrics (AAP).

Throughout the schedule, many vaccines are listed more than once - this is because it takes more than one introduction of the vaccine for the body to build up its immune response.

Combination Vaccines

To limit the injection experience for patients, combination vaccines offer more protection with less injections.

Pentacel - DTaP, Polio, and HiB

Vaxelis - DTaP, Polio, HiB, and Hepatitis B

Quadracel - DTaP and Polio

Proquad - MMR and Varicella

These combination vaccines are as safe and effective as the individual forms. Getting numerous vaccines at the same time will not harm your child.

**If preferred, vaccines can be separated and are available in their individual form.*



Vaccine Brands

Individual

Vaccine	Trade Name
COVID-19	Pfizer & Moderna
DTaP	Daptacel
Hep A	Vaqta-Peds
Hep B	Energix-B Peds
Hib	ActHib
HPV	Gardasil 9
Meningitis ACYW	Menquadfi
Meningitis B	Bexsero

Vaccine	Trade Name
MMR	M-M-R II
Polio	IPOL
Pneumococcal	Prevnar-20
PPD	Tubersol
Rabies	Imovax
Rotavirus	Rotadeq
Tdap	Boostrix
Varicella	Varivax

Below are all of the vaccines offered at Child Health Associates. Please take note that many of the individual vaccines are available, and recommended, as combination options to limit the injection experience for patients. Combination vaccines offer more protection with less injections and are as safe and effective as the individual form.

Combination

Vaccine	Trade Name
DTaP-Hib-Polio	Pentacel
DTaP-Polio-Hib-Hep B	Vaxelis
DTaP-Polio	Quadracel
MMR-Varicella	ProQuad

Ages 19+

Vaccine	Trade Name
Hep A	Vaqta
Hep B	Energix-B
Pneumococcal	Pneumovax-23
Tdap	Adacel

DTaP and Tdap

Diphtheria - Contracted from contact with an infected person and can lead to breathing problems, heart failure, paralysis, and death.

Tetanus - Contracted from the disease entering a cut or wound. It does not spread from person to person. Signs and symptoms include painful tightening of the muscles, usually all over the body. It can lead to stiffness of the jaw, so a person cannot open their mouth leading to difficulty swallowing and breathing, or death.

Pertussis ("Whooping cough") - Contracted from contact with an infected person. Signs and symptoms include uncontrollable violent coughing spells that can make it hard to eat, drink, or breathe. In babies and young children it can lead to pneumonia, convulsions, brain damage, and death. In teens and adults, it can cause weight loss, loss of bladder control, passing out, and rib fractures from severe coughing.

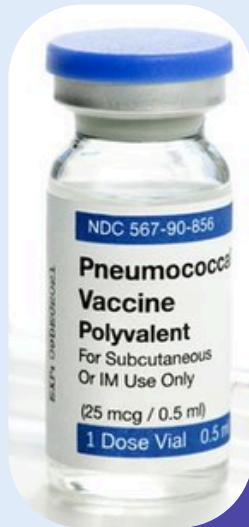


Haemophilus Influenza Type B (Hib)

Contracted from contact with an infected person. These infections usually affect children under 5 years of age. Hib bacteria can cause mild illness such as ear infections and bronchitis. It can also lead to severe illness such as meningitis (infection of the brain and spinal cord coverings), pneumonia, infections of the blood, joints, bones, and covering of the heart, brain damage, deafness, and death. Before this vaccine, Hib disease was the leading cause of bacterial meningitis in children under 5 years old.

Polio

Contracted from close contact with an infected person. Signs and symptoms can include a cold-like illness or there may be no signs or symptoms at all. It can, however, lead to symptoms that affect the brain and spinal cord: paralysis (inability to move arms or legs), meningitis, or death (by paralyzing breathing muscles).



Pneumococcal

Contracted from contact with an infected person. The pneumococcal bacteria can cause many types of illness with symptoms including fever, chills, cough, and chest pain. It can lead to meningitis (infection of the brain and spinal cord coverings), blood infections, ear infections, pneumonia, deafness, brain damage and death.

Rotavirus (Oral)



Contracted from contact with other children who are infected. Signs and symptoms include severe diarrhea, vomiting and fever. It can lead to dehydration, hospitalization, and death.

Hepatitis B

Contracted from contact with blood or body fluids of an infected person. Babies can get it at birth if the mother is infected, or through a cut or wound. Adults can get it from unprotected sex, sharing needles, or other exposures to blood. Acute hepatitis B is a short-term illness that can lead to fever, fatigue, diarrhea, vomiting, jaundice (yellow skin or eyes), and pain in muscles, joints, and stomach. If an infant contracts Hepatitis B in the newborn period, they have a 90% chance of having Hepatitis B for life. Chronic Hepatitis B can lead to liver damage, liver cancer, and death.



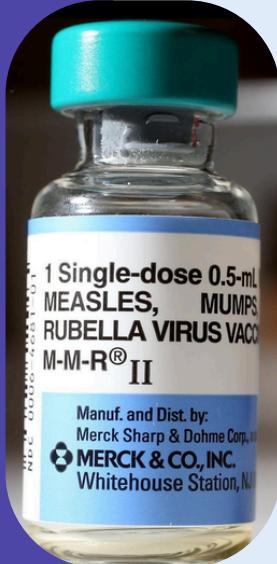
Hepatitis A



Contracted through close personal contact and sometimes by eating food or drinking water containing the Hepatitis A virus. This is a serious liver disease causing signs and symptoms of “flu-like” illness, jaundice (yellow skin or eyes, dark urine), severe stomach pains and diarrhea. Most children less than 6 years do not have symptoms.

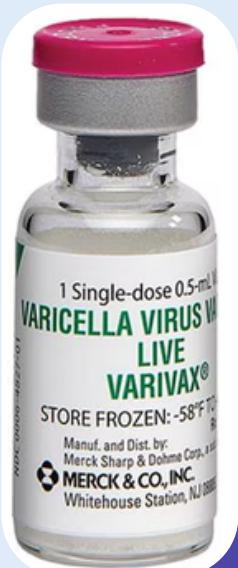
Measles, Mumps, Rubella (MMR)

Measles - so contagious that an infected person will spread it to 9-10 unprotected people on average. It is more contagious than Influenza and COVID. You can get it from being around someone who has it. Signs and symptoms include rash, cough, runny nose, eye irritation, and fever. It can lead to an ear infection, pneumonia, seizures (jerking and staring), brain damage, and death.



Mumps - contracted from being around an infected person. Signs and symptoms include fever, headache, and swollen glands. It can lead to deafness, meningitis (infection of the brain and spinal cord covering), painful swelling of testicles/ovaries and rarely, death.

Rubella/German Measles - contracted from being around with an infected person. Signs and symptoms include rash, mild fever, sore throat, and arthritis. If a woman gets rubella while she is pregnant, she could have a miscarriage, or her baby could be born with serious birth defects.



Varicella (Chickenpox)

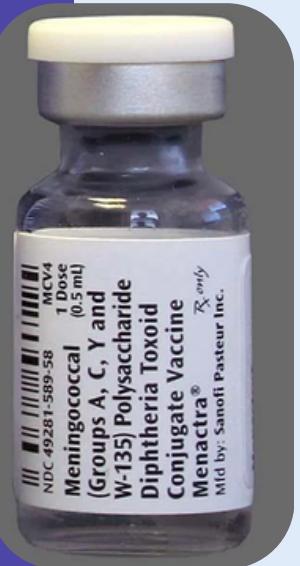


Contracted from being around someone who has it, or by contact with fluid from chickenpox blisters. Signs and symptoms include rash, itching, fever, and tiredness. It can lead to pneumonia, encephalitis (infection or inflammation of the brain) and bleeding problems. A person who has had chickenpox can get a painful rash called shingles years later.

Meningitis ACYW & Meningitis B

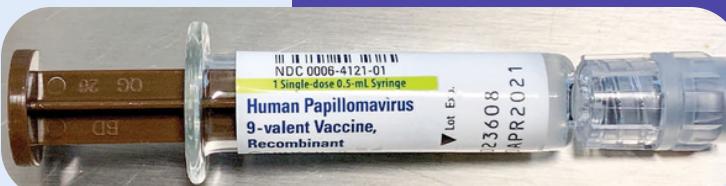
You can get meningococcal disease through close personal contact. It can cause meningitis (infection of the lining of the brain and spinal cord) and infections of the blood. It has a very fast onset and progresses rapidly. This vaccine protects a child from long-term disabilities that often come with surviving meningococcal disease.

- Meningococcal conjugate (MenACWY) vaccine protects against four types (serogroups A, C, W, and Y) of *Neisseria meningitidis* bacteria.
- Serogroup B meningococcal (MenB) vaccine protects against one type (serogroup B) of *Neisseria meningitidis* bacteria.



Human Papilloma Virus (HPV)

Contracted from direct contact with infected skin. In females it can lead to cervical, and vaginal and vulvar cancers, and anal cancer in females and males, throat cancer in females and males, genital warts in females and males, and penile cancer in males. HPV vaccine can prevent most of these cases of cervical cancer. HPV infection usually comes from sexual contact, and most people will become infected at some point in their life. HPV infections are so common that nearly all people will get at least one type of HPV at some time in their lives. Most infections will go away on their own and not cause serious problems. But thousands of people get cancer and other diseases from HPV.



Influenza

Can cause fever and chills, sore throat, muscle aches, fatigue, cough, headache, and runny or stuffy nose. Some people may have vomiting and diarrhea, though this is more common in children than adults. Each year thousands of people in the United States die from flu, and many more are hospitalized. The flu vaccine prevents millions of illnesses and flu-related visits to the doctor each year.



If a child under 8 years old is receiving the flu vaccine for the first time, it is recommended they receive 2 shots in the same flu season. The following flu seasons, a one time booster is recommended as the influenza virus changes and the vaccine is updated to provide the best protection.

COVID

Prevents disease occurrence and decreased severity of disease if contracted. COVID is spread very easily person-to-person and can cause mild to moderate illness lasting a few days or severe illness requiring hospitalization.

Symptoms may appear 2-14 days after exposure to the virus. Anyone can have mild to severe symptoms and they vary per person. Possible symptoms include fever or chills, cough, fatigue, muscle or body aches, headache, new loss of taste or smell, sore throat, congestion or runny nose, nausea or vomiting, diarrhea and more severe symptoms such as shortness of breath or difficulty breathing, chest pain, cyanosis.





Significant Reactions

While unlikely, if there is a moderate or severe reaction, you should look for any unusual conditions such as a high fever or behavior changes. Signs of a serious allergic reaction can include difficulty breathing, hoarseness, wheezing, swelling of the throat, hives, paleness, weakness, a fast heartbeat, or dizziness.

CALL 911 IMMEDIATELY if your child experiences these symptoms.

Report the reaction to your doctor including: the date and time it happened as well as when the vaccine was given. Ask your doctor, nurse, or health department to report the reaction by filing a Vaccine Adverse Event Reporting System (VAERS) form.

Travel Vaccines

Planning to travel outside of the United States?

If so, please visit [cdc.gov/travel](https://www.cdc.gov/travel) for the most updated information on recommended vaccines by location.

If vaccines are needed, please contact one of the following travel clinics for an appointment well in advance of travel dates to ensure appointment availability.

Child Health Associates does not carry travel vaccines in office.

Suffolk County

Traveler's Advice & Immunization Center - Massachusetts General Hospital
255 Charles Street
Boston, MA 02114
617-724-6454

Children's Hospital Boston Travel & Geographic Medicine Clinic
300 Longwood Avenue
Boston, MA 02115
617-355-5945

Tufts Medical Center Traveler's Health Service
260 Tremont Street
Boston, MA 02111
617-636-7010

Beth Israel Deaconess Medical Center Travel Medicine & Immunization Clinic
110 Francis Street, LMOB GB
Boston, MA 02215
617-632-7706

Worcester County

UMass - Northborough Crossing
333 Southwest Cutoff
Northborough, MA 01532
774-570-5000

Partners in Internal Medicine, PC
123 Summer Street, Suite 385
Worcester, MA 01608
508-363-7300

Harrington Preventive Health
100 South Street, Suite 210
Southbridge, MA 01550
508-765-8196

Reliant Medical Group
123 Summer Street, Suite 220
Worcester, MA 01608
508-368-3122

Reliant Medical Group Pharmacy
106 East Main Street
Westborough, MA 01581
508-871-0704

UMass - University Campus
55 Lake Avenue North
Worcester, MA 01655
508-856-1720

Doctors Express
117A Stafford Street
Worcester, MA 01603
508-755-4010

Worcester Department of Public Health
25 Meade Street
Worcester, MA 01610
508-799-8555

Passport Health
365 Main Street, Suite 103
Worcester, MA 01608
508-365-2039

Alpha-Omega Medical Care
111 Elm Street, Suite 201
Worcester, MA 01609
508-753-7700

Middlesex County

Metrowest Medical Center
115 Lincoln Street
Framingham, MA 01702
508-383-1473

Doctors Express
945 Worcester Street
Natick, MA 01760
508-650-6208

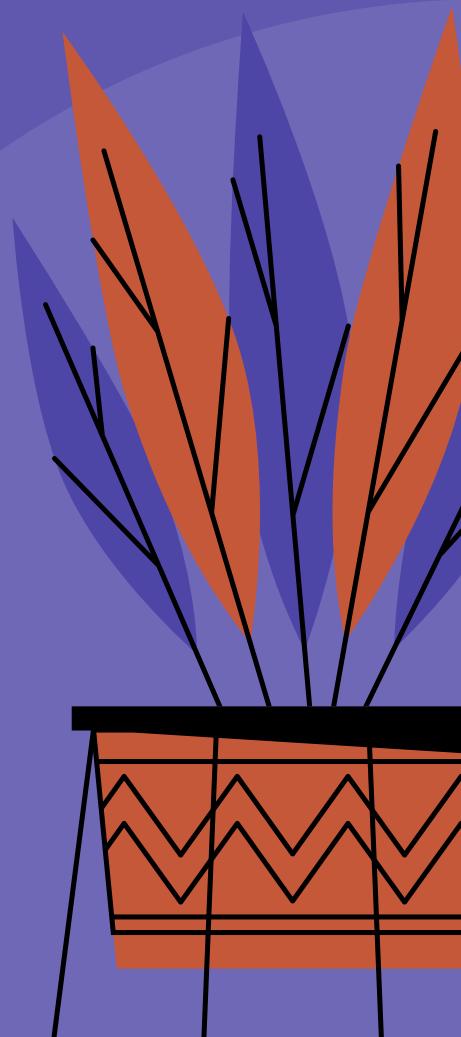
Framingham BOH
31 Flagg Drive, Door 14
Framingham, MA 01702
508-532-5470

Doctors Express
1030 Main Street
Waltham, MA 02451
781-894-6900

Occupational Health Center of Waltham
840 Winter Street
Waltham, MA 02451
781-684-0404

AFC Urgent Care
38 Boston Post Road West
Marlborough, MA 01752
508-658-0764

Southboro Medical of Framingham
761 Worcester Road
Framingham, MA 01701
508-872-1107



For more information:

**American Academy of
Pediatrics**

aap.org

Healthy Children

healthychildren.org

Parent Survival Guide

childhealthassociates.net

Child Health Associates

508-832-9691 & 508-842-1500

Vaccine information sourced from: American Academy of Pediatrics

