CHILD HEALTH ASSOCIATES

Vaccines

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

Content Outline

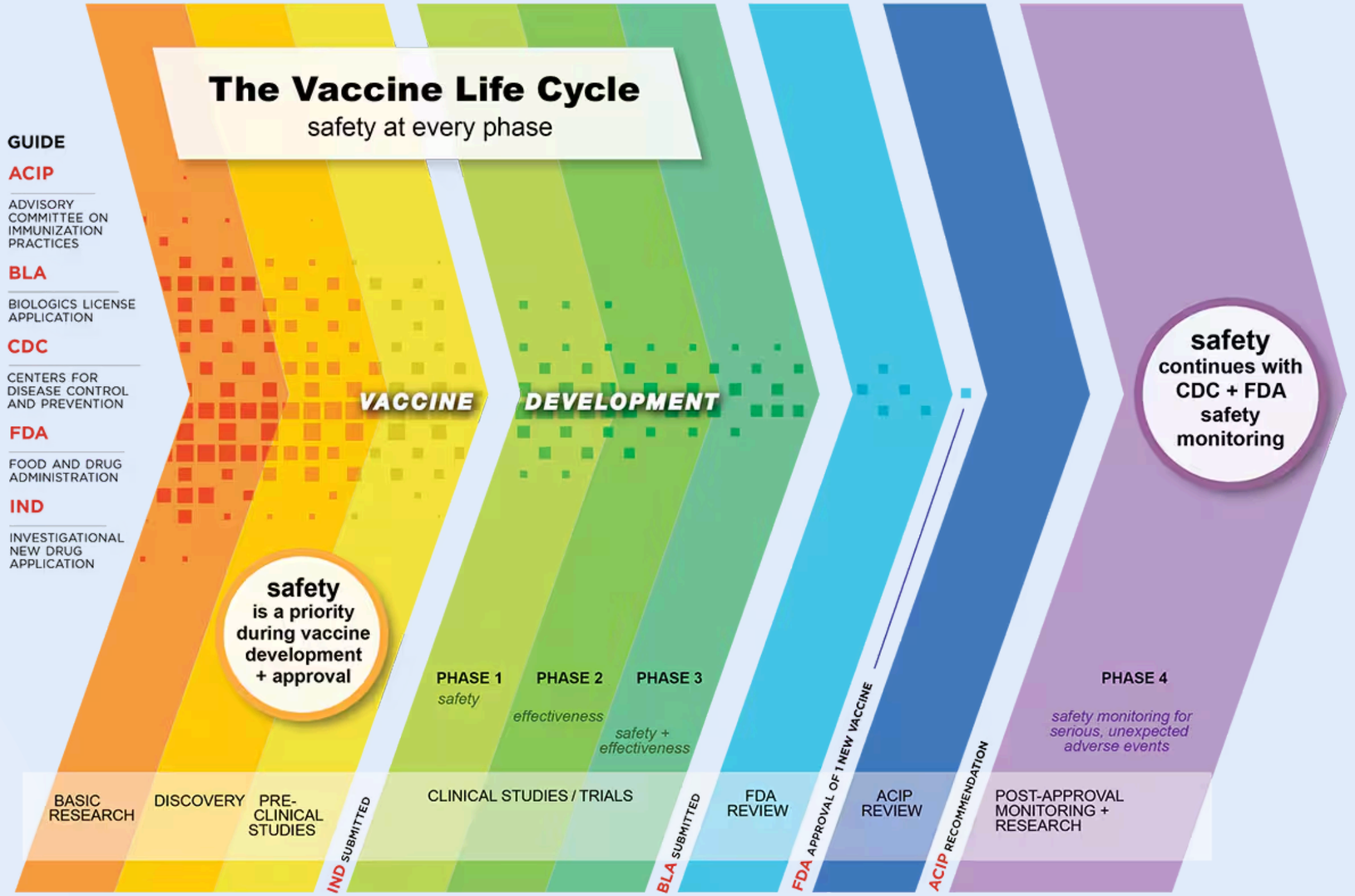
Vaccine History

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

- Polio paralyzed about 37,000 people and killed about 1,700 each year in the 1950s before a vaccine was created.
- In the 1980s, Hib disease was the leading cause of bacterial meningitis in children under 5 years of age.
- About 15,000 people a year died from diphtheria before there was a vaccine.
- Most children had at least one rotavirus infection by their 5th birthday in the pre-vaccine era.
- None of these diseases have completely disappeared; without vaccination, they will come back as has happened in other parts of the world.

Vaccine Development Cycle

A multi-step process



IMPACT OF IMMUNIZATION

4 million

Deaths prevented annually

Carter, Austin and Msemburi, William and Sim, So Yoon and A.M. Gaythorpe, Katy and Lindstrand, Ann and Hutubessy, Raymond C.W., Modeling the Impact of Vaccination for the Immunization Agenda 2030: Deaths Averted Due to Vaccination Against 14 Pathogens in 194 Countries from 2021-2030 (April 20, 2021). Available at SSRN: https://ssrn.com/abstract=3830781 or http://dx.doi.org/10.2139/ssrn.3830781

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 is 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 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. Without vaccines, your child is at risk of becoming seriously ill or even dying from childhood diseases such as measles and whooping cough.
- The recommended vaccination schedule balances when a child is likely to be exposed to a disease and when a vaccine will be most effective. Vaccines are tested to ensure they can be given safely and effectively at the recommended ages.
- 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.

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.
  - This happens in about 1 of 4 children with most vaccines.
  - 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 - some of these reactions are so uncommon that experts cannot tell whether they are caused by a vaccine or not.
  - 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 more than 1,200 cases of measles in 2019

This was the greatest number of cases reported in the United States since 1992 and since measles was declared eliminated in 2000.

https://www.cdc.gov/vaccines/parents/why-vaccinate/vaccine-decision.html

Vaccine Schedule

2 months	4 months	6 months	12 months	14 months	18 months
Vaxelis *(DTaP, Hib, Polio, Hepatitis B)* Pneumococcal-20 Rotavirus	Vaxelis *(DTaP, Hib, Polio, Hepatitis B)* Pneumococcal-20 Rotavirus	Vaxelis *(DTaP, Hib, Polio, Hepatitis B)* Pneumococcal-20 Rotavirus	MMR Varicella Hepatitis A	Pentacel *(DTaP, HiB, Hepatitis B)* Pneumococcal-20	Hepatitis A

4/5 years	9 years	11 years	16 years	17-20 years	21 years+
Proquad *(MMR, Varicella)* Quadracel *(DTaP, IPV)*	HPV	Tdap Meningitis ACYW	Meningitis B Meningitis ACYW	Meningitis ACYW	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

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.

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	Rotateq
Tdap	Boostrix
Varicella	Varivax

Combination

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

Ages 19+

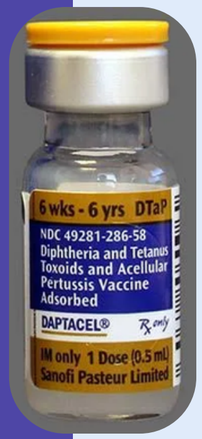
Vaccine	Trade Name
Hep A	Vaqta
Hep B	Energix-B
Pneumococcal	Pneumovax-23
Tdap	Adacel

DTaP and Tdap

Diphtheria - Contracted from contact with an infected person. Signs and symptoms include a thick covering in the back of the throat that can make it hard to breathe. It 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. It leads to death in about 1 of 5 people.

Pertussis (“Whooping cough”) - Contracted from contact with an infected person. Signs and symptoms include uncontrollable violent coughing spells that can make it hard for an infant to eat, drink, or breathe. These spells can last for months. It can lead to pneumonia, seizures (jerking and staring spells), 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.

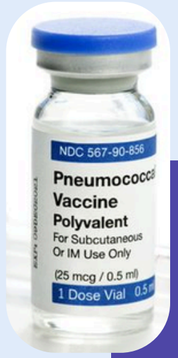


Haemophilus Influenza Type B (Hib)

Contracted from contact with an infected person. There may be no signs or symptoms in mild cases. 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. It enters the body through the mouth. Signs and symptoms can include a cold-like illness or there may be no signs or symptoms at all. It can lead to paralysis (inability to move arms or legs), 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 (up to about 70,000 a year), 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. Signs and symptoms include tiredness, 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

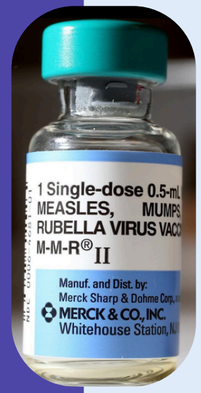
Contracted through close personal contact and sometimes by eating food or drinking water containing the Hepatitis A virus. This is a serious liver disease causing signs and symptoms of “flu-like” illness, jaundice (yellow skin or eyes, dark urine), severe stomach pains and diarrhea. Most children less 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.

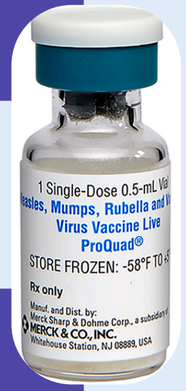
Mumps - contracted from being around an infected person. Signs and symptoms include fever, headache, and swollen glands. It can lead to deafness, meningitis (infection of the brain and spinal cord covering), painful swelling of testicles/ovaries and rarely, death.

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.



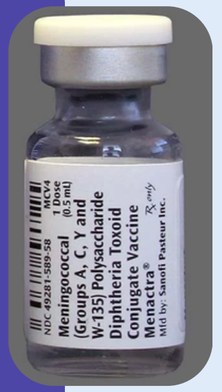
Varicella (Chickenpox)

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. It can lead to cervical cancer in females, vaginal and vulvar cancers in females, anal cancer in females and males, throat cancer in females and males, genital warts in females and males, and penile cancer in males. In the U.S., about 12,000 women get cervical cancer every year, and about 4,000 women die from it. 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. About 14 million Americans, including teens, get infected every year. 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 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

Umass - Memorial Campus
119 Belmont Street
Worcester, MA 01605
508-334-5214

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

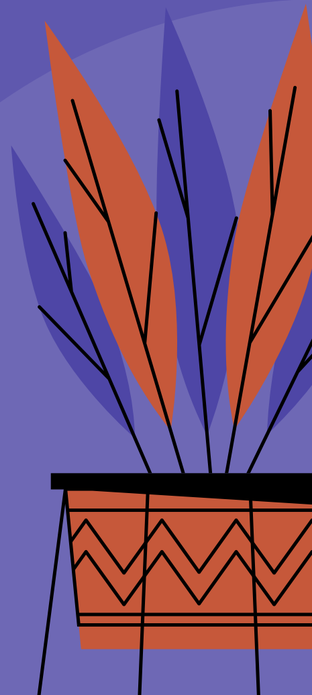
Framingham BOH
31 Flagg Drive, Door 14
Framingham, MA 01702
508-532-5470

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:

Centers for Disease Control and Prevention

www.cdc.gov/vaccines/

Parent Survival Guide

childhealthassociates.net

Child Health Associates

508-832-9691 & 508-842-1500

All vaccine information sourced from: www.cdc.gov/vaccines/