American Association of Psychiatric Pharmacists (aapp.org)

Vaccinations

Important Information

- Vaccines are the best way to protect yourself and others against diseases.
- Vaccines (and their ingredients) are thoroughly tested to ensure they are safe. Many of the components in vaccines are produced by our body, found in nature, or added to the foods we eat.
- Side effects are typically mild and a good indication that your body is learning to fight against the specific virus or bacteria it was designed to protect against. It is common to experience mild to moderate side effects, such as runny nose, nasal congestion, wheezing, sore throat, fever, headache, tiredness, muscle aches, vomiting, sore arm, or loss of appetite. Luckily, side effects are temporary (lasting 1-2 days on average) and less severe than getting sick from the actual virus or bacteria.
- Your health care provider or pharmacist can help ensure you are up to date on your vaccinations.

Alyssa Butterfield, PharmD, December 2024

Infections can be serious and have long-lasting effects. Vaccines are one of the best ways to protect yourself and others by helping your body fight different bacteria and viruses. They work by making your body think there is an infection and activating the body's natural defenses. Most vaccines use a weak or inactive version of the germ to train your body to recognize and fight it.[1]

Some people with weakened immune systems may not respond well to live vaccines since they may not be able to build an immunity. However, when most people are vaccinated, even those who can't be vaccinated are protected. This is called "herd immunity" and helps stop the spread of disease.[1]

Are Vaccines safe?

Any vaccine can cause side effects, and mild to moderate side effects are expected. More side effects can mean that your body is building more protection against that specific virus or bacteria, however, the absence of side effects does not mean the vaccine is not working. This is because the body is learning to fight the bacteria or virus before encountering it in our environment. Some common side effects include common cold or flu-like symptoms. Vaccines do not cause real infections for most people. Side effects usually last only 1-2 days, while a real infection can make you sick for a week or more. Vaccinations not only help the body fight the infection faster but also lessens the severity of symptoms.[2-4]

Vaccines go through extensive testing to make sure they are safe. Rigorous non-human testing is completed before being tested in humans. Studies often take years to complete and can be stopped at any point due to safety concerns. Even after a vaccine is approved, continuous monitoring is done to ensure it remains safe in the greater population.[5] Though many safety concerns have been reported, there is no evidence to support that vaccines cause autism, asthma, Guillain-Barré syndrome, or other health problems.[3,6]

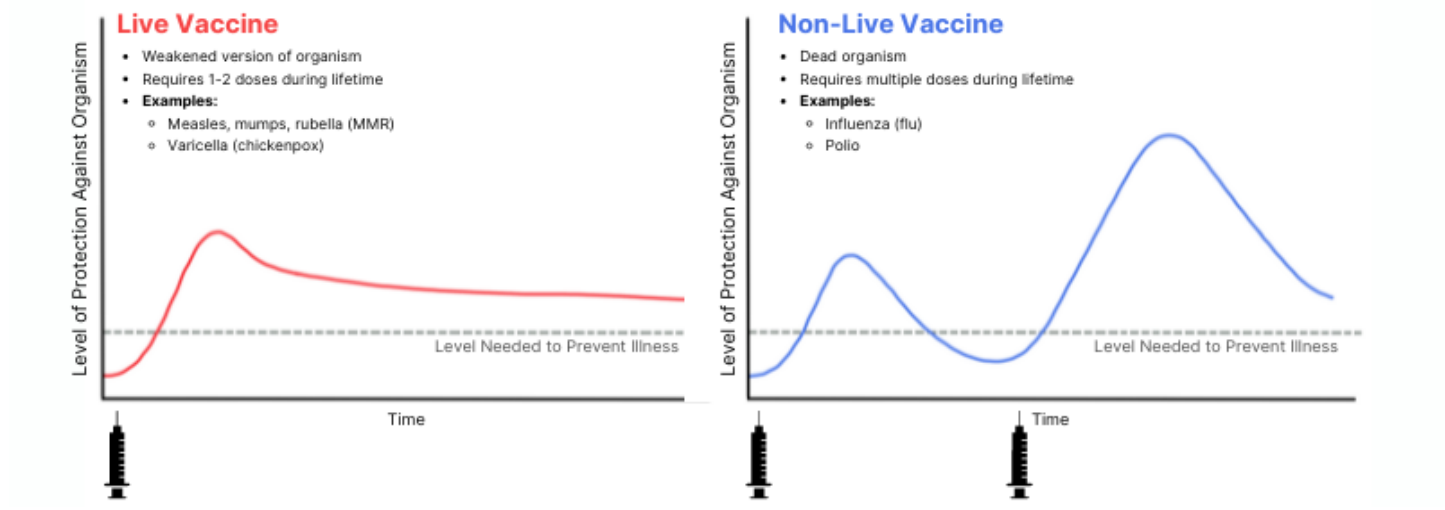
What types of vaccines exist?[3,6]

There are several ways that vaccines can teach the body to fight against disease-causing organisms. The two most common types of vaccines include live and non-live or attenuated. Other vaccine types include:

Vaccine Type	How It Works	Examples
Live	Provides a weak version of the virus or bacteria	Measles, mumps, rubella (MMR) Rotavirus Smallpox Chickenpox Yellow fever
Non-Live (Attenuated)	Provides a dead version of the virus or bacteria	Hepatitis A Influenza (flu) – *shot only* Polio – *shot only* Rabies
Subunit *May also be referred to as a recombinant, polysaccharide, or conjugate vaccine*	Provides pieces of the virus or bacteria	*Hemophilus influenzae* type B (Hib) Hepatitis B Human papillomavirus (HPV) Whooping cough Meningococcal and pneumococcal disease Shingles
Messenger RNA (mRNA)	Provides the instructions needed to make pieces of the virus or bacteria	COVID-19
Toxoid	Provides the toxins produced by the bacteria or virus	Diphtheria Tetanus
Viral Vector	Carries the instructions needed to make pieces of the virus or bacteria	COVID-19 Ebola

The number of vaccine doses needed for a certain bacteria or virus depends on how the vaccine is made. Live vaccines usually need only 1-2 doses and provide lifelong protection. Non-live vaccines may require multiple doses over time to help "boost" the immune system.

Figure 1: Comparison of Live Versus Non-Live Vaccines[7,8]

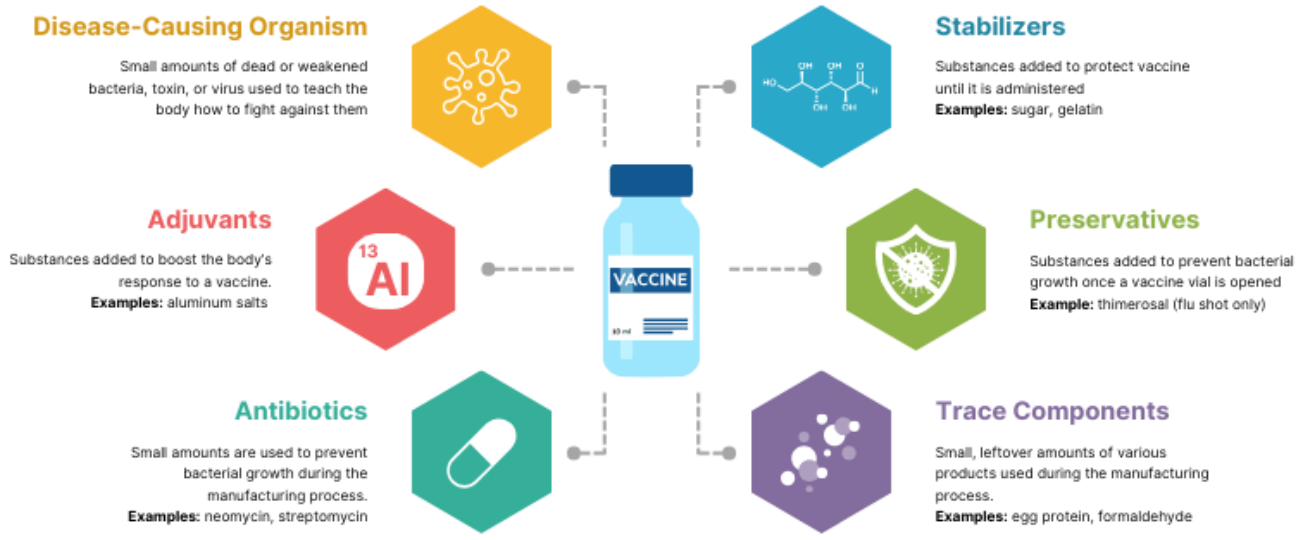


Adapted from Pollard AJ & Bijker EM. A guide to vaccinology: from basic principles to new developments. Nat Rev Immunol 21, 83–100 (2021). https://doi.org/10.1038/s41577-020-00479-7

What is in a vaccine?

Vaccines contain only the necessary ingredients needed to make it safe and effective. Some components help the body respond better to the vaccine while others make sure the vaccine stays safe during storage and transportation. Many ingredients are natural and already found in the body, environment, or in the foods we eat.[9,10] Vaccines may have small amounts of water, sodium or potassium salts, plant extracts, organic oils, and others.[11]

Figure 2: Common Vaccine Ingredients



Adapted from the Oxford Vaccine Group and the Center for Disease Control & Prevention

What are the current vaccine recommendations?[12,13]

Vaccine recommendations depend on your age, health conditions, occupation, and other factors. Almost everyone can be vaccinated. In the United States, the Center for Disease Control and Prevention (CDC) is the most trusted source for vaccination information and they update their recommendations every year.

By Age	• Children (Birth Through 6 Years Old) • Children & Adolescents (7 Years Old Through 18 Years Old) • Adults (19 Years and Older)
Additional Recommendations	• Health care workers • Health conditions • Immigrants, refugees, and international adoptions • Men who have sex with men (MSM) • Military members • Pregnant women • Travelers

For updated vaccine recommendations, visit the CDC's website. Talk to your health care provider or your local pharmacist if you are unsure which vaccine(s) you or your family should receive.

Is it too late to get vaccinated?

It is never too late to get vaccinated. If you miss a dose or your vaccine was delayed for any reason, "catch-up" vaccines may be given. The CDC provides guidance on catch-up vaccinations.[13] Further questions should be referred to your primary care provider or local pharmacist.

Where can I get vaccinated?

You can get vaccinated at your doctor's office, local pharmacies, health centers, and travel clinics.[14,15] Ask your local pharmacist what vaccines you can get today.

How much do vaccines cost?

Most insurance plans cover recommended vaccines for little or no cost. If you do not have insurance or have questions regarding cost, ask your doctor, pharmacist, or local health center for payment options as you may qualify for free vaccines. For more information, visit the US Department of Health and Human Services website.[16]

Can I get more than one vaccine at a time?

Yes - Many vaccines can safely be given at the same time. Some are even combined into one shot, like the MMR (measles, mumps, rubella) and DTaP (diphtheria, tetanus, pertussis) vaccines.[17] These combinations mean fewer shots, less pain, and fewer trips for vaccinations.[18]

Resources

- What vaccinations do I need?
  - Vaccines by Age
  - Vaccines by Disease
  - The Adult Vaccine Assessment Tool (for adults only)
  - Health care Workers
  - Health Conditions
  - Immigrants, Refugees, and International Adoptions
  - Men Who Have Sex with Men (MSM)
  - Military Members
  - Pregnant Women
  - International Travelers
- Where to get vaccinated: https://www.hhs.gov/immunization/get-vaccinated/where/index.html
  - Find a health center: https://findahealthcenter.hrsa.gov/
  - Find a pharmacy: https://www.vaccines.gov/en/
- Vaccine safety
  - Vaccine Ingredients: https://www.hhs.gov/immunization/basics/vaccine-ingredients/index.html
  - Common Ingredients in FDA-Approved Vaccines: https://www.fda.gov/vaccines-blood-biologics/safety-availability-biologics/common-ingredients-fda-approved-vaccines
  - Excipients in routinely recommended vaccines: https://www.vaccinesafety.edu/components-excipients/
  - Potential allergens in routinely recommended vaccines: https://www.vaccinesafety.edu/components-allergens/
  - Do vaccine ingredients cause adverse events? https://www.vaccinesafety.edu/do-vaccine-ingredients-cause-adverse-events/
  - Common Vaccine Safety Questions and Concerns: https://www.cdc.gov/vaccine-safety/about/index.html
  - Historical Vaccine Concerns: https://www.cdc.gov/vaccine-safety/historical-concerns/index.html
- What to expect before, during, and after vaccination
  - For adults: https://www.hhs.gov/immunization/get-vaccinated/for-adults/index.html
  - For parents: https://www.hhs.gov/immunization/get-vaccinated/for-parents/index.html
- How to pay for vaccinations
  - https://www.hhs.gov/immunization/get-vaccinated/pay/index.html

Go online to find more information and to view the references for this toolkit.

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