

Learn About Vaccines

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1. What are vaccines and how do they work?

A vaccine is a microorganism that has been modified (killed or weakened) to be harmless, or a part of a microorganism that is administered for preventive purposes. Vaccines work by simulating the presence of an infectious agent (the harmful microorganism), thus stimulating the production of defenses (antibodies and protective cells). In this way, protection or immunization against these microorganisms is achieved.

2. What are vaccines for?

Each vaccine serves to prevent one or more infectious diseases. Some, called combined or polyvalent vaccines, protect simultaneously against several diseases. For example, the MMR vaccine protects against measles, rubella, and mumps. Others only protect against one disease, such as yellow fever or influenza.

Some vaccines, such as the human papillomavirus (HPV) vaccine and the hepatitis

B vaccine, also protect against cervical cancer and liver cancer, respectively.

3. How many types of vaccines are there?

Today, there are many types of vaccines that differ in several aspects, such as how they are produced, their contents (whole or part of the microorganism), the method of administration (by injection or orally), the number of doses required, and the precautions that must be taken when administering them. The most important distinction is whether the microorganism contained in the vaccine is alive (live or replicative vaccines) or not alive (non-replicative vaccines). Live vaccines are generally more effective and require fewer doses, but they should not be used in certain cases. Non-replicative vaccines are safer, but to achieve their full protective potential, they require a greater number of doses and boosters, which are additional doses administered several years later.





As with pregnancy, live or replicating vaccines SHOULD NOT be used in these cases.

5. People with specific risks due to their profession, place of residence, or travel destinations; for example, veterinarians should be vaccinated against rabies; those who live in, or are traveling to, jungle areas should be vaccinated against yellow fever (see letter 124).



4. Who should get vaccinated?

Everyone can benefit from vaccines, but there are certain groups for whom vaccines are especially important. These groups are:

1. Children, who can be vaccinated against common and serious childhood diseases such as measles (see Health Letter 53), pertussis or whooping cough (Health Letter 56), mumps (Health Letter 63), diphtheria (Health Letter 59), chickenpox (Health Letter 61), hepatitis (Health Letters 5 and 6), and many more.
2. Older adults, in whom some diseases such as influenza (flu) (Health Letter 89), pneumonia, and herpes zoster or shingles (Health Letter 62) are more frequent or more severe.
3. Pregnant women are vaccinated to generate antibodies that are passed on to the baby, protecting it from the beginning of life against diseases such as tetanus and whooping cough. Only non-replicating vaccines are used in pregnant women.
4. People with weakened immune systems or who will undergo certain treatments that may weaken them, such as transplants.

5. When should vaccination take place?

Each vaccine has an optimal age or time for administration. For children, there are specific ages for each vaccine, which can be found in the Expanded Program on Immunization (EPI) currently in effect in Colombia. For older adults, vaccines are generally administered starting at age 60, and specific recommendations can also be found there. See the vaccination schedule for Colombia at <https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/VS/PP/ET/ficha-esquema-vacunacion-vf2.pdf>

6. What complications could have a vaccination?

Like any medical treatment, vaccines can have adverse or undesirable effects, ranging from simple painful swelling at the injection site, general discomfort, and fever, to serious complications. However, the latter are very rare nowadays if the recommendations mentioned in the previous questions are followed. In any medical intervention, whether it's taking medication, undergoing surgery, receiving a vaccine, etc., a balance between risks and benefits must be done. **With vaccines, in general, the benefits far outweigh the risks.** In fact, vaccination is considered the most impactful technological development in the area of global public health and one of the most important inventions in the history of humankind.



Web pages consulted

- <https://www.minsalud.gov.co/salud/publica/Vacunacion/Paginas/pai.aspx>
- <https://www.minsalud.gov.co/proteccionsocial/Paginas/EsquemasdeVaunaci%C3%B3n.aspx>
- <chromeextension:efaidnbmnnpbpcjpcgllefndmkaj/https://www.minsalud.gov.co/sites/ridListsBibliotecaDigitalRIDE/VS/PP/ETfichaesquema-vacunacion-vf2.pdf>
- <https://www.mayoclinic.org/es/diseasesconditions/infectious-diseases/in-depth/vaccineguidanceart-20536857>
- <https://www.cdc.gov/vaccines-adults/es/site.html>

Pages consulted: • www.vid.org.co • www.saludvid.org.co
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Recommended Readings

- Health Letter 89: Learn about the flu
- Health Letter 125: Learn about yellow fever
- Health Letter 53: Learn about measles
- Health Letter 56: Learn about pertussis (whooping cough)
- Health Letter 63: Learn about mumps
- Health Letter 59: Learn about diphtheria
- Health Letter 61: Learn about chickenpox
- Health Letter 62: Learn about herpes zoster (shingles)
- Health Letters 5 and 6: Learn about hepatitis

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