***Vaccination***

A **vaccine** is a biological preparation that provides active [acquired immunity](https://en.wikipedia.org/wiki/Acquired_immunity) to a particular [disease](https://en.wikipedia.org/wiki/Disease)

. A vaccine typically contains an agent that resembles a disease-causing microorganism and is often made from weakened or killed forms of the microbe, its toxins, or one of its surface proteins.

The agent stimulates the body's [immune system](https://en.wikipedia.org/wiki/Immune_system) to recognize the agent as a threat, destroy it, and to further recognize and destroy any of the microorganisms associated with that agent .

There are several types of vaccines in use. These represent different strategies used to try to reduce the risk of illness while retaining the ability to induce a beneficial immune response,

**Inactivated**

[*Inactivated vaccine*](https://en.wikipedia.org/wiki/Inactivated_vaccine)

Some vaccines contain inactivated, but previously virulent, micro-organisms that have been destroyed with chemicals, heat, or radiation. Examples include [hepatitis A vaccine](https://en.wikipedia.org/wiki/Hepatitis_A_vaccine),

[rabies vaccine](https://en.wikipedia.org/wiki/Rabies_vaccine) and some [influenza vaccines](https://en.wikipedia.org/wiki/Influenza_vaccines)

**Attenuated**

[*Attenuated vaccine*](https://en.wikipedia.org/wiki/Attenuated_vaccine)

Some vaccines contain live, [attenuated](https://en.wikipedia.org/wiki/Attenuated_vaccine) microorganisms. Many of these are active [viruses](https://en.wikipedia.org/wiki/Viruses) that have been cultivated under conditions that disable their virulent properties, or that use closely related but less dangerous organisms to produce a broad immune response nature.

Examples include the viral diseases

[yellow fever](https://en.wikipedia.org/wiki/Yellow_fever), [measles](https://en.wikipedia.org/wiki/Measles), , and the bacterial disease [typhoid](https://en.wikipedia.org/wiki/Typhoid).

[Toxoid](https://en.wikipedia.org/wiki/Toxoid) vaccines are made from inactivated toxic compounds that cause illness rather than the micro-organism.[ Examples of toxoid-based vaccines include [tetanus](https://en.wikipedia.org/wiki/Tetanus) and

**Developing immunity**

The immune system recognizes vaccine agents as foreign, destroys them. When the [virulent](https://en.wikipedia.org/wiki/Virulence) version of an agent is encountered, the body recognizes the protein coat on the virus, and thus is prepared to respond, by (1) neutralizing the target agent before it can enter cells, and (2) recognizing and destroying infected cells before that agent can multiply to vast numbers.\

Veterinary medicine

[*Influenza vaccine § Flu vaccine for nonhumans*](https://en.wikipedia.org/wiki/Influenza_vaccine#Flu_vaccine_for_nonhumans)*, and*[*Vaccination of dogs*](https://en.wikipedia.org/wiki/Vaccination_of_dogs)

Vaccinations of animals are used both to prevent their contracting diseases and to prevent transmission of disease to humans, Both animals kept as pets and animals raised as livestock are routinely vaccinated. In some instances, disease-prone area and has been used to attempt to control [rabies](https://en.wikipedia.org/wiki/Rabies) .

Where rabies occurs, rabies vaccination of dogs may be required by law. Other canine vaccines include [canine distemper](https://en.wikipedia.org/wiki/Canine_distemper), [canine parvovirus](https://en.wikipedia.org/wiki/Canine_parvovirus), [infectious canine hepatitis](https://en.wikipedia.org/wiki/Infectious_canine_hepatitis),  [leptospirosis](https://en.wikipedia.org/wiki/Leptospirosis),