

Understanding Cancer Vaccines



Vaccines are mostly used to prevent infectious diseases. The flu shot is a good example. But new vaccines are being made to help fight cancer. Some of the vaccines work against the viruses linked to certain cancers. Others are used to boost the immune system to help it work against a tumor that has already grown.

How vaccines work

The immune system is the body's defense against disease, infection, and cancer. Part of the immune system makes special proteins called antibodies. These proteins are made to attack and destroy harmful or foreign substances that enter the body. Each antibody is made to match a certain harmful substance. It recognizes and attacks only that substance. Vaccines work by triggering your immune system to make memory cells and antibodies. Think of antibodies as your personal army against a foreign invader, like a dangerous virus. Your soldiers are quickly ready to report to duty against a targeted dangerous virus when they have been put to work by a vaccine.

There are many types of vaccines. Some work by using a version of a bacteria or virus that has been made weak to wake up the immune system. This isn't enough to make a person sick. But it is enough to help the body to make strong and specific antibodies. Other vaccines use inactivated or dead viruses and bacteria, or a piece of their protein material, to cause an immune response. Once the antibodies are made, the body is ready to fight off the substance. This protects the body against certain infections and diseases.

Vaccines are often given as shots. There are many common vaccines for both children and adults.

Types of cancer vaccines

There are 2 types of cancer vaccines:

- **Preventive vaccines.** These help protect a healthy person from getting cancer. They target certain types of infection that can lead to cancer. For instance, there's a vaccine against certain types of the human papillomavirus. This virus has been linked to cervical, vulvar, vaginal, anal, penile, and throat cancers. Another vaccine prevents hepatitis B (HBV) infection. HBV can lead to liver cancer.
- **Treatment vaccines.** These are given to a person who has cancer. They are a type of immunotherapy. They help the immune system spot cancer cells and kill them. This may help keep the cancer cells from growing and spreading. There's 1 approved vaccine used to treat advanced prostate cancer. Another is approved to treat advanced melanoma skin cancer. These vaccines do not prevent or cure the cancer but can help keep it under control. Many other treatment vaccines for other kinds of cancer are being studied.

Possible side effects of cancer vaccines

Cancer vaccines may cause side effects, such as:

- Problems where the shot is given (bleeding, infection, redness, pain, swelling)
- Itching or rash
- Fever
- Chills
- Headache
- Tiredness
- Muscle aches

- Joint and back pain
- Weakness
- Fainting
- Nausea or vomiting
- Problems breathing
- Blood pressure problems

Other side effects may occur. These depend on the type of vaccine you get. Your healthcare provider can tell you more about what side effects to expect and how to manage them.

Learn about clinical trials

Clinical trials are a way to test new treatments before they are put on the market. A number of vaccines for cancer are now in trials. To learn more, go to the [National Cancer Institute website at www.cancer.gov/clinicaltrials](https://www.cancer.gov/clinicaltrials).

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