

Lifelines



from the National Cancer Institute

A Look at Cancer Vaccines: What You Need to Know

By the National Cancer Institute

Vaccines are medicines that boost the immune system's natural ability to protect the body against "foreign invaders" that may cause disease. You probably already know that there are vaccines for a number of diseases like the flu, measles, and even chicken pox. In fact, many deadly infectious diseases that were capable of killing millions are now tamed because of vaccines. Someday it may be the same for cancer.

For many years, the treatment of cancer was focused primarily on surgery, chemotherapy, and radiation. However, as researchers learn more about how the body fights cancer on its own, so-called biological therapies, including vaccines, are being developed that harness the potential of the body's defense system in this fight. Some cancer vaccines, known as cancer preventive vaccines, are designed to prevent cancer from developing in healthy people. Other cancer vaccines, known as cancer treatment vaccines, are intended to treat cancers that have already occurred.

Some cancer preventive vaccines are already a reality. These types of vaccines are designed to target infectious agents that cause cancer. One type of vaccine prevents infection with the human papillomavirus (HPV), which causes almost all cervical cancers. The U.S. Food and Drug Administration (FDA) has approved two vaccines to prevent HPV infections: Gardasil® and Cervarix®. Both vaccines are highly effective in preventing persistent infections with HPV types 16 and 18, two high-risk HPVs that cause approximately 70 percent of cervical cancers. Gardasil also prevents infection with HPV types 6 and 11, which cause most cases (90 percent) of genital warts. The Advisory Committee on Immunization Practices of the Centers for Disease Control and Prevention has recommended that girls ages 11 to 12 get vaccinated (though it's appropriate to do so when they are as young as 9) and that females ages 13 to 26 also be vaccinated.

Another cancer preventive vaccine protects against chronic HBV infection, which can lead to liver cancer. The HBV vaccine was approved by the FDA in 1981, making it the first cancer preventive vaccine to be successfully developed. Today, most children in the United States are vaccinated against HBV shortly after birth.

Cancer treatment vaccines are designed to strengthen the body's natural defenses by stimulating the immune system to recognize and attack existing cancer cells. These vaccines may stop a tumor from growing, stop a tumor from coming back after it has been treated, or eliminate cancer cells not killed by previous treatments. The FDA has approved one such

vaccine, Provenge, which is used to treat prostate cancer that does not respond to hormone therapy.

Clinical trials that are testing other promising cancer control strategies are under way. These include studies of how best to combine cancer treatment vaccines with other types of therapy and research on new technologies to improve understanding of the basic biology underlying the interaction of immune cells and cancer cells. People who take part in these cancer clinical trials have an opportunity to contribute to knowledge of, and progress against, cancer. They also receive up-to-date care from experts. A database of cancer clinical trials, including vaccine trials, can be searched on NCI's Web site, <http://www.cancer.gov>, by visiting <http://www.cancer.gov/clinicaltrials/search> on the Internet. To learn more about cancer vaccines enter search keywords (such as vaccines or HPV) on NCI's Web site.

NCI also offers comprehensive research-based information for patients and their families, health professionals, cancer researchers, advocates, and the public:

- **Call** NCI's Cancer Information Service at 1-800-4-CANCER (1-800-422-6237)
- **Visit** us at <http://www.cancer.gov> or <http://www.cancer.gov/espanol>
- **Chat** using LiveHelp, NCI's instant messaging service, at <http://www.cancer.gov/livehelp>
- **E-mail** us at cancergovstaff@mail.nih.gov
- **Order** publications at <http://www.cancer.gov/publications> or by calling 1-800-4-CANCER

NCI leads the National Cancer Program and the NIH effort to dramatically reduce the burden of cancer and improve the lives of cancer patients and their families, through research into prevention and cancer biology, the development of new interventions, and the training and mentoring of new researchers. For more information about cancer, please visit the NCI Web site at www.cancer.gov or call NCI's Cancer Information Service at 1-800-4-CANCER (1-800-422-6237).