

# The Significant Role of Vaccines in Oncological Diseases and their Importance

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## DESCRIPTION

Vaccines are medicines that help the body fight disease. They can train the immune system to find and destroy harmful microbes and cells. There are many vaccines that you receive throughout your life to prevent common diseases. There are also cancer vaccines. There are vaccines that prevent cancer and vaccines that treat cancer.

There are vaccines that can prevent healthy people from some cancers caused by viruses. Like the chicken pox or flu vaccines, these vaccines protect the body against these viruses. This type of vaccine will only work if the person receives the vaccine before contracting the virus.

Cancer vaccines increase the immune system's ability to find and destroy antigens. Cancer cells often have certain molecules called cancer-specific antigens on their surface that are not found on healthy cells. When a vaccine gives these molecules to a person, the molecules act as antigens. They tell the immune system to find and destroy cancer cells that have these molecules on their surface.

## Side effects of cancer vaccines

- Muscle or joint pain
- Fatigue
- Headache
- Difficulty breathing
- Low or high blood pressure
- T-VEC can cause tumor lysis syndrome. In this syndrome, tumor cells die and disintegrate in the blood. This changes certain chemicals in the blood, which can cause damage to organs such as the kidneys, heart and liver. Because T-VEC is made from a herpes virus, it can sometimes cause a herpes virus infection that can lead to pain, burning, or tingling in a blister around the mouth, genitals, fingers, or ears.
- Eye pain, sensitivity, eye discharge and blurred vision

- Weakness in the arms and legs
- Extreme tiredness and sleepiness
- Confusion

## Importance

Vaccination is the most important thing we can do to protect ourselves and our children from disease. They prevent up to 3 million deaths worldwide each year. Since vaccines were introduced in the UK, diseases like smallpox, polio and tetanus that used to kill or disable millions of people are either gone or seen very rarely. Other diseases, such as measles and diphtheria, have declined by up to 99.9% since their vaccines were introduced.

However, when people stop getting vaccines, infectious diseases can quickly spread again. Having the vaccine also benefits your entire community through "herd immunity". If enough people are vaccinated, it is harder for the disease to spread to those people who cannot have the vaccine. For example, people who are sick or have weakened immunity.

Some cancer vaccines are personalized. This means they are made for 1 person only. This type of vaccine is made from human tumor samples that are removed during surgery. Other cancer vaccines are not personalized and target specific cancer antigens that are not specific to an individual. Doctors administer these vaccines to people whose tumors have these antigens on the surface of the tumor cells. Creating effective therapeutic vaccines is a challenge because;

- Cancer cells suppress the immune system
- Cancer cells originate from a person's own healthy cells
- Larger or more advanced tumors are difficult to get rid of with a vaccine
- People who are sick or elderly may have weak immune systems
- Cancer vaccines can cause side effects that affect people in different ways

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