

## How is immunotherapy used in cancer treatment?

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Immunotherapy is a sort of cancer treatment that aids the immune system in recognizing and attacking cancer cells. This can be accomplished by administering medicines that encourage your immune system to work harder or smarter, or by administering man-made immune system proteins or altered cells that have been programmed to seek out and destroy cancer cells. Immunotherapy can be used alone to treat cancer, or it can be used in conjunction with or after another sort of treatment. These medicines aid the body's immunological responses against cancer cells, but they can also alter the immune system's function. As a result, those who receive immunotherapy may have a weakened immune system and become infected [1]. This can be done in a variety of ways:

1. Stimulating, or boosting, your immune system's natural defences so they work harder or smarter to find and fight cancer cells.
2. Creating compounds in the lab that are similar to immune system components and using them to aid in the restoration or improvement of your immune system's ability to detect and kill cancer cells.
3. Immunotherapy has been a significant aspect of the treatment of several cancers in recent decades. New immunotherapy treatments are being studied and authorised at a rapid rate, as are new techniques of dealing with the immune system.
4. Immunotherapy works better for some cancers than it does for others. For some malignancies, it's used alone, but for others, it appears to function better when combined with other treatments [2].

Your immune system is made up of organs, cells, and substances that work together to keep you safe from infections and other disorders. Immune cells and the compounds they produce go throughout your body, protecting you from infection-causing microorganisms. They can also help you avoid cancer in various ways [3].

All of the compounds that are regularly found in the body are tracked by the immune system. Any new substance that the immune system does not identify sets up an alarm, prompting the immune system to launch an attack. Germs, for example, contain components that are not ordinarily found in the human body, such as some proteins. These are recognised as "foreign" by the immune system, which attacks them. Anything containing the foreign substance, such as food, can be destroyed by the immune reaction [4].

The immune system, on the other hand, has a harder time identifying cancer cells. This is due to the fact that cancer begins when normal, healthy cells are transformed or modified and begins to grow out of control. The immune system does not always recognise cancer cells as foreign since they begin in normal cells.

Many people with healthy immune systems nonetheless develop cancer, indicating that the immune system's ability to fight cancer on its own has limits: Because cancer cells are not sufficiently distinct from normal cells, the immune system may not recognise them as foreign. The immune system may recognise cancer cells in some cases, but the response may not be strong enough to eradicate the malignancy. Cancer cells can emit chemicals that prevent the immune system from detecting and combating them. To combat this, scientists have discovered techniques to aid the immune system in recognizing cancer cells and strengthening its reaction so that it can eliminate them. In this way, with the help of science, your own body is able to rid itself of cancer [5].

Immunotherapy for cancer comes in a variety of forms: There are various different types of immunotherapy that can be used to treat cancer, and many of them are currently being researched. Please check Disease A-Z and select a cancer type to learn more about immunotherapy as a treatment for that cancer [6].

Checkpoint inhibitors: These medications work by removing the immune system's 'brakes,' allowing it to recognise and fight cancer cells. Chimeric antigen receptor (CAR) T-cell therapy: This treatment takes T-cells from a patient's blood, combines them with a virus that teaches the T-cells how to connect to tumour cells, and then returns the cells to the patient so they may detect, attach to, and kill the cancer. Cytokines: This treatment stimulates immune cells to attack cancer by using cytokines (small proteins that transport messages between cells). Immunomodulators: This class of medications works by boosting certain sections of the immune system to cure cancer. Vaccines for cancer: Vaccines are substances that are injected into the body to trigger an immune response to particular diseases. We normally conceive of them as something that is given to healthy people to help them avoid getting sick. However, some vaccines can aid in the prevention or treatment of cancer. Monoclonal antibodies (mAbs or MoAbs) are man-made immune system proteins. Because they may be engineered to assault a highly particular

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region of a cancer cell, mAbs can be very beneficial in cancer treatment. Oncolytic viruses: This treatment employs laboratory-modified viruses to infect and kill tumour cells.

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