

Understanding immunotherapy

The immune system is a complex network of organs, cells and chemicals that work together to protect the body from infection and abnormal cells like cancer. While our immune system can fight off abnormal cells, sometimes it's not able to fight all of them off and they develop into cancer.

Checkpoint inhibitors and other immunotherapies

The most widely used immunotherapies are **checkpoint inhibitors** which help the lymphocytes (white blood cells) fight cancer. There are two main types of white blood cells, which are a key part of our immune system. They are:

- B-cells which fight bacteria and viruses
- T-cells which help control the immune system and assist the B-cells to make antibodies

T-cells normally circulate through the body, looking for abnormal cells to destroy. To stop the T-cells from destroying healthy cells, they carry special proteins called 'checkpoints'. Unfortunately, sometimes cancer cells use checkpoints to prevent the T-cells from recognising that they are abnormal, which means the T-cells don't destroy the cancer cells.

Checkpoint inhibitors are designed to block the 'checkpoints' on the cancer cells, so the T-cells can recognise and destroy them. Certain types of cancers with cells that are genetically unstable

or have high numbers of mutations (changes) are more likely to respond to checkpoint inhibitors. This is because T-cells are more likely to recognise them.

Checkpoint inhibitors are usually given via intravenous infusion (a drip inserted into your vein) and may be combined with other drugs. Other types of immunotherapy include:

- **Immune stimulants** – stimulate the immune system and help it reactivate so it can attack cancer cells.
- **CAR (Chimeric antigen receptor) T-cell therapy** – removing T-cells from the blood, altering them to better recognise cancer cells and then returning them to the blood via an intravenous (IV) drip. This boosts the ability of the T-cells to fight cancer cells.
- **Oncolytic virus therapy** – using viruses to infect cancer cells, causing them to die. It also stimulates the immune system to attack the cancer cells.

Is immunotherapy effective?

Checkpoint inhibitor immunotherapy may work well for some people, but it doesn't help everyone. Currently, it's only available for some types of cancer, including bladder cancer, head and neck cancer, Hodgkin and non-Hodgkin lymphoma, kidney cancer, liver cancer, lung cancer, melanoma and Merkel cell carcinoma.

Immunotherapies are currently available for liver, oesophageal and gastroesophageal junction cancers. It is also available for cancer that occurs in any part of the body and is shown in laboratory tests to display a genetic instability.

Usually, immunotherapy is used in people with advanced cancer – either cancer has returned and spread after initial treatment or it was first diagnosed in advanced stages. To determine if immunotherapy is a treatment option for you, speak to your doctor or cancer care team.

Is immunotherapy safe?

Like all drugs and cancer treatments, there are some risks and potential side effects. Immunotherapy drugs are not usually safe for pregnant or breastfeeding women. If you have an autoimmune disease or an organ transplant there will be extra issues to consider.

Immunotherapy can cause side effects that are often referred to as immune-related adverse effects (IRAEs). These are different side effects from more traditional cancer treatments and are managed differently. Side effects can occur days, weeks and in rare cases, even months after finishing treatment. If you experience any side effects, it's important to let your doctors know straight away, even if they seem minor.

How much does it cost?

Unfortunately, checkpoint inhibitors are expensive and may cost several thousand dollars per dose. The cost of some of these drugs may be covered by

the Pharmaceutical Benefits Scheme (PBS) which means the Australian government subsidises the cost. Not all immunotherapy is covered by the PBS, so be sure to find out the exact costs.

Questions to ask

If immunotherapy is a treatment option for you, it's important you understand what's involved, you can ask your doctor:

- Are there laboratory tests to determine if my cancer is likely to respond to immunotherapy?
- What is the success rate of immunotherapy for my type of cancer?
- What do you expect immunotherapy to do to the cancer? Will it be my only treatment?
- What are my options if immunotherapy doesn't work?
- How much will immunotherapy cost? Is there any way to reduce the cost?
- How long, how often and where will I have treatment?
- What type of side effects can occur and who do I contact if I get them?
- Will I have to pay for extra medicines to help manage side effects?
- Can I have other medicines or vaccines while I am having immunotherapy?

Where to find out more

For more information about immunotherapy treatment for your type of cancer, speak to your healthcare team or contact our Specialist Nurse Support Team on **1300 881 698** or support@pancare.org.au.

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