



A Guide to **CAR T** Cell Therapy

This guide has been given to you to provide information that may help you decide, together with your healthcare team, whether CAR T cell therapy may be a potential treatment option for you.



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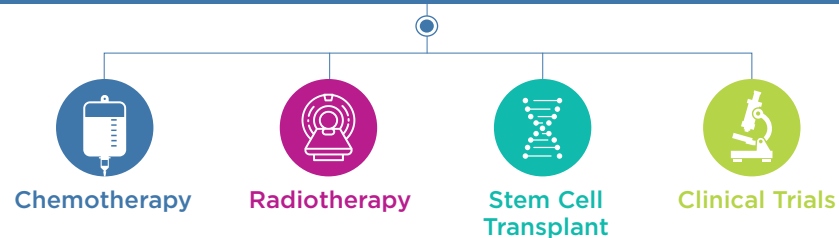
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A Guide to CAR T Cell Therapy

You have been given this booklet to provide you with information about CAR T cell therapy, which is a treatment for certain types of blood cancers. **The aim of this booklet is to help you understand CAR T cell therapy, so you and your healthcare team can decide whether it may be a potential treatment option for you.**

This guide is intended as an additional resource alongside guidance from your healthcare team, who will discuss all your treatment options with you.

Apart from CAR T cell therapy, there may be a number of other treatment options available to you. These could include:



All options will be discussed with your healthcare team.

CAR T Cell Therapy

Chimeric antigen receptor (CAR) T cell therapy is a type of individualised treatment that may be offered to people with certain types of aggressive (fast-growing) blood cancers like lymphoma or leukaemia, who have already undergone two or more other kinds of cancer treatment.¹

CAR T cell therapy is a form of immunotherapy, which means it uses your own immune system to fight your cancer.¹

Unlike other kinds of cancer treatment, it is made from your T cells, which are a type of white blood cell.¹

The job of your T cells is to target and remove bacteria, viruses and cancerous cells.^{1,2}

However, in some cases, cancerous cells have ways of hiding from T cells, which makes it difficult for your body to fight the cancer.^{1,3}

How it Works

CAR T cell therapy works by transforming T cells to help them find and fight cancerous cells.¹

T cells are collected from your body, inserted with a gene that causes them to produce chimeric antigen receptors (CARs) on their surface and then infused back into your bloodstream.¹

These newly modified cells – known as CAR T cells – have the ability to bind to and attack the cancerous cells in your body.¹

Specialist Treatment Centres

CAR T cell therapy can only be given in specialist treatment centres.¹

These treatment centres are based in specialist hospitals, which are qualified to provide CAR T cell therapy.¹

If you don't live close to your treatment centre, you may need to arrange temporary accommodation following the treatment process so you can be within reach of the treatment centre.

You may also need extra help from friends and family during this time. You'll find more information about this on **page 11**.

What May Happen Next

To find out if you're eligible for CAR T cell therapy, your doctor may need to perform a number of tests. These could include:⁴

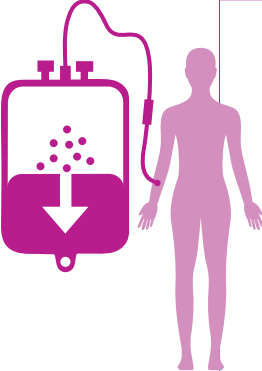
- Tests to check your heart
- Tests to check for signs of infection
- Tests to check the function of your kidneys
- Tests to check the function of your liver

In some cases, your doctor may need to monitor your health for a period of time before deciding whether the treatment is right for you.⁴



Treatment Process

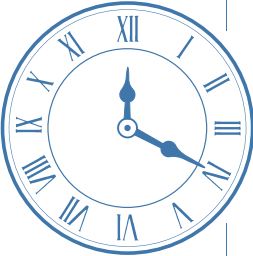
CAR T cell therapy involves several steps over a number of weeks, but time may vary. These steps are outlined in the diagram below:



1

T Cell Collection^{1,4}

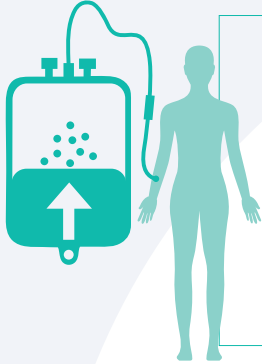
The first step is collecting white blood cells from your body through a process called leukapheresis. Blood is collected and filtered through a special machine that is able to separate the white blood cells from other cells in the blood. These white blood cells are then sent to a laboratory where the T cells are isolated to be turned into CAR T cells (see page 10 for more information).



2

Preparing for Treatment¹


While the CAR T cells are being manufactured in the laboratory there is a few weeks' waiting period. During this time, follow any instructions from the treatment centre. You may receive ongoing cancer treatment to keep your cancer under control, often referred to as bridging therapy. If your CAR T cells are successfully manufactured, you will be given a date to return to your treatment centre. To prepare your body for CAR T cell therapy, you will also need to undergo lymphodepleting chemotherapy at the treatment centre. This treatment is intended to remove other immune cells to make more room for the CAR T cells to multiply once infused.



3

Infusion^{1,4}

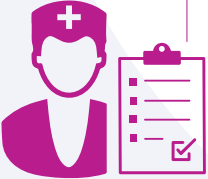
At this stage your healthcare team may decide that you need to undergo further tests. If you are well enough, you will receive a single infusion of CAR T cells. These newly modified cells may now have the ability to find and fight the cancerous cells in your body.



4

Monitoring^{1,4}

After your infusion, you will be monitored carefully by the healthcare team at the treatment centre. Once discharged you will need to remain within easy access of the centre for at least 4 weeks after the CAR T cell infusion, for any follow-up and urgent care if needed. During this time, it's useful to have people who can help you, as you will not be allowed to drive for at least 8 weeks.



5

Follow-up

Your healthcare team will arrange any follow-up appointments or ongoing care you may need.

Possible Side Effects of Treatment

CAR T cell therapy, like many treatments, has side effects.¹ While not everybody will experience all of them, some of these side effects may be severe. Your healthcare team will identify and manage these side effects with you. They will also be able to help you understand the risks associated with the treatment. Two of the most common side effects are neurological adverse reactions and cytokine release syndrome (CRS).⁴

Neurologic adverse reactions

This refers to a range of side effects that affect the brain or central nervous system, which can occur following the infusion of CAR T cells. **Signs or symptoms may include:**⁵

- Confusion and disorientation
- Difficulty speaking
- Difficulty understanding speech
- Difficulty writing
- Short term memory loss
- Tremors (shaky arms or body parts)
- Agitation
- Increased sleepiness
- Fits
- Loss of consciousness
- Loss of balance or coordination

Cytokine release syndrome (CRS)

This occurs when CAR T cells release large amounts of cytokines (proteins) into the bloodstream, causing an inflammatory response.

Signs or symptoms may include:⁶

- Fever (e.g., temperature above 38°C)
- Light-headedness
- Dizziness
- Low blood pressure
- Shortness of breath
- Rapid heartbeat
- Chills
- Fatigue
- Weakness
- Headache

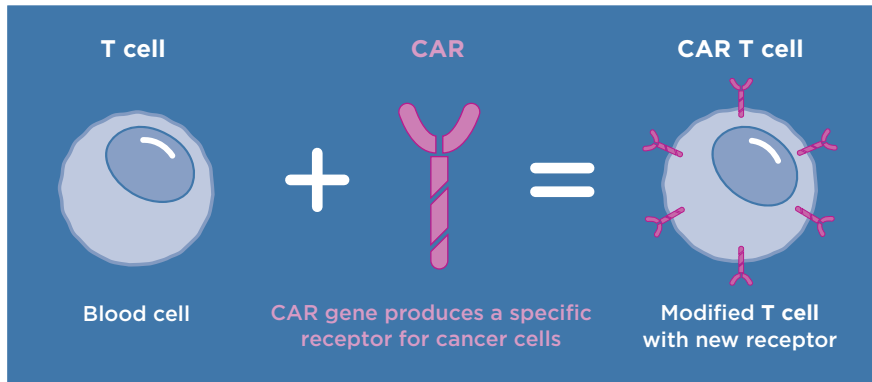
Specialised healthcare teams are well-trained to manage these side effects, and - if necessary - will transfer you to an Intensive Care Unit (ICU) to ensure the best possible care. Alert the healthcare team urgently if you experience any of these signs or symptoms.



How CAR T Cells are Manufactured

Once collected through the process of leukapheresis, white blood cells (which include T cells) are sent to a laboratory.^{1,4}

Here, scientists modify the T cells into CAR T cells by inserting them with a chimeric antigen receptor (CAR) gene.¹



These newly modified CAR T cells are then multiplied for several days to produce the number of cells your treatment requires.¹

Once quality checks have been undertaken, these cells are frozen and sent back to the treatment centre, where they are thawed prior to infusion.¹

Support

Should you choose to proceed with CAR T cell therapy, it's helpful to have a number of people who can support you during your treatment.

Support might include arranging transportation to and from appointments, helping with meals, and reporting any side effects or problems to your healthcare team if you're unable to.

The following organisations have a range of information and support for people coping with cancer.

Leukaemia Foundation

www.leukaemia.org.au

1800 620 420

Rare Cancers Australia

www.rarecancers.org.au

1800 257 600

Lymphoma Australia

www.lymphoma.org.au

1800 953 081

Cancer Council Australia

www.cancercouncil.com.au

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This guide has been produced by Gilead Sciences Pty Ltd.

References: **1.** Lymphoma Australia. Chimeric Antigen Receptor (CAR) T-Cell Therapy Fact Sheet. Available at: www.lymphoma.org.au/about-lymphoma/treatments/targeted-therapy/chimeric-antigen-receptor-car-t-cell-therapy/. Accessed June 2021. **2.** Verywell Health. The Role of T-Cells in Cancer. Available at: www.verywellhealth.com/t-cells-2252171#:~:text=T%2Dcells%20work%20in%20both,stimulated%20to%20kill%20cancer%20cells. Accessed June 2021. **3.** de Charette M, Houot R. *Haematologica*. 2018;103(8):1256–68. **4.** Yakoub-Agha I, *et al. Haematologica*. 2020;105(2):297–316. **5.** Tallantyre EC, *et al. J Neurol*. 2021;268(4):1544–54. **6.** Lee DW, *et al. Blood*. 2014;124(2):188–95.

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