

CAR T-cell therapy

Cigna LifeSOURCE Transplant Network

CAR T-cell therapy basics

Chimeric antigen receptor (CAR) T-cell therapies fight cancer using the patient's own immune system. Certain immune system cells, called T-cells or T-lymphocytes, are normally able to identify abnormal cells, such as cancer cells, and destroy them before they multiply and cause disease. Sometimes, however, T-cells have trouble detecting cancer cells. CAR T-cell therapies are customized for each patient. They are made by collecting T-cells from a patient's blood and reengineering them in a manufacturing site to produce proteins or receptors on their surface; these are called chimeric antigen receptors, or CARs. The CARs recognize and bind to specific proteins, or antigens, on the surface of specific cancer cells. Millions of these new CAR T-cells are created in the laboratory and then reinfused back into the patient. CAR T-cells will continue to multiply in the patient's body and recognize, bind to and kill cancer cells that have the target antigen on their surfaces.

In some cases, CAR T-cell therapy is used as a "bridge" to other treatments, such as a stem cell transplant, to reduce the amount of disease.

What are the CAR T-cell therapy steps?

There are several steps to develop and deliver CAR T-cell therapy:

- Collecting the patient's T-cells through leukapheresis, a procedure that separates and removes T-lymphocytes and returns all the other blood cells and plasma back into the bloodstream; this is typically performed in an outpatient clinic over four to six hours.
- Sending the collected cells to the manufacturing site where the T-cells are genetically modified into CAR T-cells.
- Expanding or growing CAR T-cells in the laboratory until there are hundreds of millions of them; the time from leukapheresis to product delivery can range from 16 days to more than 33 days. During that time, patients undergo a series of tests to confirm they are healthy enough for the infusion of CAR T-cell therapy.

- Administering conditioning chemotherapy to prepare the body for the CAR T-cell therapy; this process is called lymphodepletion. Some patients are hospitalized for this treatment, while others may receive it in an outpatient clinic.
- Intravenously infusing the CAR T-cell therapy into the body in either an outpatient or inpatient setting, under the supervision of a health care professional; the infusion typically takes 30 to 60 minutes. Depending on which CAR T-cell therapy is received and whether complications develop after the infusion, it may be necessary for the patient to be hospitalized for several days or weeks, or to return to the hospital after initially being released following the CAR T-cell therapy infusion.
- Monitoring for complications after treatment; the time between the collection of T-lymphocyte cells and follow-up care after CAR T-cell therapy administration is typically four to eight weeks.

Does CAR T-cell therapy cure cancer?

Although no one can predict with certainty whether CAR T-cell therapy will cure any individual cancer, CAR T-cell therapy may lead to:

- Complete remission (no evidence of disease) for many months or years
- Remission for a period of time before the disease comes back
- A partial remission (there is still evidence of disease, but the amount is less)
- No remission at all

CAR T-cell therapy clinical trials have shown remission rates as high as 98%¹ in some severe forms of blood cancer. This is particularly impressive considering most CAR T-cell clinical trials enroll patients with cancer that has been treated with many prior treatments but has not responded to many or all of them.²

What is our approach to CAR T-cell therapy?

Cigna HealthcareSM includes CAR T-cell therapy under the strong national Cigna LifeSOURCE Transplant Network[®]. As of May 1, 2022, the LifeSOURCE network includes 47 facilities and 57 programs to treat adult or pediatric patients.

What CAR T-cell therapies are FDA approved?

As of April 2022, six CAR T-cell therapies have been approved by the U.S. Food and Drug Administration (FDA) for treatment of patients with certain diseases. Research is underway to determine if patients with other types of cancer, such as chronic lymphocytic leukemia or acute myeloid leukemia, can also be helped by CAR T-cell therapy.

Name	Wholesale Acquisition Cost (WAC) ³	Manufacturer	Indication [FDA Approval Date]
Carvykti™ (ciltacabtagene autoleucl)	\$478,950	Janssen Pharmaceutical Companies of Johnson & Johnson and Legend Biotech	Adults with relapsed or refractory multiple myeloma (MM) after 4 or more prior lines of therapy [Feb. 2022]
Abecma® (idecabtagene vicleucl)	\$457,255	Bristol Myers Squibb and Bluebird Bio, Inc.	Adults with relapsed or refractory multiple myeloma (MM) after 4 or more prior lines of therapy [Mar. 2021]
Breyanzi® (lisocabtagene maraleucl)	\$447,227	Bristol Myers Squibb	Adults with large B-cell lymphoma (LBCL) including diffuse large B-cell lymphoma (DLBCL), DLBCL arising from indolent lymphoma, high grade B-Cell lymphoma, primary mediastinal LBCL, and follicular lymphoma (FL) grade 3B who have: <ul style="list-style-type: none"> • Refractory disease or relapse within 12 months of first-line chemoimmunotherapy [Jun. 2022] • Refractory disease or relapse after first-line chemoimmunotherapy and are not eligible for hematopoietic stem cell transplantation (HSCT) due to comorbidities or age [Jun. 2022] • Relapsed or refractory disease after 2 or more lines of system therapy [Feb. 2021]
Tecartus® (brexucabtagene autoleucl)	\$424,000	Kite Pharma, Inc., a Gilead Company	<ul style="list-style-type: none"> • Adults with mantle cell lymphoma (MCL) [Jul. 2020] • Adults with B-cell acute lymphoblastic leukemia (ALL) [Oct. 2021]
Yescarta® (axicabtagene ciloleucl)	\$424,000	Kite Pharma, Inc., a Gilead Company	<ul style="list-style-type: none"> • Adults with large B-cell lymphoma (LBCL), including diffuse large B-cell lymphoma (DLBCL), primary mediastinal large B-cell lymphoma (PMBCL), high grade B-cell lymphoma (HGBL), and DLBCL arising from follicular lymphoma (FL) after 2 or more lines of systemic therapy [Oct. 2017] • Adults with relapsed or refractory follicular lymphoma (R/R FL) after 2 or more lines of systemic therapy [May 2021] • Adults with large B-cell lymphoma that is refractory to or relapses (R/R LBC) within 12 months of first-line chemoimmunotherapy [Apr. 2022]
Kymriah® (tisagenlecleucl)	\$543,828 (ALL) \$427,048 (DLBCL, TLF)	Novartis	<ul style="list-style-type: none"> • Children and young adults (up to 25 years old) with B-cell acute lymphoblastic leukemia (ALL) [Aug. 2017] • Adults with diffuse large B-cell lymphoma (DLBCL) [May 2018] • Adults with transformed follicular lymphoma (TFL) [May 2022]

What is the total cost of CAR T-cell therapy treatment?

In addition to the wholesale acquisition cost (WAC) noted in the previous chart, there are additional costs associated with CAR T-cell therapy administration and in some cases, costs for an inpatient admission due to serious side effects that may result from receiving a CAR T-cell therapy treatment. Based on the risk and incidence of serious side effects reported in clinical trials and the hospital admission that may be required to manage these side effects, the total cost of care for a single course of treatment with a CAR T-cell therapy may range from \$700,000 to more than \$1 million.⁴

A 2018 Institute for Clinical and Economic Review study found that despite the high price of CAR T-cell therapies in B-cell cancers, they are priced in alignment with their clinical value.



1. Johnson & Johnson. (2022, February 28). "U.S. FDA Approves CARVYKTI™ (ciltacabtagene autoleucel), Janssen's First Cell Therapy, a BCMA-Directed CAR-T Immunotherapy for the Treatment of Patients with Relapsed or Refractory Multiple Myeloma." www.jnj.com/u-s-fda-approves-carvykti-ciltacabtagene-autoleucel-janssens-first-cell-therapy-a-bcma-directed-car-t-immunotherapy-for-the-treatment-of-patients-with-relapsed-or-refractory-multiple-myeloma.
2. Fernandez, C.R. (2021, November 10). "A Cure for Cancer? How CAR-T Cell Therapy is Revolutionizing Oncology." Labiotech.eu. www.labiotech.eu/in-depth/car-t-therapy-cancer-review/#.
3. WAC as of April 2022, subject to change.
4. Prime Therapeutics. (2021, April 12). "Prime Therapeutics' study shows total cost of care for CAR-T plus post-treatment events can exceed \$1 million." [Press release]. www.primetherapeutics.com/news/prime-therapeutics-study-shows-total-cost-of-care-for-car-t-plus-post-treatment-events-can-exceed-1-million/#.

Refer to your plan documents for costs and complete details of your plan's transplant coverage.

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