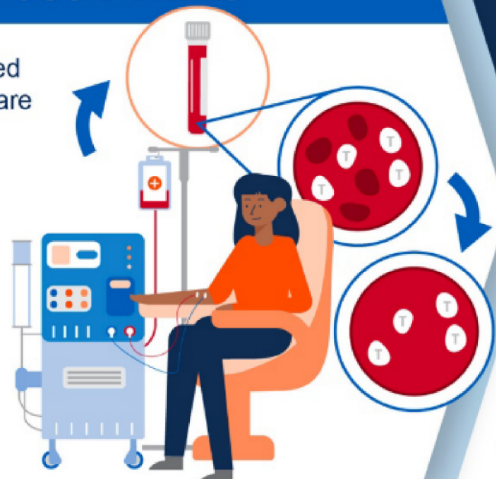


# Chimeric Antigen Receptor (CAR) T-Cell Therapy

## A TIMELINE OF EVENTS

### 1 LEUKOPHERESIS: COLLECTION OF AUTOLOGOUS T-CELLS

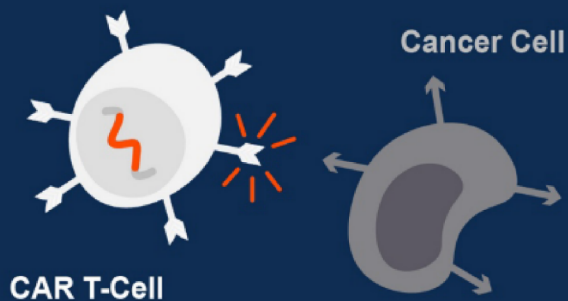
Patient's blood is collected and then the leukocytes are separated out.



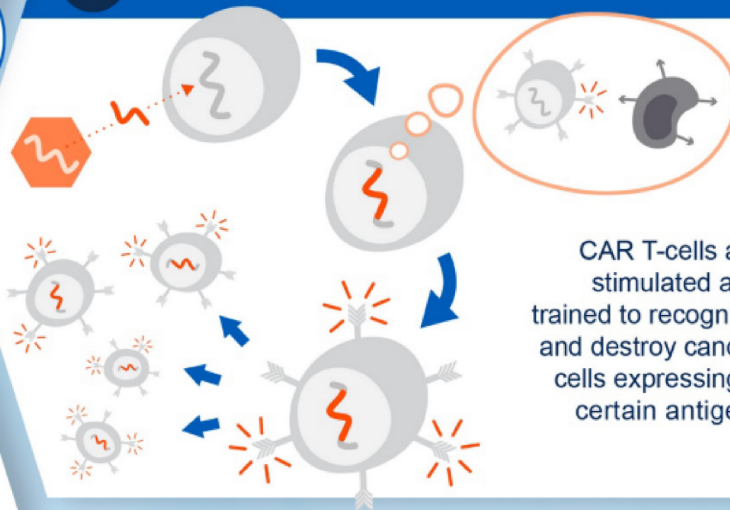
#### ADVERSE EVENTS MAY INCLUDE:



- Hypocalcemia
- Anemia
- Infection



### 2 EX VIVO MANUFACTURING PROCESS



CAR T-cells are stimulated and trained to recognize and destroy cancer cells expressing a certain antigen.

### 3 CONDITIONING

Chemotherapy is administered prior to infusion of CAR T-cells to lymphodeplete and prepare the body for the manufactured T-cells.

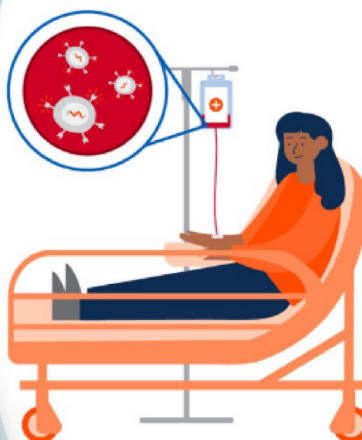


#### ADVERSE EVENTS MAY INCLUDE:



- Nausea / Vomiting
- Fatigue
- Cytopenias

### 4 INFUSION OF CAR T-CELLS



Prepared and activated CAR T-cells are infused. The procedure is performed according to institutional protocol.



ADVERSE EVENTS ARE RARE AND USUALLY NOT SEVERE, BUT MAY INCLUDE:

- Nausea / Vomiting
- Hypotension

### 5 ACUTE MONITORING

Patient is monitored for any adverse events.

#### ADVERSE EVENTS MAY INCLUDE:



- Cytokine Release Syndrome
- Immune Effector Cell-associated Neurotoxicity Syndrome (ICANS)
- Tumor Lysis Syndrome
- Cytopenias
- Infection



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## ADVERSE EVENT MANAGEMENT

CAR T RELATED ADVERSE EVENT	MANAGEMENT
Cytokine Release Syndrome (CRS)*	<p>Grades 1 and 2: Antipyretics, analgesics, antihistamines; empiric treatment for fever, supportive care as necessary</p> <p>Grades 3 and 4: Oxygen supplementation as required; IV fluid and/or vasopressor support as required, ^tocilizumab +/- corticosteroids; intensive care support with possible intubation</p>
Immune Effector Cell-Associated Neurotoxicity Syndrome (ICANS)	<p>Physical exam and neurologic assessment per institutional standard; Neurology consult, seizure precautions, and prophylactic antiepileptics; continuous pulse oximetry and cardiac telemetry monitoring; intensive care support for management of cerebral edema or intracranial pressure (ICP)</p> <p>Pharmacologic treatment: Corticosteroids and/or *tocilizumab in the setting of CRS</p>
Tumor Lysis Syndrome	Hydration; electrolyte and renal functioning monitoring; allopurinol and rasburicase
Cytopenias	Transfusions as indicated; growth factors if not contraindicated; neutropenic and bleeding precautions
Infection	Prophylactic antimicrobials per institutional guidelines; empiric treatment as required

\* Treatment of CRS based on grade. Several grading criteria exist, including CTCAE, Lee, Penn, ASTCT Consensus Grading, and CARTOX.

^ Other IL-6 monoclonal antibodies may be used.

+ Tocilizumab for ICANS is controversial and should only be used if patient is also experiencing associated CRS.



## ONS RESOURCES

**Immuno-Oncology Learning Library** | [www.ons.org/immuno-library](http://www.ons.org/immuno-library)

- **ONS CAR T-Cell Therapy Video** | [www.ons.org/videos/car-t-cell-therapy-video](http://www.ons.org/videos/car-t-cell-therapy-video)
- **Cytokine Release Syndrome Video** | [www.ons.org/videos/cytokine-release-syndrome-video](http://www.ons.org/videos/cytokine-release-syndrome-video)



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