CAR-T Immunotherapy

What is CAR-T Immunotherapy?

CAR-T Immunotherapy is a kind of cancer treatment that uses the body’s own immune system to find and kill cancer cells. Through a procedure called apheresis, T cells (a special kind of white blood cell) are collected from your blood. The T cells are then genetically modified in a laboratory, to create a man-made protein on the surface of the cell, called a chimeric antigen receptor (CAR). These receptors are designed to bind to the surface of the cancer cells, which lets the modified T cells attack them. The CAR-T cells fight the cancer and help protect against the return of the cancer.

How will my treatment be given?

This immunotherapy treatment includes the following steps:

- Your T cells will be collected through a procedure called apheresis. This procedure is done to remove certain cells from the blood so they can be used later.
- The collected T cells are sent to the lab where they are engineered to have a chimeric antigen receptor (CAR).
- The CAR-T cells are then multiplied, frozen and sent back to the hospital.
- Before you can get your engineered T cells, you will have a cycle of chemotherapy to get rid of your current T cells.
- When you are ready to get your immunotherapy treatment, you will go to the hospital or treatment center. Your CAR-T cells will be given to you through a central venous catheter (CVC).
What are the side effects of this treatment?

You may not have any or only some of these side effects with your CAR-T Immunotherapy:

- **Chemotherapy:** The chemotherapy that you will receive before the immunotherapy treatment can be given to you, may have the following side effects. The side effects will vary based on the type of chemotherapy given.
  - Infusion reaction – shortness of breath, dizziness, rash, chills, fever, changes in heart rhythm and/or pain
  - Nausea and vomiting
  - Low blood counts which reduces the ability to fight infections
  - Electrolyte changes
  - Decrease in the number of cells that clot the blood (called thrombocytopenia)
  - Fatigue
  - Taste changes or reduced appetite

- **Cytokine Release Syndrome (CRS):** This problem happens when the number of cells increase in the body and release substances called cytokines. Severe cases of CRS may progress quickly and become life-threatening, if not treated.

  It is very important to check your temperature every 8 hours. If you have any of the following problems, go to the Emergency Room right away.

  - Fever of 100.4 degrees Fahrenheit (38 degrees Celsius) or higher
  - Tiredness
  - Loss of appetite
  - Muscle and joint pain
  - Nausea and vomiting
  - Diarrhea
  - Delirium
  - Hallucinations
  - Chills
  - Rashes
  - Hard or fast breathing
  - Fast heartbeat
  - Low blood pressure
  - Seizures, headache
  - Confusion
  - Shaking (tremors)
  - Loss of coordination (clumsy)
- **Risk of Infection**: You will be given medicines to help lower your risk for possible infections that can be caused by your reduced number of white blood cells from this treatment. Potential infections may include pneumonia, herpes virus, and fungal infections.

- **Tumor Lysis Syndrome (TLS)**: This problem can happen after the treatment of a fast-growing cancer, especially with certain types of leukemia and lymphoma. As tumor cells die, they break apart and release their contents into the blood. This causes a change in some of the chemicals in your blood, which may damage organs, such as the kidneys, heart, and liver. You will have lab work done every day for the first seven days after your CAR-T Immunotherapy to check for this problem. You may be admitted to the hospital to closely monitor and treat this problem.

- **Neurological Toxicity**: This is a broad term for side effects that include confusion, headaches, tremors, dizziness, seizures, encephalopathy (a disease that damages the brain) and trouble speaking. It is important to care for these side effects as soon as possible. You should go to the Emergency Room right away if you have any of these problems. These side effects are usually short-term, but can become severe or life threatening.

- **Late Effects**: There are side effects that may happen months or years after your CAR-T Immunotherapy. The James has a Cancer Support Clinic that can help you learn how to manage these types of side effects. Your health care team will provide information about this resource, if needed.

### When to Call Your Doctor

**It is very important to keep the wallet card you were given, with you at all times.** You should call your doctor right away if you have any of the following problems:

- Fever of 100.4 degrees Fahrenheit (38 degrees Celsius) or higher
- Headache
- Rash
- Scratchy throat
- Feel achy
- Hard to breathe
- Chills or shaking chills

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• Confusion (this may be very mild and only noticed by those who know you well)
• Dizzy or lightheaded
• Severe nausea, vomiting or diarrhea
• Fast or irregular heartbeat
• Severe fatigue (tiredness) or weakness