



Chimeric Antigen Receptor (CAR) T-Cell Therapy



The Ottawa
Hospital
Cancer Care

Disclaimer

This is general information developed by The Ottawa Hospital. It is not intended to replace the advice of a qualified healthcare provider. Please consult your own personal physician who will be able to determine the appropriateness of the information for your specific situation.



Artwork by Sandra Feng
Donated by Stefany Dupont

CAR T-cell therapy is a very specialized procedure which is only offered at a few centres in Ontario. The purpose of this booklet is to help prepare patients and families for the process.

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Program Team Members

Throughout your treatment journey, you will meet many health-care providers. Our inter-disciplinary team includes:

- Haematologists
- Registered Nurses
- Clinical Associates
- Pharmacists
- Coordinators
- Social Worker
- Dietitian
- Physiotherapist
- Nurse Practitioner
- Managers
- Clerks
- Porters
- Environmental Aides

Based on your care needs, other specialists may be consulted.

For non-urgent issues call the Transplantation and Cellular Therapy (TCT) Office **613-737-8899 x 71825** to speak to a clerk or TCT nurse. Please leave a voice message and your call will be returned within one business day (24 hours on weekdays).

For **emergencies** and urgent issues arising after business hours call the haematologist on call at: **613-739-6962**.

Please notify your TCT nurse if you go to the Emergency Department or if you are admitted to the hospital.

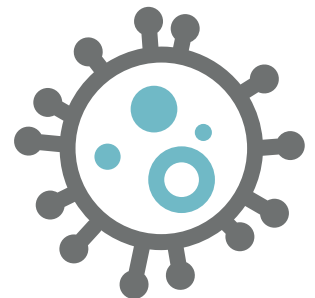
Introduction to CAR T-Cell Therapy

This booklet serves as a guide to help you better understand the CAR T-cell therapy process. CAR T-cell therapy is a type of immunotherapy, meaning your underlying disease is treated by stimulating your immune response to your cancer cells. The goal of this procedure is to cure your blood cancer or keep it away as long as possible. Your doctor believes that CAR T-cell therapy is an appropriate treatment for your disease based on current published data. Some CAR T-cell therapies are only available as part of a clinical trial, whereas other CAR T-cell therapies have been approved in Canada as the standard of care for treatment of some blood cancers, including:

- B-Cell Acute Lymphoblastic Leukemia (B-cell ALL) in patients ages 3-25.
- Diffuse Large B-cell Lymphoma (DLBCL) in patients 18 and older after relapse or failure to respond to previous treatments.

How it Works

CAR T cells are a type of white blood cell known as lymphocytes that are derived from you and genetically modified to recognize and kill your cancer. A few weeks or more prior to the therapy, your lymphocytes will be collected by a process known as leukapheresis. The procedure is performed on an outpatient basis and can usually be done in one day over 3 to 8 hours. After collection, your lymphocytes will be sent to an external lab that specializes in manufacturing CAR T cells. Using genetic technology, a subset of your lymphocytes known as T cells will be engineered to produce receptors on their surfaces known as Chimeric Antigen Receptors. These receptors specifically target your cancer cells for destruction. Your newly modified T cells will be grown (expanded) in cultures in the lab, purified and shipped back to the hospital once you are ready for treatment.



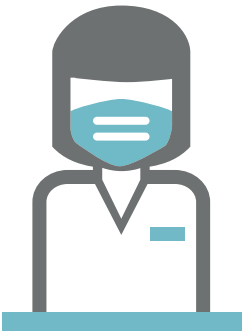
Steps Before Treatment

The decision to undergo CAR T-cell therapy may not be easy. A great deal of planning goes into developing a treatment plan just for you. The process starts with a consultation in the outpatient clinic (Module L) and continues through the path of planning and collecting your cells, waiting for the manufacture of your personalized CAR T cells, chemotherapy, infusion, recovery and follow-up.

Consultation

At your CAR T consult appointment, you and a support person will meet with one of the haematologists where your case will be thoroughly reviewed. Blood work and a brief physical examination will be done. The principles of CAR T-cell therapy, along with the possible risks and benefits will be discussed in detail.

Your doctors will consider several factors when deciding if you are a candidate for CAR T-cell therapy:



- Your overall health
- Your age and medical condition
- Your underlying disease and the likelihood CAR T treatment would be safe and effective

The decision to proceed with CAR T-cell therapy may be difficult to make. Another appointment can be requested to discuss treatment options.

Pre-treatment Investigations

Certain tests need to be done before, during and after your CAR T-cell therapy in order check your disease status and guide your ongoing care. These may include:

- Blood tests: usually a small amount of blood is taken from your arm with a needle. Blood is collected in tubes and sent to a lab.
- Bone marrow aspiration and biopsy: a liquid sample of cells is taken from your marrow through a needle. The cells are then looked at under a microscope. At the same time, a very small amount of bone filled with marrow cells is removed through a needle. The cells are then looked at under a microscope.

Other tests may be required depending on your disease type, treatment plan and whether you are participating in a clinical trial (i.e., tumour biopsy, CT scan, PET scan, echocardiogram).

Planning Rounds

Every week the team of haematologists meets to review each case, discuss treatment strategies and, based on team recommendations, develop an individualized plan of care for you.



Once the decision is made that you wish to proceed, and the treatment is approved, the team will start working with the CAR T-cell manufacturer very quickly to plan your personalized therapy. Many team members collaborate to coordinate the numerous steps to ensure a safe and effective process.

Cell Collection

Your white blood cells, or leukocytes, will be collected by a process known as apheresis, or more specifically, leukapheresis.

Before your cells are collected you will need to undergo a thorough physical exam and blood testing for hepatitis viruses, human immunodeficiency virus (HIV), and other infectious diseases.

On your collection day you will go to the Apheresis unit at the General Campus. You will receive two Intravenous (IV) catheters, one in each arm. During your consultation your arm veins will be assessed. If the veins in your arms are not suitable, a temporary central line may be inserted. Most people will not require a central line for collection.

Your leukocytes be collected by specially trained nurses. They will use an apheresis machine which will be connected to the IVs in both of your arms. Your blood will exit through one IV and travel through the machine. A centrifuge inside the machine will spin your blood and separate out your leukocytes. Your blood minus the leukocytes will then be reinfused in your arm through the second IV, while your leukocyte-rich plasma gets diverted to a collection bag.

The length of this process varies, based on the amount of cells recovered. It can last anywhere from 3 to 8 hours. If the target amount of cells has not been collected by that time, you will need to come back in the next day.

We recommend you wear comfortable clothing, and drink plenty of fluids the day before and limit caffeine. You will remain in bed for the whole procedure and have limited use of your arms due to the placement of the IVs. Free WiFi is available. If you need to use the washroom you will need to use a bedpan

or a urinal so try to minimize fluids the morning of your collection. Most people tolerate the procedure very well.

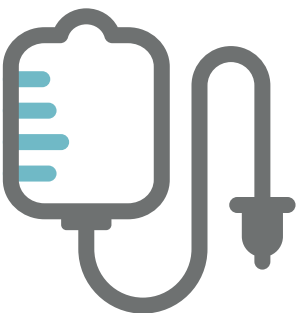
One possible side effect is a lowering of calcium in your blood. You might experience shakes, numbness or muscle cramps. This can occur because the apheresis machine uses something called citrate to prevent the blood from clotting while being processed. Citrate binds to calcium which can lead to a decreased supply in your blood. To prevent this side effect your nurse will give you a calcium replacement through the IV. You will be closely monitored throughout the procedure so if you do begin to feel symptoms of low calcium, your calcium replacement dose can be adjusted. In order to help limit this side effect, it is recommend you increase your calcium intake the night before and the morning of collection (unless lactose intolerant) with foods like yogurt, cheese, milk, sardines with bones, almonds, and/or leafy green vegetables.

The machine primarily removes only leukocytes, but sometimes other blood components can be removed as well. For this reason, your blood counts such as your platelets and red blood cells will be monitored, and a transfusion arranged if needed.



Preparing for Infusion

Once the CAR T manufacturing process has begun and the lab is satisfied with the quality of your cells, the therapy dates can be scheduled. This can take a few weeks to months based on the manufacturing availability dates, progress, and your health. During this time, you will continue to be followed by your referring physician. The team of haematologists will continue to review and coordinate your plan at weekly meetings. It is possible you will need some additional chemotherapy between the period of your cell collection and CAR T-cell therapy. This will be determined by your physician team and will most likely be



given by your referring physician. It is important for you to contact the TCT office if you develop any significant changes such as a cold or illness at this stage as they may need to delay the chemotherapy and infusion until you are better. Because your immune system will not be working properly when you are undergoing CAR T-cell therapy, any infection you have can become life-threatening.

Things to Arrange Before Your Therapy

As you are preparing for your CAR T-cell therapy there are a few things you should organize ahead of time to alleviate stress or added worries throughout the process. A social worker is available to patients to assist with these concerns.

- **Finances:** You should not expect to work during and after CAR T-cell therapy for three months or longer – every case is different. If you are currently working, you will need to discuss taking a leave of absence with your employer (if not self-employed) and arrange for a means of compensations such as EI, disability, and employer benefits if applicable. Your caregiver will also be unable to work for some time in order to be available to you 24 hours a day. He/she should also make arrangements for a leave of absence with his/her employer or business, if applicable.
- **Pets:** If you have pets and no one at home to care for them while you are admitted, arrangements should be made with a friend, family member or a kennel to look after them during this period. Be aware that we cannot give you definite discharge dates.
- **Accommodations/housing:** If you need to relocate to Ottawa for your CAR T-cell therapy, accommodation support may be available through the hospital or CAR T vendor patient assistance program. TOH has secured some dedicated short-term accommodation options for CAR T patients, which may vary in availability. It is important to discuss your accommodation options with the hospital social worker before committing to any private short-term accommodations. You will be required to stay in the Ottawa region until at least 28 days after your CAR T-cell therapy is given. Definite discharge dates cannot be given, and predicted lengths of stay are an estimate only. Arrangements should be made to have a family member or friend collect your mail and check on your house while you are away.
- **Advanced care planning** is a process of reflection and communication. It is a time for you to reflect on your values and wishes, and to let people know what kind of health and personal care you would want in the future if you were unable to speak for yourself. It means having discussions with family and friends, especially your Substitute Decision Maker – the person who will speak for you if you cannot speak for yourself. It may also include writing down your wishes and talking with healthcare providers and financial or legal professionals. Visit <http://www.advancecareplanning.ca/> for more information.

Family Doctor: It is recommended that your family doctor be aware of your CAR T-cell therapy plan. They will be involved in on-going management of any present chronic conditions and will eventually be part of your long-term follow-up care.

Dental Health: Inform the team of any dental health concerns or dental work requirements prior to treatment. Some dental work may need to be completed prior to your clearance for therapy, while other dental work may need to be delayed until after you have recovered.

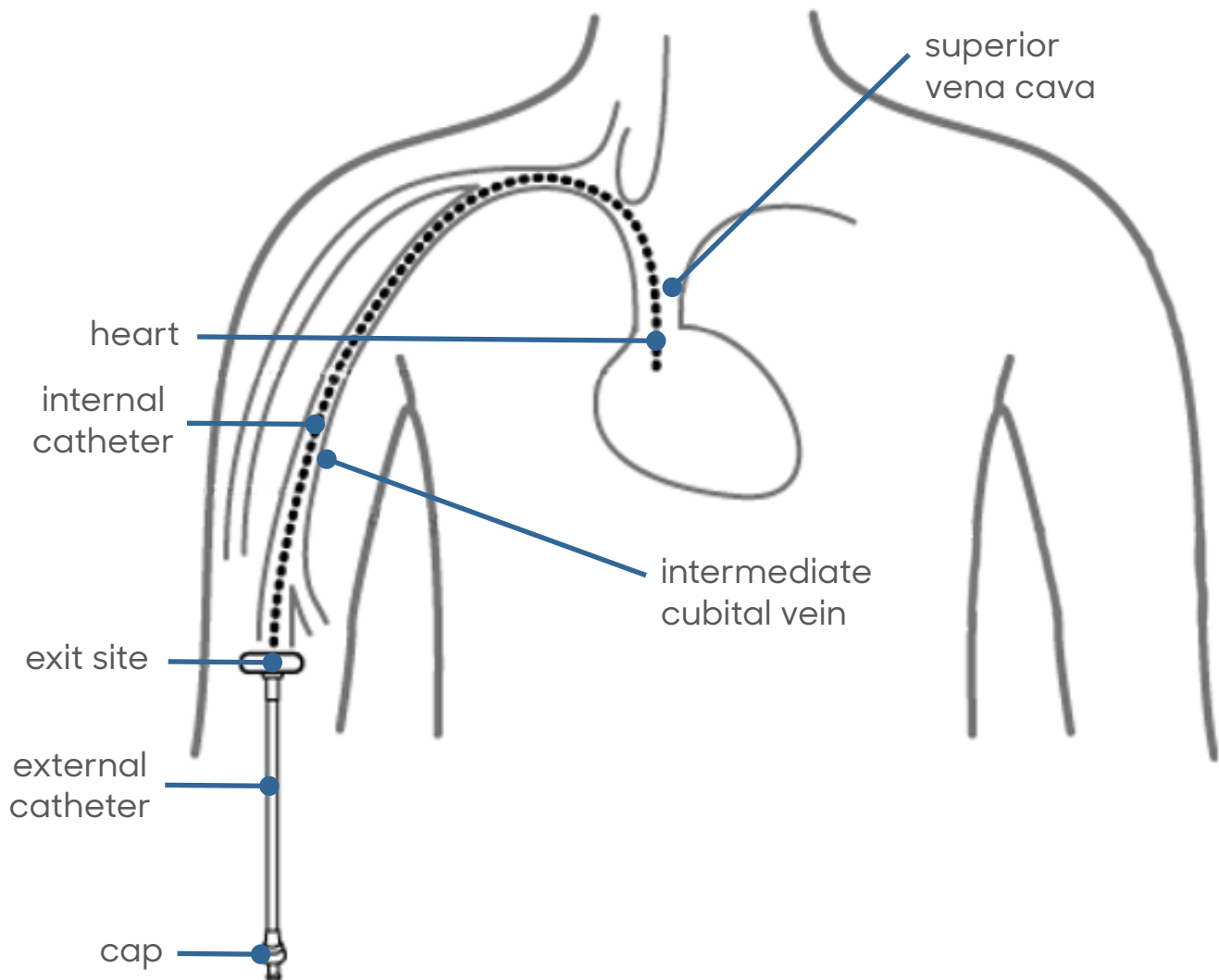
Reproduction, Fertility and Breastfeeding: CAR T-cell therapy includes high dose chemotherapy which can affect your ability to safely conceive. Fertility preservation should be discussed with your haematologist prior to having CAR T treatment. If you are a female of reproductive age and potential, you will be given a pregnancy test prior to treatment. If there is any chance that you or your partner may become pregnant, you and your partner together must use 2 effective forms of birth control at the same time while undergoing your chemotherapy until 6 months after your last dose. The long-term effects of this treatment on fertility are not fully known and this can be discussed with your haematologist. You should not breastfeed while receiving this chemotherapy. It is not known how CAR T-cell therapy affects breast milk and whether it is safe for your child when you are undergoing treatment. If you are currently breastfeeding, please discuss this with your haematologist prior to CAR T-cell therapy.

Central Vascular Access Device (CVAD)

All patients undergoing CAR T-cell therapy will require a central venous access device (CVAD), also known as a central line. The CVAD is a small, hollow, flexible tube that is inserted into a large vein in your body. The line is usually inserted a few days before starting your CAR T-cell infusion protocol. During your therapy, it may be used to take blood, as well as to give medications, chemotherapy, blood transfusions and your CAR T cells. The type of device you will be given is called a Peripherally Inserted Central Catheter (PICC).

Peripherally Inserted Central Catheter (PICC)

This catheter is inserted through a vein in the upper arm and guided/threaded to a large vein in the chest.



Your PICC will have a transparent dressing cover that will be changed weekly by your nurse. The line must not get wet. The nurse will instruct you how to cover the line for showering.

From the start of your therapy protocol up to your discharge, your PICC may be used for obtaining blood specimens. Once you have recovered and are attending follow-up appointments in the TCT clinic (Module L) it will not be used for blood work as per practice guidelines.

Summary of Steps

| Steps | Description |
|---|---|
| Step 1- Consultation | You will meet with the team to decide together if CAR T-cell therapy is right for you. |
| Step 2- Collection Planning | You will return to clinic to learn about your cell collection, treatment and infusion timelines and preparation requirements. |
| Step 3 – Leukocyte Collection and Manufacturing | Leukocytes are collected by a process called leukapheresis. A special machine removes your leukocytes and returns the other blood components back to your bloodstream. Your leukocytes are then sent to an external facility to be engineered into CAR T cells. |
| Step 4 - Lymphodepletion | You will receive chemotherapy to kill remaining cancer cells and prepare your body for your CAR T-cell infusion. |
| Step 5 – Infusion | <p>Your personalized CAR T cells will arrive at the hospital either fresh or cryopreserved (frozen). Cryopreserved cells are thawed at your bedside prior to infusion.</p> <p>You will feel the side effects of your lymphodepletion chemotherapy.</p> <p>Your blood counts will be low and you may need transfusions.</p> <p>Your risk of developing an infection will be high.</p> <p>You may experience severe or life-threatening side effects requiring transfer to the ICU.</p> |
| Step 6 – Discharge | <p>Your blood counts recover and gradually increase.</p> <p>You will begin healing.</p> |
| Step 7 – Recovery | Typically takes 3–6 months after infusion. Your care will be coordinated by the cell therapy team as well as your referring haematologist. |

Adapted from chart published by Memorial Sloan Kettering Cancer Centre:
<https://www.mskcc.org/>

Lymphodepletion Chemotherapy

Before you receive your CAR T cells, you will need pre-treatment, also called lymphodepletion. You will be given high-dose chemotherapy to suppress the immune system and allow for the engineered T cells to stay in your body and treat your disease. This chemotherapy could also provide some control of your disease.

Side Effects from Chemotherapy

Common side effects of chemotherapy include nausea, loss of appetite, taste changes, temporary hair loss, fatigue, diarrhea, and low blood counts. Most patients will need blood and/or platelet transfusions to temporarily increase their blood counts. Less common side effects include rash, low blood pressure, and mouth sores. Chemotherapy can increase your risk of developing a secondary haematologic malignancy (cancer), though the risk is low. This treatment can also cause sterility so you may not be able to have children.

Fludarabine: Side effects may include bloating, swelling of the face, arms, hands, lower legs or feet, body aches or pain, burning or stinging of the skin, chest pain, cough or hoarseness, cough producing mucous, diarrhea, fever or chills, headache, joint pain, muscle aches, sore throat, sweating, vomiting, confusion and wheezing.

Cyclophosphamide: Side effects may include hair loss, nausea, vomiting, diarrhea, infusion reactions (chest pressure, tingling in jaw), reduced heart function and bladder irritation. There is a slight delayed risk of developing a blood cancer after taking this drug.

Cell Infusion Day Zero and Recovery

Infusion day is the day you will have your CAR T cells infused. We refer to this as "day zero". It is an exciting day for many patients who have been preparing and anticipating this day for some time. You will likely receive your CAR T cells at 1:00 p.m. but it will depend on when your chemotherapy was finished. You will receive your cells through your CVAD by a nurse who has received special training. The nurse will monitor how you are feeling and your vital signs throughout the infusion. Depending on the type of CAR T cells you receive, they may arrive fresh, or they may arrive in a cannister where they are kept

cryopreserved (frozen). In the latter case, a technician from the blood bank will warm the cells in a special warm water bath. Each bag of CAR T cells will be infused in less than 30 minutes.

The CAR T cells you are receiving are preserved with a product known as dimethyl sulfoxide (DMSO). This product is tolerated well by most people. The most common side effect is a cough or tickle in the back of the throat. This occurs because the product is excreted through the lungs. Chewing gum or sucking on a hard candy will usually help. While you may not notice it, caregivers may notice a garlic or cream corn smell over the next couple of days. This is from the DMSO and will not last long. More serious reactions to DMSO are possible but uncommon. The nurse will remain with you throughout and the physician will always be available should you have any reaction.

After your "day zero" we will begin to count forward each day, (Day +1 +2 etc.) to keep track of how far along you are from your infusion. Following the CAR T infusion, you are monitored very closely either on the inpatient unit or in the outpatient Day Hospital for toxic effects from the chemotherapy or from the CAR T cells. These complications are described in more detail later. You should expect to be monitored closely for four weeks after the cells are infused.



Over the next few days you will start to feel the effects of the chemotherapy on your body. You may be tired, experience nausea, diarrhea, and mucositis (sore mouth).

Until your blood and immune system fully recover you will be at an increased risk of infection. It will be important to monitor your temperature, report and take medication to prevent infection.

Potential Risks after CAR T-Cell Infusion

Your bloodwork and vital signs will be monitored closely during your therapy so we can detect and manage any side effects of your treatment in the best way possible. If your symptoms are severe, you may need to be admitted to the intensive care unit (ICU). Special drugs can be given to you (steroids, tocilizumab) that will reduce these symptoms without impacting the disease-killing effect of your CAR T cells.

Cytokine Release Syndrome (CRS)

CRS results from inflammation in the body caused by CAR T cells working to kill your cancer and can be serious. You can develop fever, nausea, headache, fast heart rate, changes in blood pressure, shortness of breath, and low oxygen levels in the blood and body. In some cases, CRS may be life-threatening or fatal. This syndrome occurs within days to a couple weeks following CAR T infusion.

Neurological Toxicities

Some patients may develop neurological changes such as confusion, disorientation (unaware of who they are and/or where they are, not recognizing family and friends, unaware of the date and unaware of their health problems), difficulty speaking, extreme sleepiness, seizure-like activity, seizures, or coma. This toxicity can be life-threatening and requires admission to the ICU. This occurs within days to a couple weeks following CAR T infusion and rarely lasts more than 30 days.

Low Blood Count

Severe cytopenias, a decrease in the levels of some types of blood cells, can occur with CAR T-cell therapy. This can be a drop in red blood cells, white blood cells, specific white blood cells called neutrophils, or platelets. The drop in these blood cells may cause symptoms such as tiredness, shortness of breath, or an increased risk of bleeding. The drop in these blood cells may also increase your risk of infection or need for transfusions. This can be seen for months after CAR T delivery.

Areas of Care: Where is My Care Delivered?

All your care will be provided at The Ottawa Hospital General Campus. The following is a list of areas in the hospital where your care will be delivered:

Outpatient Clinic: Module L

Module L is an ambulatory care clinic located on the second floor of The Ottawa Hospital General Campus. Module L offers various visit types that meet your needs before your CAR T-cell therapy and after your discharge from the inpatient unit or Day Hospital. You can reach Module L by phone at **613-737-8131**.

MyChart™: Copies of blood results will not be faxed or emailed. To access your TOH test results electronically via myChart™, you can register through the TOH admitting department or at Module L in person, or online at <https://www.mychart.ca/>. Otherwise, you can contact the TOH Health Records Department at 613-737-8800. In order to discuss blood test and procedure results, you will need to book a clinic appointment, as our physicians do not discuss results over the phone.

Insurance Forms: A fee may be charged for each insurance form completed by the haematologist if this is not paid for by your insurance company. It may take up to a month to complete the insurance form and it will be mailed directly to the insurance company. Please make sure that you have completed and signed the authorization section.

Day Hospital Program

The TCT Day Hospital is located on the 5th floor of The Ottawa Hospital General Campus, just inside the doors to the 5 West unit. The program provides you care while you undergo treatment as an outpatient. Patients can remain in the Day Hospital program if they:

- live within one-hour travel time to hospital
- have a full-time caregiver
- are tolerating treatment side effects well

Daily visits are required. The Day Hospital is open from 7:30 a.m. to 7:30 p.m. every day. The timing of appointments is dictated by your treatment scheduled for that day.

Please arrive on time. There is no waiting room for this unit, and it is important to ensure that your medications are given on schedule. There may also be other patients scheduled after you who require the space. You should plan to be at the hospital for a minimum of two hours each day.

The nurse will do an overall assessment and document any concerns. Treatment such as chemotherapy, antibiotics, blood product transfusions and hydration are given as needed.

Medications are reviewed. You must bring all your pills and your medication schedule (provided on admission) to each visit. The hospital supplies all the medications that are prescribed during your CAR T-cell therapy until you are

discharged to the Module L outpatient clinic. A weekly supply is dispensed on **Thursdays**. In between, medications can be given out as needed.

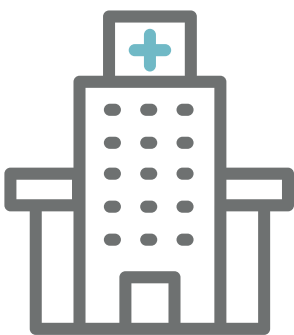
You will be seen by a member of our medical team at each visit. Blood work results will be reviewed. Your medical concerns and questions will be addressed. Once required treatments are completed an appointment time for the following day will be given to you. If your condition changes during the day prior to 5 p.m., contact the TCT Day Hospital at **613-737-8899 x70110**. If after 5 p.m., contact the **haematologist** at **613-739-6962** and they will determine if you need to come into the hospital inpatient unit.

Benefits to the Day Hospital Program include:

- Decreased risk for infection
- Routine for eating and sleeping
- Maintaining physical normalcy as much as possible

Meals are not provided by the hospital to patients in the Day Hospital program. There is an on-site cafeteria, Second Cup (near the elevators) and Tim Hortons (near the Eye Institute/Critical Care Wing). More information, including maps and hospital menus, is available on The Ottawa Hospital website. Food can also be brought in from home. Patient rooms are equipped with small refrigerators, and staff can microwave items for patients upon request.

Inpatient Unit: 5 West



5 West is an inpatient unit located on the 5th floor of The Ottawa Hospital General Campus that specializes in the care of transplant and cellular therapy patients. Patients are admitted to the inpatient unit for a variety of reasons. Many CAR T patients will be admitted to the inpatient unit for monitoring during some of their therapy. Other patients start treatment as inpatients for medical or caregiver reasons. Many patients will be able to use the Day Hospital program for a portion of their therapy

The length of your stay in the inpatient or Day Hospital program is expected to be at least 4 weeks, but it will depend on whether you experience complications. It is common to remain in the hospital or the day program if your blood counts are low.

In order to help pass the time, each room is equipped with a television. On the 5 West unit, cable is provided at no cost to the patient. Patients are encouraged to bring in their laptop and/or tablet. Wi-Fi is available at no charge to patients.

Visitation Policies for Inpatient Units

The Ottawa Hospital has unrestricted visitation 24 hours a day in most areas and encourages family presence. **However**, in order to protect patients who have weakened immune systems, the haematology inpatient units maintain strict visitation policies as described below:

- No one will be permitted to enter the unit with any infectious conditions. This includes but is not limited to the following symptoms: cough, cold, fever, flu-like symptoms, vomiting or diarrhea, and conjunctivitis (pink eye).
- On 5 West, all visitors are required to **use the phone outside the entrance** of the unit in order to gain access with each visit.
- Purell (alcohol-based hand sanitizer) will be used by visitors prior to entering the unit and again prior to entering the patient room. It must also be used by all visitors prior to exiting the room and prior to leaving the unit.
- Visitors are to remain in your room and must comply with all procedures outlined in this document.
- You may only have two visitors at a time, including your caregiver, between the hours of **3:00 p.m. and 8:00 p.m.** Rules may vary during an outbreak or pandemic.
- Children under the age of 12 years are not permitted to visit on the unit.
- Special compassionate exceptions for visitation can be made for a short, pre-determined length of time. Please ask your nurse or social worker about requesting a compassionate visitation.
- You are advised against leaving the unit unless deemed medically necessary (i.e., tests, leave of absence home) for your own protection.
- If you do leave the unit, you **MUST** wear a mask at all times to protect against infection. Ask your nurse for a mask. The mask will only protect you as long as it is dry, and it must cover both your mouth and your nose.
- A mask is to be worn any time you are out of your room.
- The unit kitchen is **only** accessible by hospital staff. If you need something, please ask your nurse or orderly to get it for you.

A primary caregiver must be identified by you upon your admission to the unit. Please provide this name to your nurse upon your arrival. Your identified caregiver (usually your spouse, parent, etc.) will be listed on the front of your chart so that all staff can identify them for admittance to the unit **at any time** during your stay. Alternate caregiver arrangements will have to be made if your identified caregiver has any of the infectious symptoms listed above. Please speak to your nurse if you need to change your caregiver due to illness.

Other precautions:

- Flowers, potted plants and fresh fruit are **NOT** allowed on the unit.
- The use of humidifiers are prohibited.
- All electrical appliances brought in from home must be cleared by the management team.
- Security may be alerted for non-compliance. Abusive verbal or physical behaviour will not be tolerated at any time.

Discharge from the Hospital

Your discharge from the hospital will depend on your blood counts and your general condition. It is important that your bone marrow is working well enough to guard against infections and control bleeding. It is equally as important that you are able to take your medications by mouth, eat and drink well enough and carry on with your activities of daily living. The team will continue to monitor your recovery in Module L.

Outpatient Guidelines

1. Prescriptions will be provided when you are discharged. It is very important that you take your medications as directed.
2. Keep records of what you are eating and drinking.
3. Weigh yourself each day and keep a record.
4. Before you come to the clinic, check your supply of medications and tell the physician what you need so that prescriptions can be written during your visit.



Central Line Care

If a central line is required after you are discharged from 5W, arrangements will be made with Module L or Homecare for weekly dressing changes and flushes to be done up until your central line is no longer needed and can be safely removed.

Family Physician

It is very important to keep in contact with your family physician. You should continue with annual physical exams as certain exams will not take place at the TCT Clinic.

Dental Care

It is important to follow-up with your dentist, but not necessary to see them until at least 3 months after your infusion. Inform the TCT program team before your first visit to the dentist, as antibiotics prior to any treatment may be necessary.

Sun Exposure

As your skin may be more sensitive to the sun it is important to wear protective/reflective clothing (hat and sunglasses) and apply 30 SPF sunscreen.

Driving

Patients must wait at least 2 months after their CAR T-cell therapy before driving or operating heavy machinery. This could take longer, depending on your overall health, side effects and medications.

Returning to Work

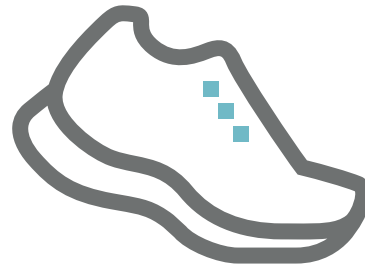
A reasonable amount of time for recovery post therapy is anywhere from three to six months; however, each individual case is different. If you require extended leave beyond 6 months, ensure your doctor has the necessary disability forms to sign.

Cancer-related fatigue is the most common cancer symptom. It can range from mild to severe and may come and go over time. It is a feeling of tiredness that can last a long time and does not go away with rest or sleep. It is different than any fatigue you may have felt before you had cancer.

Some companies have programs that can help you return to work gradually by letting you work part-time to ease you back into the job, change your work times so you do not have to commute during rush hour, reduce your work responsibilities, make changes to how you work, where you work or the type of work you do. Make sure to discuss these possibilities with your employer if applicable.

Some things you can do to manage fatigue:

- Be active
- Improve your sleep
- Manage stress and emotions
- Find support
- Pace yourself
- Eat well
- Be patient – feeling better will take time



Visit www.cancer.ca/support or www.cancercare.on.ca/symptoms for more information.

Signs and Symptoms to Report

**TCT Day Hospital (During Treatment): 7:30 a.m. – 5:00 p.m.,
Mon to Sun. 613-737-8899 x70110**

**TCT office (After Discharge) 8:00 a.m. – 4:00 p.m.,
Mon to Fri. 613-737-8227**

Haematologist on-call 24 hours / 7 days a week 613-739-6962

1. Increased temperature (fever of 38 degrees or higher for longer than 1 hour) or chills.
2. Breathing problems such as shortness of breath, wheezing, coughing or painful breathing.
3. Strong pain in your mouth, white patches or red/swollen areas in your mouth, trouble swallowing or a choking feeling.
4. Severe nausea that lasts more than 24 hours or if you are weak, dizzy, confused.
5. You are not able to keep any water, food or pills in your stomach.
6. Changes in the appearance of your central line (redness, swelling, pain, discharge).
7. New liquid diarrhea or no bowel movement for longer than 5 days.



8. Painful and/or frequent urination or if you have little or very dark pee.
9. Unexplained bruising and bleeding (nosebleed longer than 1 hour, blood in the urine or stool, vomiting blood).
10. New or worse onset of pain.
11. Changes in skin colour such as yellowing, pinpoint purple-red dots, painful blisters or any changes in skin texture.
12. New dizziness, light-headed or feeling faint.
13. Changes in your vision or eye discomfort such as itchiness, dryness and light sensitivity.
14. Cough or cold lasting longer than 1 week.
15. New swelling in an arm or leg.
16. Loss of appetite or weight loss.
17. Any other major changes in the way you feel.

How to Tell if You Have a Fever?

You have a fever if your temperature taken by mouth (oral temperature) is 38.0°C (or 100.4°F) at any time.

Temperature Monitoring

- Keep a digital thermometer at home and take your temperature if you feel hot or unwell (for example, chills).
- If you are an outpatient, check your temperature 4 times daily and call the haematology outpatient Day Hospital **(613-737-8899 x70110)** or haematologist on call **(613-739-6962, after 5:00 p.m.) immediately if you have a temperature greater than 38°C**, or other severe symptoms for guidance on medical care. You will likely need to come to the hospital for an assessment and intravenous antibiotics.
- **Do not** take any medications for your fever, for example, acetaminophen (Tylenol), or ibuprofen (Advil®), as they may hide a fever. You can keep taking other pain medications such as morphine or gabapentin as prescribed by your doctor as they do not affect your temperature.
- **Do not** eat or drink anything hot or cold right before taking your temperature.

CAR T Treatment Card

All patients will be given a CAR T patient information card with the contact information of the program. It is always essential that you or your caregiver carry this card after receiving CAR T-cell therapy and that you alert all health care providers of your treatment.

Irradiated Blood Products

Your chemotherapy puts you at an increased risk to acquire a rare but potentially life-threatening complication of transfusion known as transfusion-associated graft versus host disease (TA-GVHD). To prevent this, some centres irradiate (treat with radiation) blood components for patients with impaired immune systems. The irradiation impairs the white cells in the product so that they cannot attack your cells.

Immunizations

Once you have had your CAR T treatment, your immune system has been reset, so the benefits of past immunizations you received are no longer present. This means you are recommended to receive all vaccines again to provide protection against diseases like measles and mumps. It is very important to follow the vaccine schedule made for you after your CAR T-cell therapy. Your immunizations will be coordinated by the cellular therapy program and may be given in Module L or by your family physician or referring haematologist. Consultation with the Infectious Disease program may be required.

Other Treatment Complications

Infection

After a CAR T-cell therapy, you will be at increased risk of infection. You will be given a combination of antibiotics to minimize your risk of developing a bacterial, viral or fungal infection.

It may take up to a year for your new immune system to be working as well as it should, so it is important to continue taking antibiotics as prescribed and to always be on the lookout for signs of infection, like fever or cough.

There are a variety of medications that you will be given to prevent infection during your treatment. Any of the following agents may be prescribed:

1. Septra

Possible Uses: Prevent or treat bacterial infections.

Side Effects: Rash, nausea, vomiting, diarrhea, stomach upset, decreased blood counts, change in kidney or liver function. If patient is allergic, may cause breathing difficulties, swelling of face, throat or lips.

2. Acyclovir

Possible Uses: Prevent and treat viral infections (i.e., Herpes Simplex Virus, or Varicella Zoster Virus, commonly known as "chickenpox"). Most people have latent virus inside them from past infections which are not active because they are controlled by a healthy immune system. When you receive chemotherapy, your immune system becomes suppressed and these infections may reappear as a result. Again, adequate fluid intake is essential. You will take acyclovir three times a day throughout the treatment period if your blood tests show you have these viruses. You will receive this medication twice a day as preventative therapy if virus not presently detected in your blood.

Side Effects: Diarrhea, dizziness, rash, fatigue, change in kidney function, vein irritation, confusion, change in liver function.

3. Fluconazole

Possible Uses: Prevent or treat fungal infections.

Side Effects: Nausea, vomiting, diarrhea, rash, itching, headache, stomach upset / pain, loss of appetite, dark coloured urine, pale coloured bowel movements, fatigue, yellow skin or eyes, change in liver function.



It is important to report any potential side effects from any of these medications as soon as possible. Prevention of infection is critical during your recovery. Another type of medication may be prescribed.

Infection Prevention Measures

What to avoid:

1. Avoid large crowds. If you go to public places, try go when the least number of people will be there.
2. Avoid close contact with anyone who has open sores or is feeling unwell. For example, friends or family members with flu-like symptoms, colds, cough, pneumonia or fever.
3. Avoid people with communicable illnesses such as chickenpox or measles.
4. Avoid raw or undercooked meats, chicken, fish or tofu (refer to Nutrition Guide in Appendix II of this guide book).
5. Avoid well water.
6. Avoid rectal suppositories or enemas.
7. Never share drinking glasses or cutlery.
8. You should **NOT** handle animal feces. Avoid cleaning litter boxes or birdcages.
9. Avoid using a razor. Use an electric shaver instead.
10. Avoid tearing or cutting the cuticles of your nails.
11. Do not swim until your Central Line has been removed and the insertion site is well healed.
12. No gardening.

What do to:

13. Wash your hands often, especially after using the washroom and before eating. Carry a small bottle of hand sanitizer with you.
14. For the first month after CAR T-cell therapy (and longer if you still have a low white blood cell count) take your temperature at least 4 times per day, even if you feel well, and especially if you feel warm, have chills or sweats.
15. Pay close attention to signs of infection, such as a new or worse cough or shortness of breath with or without fever.
16. Maintain good body hygiene by bathing or showering every day.
17. Women should use sanitary pads instead of tampons for menstruation and avoid douches.

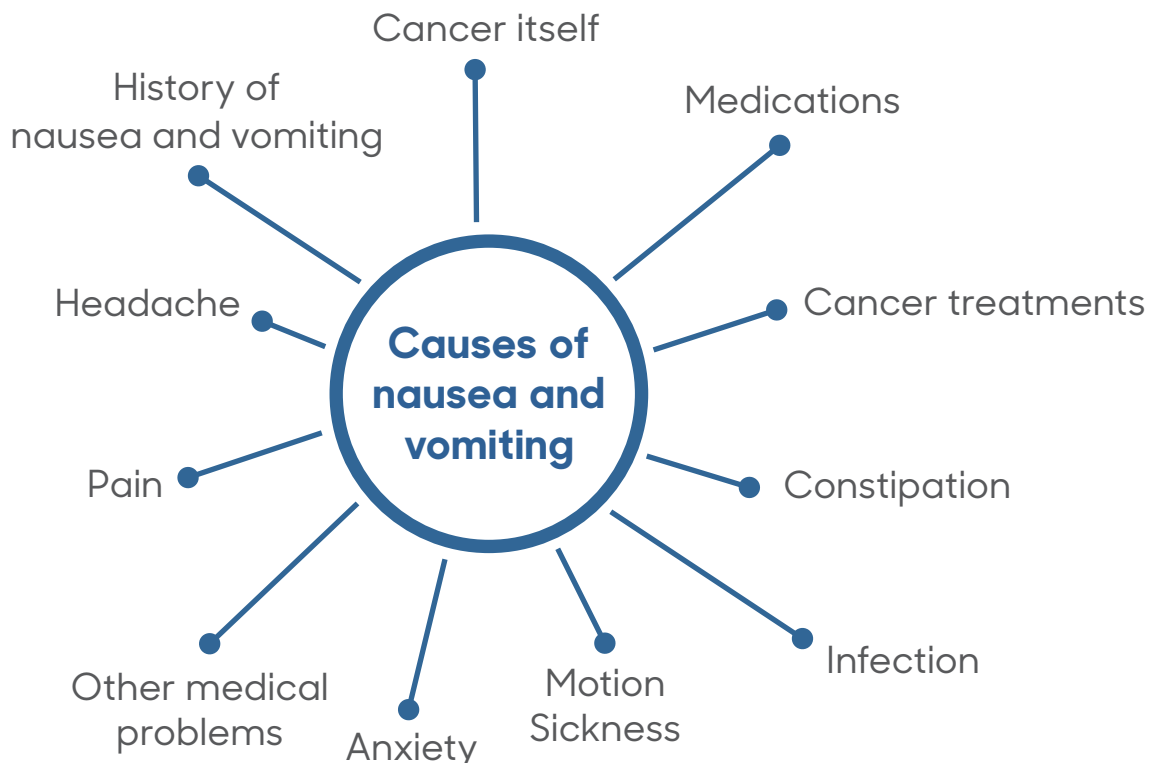
18. Perform oral hygiene 3 to 4 times daily to help prevent mouth sores.
19. Wash any cuts or scrapes right away and do not squeeze or scratch pimples.
20. Avoid vaccinations unless approved by your haematologist.
21. Avoid people who have been recently vaccinated with live vaccines (i.e., MMR vaccine), particularly infants 12-15 months old, for at least six weeks. Do not change the diapers of a child who has recently had the rotavirus vaccine.

Managing Chemotherapy Side Effects

CAR T-cell therapy includes pre-treatment with chemotherapy to help the engineered cells remain in the body and treat your cancer. Common gastrointestinal (GI) side effects include nausea, vomiting, and diarrhea. While often not life-threatening, these complications can cause discomfort and can seriously affect your quality of life.

Nausea and Vomiting

Some chemotherapy agents cause nausea – an unpleasant feeling in the back of your throat and stomach that can make you have more saliva, clammy skin, a fast heart rate or feel light-headed. Vomiting or “throwing-up” may or may not happen with nausea. There are many other things that can cause nausea and vomiting:



Cancer Care Ontario - How to Manage Your Nausea and Vomiting, 2016.

The severity and duration of nausea and vomiting after chemotherapy depends on the drug(s) you receive and your personal risk factors. There are a variety of anti-nausea medications that you may be prescribed during and after your treatment. It is easier to prevent nausea with medications than it is to treat it once it starts. Some medications are taken at regular times to prevent or control nausea. Other medications may be taken as you need them if you feel nauseous in between your regular medications. Most anti-nausea medications take 20 to 60 minutes before they start to work, so plan to take them before your meals.

To help control nausea and vomiting:

- Eat small frequent meals every 2 to 3 hours and take your time when eating. An empty stomach can make feelings of nausea stronger.
- Sip small amounts of liquids often throughout the day even if you do not feel thirsty. Aim for 6 to 8 cups per day (1.5 to 2 Litres).
- Drink liquids and eat foods separately; at least 30 minutes apart.
- Choose cold foods if the smell bothers you.
- Drink clear fluids, such as water, watered down juice or sports drinks, flat ginger ale, lemonade, broths. Cool liquids may be easier to drink than hot or cold liquids.
- Suck on ice chips, popsicles or frozen yogurt.
- Limit caffeine, including coffee and caffeinated soft drinks and avoid alcohol.
- Avoid fatty, fried or spicy foods as well as very sweet foods or foods with a strong odour.
- Eat whatever foods appeal to you.
- Try to choose food/drinks that are high in protein and calories.
- Rest after your meals and sit up for at least 30 to 60 minutes after eating.
- Rinse your mouth with bland rinse before eating to keep it clean and moist.
 - 1 teaspoon salt
 - 1 teaspoon baking soda
 - 4 cups water
- Brush your teeth 30 minutes after eating and before bed. This helps to get rid of tastes in your mouth that make you feel sick.

- If you vomit, stop eating and drinking for 30 to 60 minutes. Then start eating and drinking slowly in this order: (1) clear liquids; (2) dry starchy food (crackers, toast); (3) bland protein-rich foods (chicken, fish, eggs); (4) dairy foods (yogurt, milk, cheese).
- If you vomit in between your regular anti-nausea medication doses, take your "as needed" medication.

It is very important that you do not become dehydrated and stop eating. If you are not able to keep your anti-nausea pills down, speak to your nurse or doctor about other ways to take them (like using dissolving tablets or injections). If you are not able to drink, you may need to get liquids through an intravenous (IV) line to keep you hydrated.

Diarrhea

Diarrhea is a common side effect of high dose chemotherapy and is characterized by loose, watery stool that might look like many flakes or pieces. It usually happens more than 3 to 4 times a day. It can last for a few hours or become a problem that lasts a long time. Diarrhea may begin during or after chemotherapy. Diarrhea may also cause stomach cramps, bloating, restlessness or agitation, sore skin in the rectal area from going to the bathroom a lot, and dehydration (thirst, dry mouth or tongue, dark yellow pee or a need to pee less often).

Goals:

1. Prevent dehydration
2. Minimize or eliminate diarrhea
3. Treat infections associated with diarrhea
4. Prevent soreness around the rectum

It is important that you monitor the frequency and quantity of your bowel movements, especially if diarrhea occurs. Loss of large quantities of fluid can result in dehydration. Drinking more liquids will not stop your diarrhea, but it will help make up for the liquids you lose.

We will take a stool sample of diarrhea to look for infection. If bacteria or virus is found in your stool, you may be given an antimicrobial drug to help get rid of it.

Anti-diarrheal medications that help decrease the frequency of bowel movements and cramping may be ordered once it is confirmed that the diarrhea is not from an infection. These may include:

- **Loperamide** (Imodium)
- **Diphenoxylate / atropine (Lomotil)** – may cause drowsiness

Frequent diarrhea may cause your rectal area to become irritated, red and painful. It is important to keep your rectal area clean. Often a sitz bath (a warm basin of water that you sit in on the toilet) is the best way to clean and soothe your rectal area. Pat dry with a towel after soaking your rectal area. You can also use zinc oxide cream and Tucks® to protect from skin breakdown. Do not apply petroleum jelly (Vaseline®) to this area, as it may promote infection.

To help control diarrhea:

- Eat small meals and snacks frequently.
- Eat slowly, take small bites and chew food well.
- Drink at least 6 to 8 glasses of liquids each day.
- Drink liquids between meals instead of with them.
- Reduce foods high in soluble fiber (remove peels, seeds and membranes from all fruits and vegetables and avoid whole wheat grain products and legumes, nuts and seeds).
- Include foods high in soluble fiber (white rice, tapioca pudding, bananas, apple sauce, oatmeal).
- Eat foods that are high in potassium, like bananas, spinach, orange juice, and potatoes.
- If you have cramps, avoid foods that may cause gas, like soft drinks, cabbage, broccoli, spicy foods, excessive sweets and sugar-free chewing gum.
- Use lactose-free milk and milk products, as needed.
- Avoid stimulants such as caffeine, alcohol, and prune juice.
- Check with your team before taking probiotics or eating foods with probiotics.

Secondary Cancer

Following high dose chemotherapy, you have a slightly higher chance of developing a second cancer. It is important for your family doctor to be aware of your treatment history and monitor you closely.

Thyroid / Hormone Function

Thyroid function and gonadal testing are recommended at one year and then annually with replacement if needed.

Cognitive Effects

Some patients experience problems with memory, concentration or other cognitive functions after this intensive therapy program. Commonly referred to as "chemo brain" or "chemo fog", this impairment could be caused by chemotherapy, medications, fatigue, stress, anemia or nutritional deficiency, or can be caused by the CAR T-cell infusion itself. This impairment is often temporary but can be long-lasting or permanent to varying degrees. Report to your doctor if you have cognitive issues which are affecting your ability to care for yourself.

What if My CAR T-Cell Therapy Doesn't Work?

CAR T-cell therapy is a "living drug" treatment and the engineered cells can stay in the body for days to months. Unfortunately, in some cases, CAR T-cell therapy does not cure the disease and the cancer can persist or come back. In general terms, the risk of recurrence decreases as more time passes since your treatment. If your disease requires more treatment, your haematologist will discuss any possible next steps with you.

It is normal to feel emotions such as anger, sadness, anxiety and fear when you hear that your treatment didn't work. Please know that it is not your fault. If you are having trouble coping with your emotions, the Psychosocial Oncology Program at the Ottawa Hospital can help: **613-737-7700 x70516**.

Alternatives to this Treatment

If you decide not to have CAR T-cell therapy your doctor will discuss other treatments with you. This may include more chemotherapy, study drugs, or stopping all treatment.

Appendix I: Resources for Patient and Caregiver



Going through this process can be a frightening and overwhelming experience. It is important that you have access to accurate information and supportive resources during this time. For more information on community resources or counselling, please discuss with the TCT social worker.

Leukemia & Lymphoma Society of Canada

www.llscanada.org

Canadian Cancer Society (CCS)

<http://www.cancer.ca/en/?region=on>

Cancer Connections, Canadian Cancer Society

Call 1-888-939-3333 to register.

The Ottawa Hospital Patient Learning Links

www.ottawahospital.on.ca/cancer

Fondation québécoise du cancer

1-800-363-0063 (Monday to Friday 9:00 a.m. to 5:00 p.m.)

Support and Counselling

- The Ottawa Hospital Cancer Centre (TOHCC) Psychosocial Oncology Program (PSOP). PSOP services are all OHIP funded. Self-referrals are accepted. 613-737-7700 x70516.
- Ottawa Regional Cancer Foundation (ORCF) Maplesoft Centre, 1500 Alta Vista Dr., Ottawa, ON K1G 3Y9. Tel: 613-247-3527.

Coping With Loss of Income and Other Financial Issues

Whether you are living with cancer or acting as a caregiver to a person with cancer, your income can be affected through unexpected expenses or time away from work. This section discusses options patients and caregivers can explore to replace lost income and deal with costs related to medication.

Replacing Lost Income

When you are undergoing CAR T-cell therapy, you will not be able to work. The resulting loss of income can cause additional stress to an already stressful situation. Options you and your caregiver can explore to replace lost income are discussed below.

1. Taking leave from your place of employment

Talk to Human Resources personnel at your place of employment about your coverage for sick leave, vacation leave, and short or long-term disability.

2. Employment Insurance Sickness Benefit (E.I.)

This is a federal program accessed through Service Canada. Sickness benefits may be paid for up to **15 weeks** to a person who is unable to work because of sickness, injury or quarantine. A medical certificate must be obtained to confirm the duration of your incapacity. Application forms are available online at: <https://www.canada.ca/en/services/benefits/ei.html>.

There are many other financial supports that may be available to you. The social worker can assist you in applying to one or more of the following programs where eligible:

- Ontario Works
- Ontario Disability Support Program (ODSP)
- Trillium Drug Plan (TDP)
- Disability Tax Credit Certificate
- Employment Insurance
- Canada Pension Plan (CPP) Disability Benefits
- Quebec Pension Plan (QPP) Disability Benefit

Caregiver Role

While you are in the hospital, your caregiver will be responsible for:

- Telling the medical team about any changes in your condition
- Providing you with emotional support
- Advocating for your needs and helping with decision-making
- Communicating with family and friends

After you have been discharged from the hospital, your caregiver will assume additional duties including:

- Transporting you to the outpatient clinic daily or weekly
- Keeping track of your medical appointments
- Making sure you take your many medications according to the schedule
- Reporting changes in your condition to the medical team
- Monitoring you for signs of infection and other complications
- Encouraging you to eat

In addition, your caregiver will need to ensure your home environment is safe. This includes:

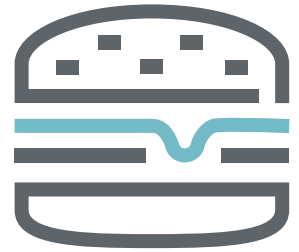
- Cooking and cleaning
- Protecting you from sources of infection, such as visitors with colds or those who have been around sick people
- Helping you move safely, if you need help

Additional Caregiver Resources

- BMT Infonet: <https://www.bmtinfonet.org/transplant-article/role-family-caregiver> This caregiver webpage has an excellent navigational video titled "*What's involved in being a caregiver for a transplant patient*".
- Please visit http://ottawahospital.libguides.com/cancer_patient/caregiving for links to many additional caregiver resources.

Appendix II: Nutrition Guide

It is very important to have a well- balanced diet during and after your treatment. The foods that you eat will help give you strength and energy. Patients who eat well are better able to cope with side effects of treatment.



Side effects from your chemotherapy can make it hard for you to eat well. The following guidelines to increase your energy and protein intake will help you meet your nutritional needs. We will also talk about precautions you should take to keep the level of bacteria in food to a minimum.

General Guidelines

- Make sure every mouthful counts!
- Choose high energy, high protein foods and drinks as part of every meal and snack.
- Eat several small meals and snacks during the day instead of three large meals. Aim to have a meal or a snack approximately every two hours. Have a few mouthfuls even if you do not feel hungry.
- Drink often. Choose liquids that have calories such as milk beverages, juices and soft drinks more often than water, tea or coffee. Drink fluids after your meals and snacks.
- Take nutritional supplements if you have difficulty eating and maintaining your weight. If you drink only these supplements, you may need to drink six or more per day to meet your nutritional needs. A variety of nutritional supplements will be offered to you at no cost during your hospital stay.
- Do not take vitamin and mineral pills or natural supplements without talking to the medical team as they can interact with your chemotherapy treatment.

Don't Forget About Fluids!

Drink at least eight to ten glasses of fluids daily (one glass = 250 mL or eight ounces). This will help your body get the fluid it needs and prevent dehydration. Juice, milk, milkshakes, yogurt beverages, oral nutritional supplements, ginger ale, Gatorade, broth, water, jello and popsicles are all good sources of fluid. Limit caffeinated products such as coffee, tea, cola products etc.

Tips to Increase Protein

Protein is a major building block of the body's cells and is an important part of your diet. Make a special effort to include high protein foods at each meal and at snack times.

- **Skim milk powder**

Add 1 cup of skim milk powder to 4 cups of homogenized milk to make fortified milk. Use the fortified milk to prepare cream soups, milk puddings, hot cereal, sauces, pancake batter and milkshakes. Add skim milk powder to casseroles, meatloaf and baked goods.

- **Eggs**

Add finely chopped boiled eggs to casseroles, sauces and béchamel. Prepare entrées and desserts that contain eggs, such as omelettes, quiche, soufflés, rice pudding and angel food cake. Add extra eggs to recipes.

- **Cheese**

Add grated cheese to the following dishes: soups, sauces, hot vegetables, casseroles and egg dishes. Melt cheese on sandwiches, hot-dogs and hamburgers.

- **Cottage cheese**

Use to stuff crepes or noodles. Mix it with fruits.

- **Peanut butter**

Spread generously on toast, crackers, muffins or English muffins. Use in milkshakes or in baked goods such as muffins, cookies and bread. Mix it with ice cream or yogurt.

- **Meat, fish and poultry**

Add diced meat, chicken, shrimp, canned tuna or salmon to soups, omelettes, quiche, pasta and casseroles.

- **Legumes**

Add beans, peas and lentils to soups and casseroles.

- **Nuts**

Add to muffins, cookies and salads.

Tips to Increase Calories

- **Butter or margarine**

Use generously on hot items such as toast, pancakes, waffles, French toast, and vegetables. Stir into soups, mashed potatoes, rice and hot cereal.

- **Honey, jam, and jelly**

Spoon onto toast or crackers. Use on pancakes, waffles, French toast or muffins.

- **Table cream**

Add to hot beverages, milkshakes and milk beverages. Use half-milk half-cream in your recipes for pudding, cream soup and sauces.

Safe Handling of Food

Following your chemotherapy, you will be able to eat most of the foods you are presently eating; however, when your immune system is weak it is very important to be careful about what you eat and to handle, cook and store food in a safe manner.

- Wash your hands thoroughly with soapy warm water for at least 20 seconds before you prepare any food and before eating. A hand sanitizer can be used if soap and water are not available.
- Keep all working surfaces clean (counters, cutting boards). Use separate cutting boards for ready-to-eat foods and raw meat, poultry, fish and shellfish.
- Do not leave perishable food at room temperature for more than two hours (1 hour during summer outdoor activities). Discard leftovers after 48 hours.
- Always cook raw meat, poultry, fish, shellfish and eggs to a safe internal temperature. Refer to "Safe Internal Cooking Temperature Chart" from Health Canada.
- Keep hot foods at a temperature above 60°C and cold foods at a temperature below 4°C. Between 4°C and 60°C, bacteria can grow quickly and cause food poisoning.
- Only eat fresh fruits and vegetables that are easy to wash or peel. Avoid buying items that are bruised or damaged. Gently wash them under cool, running, drinkable water (even the ones you will peel). You do not have to use anything other than water to wash fruits and vegetables.

- At the grocery store, do not buy packages that are damaged or leaking.
- Do not buy food from self-serve containers (as in bulk food stores). Avoid testing free food samples.
- Wash the top of cans thoroughly before opening.
- Check the best before date on products before eating them.
- Replace dish cloths and dish towels daily. Avoid using sponges as they are hard to keep bacteria-free.
- Avoid restaurants. If you must eat out, choose a restaurant that has a good reputation for cleanliness. Eat early to avoid crowds. Stay away from salad bars, buffet meals and street vendors, delis and pot-luck meals.
- You cannot always tell if food is safe by its look, smell or taste. When in doubt, throw it out!

| Items | Foods Allowed | Foods to Avoid |
|-----------------------|--|---|
| Fruits and Vegetables | <p>Raw fruits and vegetables that can be properly washed (wash well under cool running drinkable water)</p> <p>Cooked or canned fruits and vegetables</p> <p>Dried fruits</p> <p>Pasteurized juice and frozen juice from concentrate</p> | <p>Unwashed raw fruits, vegetables and herbs</p> <p>Raw fruits and vegetables that are difficult to wash (i.e., raspberries, blackberries, mushrooms)</p> <p>Raw sprouts</p> <p>Unpasteurized fruit and vegetable juice</p> |
| Milk and Alternatives | <p>Pasteurized milk and milk products</p> <p>All commercial yogurts without added probiotics</p> <p>Pasteurized cheeses such as Cheddar, Ricotta, Swiss, Mozzarella, Gouda, cheese curds, cottage cheese</p> <p>Pasteurized processed/spreadable cheeses, such as cream cheese</p> | <p>Unpasteurized milk and milk products</p> <p>Moldy blue-veined cheeses (Roquefort, Gorgonzola, Blue)</p> <p>Unpasteurized and pasteurized soft cheeses such as Brie, Camembert and Feta</p> <p>Unpasteurized and pasteurized semi-soft cheeses such as Havarti and Monterey Jack Cheeses from delicatessens</p> |

| Items | Foods Allowed | Foods to Avoid |
|------------------------|---|--|
| Meats and Alternatives | <p>Well cooked meat, poultry, fish or shellfish</p> <p>Well cooked eggs (yolk should be firm)</p> <p>Commercially packaged cold cuts heated through to steaming hot</p> <p>Canned or shelf-stable pâtés</p> <p>Cooked tofu</p> <p>Roasted nuts</p> <p>Commercial peanut butter or nut butter</p> <p>Dried and salted deli meats such as salami and pepperoni</p> <p>Hot dogs that are well cooked</p> | <p>Raw or undercooked meat, poultry, fish, shellfish or eggs</p> <p>Cold smoked fish products</p> <p>Cold cuts from deli counters</p> <p>Refrigerated pâtés and meat spreads</p> <p>Uncooked tofu</p> <p>Raw nuts, roasted nuts in a shell</p> <p>Non-dried deli meats such as bologna, roast beef and turkey breast</p> <p>Hot dogs straight from the package</p> |
| Others | <p>Tap water</p> <p>Well water that has been boiled for at least 1 minute</p> <p>Bottled water</p> <p>All canned, bottled or powdered juices</p> <p>Candies</p> <p>Pasteurized honey</p> | <p>Well water (not boiled)</p> <p>Fountain beverages</p> <p>Salad dressings made with raw eggs</p> <p>Natural herbal supplements</p> <p>Unpasteurized honey</p> <p>Cream and custard-containing desserts and pastries that are not refrigerated or frozen</p> |

Safe Internal Cooking Temperatures Chart

| Meat, Poultry, Eggs and Fish | Temperature |
|---|--------------|
| Beef, veal and lamb (pieces and whole cuts) | |
| medium-rare | 63°C (145°F) |
| Medium | 71°C (160°F) |
| Well-done | 77°C (170°F) |
| Mechanically tenderized beef (solid cut) | |
| Beef and veal | 63°C (145°F) |
| Steak (turn over at least twice during cooking) | 63°C (145°F) |
| Pork (ham, pork loin and ribs) | |
| Pork (pieces and whole cuts) | 71°C (160°F) |
| Ground meat and meat mixtures (burgers, sausages, meatballs, meatloaf and casseroles) | |
| Beef, veal, lamb and pork | 71°C (160°F) |
| Poultry (chicken and turkey) | 74°C (165°F) |
| Poultry (chicken, turkey and duck) | |
| Pieces | 74°C (165°F) |
| Whole | 82°C (180°F) |
| Eggs | |
| Egg dishes | 74°C (165°F) |
| Seafood | |
| Fish | 70°C (158°F) |
| Shellfish* (shrimp, lobster, crab, scallops, clams, mussels and oysters) | 74°C (165°F) |
| Other foods | |
| Other foods (hotdogs stuffing and leftovers) | 74°C (165°F) |
| * Checking the temperature of shellfish with a food thermometer can be hard. Because of this, eat only the shellfish that have opened after being cooked. Discard the rest. | |

From "Safe Food Handling for Immocompromised Individual", Health Canada, 2015



The Ottawa
Hospital