Memorial Sloan Kettering Cancer Center

PATIENT & CAREGIVER EDUCATION

TIL Therapy: A Guide for Adult Patients & Caregivers

This guide explains tumor-infiltrating lymphocyte (TIL) therapy. It will help you and your loved ones understand what to expect before, during, and after your TIL therapy.

This guide should not replace talking with your TIL team. They'll teach you about your treatment and what to expect. You can use this guide to help you remember.

We'll explain some of the challenges you may have during your TIL therapy and recovery. You may not face all of them. Try not to compare yourself to other people who had TIL therapy. Everyone is different.

How to use this guide

There's a lot of information in this guide. Read the whole guide at least once, including the educational resources at the end. You may find it easier to read a few sections at a time, instead of all at once. We encourage you to refer to this guide throughout your treatment.

It's a good idea to highlight or write notes on anything you don't understand or have a question about. There's no such thing as a silly question. Please ask us about anything.

Visit www.msk.org/pe/til-guide to view this guide online.

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Communicating with your care team

It's normal to have many kinds of emotions during TIL therapy. It's very important to talk with your TIL team and your caregiver about how you're feeling physically and emotionally.

Your TIL team includes social workers, chaplains (spiritual counselors), psychiatrists, doctors, nurses, and members of MSK's Integrative Medicine and Wellness Service. All these healthcare providers are here to support and help you and your caregivers cope with your feelings.

Tell a member of your TIL team if anything is bothering you, even if it seems small. Don't wait and let things build up. The more information you share with your TIL team, the more they can help you.

Here are some ways you can communicate with your TIL team.

Communicating by phone

Who to call	
If you're having symptoms **before** your TIL infusion	Call your primary oncologist's office (main cancer doctor's office)
If you have questions about the TIL process or appointments	Call the Cellular Therapy Nurse Coordinator at 646-608-2091
If you're having symptoms **after** your TIL infusion	Call the Outpatient Cellular Infusion Unit at 646-608-3150

Communicating in person

Talk with any member of your care team. When you're in the hospital (inpatient), it's important to talk with your inpatient team, not the outpatient office. Your inpatient team is the healthcare providers who come to see you in your hospital room.

You should also choose just 1 caregiver to call the nursing station for updates. This person can share the updates with the rest of your friends and

family. Your inpatient team will give you the nursing station phone number when you're admitted to the hospital.

Communicating through MSK MyChart

MSK MyChart (mskmychart.mskcc.org) is MSK's patient portal. Instructions for enrolling in MSK MyChart are printed on the bottom of your appointment printout.

You can use MSK MyChart to check your appointment schedule, ask for a prescription refill, contact a healthcare provider, and find educational information. We suggest reading *Communicating with Your Care Team: When to Call or Use MSK MyChart*. You can ask for a printed copy or visit www.msk.org/pe/communicating-using-mychart to read it online.

About PROMIS

Your TIL team will use MSK MyChart to check in about how you're feeling physically and mentally over time. They'll send you a set of questions, called PROMIS. Your TIL team will send PROMIS questions to your MSK MyChart account:

- On or near the day you start TIL treatment.
- On the day of your TIL infusion.
- Every 7 days for the first month after your TIL infusion.
- Every month for the first year after your TIL infusion.
- Every 3 months for the second year after your TIL infusion.

There may be times you report concerning symptoms when you're filling out the PROMIS questions. If so, you'll either see a message asking you to call your care team, or they'll call you to help.

Your answers also will help us know in general how people feel after TIL therapy. This information helps us improve our care in the future.

About TIL therapy

TIL therapy is a type of immunotherapy. Immunotherapy is a form of cancer treatment. It boosts your immune system's natural ability to fight cancer. Your immune system attacks cancer cells, much the same way it attacks bacteria or viruses (germs).

TIL is a treatment for melanoma that has spread, or metastasized, to other places in the body. We're still learning about how it can be used to help treat other types of cancers.

What are tumor infiltrating lymphocytes (TILs)?

Lymphocytes (LIM-foh-sites) are a type of white blood cell. They're an important part of your immune system. They help your body fight infections and diseases, including cancer.

TILs come from a tumor. Infiltrating (IN-fil-trey-ting) means to enter, and these lymphocytes are found inside the tumor.

What will happen during TIL therapy?

TIL therapy is broken into 6 main steps, or phases.

Before you start TIL therapy, you'll have a few medical tests done to make sure TIL therapy is right for you. Your insurance company may also need some test results before it approves your treatment. Your care team will talk with you about which tests you need.

Phase 1: TIL harvest

The first step in TIL therapy is surgery to take out the tumor and collect its TIL cells. This is called the TIL harvest. The tumor can be the primary tumor (where cancer started) or a tumor that spreads to another area.

Most often, your surgeon will choose the tumor that's easiest to take out. This will let you recover from surgery faster so you're ready to start the next

part of treatment. Sometimes, your surgeon may take a sample from more than 1 tumor. This depends on where the tumors are in your body.

Read the section "TIL harvest surgery" (page 19) to learn more.

Phase 2: TIL expansion

After your TIL cells are harvested, we send the sample to a lab. In the lab, the TILs are isolated (separated from other types of cells) and grown in larger numbers. This is called TIL expansion. It takes about 5 to 6 weeks.

While your TIL cells are in the lab:

- You may get chemotherapy (chemo) or other treatments to help control your cancer before your TIL treatment starts. This is called bridging treatment.
- You will have your pretreatment evaluation and preadmission testing.

This is also a good time to finish planning for your TIL therapy. It's very important to make plans for where you'll stay. You also must choose your caregiver.

Read the sections "Getting ready for your TIL infusion" (page 17) and "Caregiver requirements for TIL therapy" (page 13) to learn more.

Phase 3: Lymphodepleting chemotherapy

Once your TIL cells are ready, the lab will send them back to MSK. You'll also get chemo to help get your body ready for your TIL infusion. This is called lymphodepleting (lim-foh-dee-PLEE-ting) chemo. It's different than chemo you may get as a bridging treatment.

Lymphodepletion (lim-foh-dee-PLEE-shun) is the process of lowering your white blood cell numbers with chemo. Having fewer white blood cells will help the TIL work better at finding and killing cancer cells. It also gives the TIL room to grow.

Most people get lymphodepleting chemo in the Outpatient Cellular Infusion Unit. It's most often done a few days before the TIL infusion. Your clinical

nurse coordinator will give you your schedule. They'll talk with you about what to expect. Your schedule depends on your medicine and treatment.

Read the section "What to expect at the Outpatient Cellular Infusion Unit" (page 29) to learn more about what to expect during your appointments. You can also read *About Your Appointments in MSK's Cellular Infusion Unit*. You can find it online at www.msk.org/pe/about-cellular-infusion-unit or ask for a print copy.

Phase 4: TIL cell infusion

You'll be admitted to the hospital for your TIL cell infusion. Most people are admitted the day before their infusion.

You'll get your TIL cell infusion in your hospital room. During your infusion, the TIL cells will be slowly put into your bloodstream over time. The infusion usually takes about 30 to 60 minutes. You can have visitors during your TIL infusion based on the guidelines in MSK's Visitor Policy.

After your TIL cell infusion, you'll get infusions of high-dose interleukin-2 (IL-2) (aldesleukin). IL-2 is a medicine that helps the TIL cells grow, divide, and start working. It also helps them multiply in your body.

Read the section "What to expect in the hospital" (page 23) to learn more.

Phase 5: Early recovery

Early recovery lasts for about 4 weeks after your TIL infusion. Your TIL team will see how you're doing and manage your side effects during your early recovery.

You'll stay in the hospital for at least 1 week after your TIL infusion. After that, you may need to stay nearby for outpatient follow-up appointments a few times a week.

Read "What to expect in the hospital" (page 23) and "What to expect at the Outpatient Cellular Therapy Infusion Unit" (page 29) to learn more.

Phase 6: Long-term recovery

Long-term recovery lasts several months after your TIL infusion. During this time, your care team will monitor your recovery and watch for signs of infection.

At first, you'll have appointments with your TIL team. After a few months, you may be able to go back to seeing your primary (main) doctor.

While uncommon, some people need to come back to the TIL team for more care. This may include being seen in the outpatient clinic or being admitted to the hospital.

Read "What to expect during long-term recovery" (page 35) to learn more.

Your TIL therapy team

A large care team will work together to care for you during each phase of your TIL therapy. You'll meet many of the healthcare providers on your care team as you go through your TIL therapy. You may not meet others. But everyone on your care team is working to help you.

Here's a list of your TIL therapy team members and their roles.

A **cellular therapy doctor** will be in charge of your care throughout your treatment. You'll have one primary (main) outpatient doctor. Different doctors may care for you while you're in the hospital, but they'll be in contact with your primary cellular therapy doctor as needed.

A **surgeon** with special training in cancer surgeries will take out tumor tissue as the first step in TIL therapy.

A **fellow** is a doctor who has finished general training and is getting more training in cancer care.

An **advanced practice provider (APP)** is a healthcare provider who works with your doctor to care for you. They can give medical treatments and prescribe medicine. Sometimes, you may see them instead of your doctor. APPs include **nurse practitioners (NPs)** and **physician assistants (PAs)**.

A **clinical nurse coordinator (CNC)** is a nurse who works with you, your caregiver, and your team of doctors. They'll organize and schedule testing, procedures, and consultations with other professionals you need before your infusion. Your clinical nurse coordinator will teach you about your treatment plan.

Nurses will work with you during your outpatient visits and while you're in the hospital. They're registered nurses (RNs) with special training in caring for people getting cellular therapy treatments.

Both the inpatient and outpatient nurses work closely with your care team to manage your symptoms. They can help you with any questions or concerns.

A **nursing assistant (NA), patient care technician (PCT),** or **medical assistant (MA)** works with your nursing team. They'll help give you basic care and support, such as helping you shower.

A **hospitalist** is a doctor who sees people only while they're in the hospital. At MSK, there's a hospitalist on duty all night.

A **clinical pharmacist** is a pharmacist who works directly with you, your caregiver, and other members of your care team. They'll review your medicines with you and your caregiver and teach you how to take them properly. They'll also tell you about side effects the medicines can cause. Your clinical pharmacists will have special training in caring for people getting cellular therapy.

A **social worker** helps you, your family, and friends manage the stress of going through TIL therapy. Social workers understand the issues people having treatment face. They're here to listen, offer counseling, and refer you or your loved ones to other resources and services.

Social workers also play an important role in making sure you're set up for a safe recovery. This includes helping you arrange housing close to the treatment center (if you don't live nearby) and confirming you have a caregiver plan in place — meaning someone who can be with you 24/7.

A **patient financial service (PFS) nurse case manager** works with you and your health insurer to learn about your treatment benefits. They know the insurance challenges people may face during TIL therapy. Each health plan has its own policies and rules. When your insurer needs authorization, your PFS nurse case manager will help.

An **office coordinator** gives administrative support to your attending doctors and the nurses who work with them. You may talk with them to give us information, schedule an appointment, or have questions for your TIL team.

A **medical coordinator (MC)** works in an outpatient area. They track the flow of people in and out of the clinic. They make sure you schedule and complete all the tests, scans, and treatments your care team orders. Medical coordinators also manage your health records and coordinate your future appointments.

A **clinical research coordinator** works with your care team. They'll explain some of the research studies, also called clinical trials, you may be able to join. These studies mostly involve collecting samples or data.

A **patient representative** is the connection between you, your family, and MSK's hospital staff. They're here to protect your rights and help explain hospital policies and procedures. Patient representatives can help you with any concerns about your care. They can help you communicate with your TIL team.

A **physical therapist (PT)**, **occupational therapist (OT)**, or both may see you while you're in the hospital. The PT will work with you to help you keep up your strength and stamina during your recovery. The OT will work with you to help you keep doing your daily activities.

A **room service associate** explains how room service works, including when it's available and how to use it. They'll make sure you get the right menus and deliver your meals.

A **case manager** may see you while you're in the hospital. They'll help you arrange home care, as needed.

Caregiver requirements for TIL therapy

You must have a clear caregiver plan to get TIL therapy. There are no exceptions.

TIL therapy can cause side effects. These side effects can happen quickly, at any time — day or night. That's why you need another adult with you **at all times**. They'll watch for symptoms and call your care team right away if something seems wrong.

Choosing a caregiver

Choosing your caregiver is an important step in getting ready for your TIL therapy. They'll support you before, during, and after your infusion. Caregivers are usually a family member or close friend. Choose someone who is reliable and comfortable reporting symptoms right away. **Your caregiver does not need medical training.**

If you do not have 1 person to be your caregiver, it's OK to have more than 1 person share the role. It's best to limit the number of caregivers to 1 or 2 people. There must always be someone available. Plan ahead so there are no gaps in coverage.

Talk with your social worker if you want to hire a home health aide. They'll give you information about these services.

What a caregiver does

Your caregiver must be available 24 hours a day, 7 days a week. They may not be able to work. They must stay with you day and night. Your caregiver can have some personal time while you're in the Cellular Infusion Unit for your visits. We strongly recommend they take this time.

The exact length of time you'll need 24/7 caregiver support may vary. Most people need a caregiver for about 28 days after their TIL infusion.

Your TIL team will give your caregiver instructions about what they need to do. They'll be responsible for some of the medical, practical, and emotional support you'll need. Here are some of the things they must do.

Medical support

- Look out for symptoms. Tell your outpatient cellular therapy team about any symptoms you have.
- Read *Outpatient Cellular Therapy Emergency Guide* to learn what to do in case of any emergency. Your care team will give you a copy. You can also find it online at www.msk.org/pe/cellular-therapy-emergency-guide.
    - Call your outpatient cellular therapy team with any concerns. Make sure you get to urgent care if needed.
    - Call for medical help right away in an emergency.
- Take your temperature every 4 hours while you're awake and away from the Outpatient Cellular Infusion Unit.
- Make sure you take your medicine.
- Keep track of how much you drink each day.
- Know how to take care of your central venous catheter (CVC).

Practical support

- Take you to and from your appointments.
- Handle food safely to prevent foodborne illness (food poisoning).
- Keep the place you're staying clean.
- Keep family members and friends up to date about your condition.
- Manage how many visitors you have.
- Keep you away from anyone who's sick.

Emotional support

- Pay attention to your moods and feelings.
- Communicate with you and listen to you.
- Understand your needs and your decisions.
- Feel comfortable contacting your care team if they're worried about your emotional state.

The caregiver role for TIL therapy is full time, 24 hours a day, 7 days a week. It can be tiring, demanding, and stressful. That's even more true if your condition, schedule, or treatment changes.

Your TIL team will do everything they can to support your caregiver. They can also refer your caregiver to other support services to help them manage their role.

Resources for caregivers

Caregivers can have physical, emotional, spiritual, and financial distress. There are resources and support to help manage the many duties of caring for a person having TIL therapy.

Contact your social worker for support resources and information. MSK's Caregivers Clinic supports caregivers who are having a hard time coping with the demands of being a caregiver. To learn more, visit www.msk.org/caregivers or call 646-888-0200.

Tell your TIL team right away if your caregiver gets sick or shows any signs of a cold or flu (such as a cough, fever, or sore throat) 1 week before or any time during your treatment.

Notes

Getting ready for your TIL infusion

Initial consult

Your initial (first) consult is your first appointment with your cellular therapy doctor. During this appointment, you'll meet with your cellular therapy doctor and other members of your TIL team. Your doctor will:

- Talk with you about your health and surgery history.
- Do a physical exam and other medical tests. Your care team will talk with you about what to expect.
- Talk with you about options for TIL harvest sites.
- Talk with you about what's the best treatment plan for you.
- Explain what to expect during your TIL therapy.
- Ask you to sign a consent form for TIL therapy. A consent form is a form that says you agree to the treatment and understand the risks.

Surgical consult and presurgical testing (PST)

You'll have an appointment with your surgical team before your tumor harvest. During this appointment, your surgeon will review your imaging scans. They may order more tests to help them choose the best area to take tumor samples. The goal is to collect enough tumor tissue that has TILs.

Your surgical team will also talk with you about:

- What to expect before, during, and after your surgery.
- How to get ready for your TIL harvest surgery.
- What to do while you recover after your surgery.

They'll give you time to ask questions. Then, they'll ask you to sign a consent form for surgery.

Other things to do before TIL therapy

Here's a list of other things to do to get ready after your initial consult.

- **Fill out a Health Care Proxy form.** This form is a legal document. It says who will speak for you if you cannot communicate for yourself. This person is called your health care agent. They can be different than your caregiver.
    - Read *Advance Care Planning for People With Cancer and Their Loved Ones* to learn more about health care proxies and other advance directives. You can ask for a printed copy or find it at www.msk.org/pe/advance-care-planning.
    - Read *How to Be a Health Care Agent* to learn more about being a health care agent. You can ask for a printed copy or find it at www.msk.org/pe/health-care-agent.
    - Talk with a member of your care team or a social worker if you have questions about filling out a Health Care Proxy form.
- **Meet with a social worker.** They'll tell you about MSK's psychological, emotional, and financial support services and assess if you need any support. They'll help you find a place near MSK to stay during your treatment and follow up, if needed. They'll also talk with you about why you need a caregiver and help you finalize your caregiver plan. You can contact your social worker at any point during your care for support.
- **Arrange for disability or a leave of absence from work.** If you're working, plan to go on disability or take a leave of absence. The exact length of time is different for everyone. Your care team will talk with you about how long you'll be away from work. They'll also help you complete any forms you need to be away from work.
- **Arrange for childcare and pet care, if needed.** Your social worker can help guide you if you're worried about talking with your children about your TIL therapy.

It's also important to make sure you have a clear caregiver plan. Read "Caregiver requirements for TIL therapy" (page 13) to learn more.

TIL harvest surgery

There are 2 ways TIL harvest surgery can be done.

- With a **minimally invasive surgery**, your surgeon will make a few small incisions (surgical cuts). They'll put a long, thin camera through one of the incisions so they can see inside your body. They'll put long, thin surgical tools through the other incisions to take out tumor samples.
- With a **traditional (open) surgery**, your surgeon will make 1 or more bigger incisions to take out tumor samples.

How your surgery is done depends on where the tumor or tumors are in your body. Your surgeon will talk with you about what to expect.

Your TIL harvest surgery will be early in the morning. Your TIL surgeon will tell you how long to plan to stay in the hospital after your surgery. Some people leave the same day as their surgery. Others stay for 1 to 2 nights.

Your TIL surgeon will tell you when you can go back to your regular activities after surgery. They may schedule follow-ups after your surgery to check how you're healing and see how you're feeling.

Pretreatment evaluation

We'll check your overall physical condition again before your TIL infusion. This will help us make sure you're ready for treatment. It will also help your TIL team notice any changes later.

You'll need to make a few trips to MSK to have tests. We often call this the work-up or restaging period.

You must have some, but not always all, of these tests during the work-up. Even if you have some before your TIL harvest, you may need them again during your pretreatment evaluation.

- **Blood tests (sometimes called labs).** These are done to check a few things. This includes how well your kidneys and liver work, your blood counts, and if you've been exposed to certain viruses.

- **Electrocardiogram (EKG)** and **echocardiogram (echo).** These give your TIL therapy team information about your heart.
- **Pulmonary function tests (PFTs).** These are breathing tests that measure how well your lungs work.
- **Computed tomography (CT) scan.** This is an imaging test that gives more detailed images of soft tissue and bone than a standard X-ray.

  Sometimes, CT scans use contrast dye that you drink or have injected into your veins. It's very important to tell your doctor if you know you have an allergy to contrast dye, seafood, or iodine. If you have a mild allergy, you can still have contrast dye. But, you must take medicine before you get the dye so you do not have a reaction.
- **Positron emission tomography (PET) scan.** This is an imaging test that's used to look at some types of cancer. It's also used to look at your organs and how they work in your body.
- **Brain magnetic resonance imaging (MRI) scan.** This is done to look at your brain and how it works.

Your TIL team will work with you and your caregiver to schedule the tests. Your care team will use the results of the tests to plan your treatment. They'll make sure it's safe to start.

Your care team will explain any other tests you may need.

Preadmission appointment

You'll have your preadmission appointment after you finish your pretreatment evaluation and your TIL infusion is scheduled. Sometimes, the preadmission appointment is the same day as the pretreatment evaluation.

The preadmission appointment is usually about 1 week before your scheduled TIL infusion. You must come to this appointment in person. It cannot be a video visit.

During your preadmission appointment:

- Your cellular therapy doctor will go over your treatment plan and consent forms with you. You'll sign consent for your TIL therapy and lymphodepleting chemo, if you have not already.
- Your clinical nurse coordinator will give you a calendar with your treatment plan. They'll review the information with you and answer your questions.
- We may ask you to sign a consent form for a blood transfusion. You may need blood or platelet transfusions when your blood counts are low after your treatment. Read *About Your Blood Transfusion* to learn more. You can find it in the "Educational resources" section of this guide.

You must stay healthy between your preadmission appointment and when you're admitted to the hospital. It's important to call your doctor's office if you have any of these:

- Signs of an infection, such as:
  - A fever of 100.4 °F (38.0 °C) or higher.
  - A runny nose.
  - Stuffy nose.
  - A cough.
- Nausea (feeling like you're going to throw up).
- Vomiting (throwing up).
- Diarrhea (loose or watery poop).
- A toothache.
- An open wound, such as a wound that's bleeding or not healing.
- Any other new problem, even if it seems small.

Your healthcare provider will decide if we should delay your TIL therapy. It could be dangerous to start while you have an infection, even if it's just a cold. This is because your immune system may not be able to fight the infection.

Having your central venous catheter (CVC) placed

You'll need a CVC during your TIL therapy. A CVC is a catheter (thin, flexible tube) that's put into one of your larger veins. Outside your body, the catheter divides into smaller tubes called lumens.

A CVC lets your TIL team infuse your cells and draw your blood. It also helps them give you fluids, electrolytes, blood transfusions, chemo, and other medicine. They will not need to stick you with a needle as often. Having a CVC will make your treatment much more comfortable.

There are 2 main types of CVCs:

- A **peripherally inserted central catheter (PICC)** is put into a large vein in your arm. Read *About Your Peripherally Inserted Central Catheter (PICC)* to learn more. You can ask for a printed copy or find it at www.msk.org/pe/about-picc.
- A **tunneled chest catheter** is put into a large vein in your upper chest. Tunneled chest catheters are sometimes called Hickman catheters. Read *About Your Tunneled Catheter* to learn more. You can find it in the "Educational resources" section of this guide.

Your doctor or nurse will tell you which type of CVC you'll have.

CVCs are often taken out before you're discharged from the hospital after TIL. Some people keep their CVC for longer if they need blood transfusions or other infusions after discharge.

What to expect in the hospital

You'll be admitted to the hospital for your TIL infusion. After your infusion, you'll stay in the hospital for 1 to 2 weeks. How long you stay in the hospital depends on how your body reacts to the cells.

There are a few units in the hospital that care for cellular therapy patients. The nurses on each unit have special training in caring for people having TIL therapy. All the units follow the same guidelines.

On the day of your TIL infusion

You'll have a general check-up on the day of your TIL infusion. Your nurse will ask you simple questions to check your neurological (brain) function. They'll use these as a baseline later if you have side effects. You'll also get medicine to help keep you from having a reaction to the infusion.

Your inpatient care team will tell you what time you can expect to get the infusion.

During your TIL cell infusion

Your healthcare provider will give you the TIL infusion through your CVC. The infusion can take 30 to 60 minutes, depending on your treatment plan. A staff member will be in the room with you for at least the first 15 minutes of your infusion. They'll probably stay with you for the entire infusion.

After your TIL infusion: IL-2 infusions

IL-2 is a medicine that helps your TILs grow after they've entered your immune system.

You may start getting IL-2 infusions anywhere from 3 to 24 hours after your TIL infusion. Your team will check how you're doing before every IL-2 infusion to see if you need another dose. You may get up to 6 IL-2 infusions.

We'll watch you closely for side effects. Here are some common side effects of IL-2:

- A fever of 100.4 °F (38 °C) or higher
- Flu-like symptoms, such as:
  - Muscle aches
  - Headaches
- Shaking chills (feeling cold and having strong shivering)
- Feeling very tired
- Shortness of breath
- Swelling in your arms or legs
- Nausea
- Vomiting
- A faster heart rate than usual
- Feeling dizzy or lightheaded
- Confusion
- Changes in eyesight
- Seizures
- Feeling very drowsy and responding more slowly than usual

Not everyone responds the same to each type of therapy. Talk with your care team about the side effects you may be more likely to have and how long they may last. These things can change based on the number of IL-2 infusions you get and if you have other health conditions.

These side effects will go away. Your care team will watch you carefully for side effects. They'll manage any side effects you have. It's very important for you or your caregiver to tell your care team if you may be having any of these side effects.

Throughout your hospital stay

Your inpatient care team will care for you and keep watching for side effects. Some side effects must be watched more closely and may mean you need to move to the Intensive Care Unit (ICU).

Your nurses, patient care technicians, and nursing assistants most often work 12-hour shifts. The shifts start at 7 a.m. or 7 p.m.

When nursing shifts change, your nurse will update the nurse taking over. They'll tell them anything they should know about you and your care during that shift.

The hospital environment

- Keep your hands clean. Read *Hand Hygiene and Preventing Infection* to learn more. You can find it in the "Educational resources" section.
- Your CVC lines will be connected to an electronic pump on an IV pole during most of your hospital stay. Your nurse will not disconnect your lines when you take a shower or walk around. Disconnecting them can raise your risk for a CVC infection. It's important to keep your lines connected during your stay.
- If you're at risk for falling, someone will help you get to the bathroom. Your care team will tell you more about how to keep from falling while you're in the hospital. Read *Call! Don't Fall!* to learn more. You can find it at www.msk.org/pe/call-dont-fall or ask for a printed copy.

Your hospital room

- Each room has a call bell system that's monitored 24 hours a day, 7 days a week. If you need something, use your call bell. Tell us what you need so we can send the right member of your care team member to help.
- Your room will have Wi-Fi and a TV with cable channels. You can also bring a streaming device to use on your TV. Amazon Fire TV Stick, Roku Streaming Stick, Google TV Streamer, and Apple TV are examples.

- People getting TIL therapy stay in a semi-private (shared) hospital room. Room assignments are based on:
    - Which rooms are available.
    - What you and other patients need to avoid infections.
    - What you and other patients need to be safe in your room.
- You may need to change your room or floor while you're in the hospital. This will be based on your medical needs, other patients' medical needs, and which hospital rooms are available. We try to avoid changing rooms as much as possible.

Testing and evaluations

Your medical team will see you every day. This includes a doctor and an NP or PA. A clinical pharmacist may also see you.

You'll also have these tests and evaluations regularly:

- Your care team will check your vital signs every 4 hours, even at night. This includes your blood pressure, heart rate, breathing, and pain level.
- Your care team will give you medicine during your stay. **Please do not bring any of your own medicine to the hospital.**
- A member of your care team will weigh you and take a sample of your blood before 6 a.m. each day. The blood test will check how your white blood cells, red blood cells, and platelets are recovering.
- We'll do other blood tests as needed. These tests check how well your kidneys and liver work and check for infections. The tests also tell us the level of chemo or other medicine in your blood. This information helps your care team assess your overall condition.
- Your care team will measure your urine (pee) throughout the day. It's important that we know how much urine you're making. They'll also ask you how much water or liquids you're drinking.
- Your nurse may ask you simple questions to check your neurological (brain) function.

Visitors

Go to www.msk.org/visit to see MSK's most current visitor policy. Talk with the inpatient unit charge nurse or nurse leader if you have any questions.

Along with the instructions in the visitor policy, your visitors must follow the instructions below. This is to keep you and others getting TIL therapy safe.

- You must not have any visitors who:
    - Have symptoms of being sick, such as a cough, rash, fever, or diarrhea.
    - Think they may be getting sick.
    - May have recently been exposed to someone with an infectious (contagious) illness.
- All visitors must always clean their hands before entering your room.
- Visitors and caregivers must use the visitor's restroom in the hallway, not the restroom in your room. This is to keep bacteria from spreading in your room.
- You cannot have fresh, dried, or live flowers or plants in your room. Please tell your family and friends not to bring or send them.
- For adult patients, visitors must be at least 12 years old. Any visitor younger than 18 must be with an adult who can actively supervise them throughout their visit.

Exercise

You'll feel tired after your chemo and TIL infusion. Still, you should try to stay active and get out of bed each day. It's important to be safe, so ask for help when you get up.

We encourage you to walk around the unit. You may need to wear a mask while you're walking around. Your nurse will tell you if you must also wear gloves, an isolation gown, or both. Do not go to a different floor when you're walking or exercising.

You may meet with a physical therapist or occupational therapist while you're in the hospital. If you do, they'll prescribe an exercise program that's right for you.

Diet

Your TIL team will plan your diet. You'll get a menu and instructions for ordering your meals. A room service associate will bring your meals to you.

Tell a member of your care team if you keep kosher, have diabetes, or follow another special diet. We will prepare your meals properly. A clinical dietitian nutritionist can also help you plan your meals.

Showering

It's best to shower daily. A patient care technician or nursing assistant can help you manage your IV pole and keep you safe while you're showering.

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What to expect at the Outpatient Cellular Infusion Unit

After you're discharged from the hospital, you'll have follow-up appointments at the Outpatient Cellular Infusion Unit. During your visits, your care team will check how you're doing and help manage any side effects you're having. You may be admitted to the hospital if needed.

You may be able to have appointments less often as time passes after your TIL infusion. This depends on how you're feeling. Side effects are still common during this time, so it's important to come to all your scheduled appointments.

You'll start having appointments in your cellular therapy doctor's regular clinic instead of the Cellular Infusion Unit about 4 weeks after your TIL infusion.

What to bring to the Outpatient Cellular Infusion Unit

- A list of all prescription and nonprescription medicines you're taking, their dosages, and how often you take them. This should include patches, creams, vitamins, nutritional supplements, herbal products, and over-the-counter medicines. An over-the-counter medicine is one you can buy without a prescription.
- All the prescription medicines you were told to take during your TIL therapy.
- Things to pass the time, such as books, newspapers, an audio player, a laptop, or tablet. Do not forget the charger for your electronic items.
- A notebook to write down information and any questions you or your caregiver have.

Your care team may give you an *Outpatient Cellular Therapy Temperature and Liquid Intake Log*. If they do, bring it to your appointments. Your caregiver will use this to keep track of your temperature and how much you drink while you're away from the unit. You can also print it from www.msk.org/pe/cellular-therapy-log.

What to expect while you're in the Outpatient Cellular Infusion Unit

Wear comfortable clothing that makes it easy to access your CVC. This can be a shirt that opens in the front, a sweatshirt, or a large T-shirt. Do not wear clothing that's hard to take off or put back on.

After you arrive

After you check in, a member of your care team will bring you to a room. They will:

- Check your vital signs and weight.
- Ask you about any symptoms you have.
- Check your blood counts, electrolyte levels, and kidney function (how well your kidneys are working).

Then, you'll wait in your room for your test results to be ready. This can take a few hours. You'll have an entertainment unit with a TV and computer to pass the time. You can also bring food and snacks with you.

This is a good time for your caregiver to take a break, take some personal time, or run errands. You'll be safe in your treatment team's care. We highly recommend your caregiver takes this time to relax.

Planning your care

Your care team will plan your care after they get the results from your blood tests. The rest of your visit that day will depend on your test results. Based on your test results:

- Your healthcare provider may give you fluids through your CVC.
- Your healthcare provider may give you an infusion of platelets, red blood cells, or other blood components.
- Your healthcare provider may change some of your medicines.
- Your treatment could be left as is.

You'll stay in the unit until you finish your treatments. After that, your caregiver will take you to where you're staying.

Read *About Your Appointments in MSK's Cellular* Infusion *Unit* to learn more. You can find it at www.msk.org/pe/about-cellular-immunotherapy-unit or ask for a printed copy.

What to do in your home or apartment

Your caregiver will take care of you when you're not in the Cellular Infusion Unit. If you live more than 2 hours from MSK, you may need to stay near the hospital. Your social worker will help you arrange this if needed.

We may give you a printed copy of these resources, or you can find them online. Keep them out in your home or apartment so you and your caregiver can get them easily.

- *Outpatient Cellular Therapy Emergency Guide*
  www.msk.org/pe/cellular-therapy-emergency-guide
- *Outpatient Cellular Therapy Temperature and Liquid Intake Log*
  www.msk.org/pe/cellular-therapy-log

Your care team will give you discharge instructions before you leave the hospital. Here are some guidelines to follow:

- Call the Cellular Infusion Unit at 646-608-3150 if you have:
    - A fever of 100.4 °F (38.0 °C) or higher
    - Chills
    - Confusion
    - Hallucinations (seeing or hearing things that are not there)
    - Headaches
    - Seizures
    - Dizziness or lightheadedness
    - Trouble breathing
    - Bleeding
    - A faster heart rate than usual
    - Severe (very bad) nausea, vomiting, or diarrhea
    - Pain
    - Any other changes in condition
- If you go home with your CVC or PICC, your nurse will teach you how to care for it at home.
- Avoid family and friends that may be sick.

Carry your outpatient cellular therapy emergency card with you

You'll get an Outpatient Cellular Therapy Emergency Card. **Keep this card with you at all times.** It has important information about who to call and where to go if you have a medical emergency. If you need emergency medical care, show this card to the medical professional helping you.

Keep track of your temperature, if needed

Your care team may ask you and your caregiver to take your temperature every 4 hours while you're awake. We'll give you a thermometer.

If you have a fever of 100.4 °F (38 °C) or higher, your caregiver needs to take you to Urgent Care Center. Follow the instructions in your *Outpatient Cellular Therapy Emergency Guide*.

Call the Cellular Infusion Unit at 646-608-3150 while you're on your way there.

Keep track of how much you drink, if needed

Drink 2 liters (64 ounces) of liquids every day. This is about 8 cups. Try to drink small amounts throughout the day.

Your care team may ask you and your caregiver to keep track of all the liquids you drink in the *Outpatient Cellular Therapy Temperature and Liquid Intake Log*.

Check for bleeding

Always tell someone from your care team if you have any bleeding. If you notice you're bleeding and you're not in the Cellular Infusion Unit, follow these steps right away:

1. Put pressure directly on the bleeding site. If you're bleeding from your nose, also put ice over the bridge of your nose.
2. Follow the instructions in your *Outpatient Cellular Therapy Emergency Guide*.
3. Call the Cellular Infusion Unit at 646-608-3150.

Call your doctor right away if you have any of these while you're not in clinic:

- Black bowel movements (poop), blood in your poop, or bleeding from your anus (the opening where your poop comes out).
- Blood in your urine (pee).
- A headache that does not get better.
- Blurred vision.
- Dizziness.
- Coughing up or vomiting blood.
- A nosebleed that does not stop after putting pressure or ice for a few minutes.

These are signs of bleeding.

Move around and exercise

You'll feel tired after your chemo and TIL infusion, but you should still try to stay active. A physical therapist will talk with you and prescribe an exercise program that's right for you.

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What to expect during long-term recovery

Long-term recovery is different for everyone. Most people take medicine to help prevent infection for a few months while their white blood cells recover from chemo. It depends on your situation and how the cancer reacts to your TIL therapy. Your TIL team will talk with you about what to expect.

Appointments with your TIL team

You'll have appointments with your TIL team 4 weeks, 6 weeks, and 12 weeks after your TIL infusion. During these appointments, you'll have tests to check how you're doing. These tests might include:

- A physical exam.
- Blood tests.
- Imaging scans, such as a positron emission tomography (PET) scan or computed tomography (CT) scan.

Your TIL team will use the results of these tests to plan your care during your recovery.

Going back to your primary doctor

Your TIL team will talk with you about going back to seeing your primary doctor during your long-term follow-up. If you do start seeing your primary doctor, please be sure to update your TIL team on how you're doing.

Testing for vaccination status

After TIL therapy, some of your past vaccines may no longer protect you. Around 6 months after your TIL infusion, you'll have blood tests to check if you still have immunity from your past vaccines. You may need to get some of the vaccines again. If you do, your care team will talk with you about which ones. They'll also make a vaccination schedule for you.

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Educational resources

This section lists the educational resources mentioned in this guide and some other resources that may be helpful.

You can find these resources online or you can ask for a printed copy. You can also visit www.msk.org/pe to search for more educational materials on the Patient and Caregiver Education website.

About Your Appointments in MSK's Cellular Infusion Unit
www.msk.org/pe/about-cellular-infusion-unit

About Your Blood Transfusion
www.msk.org/pe/about-blood-transfusion

About Your Peripherally Inserted Central Catheter (PICC)
www.msk.org/pe/about-picc

About Your Tunneled Catheter
www.msk.org/pe/about-tunneled-catheter

Adult Outpatient Cellular Therapy Emergency Card (Wallet Card)
www.msk.org/pe/cellular-therapy-wallet

Advance Care Planning for People With Cancer and Their Loved Ones
www.msk.org/pe/advance-care-planning

Call! Don't Fall!
www.msk.org/pe/call-dont-fall

Communicating With Your Healthcare Team: When to Call or Use MSK MyChart
www.msk.org/pe/communicating-using-mychart

Food Safety During Cancer Treatment
www.msk.org/pe/food-safety

Hand Hygiene and Preventing Infection
www.msk.org/pe/hand-hygiene

How to Be a Health Care Agent
www.msk.org/pe/health-care-agent

Improving Your Vulvovaginal Health
www.msk.org/pe/improving-vulvovaginal-health

Mouth Care During Your Cancer Treatment
www.msk.org/pe/mouth-care

Outpatient Cellular Therapy Emergency Guide
www.msk.org/pe/cellular-therapy-emergency-guide

Outpatient Cellular Therapy Temperature and Liquid Intake Log
www.msk.org/pe/cellular-therapy-log

Sex and Your Cancer Treatment
www.msk.org/pe/sex-cancer-treatment

Sexual Health and Intimacy
www.msk.org/pe/sexual-health-intimacy

Memorial Sloan Kettering Cancer Center

PATIENT & CAREGIVER EDUCATION

About Your Blood Transfusion

This information explains what to expect before, during, and after your blood transfusion. A blood transfusion is when blood or blood cells are put into your body. You may need a blood transfusion because of how your cancer or cancer treatment affects your blood.

Some people may not want a blood transfusion for religious or other reasons. It's always your right to refuse a treatment. Your healthcare provider will only recommend a blood transfusion if they think it's needed. You can lose lots of blood during some types of surgery. If this blood isn't replaced, you can die.

About blood

Blood is made up of plasma, red blood cells, platelets, and white blood cells.

- **Plasma** is the liquid part of blood. It holds your blood cells. You may need a plasma transfusion if your blood isn't clotting well.
- **Red blood cells** carry oxygen to all parts of your body. You may need a transfusion of red blood cells if you have a low red blood cell count (anemia). This can help you feel better.
- **Platelets** help form clots and stop bleeding. You may need a platelet transfusion if you have a low platelet count (thrombocytopenia). This can help stop bleeding or keep you from bleeding too much during a surgery or procedure.
- **White blood cells** fight infection. White blood cell transfusions are rare and are only done in very specific situations.

About donated blood

There are no blood substitutes currently available. The blood or blood cells you get during your transfusion are usually donated by another person.

Sometimes, you can donate your own blood so it can be stored and given back to you if needed. This is called an autologous (aw-TAH-luh-gus) donation. To learn more, read *Being Your Own Blood Donor* (www.mskcc.org/pe/being-your-own-blood-donor).

After it's donated, blood is tested to see what type it is. It's also tested for things such as:

- Syphilis.
- Hepatitis B and C.
- HIV.
- A virus linked to a very rare form of leukemia.
- West Nile virus.
- *Trypanosoma cruzi* (a parasite that causes Chagas disease).
- Zika virus.
- Bacteria (platelets only).

If the tests show any of these, the blood is thrown away.

Directed donations

A directed donation is when someone donates blood or blood cells specifically for you. Directed donations are tested in the same way as other donations. If the blood tests positive for any of the things listed above, we'll notify the donor privately.

Directed red blood cell donations are held for you for 25 days. Directed platelet donations are held for you for 4 days. After that, the donation may be given to someone else. It will also be given to someone else if the donor's blood type isn't a match for yours.

Before your blood transfusion

Before your transfusion, we'll check your blood type with a test called a type and screen. The blood bank may take 2 to 4 hours to process the test. It may take longer if you have unexpected results. Your healthcare provider will use the results of your type and screen to make sure the blood or blood cells you get during your transfusion are safe for you.

Your healthcare provider will also talk with you about risks associated with having a blood transfusion. There's a very small chance of having an allergic reaction during or after your transfusion. The most common reactions are a fever of 100.4 °F (38 °C), chills, or hives. These can be treated with medication. Transfusion reactions are rarely life-threatening.

During your blood transfusion

When everything is ready, the nurse will access one of your veins.

- If you have a central venous catheter (CVC), such as a tunneled chest catheter or peripherally inserted central catheter (PICC line), the nurse will likely use it for your transfusion.
- If you have an implanted port (sometimes called a mediport), the nurse will use it for your transfusion. This will be the same type of needle stick you have for chemotherapy.
- If you don't have an implanted port or CVC, the nurse will put an intravenous (IV) line into one of your veins.

After they access your vein, the nurse will start the transfusion. The transfusion won't hurt.

A transfusion of one unit of red blood cells usually takes 90 minutes to 4 hours. A transfusion of one unit of platelets takes about 30 to 90 minutes. Your nurse will monitor you carefully during your entire transfusion.

After your blood transfusion

If you got your blood transfusion through a vein in your arm you may have some bruising or irritation in the area where the needle was.

Blood transfusions can cause an allergic reaction up to 2 days after the transfusion. Call your healthcare provider if you have any of the reactions below.

When to call your healthcare provider

Call your healthcare provider if you have:

- A fever of 100.4 °F (38 °C) or higher.
- Chills.
- Redness and warmth in your face.
- Hives, rash, or itching.
- Bad bruising or irritation at area IV was.
- Trouble breathing or shortness of breath.
- Lower back pain.
- Nausea (feeling like you’re going to throw up) or vomiting (throwing up).
- Weakness or fainting.
- Dark-colored urine (pee).

If you have chest pain, call 911 right away.

If you have questions or concerns, contact your healthcare provider. A member of your care team will answer Monday through Friday from 9 a.m. to 5 p.m. Outside those hours, you can leave a message or talk with another MSK provider. There is always a doctor or nurse on call. If you're not sure how to reach your healthcare provider, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

Memorial Sloan Kettering Cancer Center

PATIENT & CAREGIVER EDUCATION

About Your Tunneled Catheter

This information explains what a tunneled catheter is and how it's placed. It also has general guidelines for caring for your tunneled catheter at home. A tunneled catheter is a type of central venous catheter (CVC).

About tunneled catheters

A tunneled catheter is a flexible catheter (thin tube) that goes into a vein in your chest. There are many different types of tunneled catheters. Your doctor will decide which type is best for you.

All tunneled catheters are tunneled under your skin and into a large vein near your heart (see Figure 1).

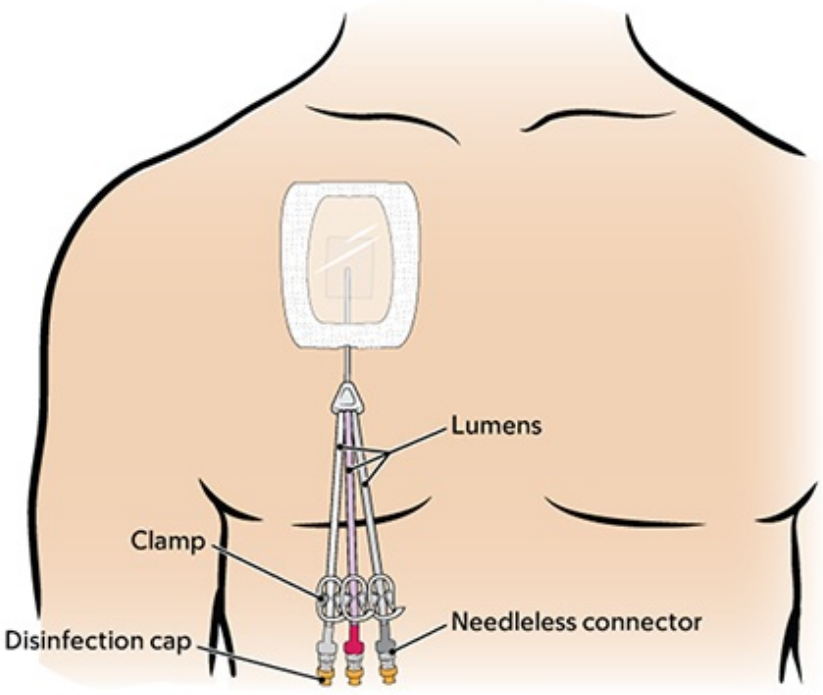

Figure 1. Tunneled catheter

The catheter splits into 1, 2, or 3 lumens (smaller tubes) outside of your body. Each lumen has:

- A clamp.
- A needleless connector (also called a clave).
- A disinfection cap on the end.

Having a tunneled catheter can help you need fewer needle sticks. It can be used to:

- Take blood samples.
- Give fluids.
- Give chemotherapy and other cancer treatments, such as CAR-T and bone marrow transplant.
- Give intravenous (IV) medications and nutrition.
- Give blood transfusions.

A tunneled catheter can stay in your body for weeks, months, or even years. Your doctor will remove it when you do not need it anymore.

You will have a procedure to place your tunneled catheter. Your nurse will tell you how to get ready for your procedure. They will also teach you how to care for your tunneled catheter after your procedure. It can be helpful to have a caregiver, family member, or friend learn with you.

Most people can do normal activities with a tunneled catheter, such as work, school, sexual activity, showering, and mild exercise. Talk with your doctor or nurse about which activities are safe to do before you start them.

Avoid contact sports, such as football and soccer. Avoid submerging your catheter in water, such as swimming in a pool or ocean, while your catheter is in place.

What to do before your procedure

Ask about your medicines

You may need to stop taking some of your usual medicines before your procedure. Or, you may need to take a different dose (amount) than usual. Talk with your healthcare provider about how to take your medicines before your procedure. Do not change how you take your medicines without talking with a healthcare provider.

This section lists some examples of medicines, but there are many others. **Make sure your care team knows all the prescription medicines, over-the-counter medicines, and dietary supplements you take.** A prescription medicine is one you can only get with a prescription from a healthcare provider. An over-the-counter medicine is one you can buy without a prescription.

It's very important to take your medicines and supplements the right way in the days before your procedure. If you don't, we may need to reschedule your procedure.

Anticoagulants (blood thinners)

A blood thinner is a medicine that changes how your blood clots. Blood thinners are often prescribed to help prevent a heart attack, stroke, or other problems caused by blood clots.

If you take a blood thinner, ask your healthcare provider what to do before your procedure. They may tell you to stop taking it a certain number of days before your procedure. This will depend on the type of procedure you're having and the reason you're taking a blood thinner.

Here are some examples of blood thinners. There are others, so be sure your care team knows all the medicines you take. **Do not stop taking your blood thinner without talking with a member of your care team.**

• Apixaban (Eliquis®) • Aspirin • Celecoxib (Celebrex®) • Cilostazol (Pletal®) • Clopidogrel (Plavix®) • Dabigatran (Pradaxa®) • Dalteparin (Fragmin®) • Dipyridamole (Persantine®) • Edoxaban (Savaysa®) • Enoxaparin (Lovenox®) • Fondaparinux (Arixtra®) • Heparin injection (shot)	• Meloxicam (Mobic®) • Nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen (Advil®, Motrin®) and naproxen (Aleve®) • Pentoxifylline (Trental®) • Prasugrel (Effient®) • Rivaroxaban (Xarelto®) • Sulfasalazine (Azulfidine®, Sulfazine®) • Ticagrelor (Brilinta®) • Tinzaparin (Innohep®) • Warfarin (Jantoven®, Coumadin®)

Other medicines and supplements can change how your blood clots. Examples include vitamin E, fish oil, and nonsteroidal anti-inflammatory drugs (NSAIDs). Read *How To Check if a Medicine or Supplement Has Aspirin, Other NSAIDs, Vitamin E, or Fish Oil* (www.mskcc.org/pe/check-med-supplement). It will help you know which medicines and supplements you may need to avoid before your procedure.

Diabetes medicines

You may be taking insulin or other diabetes medicines. If so, talk with your MSK healthcare provider and the healthcare provider who prescribes it. Ask them what to do before your surgery or procedure. You may need to stop taking the medicine or take a different dose (amount) than usual. You may also need to follow different eating and drinking instructions before your surgery or procedure. Follow your healthcare provider's instructions.

Your care team will check your blood sugar levels during your surgery or procedure.

GLP-1 medicines for weight loss

It's important to tell your healthcare provider if you take a GLP-1 medicine. You must follow special eating and drinking instructions before your surgery or procedure. **It is very important to follow these instructions. If you do not follow them, your surgery or procedure may be delayed or canceled.**

- **Follow a clear liquid diet the day before your surgery or procedure.** Do not eat any solid food. Read *Clear Liquid Diet* (www.mskcc.org/pe/clear-liquid-diet) to learn more.
- **Stop drinking 8 hours before your arrival time.** Do not eat or drink anything after this time, including clear liquids. You can have small sips of water with your medicines.

To learn more, read *Eating and Drinking Before Your Surgery or Procedure When Taking GLP-1 Medicines* (www.mskcc.org/pe/eat-drink-glp1).

Here are some examples of GLP-1 medicines. There are others, so be sure your care team knows all the medicines you take. Sometimes, these are prescribed to help manage diabetes or other conditions. Other times, they're prescribed for weight loss.

• Semaglutide (Wegovy®, Ozempic®, Rybelsus®) • Dulaglutide (Trulicity®)	• Tirzepatide (Zepbound®, Mounjaro®) • Liraglutide (Saxenda®, Victoza®)

Diuretics (water pills)

A diuretic is a medicine that helps control fluid buildup in your body. Diuretics are often prescribed to help treat hypertension (high blood pressure) or edema (swelling). They can also be prescribed to help treat certain heart or kidney problems.

You may be taking a diuretic. If so, ask the healthcare provider doing your procedure what to do before your procedure. You may need to stop taking it the day of your procedure.

Here are some examples of diuretics. There are others, so be sure your care team knows all the medicines you take.

• Bumetanide (Bumex®) • Furosemide (Lasix®)	• Hydrochlorothiazide (Microzide®) • Spironolactone (Aldactone®)

Take devices off your skin

You may wear certain devices on your skin. Before your procedure, surgery, or scan, some device makers recommend you take off your:

- Continuous glucose monitor (CGM)
- Insulin pump

Talk with your healthcare provider about scheduling your appointment closer to the date you need to change your device. Make sure to bring an extra device with you to put on after your procedure, surgery, or scan.

You may not be sure how to manage your glucose (blood sugar) while your device is off. If so, before your appointment, talk with the healthcare provider who manages your diabetes care.

Arrange for someone to take you home

You must have a responsible care partner take you home after your procedure. A responsible care partner is someone who can help you get home safely. They should be able to contact your care team if they have any concerns. Make sure to plan this before the day of your procedure.

If you don't have a responsible care partner to take you home, call one of the agencies below. They'll send someone to go home with you. There's a charge for this service, and you'll need to provide transportation. It's OK to use a taxi or car service, but you still need a responsible care partner with you.

Agencies in New York

VNS Health: 888-735-8913

Caring People: 877-227-4649

Agencies in New Jersey

Caring People: 877-227-4649

Tell us if you're sick

If you get sick (including having a fever, cold, sore throat, or flu) before your procedure, call your IR doctor. You can reach them Monday through Friday from 9 a.m. to 5 p.m.

After 5 p.m., during the weekend, and on holidays, call 212-639-2000. Ask for the Interventional Radiology fellow on call.

Note the time of your appointment

A staff member will call you 2 business days before your procedure. If your procedure is scheduled for a Monday, they'll call you on the Thursday before. They'll tell you what time to get to the hospital for your procedure. They will also remind you where to go.

If you don't get a call by noon (12 p.m.) on the business day before your procedure, call 646-677-7001. If you need to cancel your procedure for any reason, call the healthcare provider who scheduled it for you.

What to do the day before your procedure

Instructions for eating

Important: If you take a GLP-1 medicine, do not follow these instructions. Follow the instructions in *Eating and Drinking Before Your Surgery or Procedure When Taking GLP-1 Medicines* (www.mskcc.org/pe/eat-drink-glp1) instead.

Stop eating at midnight (12 a.m.) the night before your surgery or procedure. This includes hard candy and gum.

Your healthcare provider may have given you different instructions for when to stop eating. If so, follow their instructions. Some people need to fast (not eat) for longer before their surgery or procedure.

What to do the day of your procedure

Instructions for drinking

Important: If you take a GLP-1 medicine, do not follow these instructions. Follow the instructions in *Eating and Drinking Before Your Surgery or Procedure When Taking GLP-1 Medicines* (www.mskcc.org/pe/eat-drink-glp1) instead.

Between midnight (12 a.m.) and 2 hours before your arrival time, only drink the liquids on the list below. Do not eat or drink anything else. Stop drinking 2 hours before your arrival time.

- Water.
- Clear apple juice, clear grape juice, or clear cranberry juice.
- Gatorade or Powerade.
- Black coffee or plain tea. It's OK to add sugar. Do not add anything else.
    - Do not add any amount of any type of milk or creamer. This includes plant-based milks and creamers.
    - Do not add flavored syrup.

If you have diabetes, pay attention to the amount of sugar in your drinks. It's easier to control your blood sugar levels if you include sugar-free, low-sugar, or no added sugar versions of these drinks.

It's helpful to stay hydrated before surgeries and procedures, so drink if you're thirsty. Do not drink more than you need. You'll get intravenous (IV) fluids during your surgery or procedure.

Stop drinking 2 hours before your arrival time. This includes water.

Your healthcare provider may have given you different instructions for when to stop drinking. If so, follow their instructions.

Things to remember

- Take only the medications your doctor told you to take the morning of your procedure. Take them with a few sips of water.
- Do not put cream (thick moisturizers) or petroleum jelly (Vaseline®) anywhere on your chest.
- Do not wear eye makeup.
- Remove any jewelry, including body piercings.
- Leave all valuables at home if you do not need them.
- If you wear contact lenses, wear your glasses instead, if you can. If you do not have glasses, bring a case for your contacts.

What to bring with you

- Medications for breathing problems, such as inhalers, if you take any.
- Medications for chest pain, if you take any.
- A case for your glasses or contacts.
- Your Health Care Proxy form and other advance directives, if you have completed them.
- Your CPAP or BiPAP machine if you use one. If you cannot bring yours with you, we will give you one to use while you're in the hospital.

What to expect when you arrive

Many staff members will ask you to say and spell your name and date of birth. This is for your safety. People with the same or similar names may be having procedures on the same day.

Meet with a nurse

You'll meet with a nurse before your procedure. Tell them the dose of any medicines you took after midnight (12 a.m.) and the time you took them. Make sure to include prescription and over-the-counter medicine, patches, and creams.

Your nurse may place an intravenous (IV) line in one of your veins, usually in your arm or hand. If your nurse does not place the IV, your anesthesiologist will do it in the procedure room.

A member of your care team will review your medical history with you to prepare you for sedation (seh-DAY-shun). Sedation is when you're calm, relaxed, or sleepy from medicine you will get before your procedure. They will:

- Ask you if you've had any problems with sedation in the past. This includes nausea (feeling like you're going to throw up) or pain.
- Talk with you about your comfort and safety during your procedure.
- Talk with you about the kind of sedation you'll get.
- Answer questions you have about sedation.

Inside the procedure room

A member of your care team will give you an injection (shot) of local anesthesia. This is medicine to numb the area where they will place the catheter into your skin.

Once the areas are numb, your doctor will make small incisions (surgical cuts). They will place the catheter through the incision on your chest and tunnel it under your skin to the incision at the base of your neck. Then, they will thread the catheter into your vein (see Figure 2).

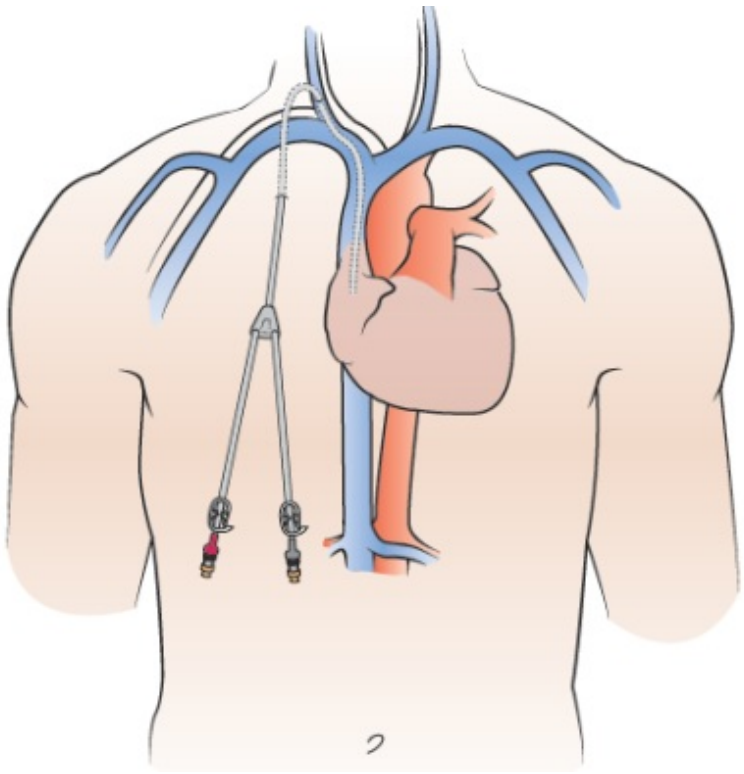

Figure 2. Catheter tunneled under your skin, into a vein

Your doctor will use fluoroscopy (real time X-rays) or ultrasound to help place the catheter. They may also give you an injection of IV contrast. The contrast makes it easier for your doctor to see the area.

Your doctor will use sutures (stitches) to close the incision at the base of your neck. They will put Steri-Strips™ (surgical tape) over the sutures. Then, they will stitch your catheter to your skin at the place where it leaves your body (the exit site). This will keep the catheter in place.

At the end of your procedure, your doctor will put a gauze dressing (bandage) over the incision on your neck. They'll also put a Tegaderm™ dressing over your catheter exit site.

What to do after your procedure

After your procedure, your care team will bring you to the recovery room. You will need to stay in bed until the sedation has worn off. You will then go back to your hospital room or go home with your caregiver.

You may have bleeding, discomfort, or pain at your catheter exit site. It can last for up to 3 days after your catheter is placed. Talk with your healthcare provider about what pain medicine is safe to take.

If you have any bleeding from your exit site, apply pressure and a cold compress to the area. Tell your nurse if you have:

- Bleeding. Your care team may need to change your dressing.
- Pain or discomfort that gets worse.
- Any nausea (feeling like you're going to throw up).
- Any symptoms that concern you.

Do not shower for 24 hours after your procedure.

Your central line discharge kit

Your nurse will give you a discharge kit before your procedure or before you leave the hospital. They will explain how to use the kit.

The discharge kit has:

- 1 toothless clamp
- 1 cannula clamp
- 2 Curos Jet™ strips
- 3 needleless connectors
- 1 package of (10-inch x 12-inch) water guards, such as AquaGuard
- 2 (4-inch x 6 1/8-inch) Tegaderm dressings without CHG
- 2 Nitrile exam gloves
- 10 alcohol Pads
- 1 (4-ounce) package of CHG 4% cleansing soap
- Disinfection caps
- Your doctor's office and emergency telephone numbers

Keep your discharge kit with you at all times. You'll need it if your catheter is leaking, or if your Tegaderm dressing or needleless connector is damaged or comes off.

How to care for your catheter exit site

Always have a Tegaderm dressing over your exit site while your tunneled catheter is in place. The Tegaderm dressing helps prevent infection. Call your healthcare provider if your Tegaderm dressing gets dirty, wet, or peels off. They may need to change your Tegaderm dressing.

Have a nurse change your dressing

Have a nurse change your dressing:

- Within 24 hours (1 day) if you're staying in the hospital after your procedure.
- Within 48 hours (2 days) if you're going home after your procedure and your dressing is gauze and tape. They will replace it with a CHG or non-CHG transparent (clear) dressing.
- Within 7 days if both of these are true:
    - You have a CHG or non-CHG transparent dressing.
    - You can see your insertion site (where the catheter goes into your body).

During these dressing change appointments, the nurse will change your needleless connectors, disinfection caps and flush your catheter. If you cannot come to an MSK site, your nurse will help you make other plans. Call your healthcare provider if you have any questions.

How to care for your neck incision

Two days after your procedure, remove the gauze bandage over the small incision on your neck. You do not need to put a new bandage over the incision.

Leave the Steri-Strips in place until they start to peel off. This can take up to 1 week after your procedure.

How to care for your tunneled catheter at home

Keep the lumens clamped when you are not using your catheter. Keep your catheter secure at all times to keep from pulling it.

Talk with your nurse about the best way to secure your catheter. You can tape the lumens to your skin or tuck them into your bra. Or, you can wrap them in medical tape and pin the tape to your clothing. Take off the pin when changing your clothes to prevent tugging on the catheter.

Do not put tape over the connection site. The connection site is where the needleless connector connects to the lumens.

Check your exit site every day for redness, tenderness or pain, leakage or drainage, swelling, or bleeding. Call your healthcare provider right away if you have any of these signs or symptoms. These are signs you may have an infection.

What to do if your catheter is leaking

1. Clamp your catheter above the leak. Move the white clamp on the catheter so it's above the leak, if you can. If you cannot use the white clamp, use the toothless clamp in your discharge kit (see Figure 3).
2. Wipe the area that's leaking with an alcohol pad.
3. **Call your doctor's office right away.**

Figure 3. A toothless clamp

What to do if your Tegaderm dressing is damaged, loose, or dirty

Call your doctor's office right away. Do not take off the damaged, loose, or dirty dressing. Put a new Tegaderm dressing from the discharge kit over it.

What to do if your Tegaderm dressing is wet

What to do if your Tegaderm dressing is wet

Call your doctor's office right away. Do not take off the wet Tegaderm dressing or put another dressing over it.

What to do if your disinfection cap falls off

Throw away the disinfection cap that fell off. Do not put it back on the lumen.

To put on a new disinfection cap:

1. Clean your hands with soap and water or an alcohol-based hand sanitizer.
2. Get a new disinfection cap from your discharge kit. Remove the cap from the strip.
3. Hold the needleless connector in one hand. With your other hand, gently push and twist the new disinfection cap onto the end of the needleless connector.

What to do if your needleless connector falls off

Throw away the needleless connector that fell off. Do not put it back on the lumen.

To put on a new needleless connector:

1. Gather your supplies. You will need:
    - 1 pair of nonsterile gloves
    - 2 alcohol pads
    - 1 new needleless connector
    - 1 new disinfection cap
2. Clean your hands with soap and water or an alcohol-based hand sanitizer. Put the gloves on.
3. Get your supplies ready.
    - Open 1 of the alcohol pad packets, but leave the alcohol pad inside.
    - Open the needleless connector packet, but leave the needleless

connector inside.

- Pull the tab to take the cover off the disinfection cap, but leave the disinfection cap inside its plastic holder.

4. Open the other alcohol pad packet. Using the alcohol pad inside, pick up the lumen with your nondominant hand (the hand you do not write with). Hold it close to the end (see Figure 4).
5. Pick up the other, open alcohol pad with your dominant hand (the hand you write with). Scrub the open end of the lumen with the alcohol pad for 15 seconds. Throw away the used alcohol pad. Let the lumen dry for 15 seconds. Keep holding it with the alcohol pad in your nondominant hand.
6. Pick up the new needleless connector with your free hand. If it has a cover, take the cover off. You can do this using the knuckles of your other hand. Then, twist the new needleless connector onto the end of the lumen (see Figure 4). Keep holding the lumen with the alcohol pad in your nondominant hand.

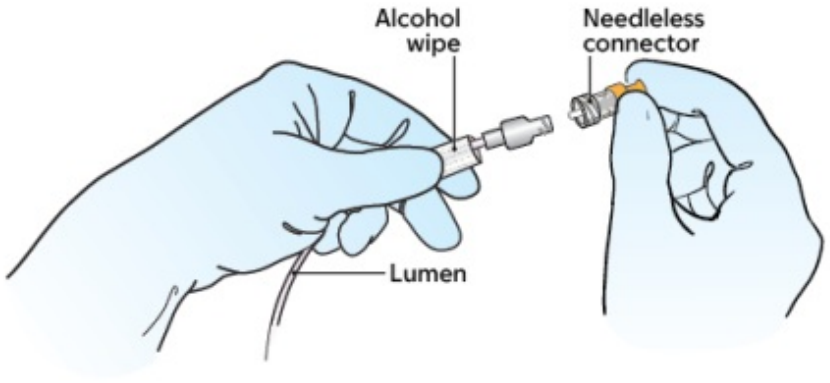

Figure 4. Twisting on the new needleless connector

7. Pick up the plastic holder with the disinfection cap with your free hand. Gently push and twist the disinfection cap onto the end of the needleless connector. Once it's attached, pull off the plastic holder and throw it away.
8. Take your gloves off. Clean your hands.

Call your doctor or nurse after you change the needleless connector.

Guidelines for showering with a tunneled catheter

Keep your skin clean to lower your risk of infection while your tunneled catheter is in place.

Do not submerge your catheter in water, such as in a bathtub, swimming pool or ocean. Watch *Showering While You Have a Central Venous Catheter (CVC)* (www.mskcc.org/pe/shower-cvc) to learn more about showering with a tunneled catheter.

Use a waterproof cover

Use a single-use waterproof cover over your dressing, such as Aquaguard®, to shower while your catheter is in place. Your discharge kit will have waterproof covers. You can also buy them online.

Each time you shower, cover your Tegaderm dressing completely with a new waterproof cover to keep it from getting wet. To put on the waterproof cover:

1. Peel off the top and side strips.
2. Place the top edge above your dressing. Do not let the tape on the waterproof cover touch your Tegaderm dressing. It can lift your dressing when you remove the waterproof cover after showering. Smooth the cover down over your dressing.
3. Peel off the bottom strip. Make sure the bottom edge of the waterproof cover is below your dressing. Make sure the lumens of your catheter are tucked into the waterproof cover and completely covered. Smooth the bottom edge down.

Do not shower for longer than 15 minutes. Use warm water, not hot water. This will help keep the waterproof cover from coming off.

Dry the waterproof cover before you take it off. After your shower, fully dry the connection sites.

Use an antiseptic skin cleanser, such as Hibiclens ®

While your tunneled catheter is in place, keep your skin clean to lower your risk of infection. Wash with an antiseptic skin cleanser, such as Hibiclens, every day.

Hibiclens is a skin cleanser that kills germs for up to 24 hours after you use it. It has a strong antiseptic (liquid used to kill germs and bacteria) called 4% chlorhexidine gluconate (CHG) solution. Showering with 4% CHG solution will help lower your risk of infection.

CHG solution comes in liquid form or as wipes. You can buy it from any local pharmacy or online. You will be sent home with a small bottle of Hibiclens when you're discharged from the hospital.

Read *How to Shower Using 4% Chlorhexidine Gluconate (CHG) Solution Antiseptic Skin Cleanser* (www.mskcc.org/pe/chg-solution) to learn more.

Instructions for using liquid Hibiclens (4% CHG solution)

1. Wash your hair with your usual shampoo and conditioner. Rinse your head well.
2. Wash your face and genital (groin) area with your usual soap. Rinse your body well with warm water.
3. Open the 4% CHG solution bottle. Pour some into your hand or a clean washcloth.
4. Move away from the shower stream. Rub the 4% CHG solution gently over your body from your neck to your feet. Do not put it on your face or genital area.
5. Move back into the shower stream to rinse off the 4% CHG solution. Use warm water.
6. Dry yourself off with a clean towel.

Do not put on any lotion, cream, deodorant, makeup, powder, perfume, or cologne after your shower.

Things to remember when using Hibiclens

- Do not use regular soap, lotion, cream, powder, or deodorant without talking with your nurse first. If you're in the hospital, your nurse might give you a lotion you can use after using Hibiclens.
- Do not use Hibiclens on your head, face, ears, eyes, mouth, genital area, or on deep wounds. If you have a wound and are not sure if you should use Hibiclens on it, ask your doctor or nurse.
- Do not use Hibiclens if you're allergic to chlorhexidine.
- If your skin gets irritated or you have an allergic reaction when using Hibiclens, stop using it. Call your doctor.

When to call your healthcare provider

Call your healthcare provider right away if:

- You have a fever of 100.4 °F (38 °C) or higher or chills.
- You have bleeding at your exit site. Your care team may need to change your dressing.
- You have pain or discomfort that gets worse.
- Your catheter breaks or leaks. Your care team may need to change your dressing and check your catheter site.
- Your Tegaderm dressing gets damaged, loose, dirty, or wet. Your care team will need to change your dressing and check your catheter site.
- You have redness, tenderness or pain, leakage or drainage, swelling, or bleeding around your catheter exit site.
- Your needleless connector falls off.
- You have any questions or concerns about your catheter.

If you have questions or concerns, contact your healthcare provider. A member of your care team will answer Monday through Friday from 9 a.m. to 5 p.m. Outside those hours, you can leave a message or talk with another MSK provider. There is always a doctor or nurse on call. If you're not sure how to reach your healthcare provider, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

About Your Tunneled Catheter - Last updated on August 31, 2026

Memorial Sloan Kettering Cancer Center

PATIENT & CAREGIVER EDUCATION

Food Safety During Cancer Treatment

This information explains what foodborne illness (food poisoning) is. It also explains how to handle food safely to help prevent foodborne illness.

What is foodborne illness?

Foodborne illness is caused by germs that get into the food you eat. Germs such as bacteria, viruses, or parasites can attach to food and grow. You cannot always see, smell, or taste these germs.

Who is at risk to get foodborne illness?

Foodborne illness can happen to anyone, but some people are more likely to get it than others. People are at higher risk if their immune system is weakened by cancer and cancer treatment.

Some people may need to take extra steps to avoid foodborne illness. This includes people who had a stem cell transplant. Your care team will tell you if this applies to you.

What are the symptoms of foodborne illness?

Symptoms of foodborne illness include:

- Vomiting (throwing up)
- Diarrhea (loose or watery poop)
- Pain in your abdomen (belly)
- Flu-like symptoms, such as:

- A fever above 101.3 °F (38.5 °C)
- A headache
- Body aches
- Chills

Symptoms often happen within 1 to 3 days after eating the contaminated food. They can also happen within 20 minutes or up to 6 weeks later.

Contact your healthcare provider right away if you have any symptoms of foodborne illness.

How can I prevent foodborne illness?

It's important to handle food safely to lower your risk. Foodborne illness can be serious or even deadly.

To help keep yourself safe, follow these 4 simple steps: **clean**, **separate**, **cook**, and **chill**.

Clean your hands and surfaces often

- Wash your hands with warm water and soap for at least 20 seconds:
  - Before and after handling food.
  - After using the bathroom, changing diapers, handling garbage, or touching pets.
- Wash cutting boards, dishes, forks, spoons, knives, and countertops with hot soapy water after preparing each food item.
- Use clean glass, plastic, or wooden cutting boards.
- Use paper towels to clean kitchen surfaces, if you can. Germs can grow on wet or dirty cloth towels and sponges.
  - If you use cloth towels, wash them often using hot water.

    - If you use a sponge, squeeze out all the water after each use. Replace it every 2 weeks.
- Use an antibacterial cleaning spray to clean surfaces. Look for sprays that have bleach or ammonia, such as Lysol® or Clorox®.
- Rinse all fruits, vegetables, and other produce under running water. This includes produce with skins and peels you don't eat, such as bananas and avocados. Scrub firm produce (such as melons, oranges, and lemons) to clean them. If you use a produce brush, clean it every 2 to 3 days. You can put it in your dishwasher or wash it with hot, soapy water.
- Avoid produce that has bruises or blemishes.
- Clean the lids of canned goods before you open them.

Separate raw meats from other foods

- Put raw meats, poultry, and seafood into individual bags in your shopping cart and grocery bags. This will keep any liquids that leak from getting onto other foods.
- Do not store raw meats, poultry, or seafood in your refrigerator above produce or other foods you do not cook before eating.
- Use one cutting board for produce. Use a different cutting board for raw meats, poultry, and seafood.
- Do not use any plate that held raw meat, poultry, seafood, or eggs without washing it first. Wash the plate with hot, soapy water before you use it again.
- Do not reuse marinades used on raw meats, poultry, or seafood unless you heat them to a boil first.

Cook foods to the right temperature

- The best way to tell if food is cooked enough to be safe is to check the internal temperature. That's the temperature of the middle of the food. Food color and texture are not always reliable ways to tell if foods are fully cooked.
- Use a food thermometer to check the internal temperature of meat, poultry, seafood, and egg products as they cook. You must cook these foods to a certain temperature to kill any harmful germs. This is called the safe minimum internal temperature (see Table 1).
- Cook eggs until the yolk and white are firm. Choose recipes that only use eggs that are cooked or heated thoroughly.
- When cooking in a microwave oven:
  - Cover, stir, and turn the food to make sure it's cooked evenly. If the microwave doesn't have a turntable, pause it and turn the food yourself once or twice while it's cooking.
  - Always wait about 10 minutes after the food is done before checking the food's internal temperature with a food thermometer. This lets the food finish cooking.
- When reheating sauces, soups, or gravy, heat them to a boil.
- Eat reheated leftovers within 1 hour.
- Do not reheat leftovers more than once. If you don't finish the food you reheated, throw it away. Do not put it back in the refrigerator.

How do I know when cooked food is safe to eat?

Measure the internal temperature of your food as it's cooking. Different foods must reach a certain internal temperature before they are safe to eat.

Use a food thermometer to measure the internal temperature of your food as it's cooking. Push the thermometer into the center of the food. The numbers on the thermometer will go up slowly. Hold the thermometer in place until the numbers stop going up.

The table below shows the minimum (lowest) internal temperatures for a food to be safe to eat. The temperature on the thermometer should be the same or higher than the temperature in the table. If the temperature is lower than the temperature in the table, keep cooking the food. Once the food reaches the temperature in the table, it's fully cooked and safe to eat.

Type of food	Safe minimum internal temperature
Beef, pork, veal, and lamb (steaks, roasts, and chops)	145 °F (63 °C) with a 3-minute rest time
Beef, pork, veal, and lamb (ground)	160 °F (71 °C)
Poultry, such as chicken, turkey, and duck	165 °F (74 °C)
Egg dishes and sauces	160 °F (71 °C) or until the yolk and white are firm
Fish and shellfish	145 °F (63 °C) and flesh is opaque (not see-through)
Leftovers and casseroles	165 °F (74 °C)

Table 1. Safe minimum internal temperature of foods

Chill foods right away

- Make sure the refrigerator is 40 °F (4 °C) or lower inside.
- Make sure the freezer is 0 °F (-18 °C) or lower inside.
- Refrigerate or freeze meat, poultry, eggs, seafood, and other perishables (foods that can go bad). Do this within 2 hours of cooking or buying them. If the temperature outside is above 90 °F (32 °C), refrigerate or freeze them within 1 hour.
- When it's hot out, keep perishables cold when you bring them home after shopping. Use an insulated bag or a cooler with ice or frozen gel packs.
- Defrost food in the refrigerator, cold water, or a microwave. If you use cold water or a microwave, cook the food right away once it's defrosted. Never defrost food at room temperature, such as on the countertop.
- When you marinate food, always marinate it in the refrigerator.
- Split up large amounts of leftovers into shallow containers before refrigerating them. This helps them cool more quickly.
- Eat leftovers within 2 days.

Common questions

How can I store my groceries safely?

- Keep perishable foods cold if you need to make a stop after grocery shopping. Use an insulated bag or cooler with ice or frozen gel packs to keep them cold.
- Put eggs and milk on a shelf inside the refrigerator. Do not store them in the refrigerator door. Food stays cooler inside the refrigerator than on the door.
- If you use a grocery delivery service:
  - Make sure all refrigerated and frozen items are at a safe temperature when they're delivered.
  - Put these items into the refrigerator or freezer right away.

How can I make safe choices while grocery shopping?

- Check containers for an expiration date. Do not buy the item if the date has passed.
- Do not buy canned, jarred, or boxed foods with dents, swelling, or a broken seal.
- Do not buy foods from self-service bulk containers or bins. This includes nuts, grains, or other items that you portion into containers yourself.
- Pick up cold and frozen foods, such as milk and frozen vegetables, at the end of your shopping trip. This helps limit the time they will be outside of a refrigerator or freezer.

Is it safe to eat at restaurants?

It's safe for most people to eat at restaurants. Follow these guidelines to lower your risk of foodborne illness:

- Choose the restaurant carefully. You can see a restaurant's recent health inspection score by visiting your local Department of Health (DOH) website.

- Order food that's properly cooked. Send back any meat, poultry, fish, or eggs that are undercooked. Food that's steaming hot is usually safer than room temperature and cold foods (such as sandwiches and salads).
- Refrigerate any leftovers within 2 hours of eating out. Reheat them until they're steaming hot (165 °F) and eat them within 2 days.
- Avoid foods that may have raw, unpasteurized eggs. This includes Caesar salad dressing, fresh mayonnaise or aioli, and hollandaise sauce.

Some restaurant foods are riskier than others. These include:

- Foods from buffets and salad bars.
- Food that isn't cooked to order, such as fast food and foods stored under heat lamps.
- Containers used by many people, such as condiments and milk at a cafe.
- Any food handled by employees without gloves or utensils.

Take-out food, delivery food, and food from food trucks can also be riskier. These foods may not be kept hot or cold enough during transit.

If you had a stem cell transplant, you may need to avoid eating at restaurants for about 3 months. Talk with your healthcare provider about when it's safe for you to eat at restaurants.

Is it safe for me to take dietary supplements?

How dietary products are made and stored is not regulated in the United States. This means they can be a health risk (infection or foodborne illness). Dietary supplements can also keep some medications from working as well as they should.

Talk with your MSK healthcare provider before taking any supplements, probiotics, homeopathic remedies, or herbal products. This includes as St. John's wort and traditional Chinese medicines, such as herbs, roots, or seeds.

How do I know if my drinking water is safe?

Tap water from most big cities (such as New York City) is safe to drink. If you're not sure if the tap water in your area is safe, check with your local health department.

Never drink water from lakes, rivers, streams, or springs.

If you use well water that's not tested for bacteria, boil it before you drink it. To do this:

- Bring the water to a rolling boil (large, fast-moving bubbles) for 15 to 20 minutes.
- Store the water in the refrigerator and use it within 48 hours (2 days).
- After 2 days, pour any leftover water down the drain. Do not drink it.

You can also use bottled water instead of well water.

Visit www.epa.gov/privatewells/potential-well-water-contaminants-and-their-impacts for more information about well water.

What foods I should avoid eating?

Some foods are more likely to cause a foodborne illness than others. It's best to avoid:

- Raw or undercooked meat, poultry, seafood (including sushi), eggs, and meat substitutes, such as tempeh and tofu.
- Unpasteurized (raw) milk, cheese, other dairy products, and honey.
- Unwashed fresh fruits and vegetables.
- Raw or uncooked sprouts, such as alfalfa and bean sprouts.
- Cold or uncooked deli meats (cold cuts) and hot dogs. Cooked meats on other foods, such as pepperoni on pizza, are safe to eat.

Infections can also happen when sickness spreads through foods. Visit www.cdc.gov/foodborne-outbreaks to find news about current cases in the

U.S.

A clinical dietitian nutritionist can help you make safe food choices by understanding risks of eating certain foods. Talk with them about the risks of eating the foods in listed in the table below.

Food group	Talk with a clinical dietitian nutritionist about the risks of eating these food items
Milk and dairy	• Milk, cheese, and other dairy products that are not in a refrigerator. • Cheese sliced at a deli counter. These cheeses may be sliced near deli meats. Choose sealed, pre-packaged cheese instead. • Unrefrigerated desserts or pastries with cream fillings or frosting. Choose packaged, shelf-stable products instead. • Soft-serve ice cream, soft-serve yogurt, and ice cream scooped at a restaurant.
Meat, poultry, seafood, and eggs	• Meat sliced at a deli counter. Choose sealed, pre-packaged deli meat instead. • Raw or partially cooked fish and shellfish. This includes caviar, sashimi, sushi, ceviche, and cold smoked seafood, such as lox. • Clams, mussels, and oysters in the shell. • Refrigerated pâtés and meat spreads.
Fruits and vegetables	• Produce that is bruised, dented, or has other markings on it. • Salads and produce from a deli or salad bar. • Pre-cut fruits and vegetables. • Vegetarian sushi, unless you make your own at home. Vegetarian sushi made at a store or restaurant may be prepared near raw fish.
Drinks	• Unpasteurized eggnog, apple cider, or other fruit or vegetable juices. • Fresh-squeezed fruit or vegetable juices, unless you make your own at home. • Unpasteurized beer and wine, such as microbrewery beers and those that aren't shelf-stable. Talk with your doctor before having any alcohol. • Fountain soda and other fountain drinks. • Water from a water fountain or other shared container.
Nuts and grains	• Unroasted nuts in the shell.

Other	• Herbal and nutritional supplements, including probiotic supplements to improve gut health. These usually come in capsule, gummy, powdered, or pill form. • Shared containers used by many people, such as condiments and milk at a coffee shop. • Any unpackaged, communal, or shared food items. This includes free samples or shared non-perishable pantry foods in your home.

If you have questions or concerns, contact your healthcare provider. A member of your care team will answer Monday through Friday from 9 a.m. to 5 p.m. Outside those hours, you can leave a message or talk with another MSK provider. There is always a doctor or nurse on call. If you're not sure how to reach your healthcare provider, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

Food Safety During Cancer Treatment - Last updated on August 31, 2026

Memorial Sloan Kettering Cancer Center

PATIENT & CAREGIVER EDUCATION

Hand Hygiene and Preventing Infection

This information explains how to clean your hands with soap and water or an alcohol-based hand sanitizer.

Why is hand hygiene so important?

When germs get into your body, they can cause infection. Everyone is at risk for infection while in the hospital. Hand hygiene is the best way to prevent the spread of germs and infections. It only takes 20 seconds of washing your hands or using an alcohol-based hand sanitizer (such as Purell®) to kill germs. Take action by cleaning your hands and asking your visitors to clean their hands.

When should I clean my hands with soap and water?

Clean your hands:

- After using the toilet, urinal, or bedside commode.
- If your hands look dirty.
- Before you eat or prepare food.
- If you have an infection with the germ *Clostridium difficile* (*C. diff*) or norovirus.
- After vomiting (throwing up) or coughing up phlegm (mucus).

What is the right way to clean my hands with soap and water?

1. Wet your hands with warm water. Use liquid soap, if possible. Apply enough soap to cover both your hands.
2. Rub your hands together. Rub the soap over the top of your hands, between your fingers, and in the area around and under your fingernails.
3. Keep rubbing your hands for at least 20 seconds.
4. Rinse your hands well under warm running water.
5. Dry your hands with a paper towel.
6. Use a dry paper towel to turn off the faucet and to open the bathroom door, if needed.

Please visit **www.mskcc.org/videos/how-wash-your-hands-properly** to watch this video.

When should I clean my hands with an alcohol-based hand sanitizer?

Clean your hands with an alcohol-based hand sanitizer:

- If you don’t have soap and water.
- When you leave your hospital room and when you come back.
- Before eating.

If you cannot get out of bed, you can use an individually packaged hand wipe.

What is the right way to clean my hands with an alcohol-based hand sanitizer?

1. Apply enough sanitizer to cover both of your hands.
2. Rub your hands together. Rub the sanitizer over the top of your hands, between your fingers, and in the area around and under your fingernails.
3. Keep rubbing until your hands are dry. It should take at least 20 seconds of rubbing before your hands feel dry. Don’t rinse your hands with water or dry them with a towel.

Where can I get more information about hand hygiene?

If you have questions, talk with your healthcare provider. You can also visit the following website for more information:

Centers for Disease Control and Prevention (CDC)
www.cdc.gov/hygiene/personal-hygiene/hands.html

When to call your healthcare provider

Call your healthcare provider if you have any of the following:

- A fever of 100.4° F (38° C) or higher.
- A temperature of 96.8° F (36° C) or lower.
- New or worsening chills or sweating.
- New or worsening redness around a wound.
- New or increased drainage from a wound.
- New or worsening shortness of breath or trouble breathing.
- A heartbeat that is faster than usual.
- New or worsening cough.
- New or worsening pain.

If you have any questions, contact a member of your care team directly. If you're a patient at MSK and you need to reach a provider after 5 p.m., during the weekend, or on a holiday, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

Hand Hygiene and Preventing Infection - Last updated on May 16, 2023

Memorial Sloan Kettering Cancer Center

PATIENT & CAREGIVER EDUCATION

Sexual Health and Intimacy

This information explains how to maintain sexual health and intimacy during cancer treatment.

It's common for people to feel changes in their body during and after cancer treatment. There may be things you can see right away, like surgical scars, drainage tubes, and catheters (thin, flexible tubes). You may have changes to your body, such as losing your hair, changes in your weight, pain, or fatigue (feeling more tired or weak than usual).

These physical changes may affect how you feel about yourself or how you relate to your partner. They can affect your interest in sexual activity. They may also lessen your enjoyment and pleasure in sexual activities. Here are some suggestions and resources to help you maintain sexual health and intimacy during your treatment.

Managing your feelings

You may feel different during and after your cancer treatment. To help you deal with this, it's important to talk about how you feel. Family and friends can help. Your care team can reassure, support, and guide you. Here are some ways you can manage your feelings during and after cancer treatment:

- Figure out what you enjoy about yourself or what things make you feel special. These may be related to your family, friends, personal interests, or work life.
- Spend time doing activities and being with people that you enjoy.
- If your faith is important, maintain your spiritual or religious practices.
- Choose clothes that make you feel good.

- Have your favorite clothes altered to fit better.
- Take part in an online or in-person Look Good Feel Better program. See the section “External resources” to learn more.

Maintain physical intimacy with your partner

- Talk with your partner about your physical relationship. Talk about what you think would help you feel close and give you both pleasure. Share your concerns with them so that you can find solutions together.
- Increase intimate and sensual touching. Hug, caress, cuddle, touch, and hold hands to feel closer to each other.
- Try being intimate at times when you have more energy.
- Try to relax. Being relaxed can help with sexual enjoyment. Choose a time and place when you can relax and have privacy.
- If sex is hard or uncomfortable:
  - Try different sexual positions. Some may be less tiring or more comfortable.
  - Vaginal moisturizers and lubricants can be helpful. Read *Improving Your Vulvovaginal Health* (www.mskcc.org/pe/improving-vulvovaginal-health) to learn more.
  - Your care team can prescribe medicine to help with erections (getting hard for sex). Talk with your care team to learn more.

Special points related to sexual activity

The following are special factors you should think about before starting sexual activity during or after your cancer treatment:

- Ask your healthcare provider if there are any safety measures you should use for different types of sexual activity (such as oral, anal, or vaginal sex).
- Ask your healthcare provider if your blood cell counts are high enough for you to have safe sex.
  - Your white blood cell count should be high enough to prevent infection.

    - Your red blood cell count should be high enough to prevent bleeding.
- Use a condom to protect yourself from sexually transmitted infections (STIs), including HIV, especially if you have more than 1 partner.
- If there's any chance you or your partner can become pregnant, use birth control (contraception) during your cancer treatment. If you have any questions about birth control, or for help deciding the type of birth control that's right for you, talk with your healthcare provider.
- Ask your healthcare provider how long you should use birth control after your cancer treatment is over.
- Some cancer treatments may affect your fertility (the ability to become pregnant with a biological child). If you have questions about this, ask your healthcare provider.

To learn more, read *Sex and Your Cancer Treatment* (www.mskcc.org/pe/sex-cancer-treatment).

When to talk with your healthcare provider

Talk with your healthcare provider if:

- You have vaginal dryness or tightness that makes sexual activity painful. Simple solutions, such as vaginal lubricants or moisturizes, can help. You can also ask for a referral to our Female Sexual Medicine and Women's Health Program. Call 646-888-5076 to make an appointment.
- You have trouble getting or keeping an erection (erectile dysfunction) or have a low testosterone hormone level. Your healthcare provider can recommend medicine that may help. You can also ask for a referral to our Male Sexual and Reproductive Medicine Program. Call 646-888-6024 to make an appointment.
- You have emotional issues affecting your sexual health, such as having a low desire to have sex. You can also ask for a referral to our Female Sexual Medicine and Women's Health Program or our Male Sexual and Reproductive Medicine Program.

- You have accidental leakage of urine (pee) or bowel movements (poop). This is called incontinence. Your healthcare provider can give you a referral for rehabilitation therapy, or you can call 646-888-1900 to make an appointment.

MSK support services

Female Sexual Medicine and Women's Health Program
646-888-5076
Our Female Sexual Medicine and Women's Health Program helps women who are dealing with cancer-related sexual health issues. To learn more, or to make an appointment, call 646-888-5076.

Male Sexual and Reproductive Medicine Program
646-888-6024
Our Male Sexual and Reproductive Medicine Program helps men who are dealing with cancer-related sexual health issues. To learn more, or to make an appointment, call 646-888-6024.

Counseling Center
646-888-0200
www.msk.org/counseling
160 E. 53rd St.
New York, NY 10022
Many people find that counseling helps them manage their feelings. We provide counseling for individuals and couples to help you process any issues and work with you to solve problems. Your partner can attend these sessions with you, if you would like.

External resources

American Cancer Society (ACS)
www.cancer.org
800-ACS-2345 (800-227-2345)
The ACS has free booklets on cancer and sexual health called *Sex and the Adult Male With Cancer* and *Sex and the Adult Female With Cancer*. You can search for

them on www.cancer.org or call to request printed copies.

Look Good Feel Better Program
www.lookgoodfeelbetter.org
800-395-LOOK (800-395-5665)
This program offers workshops to learn things you can do to help you feel better about your appearance. To learn more or to sign up for a workshop, call the number above or visit the program's website.

National Cancer Institute (NCI)
www.cancer.gov
Visit the NCI's website to learn more about sexual health and cancer.

If you have questions or concerns, contact your healthcare provider. A member of your care team will answer Monday through Friday from 9 a.m. to 5 p.m. Outside those hours, you can leave a message or talk with another MSK provider. There is always a doctor or nurse on call. If you're not sure how to reach your healthcare provider, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

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