

Your Health Care Team- Allogeneic

Your Blood and Marrow Transplant Team includes the following professionals:

Doctors

While undergoing your transplant, medical care is provided by a transplant doctor. He or she sees you on a daily basis to answer questions you may have and keep you informed of your progress. Responsibilities of the transplant doctors change every 2 weeks. This means that you will have the opportunity to receive care from a few doctors during your hospitalization and recovery period. Weekly meetings of the doctors and other team members keep everyone up-to-date on the status of every patient.

Nurse Practitioners and Physician Assistants:

These providers have advanced training in transplant patient care and have day-to-day responsibility for your care while you are in the hospital or in the clinic. They work in close collaboration with the doctors in both the inpatient and outpatient setting.

Pre-Transplant Nurse Coordinators

Your pre-transplant nurse coordinator tracks your treatment prior to your transplant admission and plans the necessary testing and treatment you will need to get ready for transplant. The BMT nurse coordinator also plans your donor's schedule. The BMT nurse coordinator is your primary contact as you work your way toward transplant.

Inpatient Nurses

These nurses are experienced in the care and specific needs of transplant patients. Your inpatient staff nurses organize your care from the time you are admitted until you are discharged from the hospital. Once admitted, your nurse

will discuss the transplant process and what will be expected of you during your hospitalization. They also will be available to help you and your family with physical or emotional problems as they arise. Throughout your hospitalization, they will provide ongoing education about the transplant process in preparation for discharge.

Care Management

Your case manager is a nurse that will partner with you, your family, and your healthcare team to coordinate a safe discharge. The team will begin working on your transition for a safe discharge as soon as you are admitted to the hospital. They help coordinate home care needs, which will likely include a visiting nurse coming to your residence to help with home magnesium infusions as well as line maintenance.

BMT Clinic Nurses

Once you are discharged, the outpatient clinic nurses will help develop your plan of care in the outpatient setting. These nurses are also experienced in the care and specific needs of transplant patients. Your clinic nurse will assist you and your caregiver through the recovery process.

Social Workers

Part of your required pre-transplant preparation is an initial psychosocial assessment with a social worker that will give you the opportunity to discuss non-medical needs and other concerns you may have. Social work is available to provide as needed mental health support services, including counseling, therapy and support groups to help patients, families and caregivers adjust to the transplant process. Social workers are available to providing assistance for coping with the stress of hospitalization or post-transplant complications. They are available to address practical matters as well, including education regarding

Social Security Disability, caregiver planning, community and Michigan Medicine resources, financial stress, and referrals to insurance specialists.

Dietitians

The transplant dietician will meet with you while you are inpatient to explain any diet considerations during your hospital stay and when you go home. They also work with you to set nutritional goals to prevent weight loss, follow your nutrition intake and offer suggestions on how to achieve your nutrition requirements. The dietician is available to you after you are discharged and during your recovery as your appetite returns to normal.

Clinical Pharmacists

A clinical pharmacist participates in the planning of your chemotherapy and other medications you receive as an outpatient or inpatient. They are available to answer questions you may have about the medications you receive.

Cell Therapy Technologists

This team is responsible for processing your donors stem cells. A cell therapy tech will bring your cells to the bedside on day of transplant.

Physical/Occupational Therapists

A physical and occupational therapist may see and assist you while you are in the hospital, to help you maintain your strength and endurance during and after transplant. A physical therapy tech will also be available to encourage activity throughout your stay.

Inpatient Spiritual Care

A spiritual care counselor is a supportive care resource for coping with the stress of transplant. They are available to provide you with spiritual and religious resources.

Medical Assistants and Patient Care Techs

Medical Assistants in the clinic will check you in and obtain your vital signs prior to seeing the doctor. On the inpatient unit, patient care techs will assist you with daily activities including hygiene and mouth care, assess your vital signs, draw blood, and check blood sugars.

Clerical Staff

Clerical Staff will check you in at clinic appointments and when you are admitted to the inpatient unit. They coordinate communication between other departments or units in the hospital.

Research Coordinators

Research Coordinators ensure that protocol requirements such as diagnostic tests, lab samples, etc. are completed. They also ensure that study medications are dispensed and tracked for any clinical trials you may be enrolled in.

Common Pre-Transplant Tests and Procedures

Blood tests- The most common test (called a “Complete Blood Count” or CBC) measures the number of red blood cells, white blood cells, and platelets in the blood. In addition to blood cell counts, tests to measure the values of many chemicals in the blood (such as a “metabolic panel”) can indicate how other parts of the body are functioning, including your liver, kidneys, heart and lungs. A metabolic panel is one test within a chemistry panel which are groups of tests that are ordered to determine a person’s general health status.

Bone marrow tests- Blood cells (white blood cells, red blood cells, and platelets) are made in the marrow. Bone marrow tests allow doctors to look at the fluid (inner liquid part of the marrow also known as the spongy part of the bone) and tissue in the marrow to determine whether cancer or another disease is affecting blood cell production or the structure of the marrow. Marrow tests can help determine the type and extent of the disease. Certain changes to blood cells can be detected in marrow samples before they can be detected in blood samples.

Imaging tests- Imaging or radiology tests create pictures of the chest, abdomen (belly), head, neck, and other parts of the body. Examples of imaging tests include X-rays, ultrasound, CT scans, MRI, and PET scans. Imaging tests are generally used to look for signs of disease or to check if the cancer (tumors or masses of cells) has spread to other areas.

Some of the tests below may be ordered for you before your transplant admission:

- **Echocardiogram-** An echocardiogram (echo) is a test that uses high frequency sound waves to make pictures of your heart. This tests helps your doctor to find out the size and shape of your heart, how your heart moves and the heart’s pumping strength.

- **EKG (Electrocardiogram)**-An EKG records the electrical signals in your heart. It's a common test used to detect heart problems and monitor the heart's status in many situations.
- **Pulmonary Function Tests (PFTs)**- PFTs are a group of tests that measure how well your lungs work. This includes how well you're able to breathe and how effective your lungs are at being able to bring oxygen to the rest of your body.
- **Chest X-Ray (CXR)**- A chest x ray produces images of the lungs, heart, airway, blood vessels and the bones of the spine and chest.
- **Positron Emission Tomography (PET) Scan** - A PET scan is an imaging test that measures blood flow, oxygen use, glucose metabolism and other body processes. It is commonly used to detect and monitor cancers because it shows tissue abnormalities at the cellular level.
- **Computed Tomography (CT or Cat) Scans**- A CT scan is an imaging test that combines a series of X-ray images taken from different angles around your body and uses computer processing to create cross-sectional images (slices) of the bones, blood vessels and soft tissues inside your body. CT scan images provide more-detailed information than plain X-rays do.
- **Magnetic Resonance Imaging (MRI)**- Is a medical imaging technique used in radiology to form pictures of the anatomy and the physiological processes of the body. MRI scanners use strong magnetic fields and radio waves to generate images of the organs of the body.
- **Skeletal Survey**- (also called a bone survey) is a series of x-rays of all the bones in the body.
- **Bone Marrow Biopsy and Aspiration**- Samples of fluid, tissue and cells are examined under a microscope to look for chromosomal changes and other changes in the cells. This test is used to evaluate the response to cancer treatment and to further identify the type of abnormality in the bone marrow.

- **Lumbar Puncture (LP)** - is a medical procedure in which a needle is inserted into the spinal canal, most commonly to collect cerebrospinal fluid (CSF) for diagnostic testing.
- **24 Hour Urine Collection**- A 24-hour urine test is used to check kidney function and measures certain proteins present in the urine.

The Tunneled Catheter

What is a tunneled catheter?

A tunneled catheter is a small tube made of a material called silicone. It is called “tunneled” because it is inserted into a large vein and tunneled under the skin to a place where it exits your body. In this handout, we will simply refer to it as a catheter.

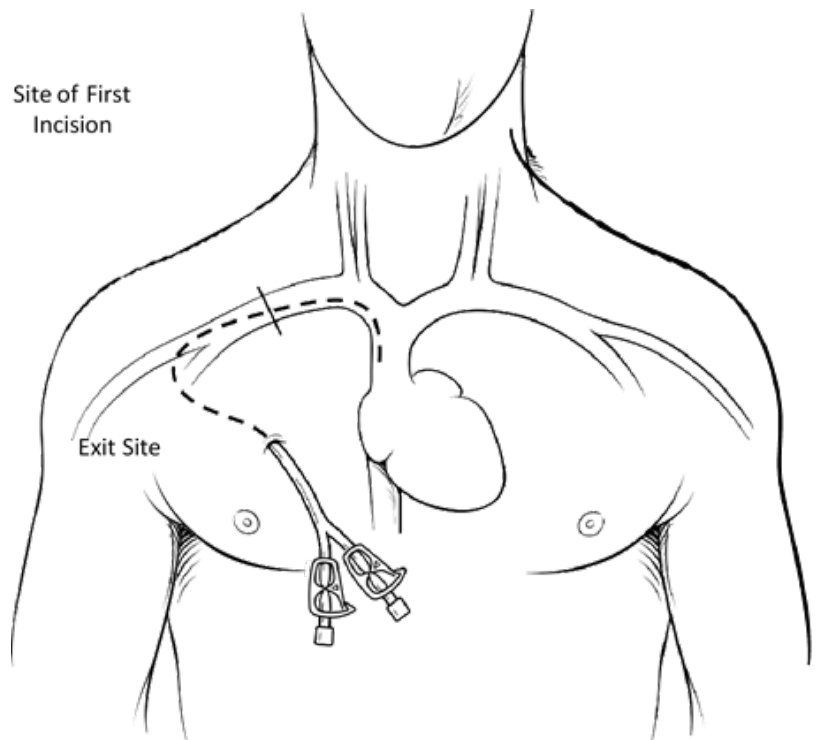


Why are tunneled catheters used?

A catheter is used to give medications, fluids, blood products, chemotherapy, stem cells, or nutrition through a vein. It may also be used for drawing blood or for apheresis.

How is the catheter inserted?

The catheter is inserted in an operating room or radiology department and should take about 30-60 minutes. The practitioner makes a small opening in the mid-chest area. Another opening is made where the catheter enters the vein. A tunnel is formed under the skin between the two openings. The catheter is passed through this tunnel and then gently threaded until the tip is near your heart in the large vein called the superior vena cava. After placement, the catheter will be checked to confirm it is in the right position.



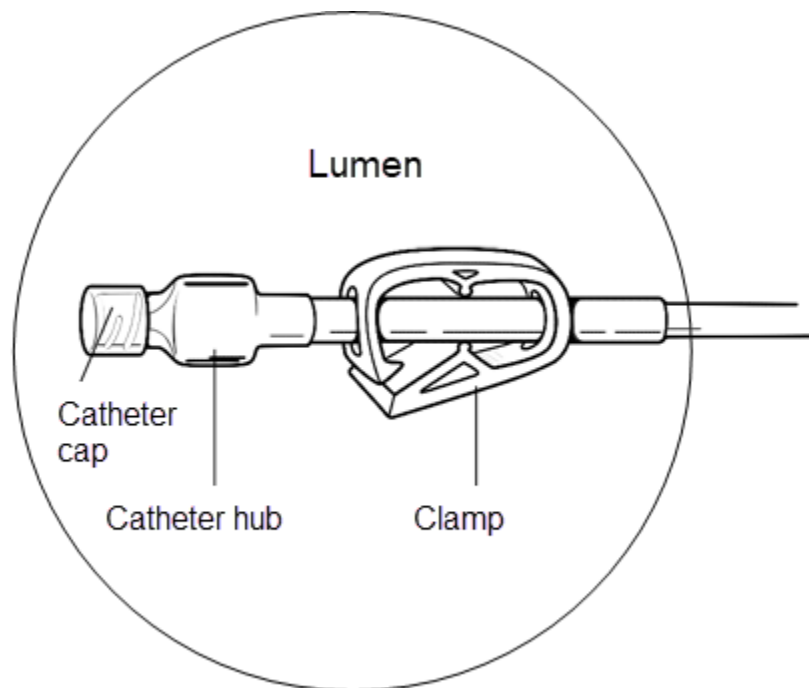
What is a cuff?

Most catheters have a small cuff that lies beneath the skin about one to four inches from the exit site. The cuff serves two main purposes:

1. The cuff holds the catheter in place by forming scar tissue. Scar tissue will grow around the cuff after 1-2 weeks, making it difficult to pull the catheter out.
2. The cuff helps protect against infection by blocking bacteria from entering the exit site.

What is a lumen?

The word lumen means the opening or path that is inside the catheter. It is through this opening that you give medications or blood can be drawn. We also use this word to describe the ends of the catheter that are outside your body. You will notice that your catheter has 1, 2, or 3 lumens (see image below).



Preparing for Your Hospital Stay

Being in the hospital can be difficult. The transplant team encourages you to bring personal items to make the hospital room feel more at home. Items from home can also provide distraction and often help decrease stress and boredom. The items listed below are offered as suggestions. Remember, your room size is limited. Check with your nurse coordinator or social worker if you have questions about items not on this list.



Items you ***must*** bring:

- One copy of your Medical Durable Power of Attorney and Living Will
- Your transplant education binder
- Your current list of medications you take

Items to ***consider*** bringing:

- Pajamas, sweats, or loose fitting, comfortable street clothing to change daily
- Clean underwear to change daily
- Slippers with non-skid bottoms or slip on shoes
- Shoes to walk the halls/ride exercise bikes
- Hangers for the closet
- Turbans, scarves, or hats (in case you feel chilly after losing your hair)
- Pillows, blankets, and stuffed animals may be brought in, however they should be machine washed before bringing into the room. They must be

sanitary. Avoid feather pillows. New items do not need to be washed before bringing them into the room

- Electric razors only
- Soft toothbrush, toothpaste
- Nail file or emery board
- Make-up in new, unopened containers only (keep to a minimum)
- Menstrual pads (we only stock very large bulky ones), do not use tampons
- Night light
- Silk plants/silk flowers
- Favorite family photos or decorations
- Personal address/phone book
- Cell phones and chargers
- Electronic devices (cell phones, laptops, tablets, etc) and chargers
- Leisure activities such as magazines, books, puzzles, games, cards, or crafts
- A journal, stationary, stamps and envelopes (consider pre-addressing them)
- Snacks for your room
- 1-2 days quantity of perishable food items may be brought in and stored in the refrigerator in room.

Items *not* to bring:

- Contacts
- Dental floss
- Tampons
- Cologne/perfume/body spray/lotion with fragrance
- Refrigerators or other small appliances
- Fans
- Live plants and flowers
- Valuables
- Tight restrictive clothing
- Disposable razors
- Finger nail-clippers
- Artificial nails
- Multiple dose eye drops

- Sources of standing water (humidifiers, vases of water with flowers, etc)
- Home medications (Actual) - Do bring a list of current medications
- Bar soap or loofah
- Diffusers

* Refer to Section 4 for information on what to expect during your hospital stay.

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Home Magnesium Infusion F.A.Q.'s

Why do I need to have Magnesium infusions at home after transplant?

As part of your treatment after an Allogeneic transplant, you will likely be prescribed Tacrolimus to prevent rejection of your graft. Unfortunately, a common side effect of the Tacrolimus is a loss of magnesium, an essential mineral in your body which must be replaced. Blood tests measure how much you're losing and determine how much replacement you need.

Just after transplant, you may not be able to tolerate oral magnesium because it can be upsetting to your digestive system. Your clinic team will work with you to transition from the IV form of magnesium to the oral magnesium solution as your gastrointestinal (GI) system heals. As your ability to eat a more varied and healthy diet improves, this will also help increase your magnesium levels.

How long does the Magnesium Infusion take to run?

Essentially 1 gram of I.V. Magnesium = 1 hour of infusion time

We can usually subtract an hour, so:

2 grams = 1-2 hours

4 grams = 3-4 hours

6 grams = 5-6 hours

8 grams = 7-8 hours

10 grams = 9-10 hours

Rarely someone may even require 12 grams of supplemental IV magnesium. If the Magnesium cannot be given at home, then we have to get creative to find a solution because infusion centers aren't open long enough to infuse longer than 9 hours. For example, we'll try to give some Magnesium orally with the IV.

Sometimes there is not a choice to give the magnesium out-patient. In that case it must be given at home, with a caregiver available to administer it daily. This

may mean it has to be paid for out of pocket if the patient's insurance does not cover the cost.

How long will I need to have IV Magnesium after discharge?

This will depend on how much magnesium you need to replace and how quickly you're able to eat well without having problems with your stomach or bowels. Some people can discharge on as little as 2 grams of Magnesium and others as much as 12 grams. The smaller the amount of magnesium that is needed, the quicker you will likely be able to wean off the IV form and start the oral supplement.

Your clinic team will be monitoring your progress to help determine when it's safe to begin weaning and how quickly you can transition to oral magnesium.

Is the Magnesium infusion covered by my insurance?

Our Patient Financial Counselors check your insurance coverage before transplant and notify you if your insurance does not have home infusion coverage.

Normally the Visiting Nurse home visits are covered by insurance, however the nurse's role is to *teach caregivers* the infusion and dressing changes so that caregivers become independent. The home nurse will then end the temporary home visits.

I have Medicare coverage. Doesn't it cover home infusions, like Magnesium?

Unfortunately, at this time, Medicare does not cover home infusion costs. If you have a Medicare *supplement*, it follows Medicare guidelines and normally does *not* cover home infusions. If you have a *separate* insurance health insurance policy, such as health insurance from your spouse's work, it would most likely

cover the home infusion costs. The clinic's financial counselors will check your insurance coverage and notify you if you do not have coverage.

If I don't have home infusion coverage, what are my options?

You can arrange for private-pay arrangements with a Home Infusion Provider. The RN Case Manager (RN CM), also known as "Discharge Planner" will facilitate this. The cost to you is around \$22.05 per day and the magnesium & supplies would be delivered to your discharge address on a weekly basis. The Visiting Nurse services are normally covered by insurance and your RN Case Manager can confirm these costs and coverages for you before discharge.

Home Infusion (IV) Insurance Information

Allogeneic Bone Marrow Transplant (BMT) candidates receiving donor cells will need home infusions or infusion (IV) supplies to continue their care for **approximately 100 days** after being discharged from the hospital after transplant.

If your insurance provider does not cover home infusion (IV) supplies, please read below.

Upon hospital discharge after transplant, you will require daily magnesium at a *minimum* average of 2 grams and a *maximum* of 12 grams. Once you are able to tolerate the minimum daily dose via magnesium pill or solution, you will be weaned off the IV.

As stated on the Caregiver Responsibilities Agreement they signed before transplant, your caregivers are required to attend hospital discharge training to learn intravenous (IV) care. Insurance will not pay for a visiting nurse to provide daily IV magnesium infusions.

*** Attention veterans ***

If you have care established with a hematology or oncology doctor at the VA hospital, you may be eligible for home infusion coverage.

Please contact the VA nurse coordinator below to discuss.

- **Ann Arbor:** Nicole Hosler (734) 845-5800
- **Battle Creek:** Ask for the hematology/oncology nurse coordinator (269) 966-5600
- **Saginaw:** Tami Fox (989) 497-2500, Extension: 15257

Below are your options for receiving infusion (IV) or supplies at the time of your hospital discharge:

1. Return to a Michigan Medicine infusion center daily for infusion and line care, typically covered by most insurances under the “Outpatient Services” portion of the policy. Please note that, although more affordable, this option requires caregivers to provide daily transportation to and from clinic and can be physically taxing on the patient’s recovery.
 - Infusions can initially last from 2-12 hours daily, decreasing over time
 - Clinics can typically only accommodate infusions of 2-6 grams
 - Infusion Hours:
 - **Monday – Friday:**
 - BMT clinic (7:30am-5:30pm)
 - Brighton (7:30am-7pm)
 - Cancer Center (7:30am-8pm)
 - Canton (8am-4pm)
 - Chelsea (see West Ann Arbor)
 - East Ann Arbor (M/W 8am-6:30pm, Tu/Th/F 8am-4:30pm)
 - Northville (7:30am-5:30pm)
 - West Ann Arbor (M-Th 8:30am-5:30pm, F 8:30am-4:30pm)

- **Saturday:**
 - Brighton (8:30am-4pm)
 - Cancer Center (7:30am-5:30pm)
 - East Ann Arbor (7:30am-11:30am)
 - **Sundays and holidays:**
 - BMT clinic (8am-4pm, with Taubman Center infusion staff)
2. Pay out of pocket for at home infusion supplies. HomeMed charges **\$22.05 per day** for the magnesium, IV tubing and necessary supplies. These charges can be placed on a charge card or covered by setting up a monthly payment plan with HomeMed.
3. Arrange a combination of the above by receiving infusions both at a Michigan Medicine infusion center and at home/local lodging (i.e. weekdays at Michigan Medicine, weekends at home/local lodging)

If you have further questions regarding the above, please contact Sheryl Bennett, RN Case Manager, at (734) 647-9019 (M-F, 7:30am-3:30pm).

Are there any other options for the I.V. Magnesium infusions, other than getting it at home?

You can arrange for appointments to receive IV Magnesium infusions in the BMT Infusion Center on the 7th floor of Mott Hospital, Sunday-Friday 8:00am-4:30pm and in the Cancer Center on Saturdays when an appointment is scheduled.

Occasionally, infusions can be scheduled at other infusion centers but the rules at each center vary. Some infusion centers require that the person be established with a doctor who has admitting privileges to the hospital that they're associated with. Many are not open on Sundays or holidays. Your RN Case Manager will look into other possible options for you if you would like to

have your infusion in an outpatient infusion center instead of at home. There may be limitations that don't make this option possible but we will investigate what is available for your needs.

Are there foods that are high in Magnesium that I should try to include in my diet?

Our inpatient Dietitian has a handout that lists the magnesium content of various foods and can help you select foods that are higher in magnesium—just ask for that handout some time during your stay.