

# **Navigating Allogeneic Transplant:**

A Guide for Pediatric Bone Marrow Patients

**Pediatric Blood and Bone Marrow  
Transplant Program**



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## Table of Contents:

<b>What should I expect during conditioning?.....</b>	<b>3</b>
<b>What can I expect on the day of transplant?.....</b>	<b>5</b>
<b>What can I expect during the transplant process?.....</b>	<b>7</b>
<b>What can I expect during recovery? .....</b>	<b>9</b>
Need for Transfusions .....	9
Fluids, Electrolytes, Nutrition .....	10
Medications to Prevent Infection .....	12
<b>What side effects may occur during the transplant process?.....</b>	<b>14</b>
Mucositis.....	14
Gastrointestinal Complications .....	15
Sinusoidal Obstruction Syndrome .....	15
Fever and Neutropenia .....	17
PRES .....	19
<b>What can I expect during engraftment? .....</b>	<b>20</b>
Acute Graft Versus Host Disease.....	22
<b>What are my goals for discharge? .....</b>	<b>25</b>
<b>What precautions should I take at home? .....</b>	<b>27</b>
<b>What do I need to know about sexual health? .....</b>	<b>29</b>
<b>What should I expect in the BMT clinic for my post discharge visit? .....</b>	<b>31</b>
<b>What should I monitor for and when should I call 9-1-1 or go to the Emergency Room? .....</b>	<b>32</b>

## What should I expect during conditioning?

### Before Transplant – the conditioning regimen

The first part of the stem cell transplant process is called “conditioning”. We refer to these days as “negative days”. The day you receive your transplant is “day 0”. The conditioning regimen consists of chemotherapy with or without radiation. We give this therapy for three reasons:

1. Making room for the new cells in the bone marrow space
2. Killing cancer cells (for patients with cancer)
3. Decreasing the immune system

We will create a therapy plan for you before transplant which will include chemotherapy with or without radiation therapy:

- **Radiation therapy:**
  - Performed in the Radiation Oncology Department
  - Usually takes 30-minutes per session
- **Chemotherapy:**
  - Schedule depends on your specific treatment plan (See below).

### What is the purpose of radiation and chemotherapy?

The purpose of these therapies is to suppress your current immune system in preparation for transplant. Your immune system needs to be suppressed to prevent rejection of the new donor cells.

- Most commonly, higher dose chemotherapy regimens are used to destroy the bone marrow, so that new stem cells can start to grow there. This is called **myeloablative conditioning**.
- Some regimens use lower doses of chemotherapy to decrease but not completely destroy the bone marrow, which we call **non-myeloablative** or **reduced intensity** conditioning.

**What are the side effects of conditioning?**

- Certain side effects are expected from each of the medicines you receive during conditioning. These will be managed with various medications and supportive care measures. Commonly expected side effects include:
  - Nausea/vomiting
  - Diarrhea
  - Mucositis (mouth sores, throat pain, heart burn, abdominal pain)
  - Hair loss
  - Bleeding
  - Irritation to the liver
  - Other side effects more specific to tailored regimen (see chemo handouts)

These side effects can remain throughout the transplant course but are usually not permanent.

Your therapy plan is:

- Day : \_\_\_\_\_
- Day : \_\_\_\_\_
- Day : \_\_\_\_\_
- Day : \_\_\_\_\_
- Day : \_\_\_\_\_
- Day : \_\_\_\_\_
- Day : \_\_\_\_\_

\_\_\_\_\_

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Your nurse will check these boxes after each topic is reviewed:

- Review Side Effects
- Review Scheduled and PRN Medications for Side Effects
- Start to Encourage Participation in Line Care

\_\_\_\_\_

## **What can I expect on the day of my stem cell transplant (Day 0)?**

The stem cell transplant replaces the diseased or empty bone marrow with healthy donor stem cells. These donor cells are obtained from one of three sources: bone marrow, umbilical cord blood, or normal (peripheral) blood. The day you receive your new cells is called “Day 0”.

Transplant date: \_\_\_\_\_

Transplant type: Allogeneic \_\_\_\_\_

Cell source: \_\_\_\_\_

## **What should I expect during the procedure?**

1. Stem cells are delivered to your room in either a bag or a syringe. If they were frozen, they will be thawed at your bedside.
2. You may receive medications and IV fluids before the infusion of stem cells to decrease your side effects.
3. Your nurse will infuse your stem cells through your central line, similar to the way you receive blood products or IV medications.
  - a. If your stem cells are frozen, you may notice a smell during the infusion. Some people describe the smell as garlic, tomato juice, or creamed corn. This is normal, and is from the preservative used when cells are collected and frozen.
4. Depending on the volume, the entire process from start to finish can take a few minutes to a few hours.
5. A doctor, nurse practitioner, or physician assistant will be present to monitor you throughout the process.

## **What are the side effects?**

Many patients tolerate transplant without any issues, however, some of the most common side effects include:

- High blood pressure

- Nausea, vomiting
- Fever
- Chills
- Hives
- Allergic reaction
- Bloody or pink-tinged urine

Several of these side effects resolve when the infusion is over. However, we may need to take other measures to help your side effects such as medications and longer monitoring and care.

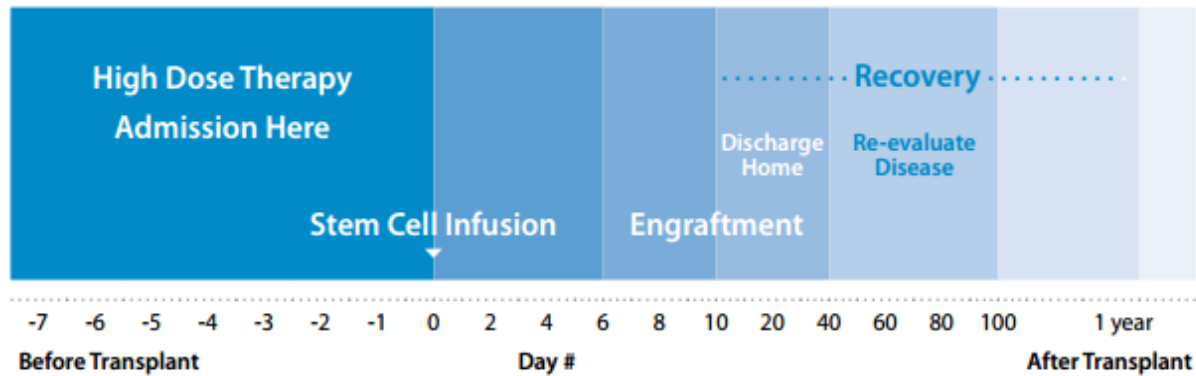
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Your nurse will check these boxes after each topic is reviewed:

- Review Transplant Process
  - Discuss Pre-medications
-

## What can I expect during the transplant process?

This diagram reflects a general overview of the transplant process:



### Foundation of a Complete Blood Count (CBC)

The complete blood count (CBC) is a test that measures your blood cell levels.

This includes the following counts:

- White Blood Cells (WBC):
  - Absolute **Neutrophil** Count (ANC)
  - Absolute **Lymphocyte** Count (ALC)
  - Blast cells
- Red blood cells
  - Hemoglobin
  - Hematocrit
- Platelets

### What happens to my white blood cell levels?

We monitor labs closely and expect that the ANC and ALC will decrease (often as low as 0) during and after conditioning.

- The type and dose of chemotherapy determines when your neutrophil levels drop. They reach a low point about 7 to 14 days after treatment. This low point is called the **nadir**. At the nadir, you are at high risk of developing an infection. You will receive medications to try to prevent infection.

- This is also the time where you may lose your hair and feel general weakness. You likely will have mouth, throat, and abdominal (stomach) discomfort from conditioning to recovery, but the worst occurs during this period when your counts are lowest. You will not be allowed to leave the unit while your counts are at this point.

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Your nurse will check these boxes after each topic is reviewed:

- Review Daily Counts
- Emphasizing Infection Control and Hygiene
- Leave of Pass Restrictions



## **What can I expect during recovery?**

### **Need for transfusions**

As your counts decline you will likely need blood products including packed red blood cells (pRBC) and platelets. You may experience some bleeding (nose bleeds, mouth bleeding) at this time. A blood transfusion may be required if your platelet count is less than \_\_\_\_\_ or your hemoglobin is less than \_\_\_\_\_

### **Pre-Medication before a transfusion**

- If you've had a reaction in the past, you may get medicine such as Tylenol, Benadryl or steroids before the transfusion to try to prevent that reaction.

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Your nurse will check these boxes after each topic is reviewed:

- Regularity of Transfusions
  - Review of Transfusion Thresholds
-

## **Fluids, Electrolytes, Nutrition**

We will monitor you for the following (FEN):

- Fluids
- Electrolyte imbalance
- Nutrition

### **Fluids (IV):**

- You will get these:
  1. As needed during your hospital stay, including if you are not able to drink enough fluid
  2. Continuously before and for one day after your transplant

Fluid overload:

- We monitor your weight once or twice a day to check for fluid overload.
- Medicines such as Lasix help your body remove excess fluid.

### **Electrolyte imbalance:**

This means that one or more of the lab values we measure in the blood (such as magnesium, potassium, phosphorus, or sodium) is higher or lower than the normal values.

- There are many causes of this, including eating less, diarrhea, medication related (example: tacrolimus), and IV fluids.
- Most common imbalances: low magnesium and high or low potassium.
- Treatment:
  - Correcting the cause
  - Oral and IV electrolyte replacement
  - Adjusting medications and Total Parenteral Nutrition (TPN) (See below)

## **Nutrition:**

You may experience appetite loss and eat less by mouth. The main causes are nausea, taste bud changes, and oral pain. Maintaining good nutrition is important for healing and overall health!

- A dietician will teach you about BMT diet specifics.
- Treatment:
  - Feeding through the gastrointestinal (GI) tract (stomach and intestines), called enteral nutrition:
    - Supplements may be taken by mouth to improve your calorie and protein intake.
    - Tube feeds: Medicines and liquid nutrition are given through a small tube placed through the nose into the stomach or small intestine.
  - Feeding through an IV, called parenteral nutrition:
    - Total Parenteral Nutrition (TPN): All the protein, calories, vitamins and minerals a person needs are delivered into a vein. This does not use the digestive system.

Preventative medications:

- Liver/biliary protection: Actigall, N-Acetylcysteine
- Stomach ulcer prevention: Zantac, Pepcid, or Prilosec
- Vitamin D deficiency: Cholecalciferol

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Your nurse will check these boxes after each topic is reviewed:

- Educating on Accurate Reporting of I&Os
  - Importance of Nutrition for Healing
-



Purpose of Medication	Medications	Start	Stop
<b>Pneumocystis jiroveci (PJP)</b>	<ul style="list-style-type: none"> <li>• Pentamidine (inhaled, possibly IV)</li> <li>• Bactrim</li> </ul>	On day +30	<ul style="list-style-type: none"> <li>• Until 6 months post transplant <u>and</u> off immunosuppression</li> </ul>
<b>Encapsulated organisms</b> <i>Splenectomy, Functionally asplenic, Chronic GVHD, Cord Blood Recipients</i>	<ul style="list-style-type: none"> <li>• Pen VK</li> </ul>	Post engraftment	<ul style="list-style-type: none"> <li>• Until off immunosuppression for one month and asymptomatic (lifelong if splenectomized or extensive cGVHD).</li> </ul>
<b>Intravenous Immunoglobulin (IVIG)</b> This medicine is a boost of antibodies that can kill bacteria, fungi, or viruses.		It is given as needed based on lab values	

\* Trough levels will need to be monitored inpatient and outpatient.

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Your nurse will check these boxes after each topic is reviewed:

Review Prophylaxis Medication and Why

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## **What side effects may occur during the transplant process?**

### **Mucositis**

Mucositis is a common side effect of the conditioning regimen. It is pain and swelling (inflammation) of the body's mucous membranes. The mucous membrane is the soft layer of tissue lining of the body, particularly, the digestive system from the mouth to bottom. This can result in breakdown on the skin or on the surface of soft tissue.

- Usually happens around 5-10 days after starting chemotherapy.

### **What are the symptoms?**

- Sores or changes to the inside of the mouth
- Change in taste buds and loss of appetite
- Pain/discomfort in mouth, esophagus, abdomen
- Nausea, vomiting, diarrhea
- Drooling
- Hoarse voice
- Infection due to skin/mucosal breakdown which can cause bacteria to spread

### **How can I minimize these symptoms?**

- Good oral care (brushing 4 times per day, lip balm use)
- Amino acid supplements (Glutasolve)

### **What is the treatment?**

- Pain Medication, Magic Mouthwash

### **When will I start to heal?**

The sores/mucositis improve as your counts start to rise (engraft). It starts with the mouth and progresses down through the digestive tract.

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Your nurse will check these boxes after each topic is reviewed:

- Explain Mouth Care
  - Discuss Symptom Management
-

## **Gastrointestinal (GI) Complications**

### **Nausea and Vomiting:**

This is the most common complication of transplant.

- What is the prevention and treatment?
  - Some medications are ordered both as scheduled around the clock. Others may be given as needed when feeling sick.
  - My regimen: \_\_\_\_\_

### **Diarrhea:**

- Diarrhea is usually caused by mucositis, although it may also be caused by a virus or bacteria.
- What is the treatment?
  - Hydration (IV fluids)
  - Time for GI tract to heal
  - May need antibiotics (if infectious)

### **Constipation:**

- This is usually a result of not eating or side effects of pain medication use.
- What is the treatment?
  - Eating and drinking (when possible) to keep things moving
  - Medications to promote bowel movement: Senna, Colace, Miralax, Lactulose

### **Sinusoidal Obstructive Syndrome (SOS)/Veno Occlusive Disorder (VOD)**

- This is a rare complication that is due to damage to the lining of the blood vessels in the liver from chemotherapy.
- **What are the symptoms?**
  - weight gain
  - swelling due to extra water in body
  - abdominal tenderness/pain
  - liver swelling
  - yellowing of skin or eyes

- Usually occurs within first 30 days after transplant. More common with each exposure to chemotherapy and the higher doses used with transplant.
- Prevention: close monitoring of weight and fluids, measuring all intake and output, taking actigall.
- Treatment: symptom management, including medications, blood transfusions, and careful monitoring of the liver and kidneys. We pay close attention to how much fluid goes in and urine comes out. We often give medications to help increase urination.
- May require transfer to the Intensive Care Unit (ICU)

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Your nurse will check these boxes after each topic is reviewed:

- Educating on Expected Complications
  - Emphasizing Strict I&Os and Daily Weights
  - Encouraging Use of PRNs
-



## **Fever and Neutropenia**

While white blood cell counts are decreased, you are very likely to spike a fever. This may be due to an infection or inflammation from cells starting to engraft.

## **Inflammation**

- Cell irritation likely from chemotherapy and the transplant
- Most likely reason for fever

## **Infection**

- Most common **sources**:
  - Central line
  - GI tract
  - Respiratory

## **Testing**

- Will need to be done to rule out an infection:
  - Blood cultures
  - Possible viral labs
  - Possible fungal labs
  - Possible x-rays or CT scans
  - Respiratory swabs
  - Stool cultures
  - Urine samples

## **Treatment for fever and neutropenia**

- Will need to be started just in case the cause is an infection.
  - This may require us to change the antibiotics and antifungals that you were on as prophylaxis
  - Continue until infection is ruled out

While a fever is present, some symptoms you might experience are:

- Tiredness
- Elevated heart rate
- Blood pressure changes
- Changes in breathing
- Chills and shaking

**If infection is present, you may also have symptoms specific to the site of infection (abdominal pain, pain with urination, diarrhea, runny nose, cough, etc.)**

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Your nurse will check these boxes after each topic is reviewed:

- Reinforce Common Occurrence of Fever
-

## **Posterior Reversible Encephalopathy Syndrome (PRES)**

- This is a rare complication whose pathophysiology is unclear but is thought to be related to:
  - Severe hypertension
  - Drug induced: Tacrolimus, Cyclosporine, Cytoxan
  - Bone Marrow Transplant
- **What are the symptoms?**
  - High blood pressure
  - Headache (persistent)
  - Visual changes
  - Confusion
  - Seizure
- Can occur at anytime
- Prevention: Good blood pressure control, maintaining therapeutic magnesium and drug levels
- Diagnosis: MRI brain, consult with neurology
- Treatment:
  - Discontinuation of tacrolimus, cyclosporine
  - Supportive care: blood pressure management, seizure precautions, anti-seizure medication

May require transfer to the Intensive Care Unit (ICU)

## **What can I expect during engraftment?**

After your transplant, your new cells will find their way to the bone marrow spaces and begin to produce new blood cells.

- Neutrophils are the first cells to grow, followed by red blood cells, then platelets.
  - Engraftment occurs when you have neutrophil growth. This means your ANC level is rising. It typically occurs around week 2 to 3, depending on the type of stem cells you received.
- You will need blood and platelet transfusions and injections (Granix) to encourage neutrophil growth until your body is fully capable of producing them on its own.
- After your conditioning regimen and transplant, we will wait for engraftment. Engraftment means your new cells are growing and starting to rebuild your immune system. The first sign of engraftment is the production of neutrophils (ANC). Neutrophil engraftment is an ANC of 500 or greater for 3 days in a row.

## **When does it occur?**

- 2 to 6 weeks following transplant, depending on the cell source:
  - Peripheral Stem Cells 10-28 Days
  - Bone Marrow 10-28 Days
  - Cord Blood 14-42 Days
  - Haplo 21-42 Days

## **What medications will I receive during this stage?**

- G-CSF (Granix) injections
  - Speed up engraftment and reduces the length of time that blood cells are their lowest, which lowers the risk of infection
  - Started on standard days but may change for a research protocol:
    - Cord: Day +1

- Peripheral, Marrow: Day +8
- Stopped: Once engraftment occurs
- Side Effects: Bone pain, body aches, site discomfort

### **Engraftment Syndrome**

An inflammatory condition that occurs around the time of engraftment thought to be related to an overproduction of inflammatory cells

- Mild to severe
- May have a red rash, fevers, weight gain, a need for oxygen
- Treatment: Steroids, Supportive care

### **Graft Failure**

It is rare, but sometimes engraftment does not happen. This is considered **graft failure** and occurs if the ANC has not met the goal after Day +28 for peripheral blood cells or bone marrow or Day +42 for cord blood cells.

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Your nurse will check these boxes after each topic is reviewed:

- Side Effects of G-CSF
-

## **Acute Graft Versus Host Disease (GVHD)**

Acute GVHD is when the cells from your donor (the graft) see your body's cells (the host) as different and attack them. It can be mild to severe. GVHD usually occurs between engraftment and around Day +100.

### **Organs Involved:**

- **Skin rash:**
  - Red, flat, bumpy
  - May be itchy
  - Often on palms, soles, ears, and face
  - Can be anywhere
  
- **Gastrointestinal (GI):**
  - Diarrhea:
    - Watery
    - Bloody
    - Green
    - Large volume
  - Abdominal pain/cramping
  - Nausea
  - Loss of appetite
  - Weight loss
  
- **Liver:**
  - Elevated bilirubin, a yellowish pigment found in bile, a fluid made by the liver. Your medical team will watch for this on labs.

There may be other causes for these symptoms, which we will rule out first.

## GVHD prevention

My GVHD prophylaxis regimen: \_\_\_\_\_

### Calcineurin Inhibitor

- Tacrolimus (Tacro)
  - In the early parts of your transplant, we will give this as an IV medicine that infuses around the clock.
  - Once you can take it by mouth, you will take it twice daily, 12 hours apart. The timing of this medication is **really** important! We monitor the levels of this medicine in your blood to make sure you are taking the best dose for you.
    - Labs are drawn and the medicine should be taken at the same time every day. We adjust doses based on these labs.
    - Goal level 8-12 in most cases.
  - Continue until at least Day 100, often times longer
  - Side Effects: High blood pressure, low magnesium, high potassium, tremor, PRES, Kidney injury
  - Avoid: Grapefruit juice
  
- Cyclosporine (CSA)
  - In the early parts of your transplant, we will give this as an IV medicine that infuses around the clock.
  - Once you can take it by mouth, you will take it twice daily, 12 hours apart. The timing of this medication is **really** important!
    - Labs are drawn and the medicine should be taken at the same time every day. We adjust doses based on these labs.
    - Goal level 200-400 typically
  - Side Effects: High blood pressure, low magnesium, high potassium, tremor, increased hair growth, high triglycerides, PRES, kidney injury
  - Avoid: Grapefruit juice

- Mycophenolate mofetil (MMF or CellCept)
  - Taken two to three times per day
  - Side effects: stomach upset
  
- Post-Transplant Methotrexate
  - Given as an IV infusion in four separate doses, usually on days +1, +3, +6, and +11.
  - Side effects: liver and kidney dysfunction, mucositis
  
- Post-Transplant Cytoxan
  - Given as an IV infusion, usually on days +3 and +4.
  - EKGs will be monitored before the dose is given.
  - IV fluids will be given around this time to help protect the bladder.
  - Side effects: nausea, bladder irritation, cardiac dysfunction
  
- Restasis (eye drops for eye GVHD prevention)
  
- Treatment of Acute GVHD:

Mild cases of skin GVHD can often be treated with a steroid drug applied to the skin (topically) as an ointment, cream, or lotion. More serious cases of GVHD might need to be treated with a steroid drug taken by mouth or injected into a vein. If steroids aren't effective, other drugs that affect the immune system can be used.

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Your nurse will check these boxes after each topic is reviewed:

- Reinforce the Timing of Tacro Doses & Importance of Compliance
  - Review Additional GVHD Prophylaxis Meds
-



## What are my goals for discharge?

Before discharge, we expect:

- Engraftment with stable counts
- Transfusions required 2 or less days per week
- No fever for more than 24 hours
- No active infections
- Limited nausea/vomiting or diarrhea
- Tolerating oral medications
- Meeting goals for calories and liquid intake
- You are able to move around and perform daily care
- Discharge medications are present at bedside
- Caregiver demonstration of care (lines, meds)
- Successful transition day
- Home infusions ordered and delivered
- Other: \_\_\_\_\_

## What medications will I take at home?

You can pick up medications from the Cancer Center Pharmacy before discharge. These will be checked at your bedside for accuracy and you will receive education. You are expected to know what these medications are, when and why you are taking them.

After discharge, you must bring these medications to clinic with you. Some medications require lab monitoring to adjust doses such as Voriconazole and Tacrolimus. **On clinic days, you will not take these medications until after your labs have been drawn.**

You may go home with IV medications or IV fluids. These should be administered around the same time each day. You will be responsible for completing central line care and weekly dressing changes at home. You will learn and practice central line care during your hospital stay. Skilled nursing will assist you with this process at home, as well. Our case manager will work with you to set up home care before discharge.

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Your nurse will check these boxes after each topic is reviewed:

- Reinforce DC Goals
  - Education on Central Line Care and Other Home Med Infusions
  - Discuss Upcoming Transition Day
  - Provide Thermometer and Discuss Fever Guidelines at Home
  - Provide Home Medication Cooler
-

## **What precautions should I take at home?**

The following apply until you are off of immunosuppressant medication (steroids, tacrolimus, cyclosporine) or until cleared by your BMT doctor.

### **Personal Hygiene:**

- Bathe daily (all family members)
- Avoid direct sunlight. Your skin will be more sensitive after your transplant. Protect your skin with a sunscreen that has an SPF of at least 30. Reapply it often. Cover your skin with cotton clothing and a protective hat.
- No new tattoos or piercings

### **Masks:**

- Worn when coming to the clinic, hospital, or in large crowds

### **People:**

- Avoid anyone ill (encourage guests to check their temperatures before coming over and make sure they have not had colds, rashes, vomiting, or diarrhea.)
- Avoid crowds
- Limit exposure to children younger than 12 who are not part of your immediate family
- Call your doctor immediately if you or any other family member is exposed to chickenpox, shingles, measles, German measles (rubella), or any other contagious disease

### **Pets :**

- **No new pets**
- Don't clean up after your pets. This includes changing a litter box or picking up waste
- Wash your hands following contact with pets

- No direct contact with birds or farm animals. No reptiles or amphibians in home

**Home:**

- No playing in the dirt, gardening, or caring for plants
- Avoid chores that involve dust exposure
- Do not use a bedside humidifier
- Do not have carpets cleaned or deep clean after discharge.

**School and work:**

- You may not return to school or work until cleared by your doctor
- You may continue your education at home via printed or computer material through a “homebound program.”

**Other:**

- You may not drive until cleared by your doctor
- You may not resume contact sports until cleared by your doctor
- **Do not swim if your central line is still in place**
- Once your central line is removed, you can swim in a private pool that isn’t crowded. Make sure that the pool is chlorinated. You **cannot** swim in lakes, rivers, or crowded pools until your immune system has recovered.

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Your nurse will check these boxes after each topic is reviewed:

- Reinforce Appropriate Hygiene at Home
- Reinforce Using a Mask

## **What do I need to know about sexual health post-transplant?**

Due to the physical changes to your body following BMT, you may be affected physically and emotionally in regards to sex. It is normal to feel more self-conscious or nervous. The following are changes you may experience:

- trouble having an orgasm
- trouble maintaining an erection
- vaginal dryness, painful sex, increased bleeding

While fertility may be decreased post-transplant, **it is possible to become pregnant**. There are serious risks if you become pregnant as it may result in changes to your therapy plan which can have an effect on your outcome. Due to your medication regimen, birth defects are also possible.

## **How do I engage in sexual activity safely?**

There will be times when sexual contact will need to be avoided including when your blood counts are low. The main reason is to prevent bleeding or major infections. This includes vaginal, oral, and anal sex or inserting fingers, vibrators, or other sex toys into your vagina or anus. Until your doctor tells you that your blood counts and immune system have recovered, follow these precautions:

- Avoid sexual activity when your ANC is under 1,000.
- Avoid sexual activity when your platelet count is under 50,000.
- Use latex condoms each time you have vaginal, oral, or anal sex.
- If using lubricant, use a water-soluble lubricant (i.e. K-Y Jelly). Do not use petroleum based products, as they can increase chances of infection.
- Abstain from any sexual activity that could expose your mouth to feces.
- Avoid sex that involves contact with mucous membranes if a genital infection is suspected or present in either you or your partner.
- Hugging, cuddling, gentle touching, and kissing are other ways you can be intimate with your partner during this time.

- Avoid kissing if you have mouth sores or open lesions in your mouth **or** if your partner has mouth sores

Speak with your healthcare provider if:

- You have vaginal dryness or tightness that makes sexual activity painful
- You have difficulty getting or keeping an erection
- Have any additional questions or concerns

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Your nurse will check these boxes after each topic is reviewed:

- Reinforce Appropriate Precautions
-

## **What should I expect in the BMT clinic for my post discharge visit?**

- First visit will take at least 1 hour
- Lab appointments are scheduled before clinic appointment
  - Do not take Tacrolimus and Voriconazole before lab draw.

### **Allogeneic Transplants**

- After discharge, if there are no complications requiring closer follow-up, you will be seen in the BMT clinic at least weekly until day 100.
- You must remain in the Ann Arbor area, within a 60-minute drive of the University of Michigan Medical Center for the first 8-12 weeks post-transplant.
- Milestone visits at days 30, 100, (180 for selected patients), and one year for restaging and follow-up will take place for people not enrolled on clinical research studies. People on clinical research studies will be seen for follow-up according to study specific guidelines.

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Your nurse will check these boxes after each topic is reviewed:

- Check Home Meds
- Remind Family to Hold Tacrolimus/Voriconazole for Levels

## What should I monitor for and when should I call 9-1-1 or go to the Emergency Room?

### Call 9-1-1 if:

- If you/your child is having **trouble breathing, is not responsive**, or has any other **issues that may be life threatening**, please call 9-1-1 immediately.

### Call the clinic and go to Mott Emergency Department, or go to your local ER (if you live more than 30 minutes away from UM) if you notice these symptoms:

- **Fever**- A thermometer has been provided for you. You do not need to routinely check temperatures unless concerned for fever. If you need to check temperature, do so orally under the tongue. Rectal temperatures are *not* recommended for children with cancer. It's a good idea to keep a bag packed at home, just in case, as fever usually requires a hospital admission.

#### Call the clinic and go to the ER if your thermometer has these readings:

- Two temperature readings (1 hour apart) of 100.4° Fahrenheit (38° Celsius)
- A single temperature reading of 100.9° Fahrenheit (38.3° Celsius)
- Any temperature reading above 98.6° Fahrenheit with concerning symptoms such as cough, congestion, behavior changes etc.
- **Bleeding**- Such as nosebleeds that last longer than 10 minutes, red or black bowel movements, red or dark brown vomiting, red urine, or increase in bruising.
- **Cognitive**- Excessive drowsiness, changes in mental status/behavior, or complaints of vision changes, such as double or blurred vision. Increased pain or headaches that persist beyond several hours or are not controlled by prescribed pain medication.
- **GI Symptoms**- Constipation or vomiting not relieved with prescribed medications, diarrhea or pain with bowel movements, pain with urination, or inability to tolerate fluid or food intake, or inability to take oral medications.
- **Central Line**- Any pain, redness and/or swollen areas especially around central lines or port sites. A break, crack, or tear in the central line. Difficulty flushing or leaking from catheter.



## What is the contact information for my BMT team?

With any concerns or the symptoms above please contact your BMT team:

- Monday-Friday 8am-5pm:
  - (734) 936-9814 -BMT clinic & nurse line
- After clinic hours and on weekends:  
(734) 936-6267- On-call paging\_\_\_\_\_

Disclaimer: This document contains information and/or instructional materials developed by Michigan Medicine for the typical patient with your condition. It may include links to online content that was not created by Michigan Medicine and for which Michigan Medicine does not assume responsibility. It does not replace medical advice from your health care provider because your experience may differ from that of the typical patient. Talk to your health care provider if you have any questions about this document, your condition or your treatment plan.

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