Pre-allogeneic bone marrow transplant education

What is bone marrow and stem cells?

Bone marrow is the soft, fatty tissue inside your bones. It has a spongy texture and is rich in stem cells.

Stem cells are the immature cells in the bone marrow that divide and mature into all blood cell types. These include white blood cells, red blood cells, and platelets; which each play a very important role in our bodies.

What is an allogeneic bone marrow transplant?

An allogeneic bone marrow transplant is when a person receives healthy bone marrow stem cells from another person who has donated them, to replace their own damaged or destroyed bone marrow. The donor's tissue type should closely match your own, which is why close family members are often used. If you don't have a good match within your family, a donor might be found for you which is called a Matched Unrelated Donor – or mud – transplant.

How stem cells are collected

Stem cells may be collected through a bone marrow harvest, peripheral blood stem cell collection, or from an umbilical cord transplant.

In a bone marrow harvest, marrow is collected from the hip bone. This happens in the operating room under a general anaesthetic.

For peripheral blood stem cell collection, cells in the bone marrow can be stimulated by medication injections. These injections help stem cells to move into the blood where they can be collected during a procedure called apheresis, similar to a blood donation.

An umbilical cord blood transplant requires the blood collected from the umbilical cord of new-born babies, which is a rich source of stem cells.

The cells collected from these sources all contain the immature stem cells required for transplant. Your transplant team will select the most appropriate source of cells for your treatment, based on your unique situation.

How to prepare for a bone marrow transplant

Smoking, drinking alcohol and the use of recreational drugs will increase your risk of severe complications. The medications used during the transplant may be affected by these substances and have the potential to cause severe organ damage.

Active smoking and exposure to second-hand smoke may increase the risk of lung infections such as pneumonia and fungal infections while your immune system is suppressed. Smoking has also been associated with permanent, and sometimes fatal lung damage, both during the transplant and the

recovery period. People who live with you will need to either stop smoking or do so out of your living area.

Alcohol and recreational drugs increase the risk of damage to the heart, lungs, brain and kidneys.

The transplant team will work with you and your family to help you abstain from alcohol, smoking and recreational drugs.

Having a healthy mouth is very important before the transplant begins, so visit your dentist to ensure that there are no problems with your teeth or gums. Any problems should be corrected a minimum of 14 days before your hospital admission for the transplant, or otherwise planned for a later date.

This includes the filling of any cavities; and removal of any teeth likely to cause gum, jaw or mouth infections.

If you have myeloma or osteoporosis, you must get clearance from your haematologist before any major dental work, including tooth extractions. This is because some medications you are taking may increase the risk of a complication from major dental work.

Diet and nutrition

Although you may experience a decreased appetite and changes to your taste and smell, it is important to choose foods that will help in regaining strength.

You also need to stay hydrated with at least 2 litres of caffeine-free fluids per day, unless your doctor has restricted your fluid intake. Small meals regularly, or eating plain foods is better than having nothing at all.

During treatment and while your immune system is compromised, additional food safety measures should be taken to reduce your risk of infection.

A low-bacteria diet should be followed by avoiding the following:

- Raw or undercooked meat, poultry, seafood or eggs (including runny yolks)
- Sandwich, cured or highly processed meats including those from the deli
- Unpasturised dairy products
- Soft cheeses, and anything with mould in it
- Food past its ’best before’ date

It’s essential to avoid contamination by safely preparing foods. Be sure to:

- Wash your hands, surfaces and equipment thoroughly, especially after preparing raw meat
- Wash and peel raw fruit and vegetables as bacteria can live on the skin
- Thaw frozen foods in the fridge overnight, rather than at room temperature or the microwave, then cook until steaming hot
- Don’t defrost and re-freeze food more than once
- Cook meat until ‘well done’
- Only eat food that has been freshly cooked and served immediately
- Use leftovers within 1-2 days

Nominating a caregiver

For your transplant to be a success, it is crucial you nominate at least one caregiver. This person, or persons, will need to attend consultations and education sessions with you during the workup stages, so you can learn together about the transplant process. Your caregiver will need to be available to look after you twenty-four hours a day, seven days a week for the initial months following transplant.

Following your transplant, your caregiver will need to assist you with the following:

- Reminding you to take your prescribed medications at the right time
- Managing your nausea, pain and fever with your prescribed medications
- Monitoring your condition and reporting concerns to your treating team
- Helping you to care for yourself, such as personal hygiene
- Providing emotional and social support
- Driving you to appointments, especially initially in your recovery, as you may be extra tired and some mediations may affect your ability to drive.

Your caregiver will also need to do household chores, such as:

- Preparing and cooking your meals
- Keeping your house clean, including regular washing of towels and linen
- Cleaning and caring for your pet, as you will need to avoid contact with items such as litter boxes, cages, food and water bowls.

The transplant process is not only challenging for the patient, but also for the caregivers. Therefore, it is important they remember to take care of themselves by maintaining a healthy diet, exercise, adequate sleep and relaxation; in order to provide the best care to you. A social worker can be a great help in supporting a caregiver to manage their caring responsibilities, and connecting them to community supports – so don't hesitate in asking your treating team for a referral.