Peripheral Blood Stem Cell Collection
(with Chemotherapy and G-CSF)
What is a stem cell?
Most stem cells are found in the bone marrow. Bone marrow is a soft, sponge-like material in the centre of our bones. Stem cells have the ability to grow into all other blood cell types; including red blood cells which carry oxygen, white blood cells which fight infection and platelets which stop bleeding.

What is a peripheral blood stem cell transplant?
A peripheral blood stem cell transplant is a multistep process which involves ‘mobilising’ stem cells from your bone marrow then ‘collecting’ these cells from your bloodstream. The stem cells are returned back to you at a later date following high dose chemotherapy.

Why do I need a peripheral blood stem cell transplant?
Chemotherapy is the main treatment for many forms of cancer. The use of high dose chemotherapy has been shown to be a superior way of treating your disease as it results in the maximum number of cancer cells killed. Doses of chemotherapy are normally limited due to the toxic effects on the bone marrow and blood counts. Peripheral blood stem cell transplant allows high doses of chemotherapy to be given safely.

What is stem cell mobilisation?
Normally a very small number of stem cells circulate in the bloodstream. To assist in the collection of your stem cells, we need to stimulate (or mobilise) the bone marrow to produce more. This involves using chemotherapy and a medication called a growth factor (G-CSF). Chemotherapy, which at first can be toxic to your bone marrow, is used to stimulate your body to produce more stem cells. It occurs in a rebound effect. Your blood counts will fall, generally below normal, and then rise rapidly. When your blood counts are below normal you are susceptible to infection and need to take precautions. The actual chemotherapy drug or drugs used may vary from person to person.

Specific side effects and management strategies will be discussed by your doctor and nurse. You may go home following your chemotherapy with a CADD pump to administer medication overnight. The pump is light and may be carried in a pouch over your shoulder or around your waist. You can move around as usual. A registered nurse will program the pump and instruct you regarding trouble shooting. You will have an appointment to return to the centre the following day.

Growth Factors (G-CSF) are special proteins which occur naturally in the body and control the process by which the bone marrow makes new blood cells. G-CSF is given once or twice each day, as a small injection under the skin for approximately twelve (12) days. You will start the injections the day following your chemotherapy and continue until the collection of your stem cells is complete. A nurse will teach you or your support person how to administer the injections. Some side effects you may experience include bone pain or flu-like symptoms. If you develop any bone pain it is important NOT to take any aspirin-based medication. Contact your doctor if your pain is not relieved by paracetamol.

When are the stem cells collected?
Approximately ten (10) days following your chemotherapy, your peripheral blood stem cells should be at an acceptable level to start collecting. You will be given an appointment at the centre, usually 7am, for a special blood test called a CD34 blood test. This test allows us to measure how many stem cells are circulating in your peripheral blood.

How is a stem cell collection performed?
A registered nurse will perform your stem cell collection or ‘harvest’. You will be connected to a machine called a blood cell separator or apheresis machine. The blood cell separator uses sterile tubing, which is used only once and then discarded. The registered nurse will stay with you throughout the stem cell collection procedure. The nurse will insert a drip into each of your arms. Blood is drawn from one arm into the machine. The machine separates the stem cells from the rest of your blood. The stem cells are collected by the machine. The rest of your blood is returned to you via the drip in your other arm. During the procedure, the machine is continuously drawing, separating and returning your blood.
How will I know if the veins in my arms are good enough for stem cell collection?
A few days before your stem cell collection, a registered nurse will check the veins in your arms to see if they are suitable for the procedure. If your veins are not suitable for stem cell collection, the Apheresis and Stem Cell Transplant Coordinator will make a booking for you to have a special line called a ‘Vascath’ inserted. A Vascath is a temporary plastic tube which is inserted into a large vein in your neck. This allows blood to be taken and returned during the stem cell collection procedure.

How long will the stem cell collection take?
The stem cell collection takes three (3) to four (4) hours a day to complete and is usually performed on a day patient basis. It is important to wear comfortable clothing. You should eat and drink as normal before, during and after your stem cell collection. You may wish to read a book, watch TV or a DVD throughout the procedure. Visitors are welcome, but should be limited to one or two people.

How often will I need this procedure?
Stem cell collections are performed on consecutive days. On average it takes three (3) stem cell collection procedures to obtain enough stem cells for a transplant.

Is the stem cell collection procedure painful?
The stem cell collection procedure does not hurt. You may feel some discomfort when the drips are inserted into each arm. This discomfort usually passes in a couple of minutes. If you need a Vascath for the stem cell collection you may experience some discomfort at the insertion site. If discomfort is not relieved by paracetamol, please contact your doctor.

Are there any side effects or problems that could occur?
Your doctor is responsible for the overall supervision of the procedure. A registered nurse will monitor you throughout the procedure and will assist you should you experience any difficulties. Possible side effects include the following:

- The blood cell separator removes only a small amount of blood at any time, but you may feel dizzy, light headed or cold.
- The medication used to stop your blood from clotting during the procedure may cause you to experience tingling in your lips or fingers. You may also notice a sour taste in your mouth or feel nauseated.

If you experience any of the above side effects, it is important you tell the nurse straight away as any problem can be easily treated.

How will I feel after the stem cell collection?
You may feel tired or lethargic after the procedure. We ask that you organise a relative or friend to drive you home afterwards. It is unlikely you will experience any problems following the procedure. However, if you feel unwell or experience any side effects you should contact your doctor or the centre immediately.

What happens to my stem cells after the collection is completed?
Each stem cell collection will be tested to determine the suitability and quantity of stem cells collected. The results will take three (3) to four (4) hours and will help determine how many collections are required to achieve sufficient stem cells for a transplant. The stem cells are then frozen in liquid nitrogen and then stored.

The stem cells collected may be given back to you at a later date following high dose chemotherapy in a manner similar to a blood transfusion.

How long are my stem cells stored for?
Stem cells are routinely stored for up to five (5) years. After five (5) years of storage the need for continued storage of your stem cells will be reviewed on a regular basis.

Will the costs be covered by my health fund?
Issues regarding costs will be discussed with you. Costs covered depend on your health fund, level of cover and your disease. There is no cost for storing stem cells in the first three months. Storage charges will be in accordance with the agreement you sign prior to starting stem cell collection. Storage of stem cell charges are not reimbursed by Medicare or your health fund.

Out of pocket costs may occur in the following areas:

- Pharmacy costs
- Insertion of Vascath
- Storage of stem cells
For us, cancer is personal

Icon Cancer Care locations

Adelaide
First Floor, Tennyson Centre
520 South Road
Kurralta Park SA 5037
P 08 8292 2333 | F 08 8292 2287

South Brisbane
Level 5, Mater Medical Centre
293 Vulture Street
South Brisbane QLD 4101
P 07 3737 4500 | F 07 3737 4701

Townsville
9–13 Bayswater Road
Hyde Park QLD 4812
P 07 4795 7100 | F 07 4795 7101

Chermside
Level 1, Chermside Medical Complex
956 Gympie Road, Chermside QLD 4032
P 07 3737 4500 | F 07 3737 4801

Southport
Level 9, Premion Place, 39 White Street
(Corner Queen and High Streets)
Southport QLD 4215
P 07 5657 6400 | F 07 5657 6401

Wesley
Level 1, Wesley Medical Centre
40 Chasely Street
Auchenflower QLD 4066
P 07 3737 4500 | F 07 3737 4601

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This information was current at the time it was published and is intended as a guide only. It is not intended to replace information provided by your doctor or nurses. Each patient is an individual and responses may vary. If you have any questions, please talk to your doctor or clinic nurse.