

FACT SHEET STEM CELL TRANSPLANTS

- A stem cell transplant (also called a peripheral blood stem cell or bone marrow transplant - BMT) is a medical process used to treat a range of life threatening diseases, including leukaemias, lymphomas, myeloma and other serious blood disorders, and some solid tumours.
- The purpose of a stem cell transplant is to either cure, or induce a long-term remission of a disease.
- A stem cell transplant involves replacing the primitive blood-forming cells (or stem cells), usually found in the bone marrow with healthier stem cells. It is from these cells that our blood cells (red cells, white cells and platelets) develop. Stem cells may need to be replaced because they have been damaged as a result of high doses of chemotherapy or radiotherapy in order to treat the underlying disease. High dose therapy may be used to treat disease more effectively, giving some patients a better chance of cure or long-term remission. Stem cells may also need to be replaced if they are diseased (for example in leukaemia) or defective (for example in aplastic anaemia).
- Stem cells can be collected directly from the bone marrow, from the blood stream or from the umbilical cord blood of newborn babies (cord blood transplant). In most cases stem cells are collected from the bloodstream via a large vein.
- Unlike a solid organ transplant (for example a heart or lung transplant), a stem cell transplant is *not* a surgical procedure. The stem cells are given as an infusion through a vein (intravenously), like a blood transfusion. From here they make their way to the bone marrow where they recommence the processes involved in blood cell formation.
- Transplants can be **autologous** – where the patient is *their own* stem cell donor, or **allogeneic** – where the stem cells are donated by another person (a stem cell donor).
- In an **autologous** transplant, the patient's stem cells are collected in advance, frozen and stored and returned to them after they receive high doses of chemotherapy. Most people have a *single* autologous transplant. Others may have two or more autologous transplants, over a period of a few months. This approach, called *staged autologous transplantation*, is used to help reduce the chance of some diseases coming back (relapsing) in the future.
- In an **allogeneic** stem cell transplant, the most suitable donor is usually a family member, often a brother or sister whose stem cells are as close a genetic match (tissue type) as possible to the patient's. This is called a *related* or *matched sibling donor transplant*. However, only about 1 in 3 patients has such a donor, so the donor may be an unrelated, but matched volunteer. This is called a *matched, or voluntary unrelated donor transplant (MUD or URD)*. If an exact match with the patient's tissue type cannot be found, a partially matched donor can sometimes be used.
- A **mini-allogeneic** stem cell transplant (also called a *reduced intensity* or *non-myeloablative transplant*) uses lower and therefore less toxic doses of chemotherapy and radiotherapy. This may be an option for some older patients, or those with certain health problems who cannot tolerate a standard allogeneic transplant.

- Approximately 1,100 stem cell transplants are carried out in Australia each year. The majority of these (over two thirds) are autologous transplantsⁱ.
- Stem cell transplants are carried out in specialised transplant units in metropolitan, and in some regional hospitals (autologous transplants only). Care is provided by a group of specially trained doctors, nurses, social workers and other allied health professionals who together, make up the transplant team. Most metropolitan hospitals have nurses called transplant coordinators who will help make arrangements for the transplant.
- **Allogeneic** transplants are associated with significant short and long-term risks. The risks increase with age so they are generally only offered to people under the age of 60 years (a mini-allogeneic transplant may be offered to an older patient).
- **Autologous** transplants are less complex and generally carry fewer risks. The degree and severity of complications and side-effects depends on several factors including the type of transplant and high-dose therapy used, the age and general health of the patient and the stage of the disease being treated. The time to recovery varies but may take as long as 12 months. During this time the patient will see the doctor on a regular basis.
- There are separate Leukaemia Foundation booklets called '*Understanding Autologous Transplants – A guide for patients and families*' and '*Understanding Allogeneic Transplants – A guide for patients and families*', which provide more information on these types of treatments.

Table 1: Details of Australian Transplants 2006ⁱ

Total number of transplants	1109
% male, % female	60.3%, 39.7%
Number of autologous transplants	777
Number of allogeneic transplants	332
Number of first transplants (allo & auto)	1001
Number of second or subsequent transplants	108
Age range	41 days - 81 years
0-15 yrs	117
16-39 yrs	215
40-49 yrs	170
50-59 yrs	337
60-69 yrs	245
70 yrs +	25
% 60 yrs +	24.3%

Table 2: Stem Cell Transplants by Type from 2001-2006ⁱ

	2001	2002	2003	2004	2005	2006
Allogeneic	327	279	360	362	385	332
Autologous	632	738	759	849	803	777
Total	959	1117	1119	1211	1188	1109

Table 3: Numbers of Transplants in each State across Australia in 2006ⁱ

NSW	VIC	QLD	SA	WA	TAS	ACT
375	250	245	96	103	14	26

**For further information, booklets or support, please contact the Foundation:
1800 620 420 or www.leukaemia.org.au**

Last updated October 2008

ⁱ Australian Bone Marrow Transplant Recipient Registry Annual Data Summary 2006