

Transplant news

Official newsletter of the
South African Transplant Society

Vol 12 No 3 Issue 44 - August 2013

Editorial

Professor Jerome Loveland
Editor

July 2013 saw the World Transplant Games being held in Durban, capital of the "Dolphin Coast", Kwazulu Natal. What an inspiration these games are, bringing to bear the wonderful success stories of transplant recipients and one can see why when one reads the story of Tina Beckbessinger, who after receiving a combined heart lung transplant underwent a metamorphosis from a home bound, oxygen dependent patient to an active person aspiring to participate in the games!

There are countless factors that contribute to successful transplantation and subsequent participation in such an event. One must also bear in mind that many pre-transplant patients cannot participate, for obvious reasons. When one looks at these two groups of patients, there is one factor that clearly defines on which side of the games they fall: that is the availability of organs and a lack of organs can have a far greater effect than not participating in the World Transplant Games. It can result in death on the waiting list.

As many of you may have read previously, South Africa has an "opt in" organ donation policy, which essentially means that one has to decide to be an organ donor whilst alive and in addition, even when you do die, your immediate relatives need to consent to the donation process and can in fact refuse consent! Thus we are already on the back foot with respect to organ availability. The United Kingdom currently has the same system. Spain, on the other hand, is the world leader with respect to donation rates as it follows the "opt out" system, assuming all members of the population as consented donors,

unless otherwise specified. It is interesting to note that just last week Wales has tabled a bill in parliament to adopt the "opt out" strategy, driven by unacceptably high waiting list deaths due to shortage of organs and the rest of the United Kingdom is closely monitoring the outcome. The South African Department of Health would do well to follow this script: whilst the "opt out" option does not offer a complete solution, it does go a long way to alleviating the pressure on organ availability. The solution in the mean time is to actively spread awareness, make your family aware of your wishes and register with the Organ Donor Foundation.

Fortunately, not all potential transplant recipients are reliant solely on deceased donor organs and receiving an organ from a Related Living Donor is a wonderful option for potential kidney and liver transplant recipients. Whilst stringent selection and donor criteria need to be rigidly adhered to, particularly with respect to the ethical implications, once a suitable donor has been identified the impact is enormous, obviously providing the organ required by the recipient. In addition, it alleviates pressure on the deceased donor waiting list and enhances the opportunity of the remaining recipients to receive an organ.

So taking our transplant programs forward, we need to increase our deceased donor pool, firstly by education of the public and hopefully, in time, by changing legislation, as they are in the process of doing in Wales and the rest of the UK. As an alternative, Related Living Donation is an excellent alternative, immediately solving one recipient's organ requirement and thereby increasing the potential donor pool.

Production Editors:

Ann Lake Publications:
Ann Lake/Helen Gonçalves
Jane Gouveia
Astellas Pharma
Ann Lake Publications
Tel: (011) 802 8847
Fax: 086 671 9397
Email: lakeann@mweb.co.za;
www.annlakepublications.co.za

Design:
Sponsor:
Enquiries:



Editorial Board



Professor Jerome Loveland
Head, Dept of Paediatric Surgery
Chris Hani Baragwanath Academic
Hospital, University of the Witwatersrand
and Transplant Surgeon, Wits Donald
Gordon Medical Centre, Johannesburg



Professor Russell Britz
General Vascular
Surgeon
Wits Donald Gordon
Medical Centre
Johannesburg

The views expressed by the editor or authors in this newsletter do not necessarily reflect those of the sponsors and publishers.
The South African Transplant Society Website: www.sats.org.za

This newsletter was made possible by an unconditional grant from

TRANSPLANTATION
UROLOGY
DERMATOLOGY
ANTI-INFECTIVES

 **astellas**
Leading Light for Life

Related Living Donor (RLDC) – What the donor can expect



Dr Craig M. Joseph
Gastro-Intestinal & Transplant Surgeon
Wits Donald Gordon Medical Centre
Parktown
Johannesburg

Transplantation offers patients with end-stage organ failure their only hope of resuming normal lives. The impact that transplantation has on these patients is immeasurable.

Usually, organs for transplantation are acquired from brain-dead donors, in whom breathing and circulation have been artificially sustained. These deceased-donor organs are scarce and demand greatly outstrips supply.

Sadly, most patients with end-stage kidney, liver, heart or lung failure still die without being transplanted.

How living organ donation works

Living donor organ donation offers a rare opportunity to break this cycle. A parent, spouse, sibling or child may step forward and change the course of disease in their beloved relative (**Related Living Donor**). Even unrelated individuals can donate their organs to a specific patient (**“directed donation”**) or purely altruistically to the next person in line to be transplanted (**“non-directed” or “Good-Samaritan” donation**).

Live donor organ donation applies mainly to kidney transplantation, as we are born with 2 kidneys, but really only need one for normal function.

The healthy liver also has tremendous reserve and regenerative ability allowing for the donation of a portion of liver from a live donor.

Living donor kidney transplantation is well established in most transplantation centres in South Africa, while Living Donor Liver Transplantation (LDLT) has recently been introduced at the transplant unit at the Wits Donald Gordon Medical Centre.

Of course, the process of living donor transplantation puts a healthy volunteer at risk, so the **safety and well being of the living donor is always top priority** and it is the responsibility of the medical team to evaluate each potential living donor thoroughly.

Deciding to become a living donor

The following points need to be clearly established:

- The donor is acting freely, with no coercion or financial incentive
- The donor is mentally healthy and understands the risks of organ donation
- The donor is physically healthy, with no medical conditions that would render organ donation unsafe for him/herself or the potential recipient
- The donor’s anatomy (blood vessels and organ size/shape) is suitable for donation



This may seem a frustrating process for some, but is absolutely vital to ensure donor safety. It involves physician, surgeon and psychologist consultations, numerous blood tests (including an HIV test) and imaging studies (usually in the form of CT scanning).

The medical aid of the potential recipient will often cover these costs, but this varies and needs to be checked beforehand.

Non-related and Non-South African potential donors need to have the process approved by the Department of Health and this can take several weeks or even months to acquire.

The safety and well being of the living donor is always top priority and it is the responsibility of the medical team to evaluate each potential living donor thoroughly.

No donor should ever feel trapped or obligated and they are entirely free to withdraw at ANY stage in the process.

If the potential donor is accepted as an appropriate candidate after the work up process, he/she will be admitted to hospital (usually together with the recipient) on the morning of intended surgery.

The procedure

Removing a kidney from a live donor can be done in one of two ways:

- The traditional **“Open”** approach is through a 15 to 20cm flank incision, on the same side as the kidney that is to be removed. This usually requires removal of the tip of the 12th rib and may cause considerable pain. The hospital stay is typically 5 to 6 days.
- The **“Laparoscopic-Assisted”** approach uses a **“Key-Hole”** technique with 2 or 3 small trocar incisions and a 7-8cm-midline incision centered at the navel, to allow for removal of the kidney. Patients report less pain after this procedure and typically leave hospital a day or two earlier. On rare occasions, it may be necessary to convert to an open operation if there are technical difficulties.



The process of living organ donation makes it possible for a parent, spouse, sibling or child to step forward and change the course of disease in their beloved family member.

Regardless of which technique is used, patients will be nursed in ICU for the first night to provide the highest level of care possible. A surgical drain is routinely placed, to warn of any bleeding. A bladder catheter is also used to monitor urine output after surgery. Both the drain and catheter are normally removed the following day. Patients are issued with a Patient Controlled Analgesic (PCA) device, which is a self-activated pain pump to allow them to control their own pain. Patients are allowed to drink fluids from day one, but solids are usually introduced a day or two later once there is evidence of bowel activity.

Follow-up of kidney donors is an important part of the process.

After the transplant

The initial visit is typically a week or two after discharge from hospital.

Most patients will return to work after 4-6 weeks. It is recommended that kidney donors see their physician 3

monthly for the first year and then at least annually for life.

At each visit, Blood Pressure and Kidney function tests should be performed.

Studies have shown, that the longevity of kidney donors is superior to the average population, as this is a group of super-healthy individuals.

Nevertheless, the loss of one kidney does reduce renal reserve and donors should be careful not to use medications known to harm the kidneys (such as anti-inflammatories and aminoglycoside antibiotics) and should always stay well hydrated, especially during exercise.

Live Donor Liver transplantation shares the same general principles as kidney donation, although the surgery is considerably more demanding.

In the interests of donor safety and the minimum mass of liver required (i.e. at least 10 grams of liver per Kg patient mass), the most common scenario is the donation of a small portion (i.e. the Left lateral segment) of an adult's liver into a child.

Ultimately, there can be no greater gift than the **Gift of Life**. Our job as doctors is to provide the opportunity for this to occur in the safest possible way.

The stages of chronic kidney disease



Mayuri Bhawan
Registered dietitian
Nutritional Solutions
Atholl Square
Johannesburg

The main role of the kidneys is to filter waste products from the blood before converting them into urine. Other functions include releasing hormones that regulate blood pressure, maintaining the correct levels of chemicals in your body that, in turn, will help heart and muscles function properly and producing an active form of vitamin D that promotes strong, healthy bones and controls the production of red blood cells. As kidney function declines, waste products can build up in the blood causing a condition known as "uraemia" and as the disease progresses over a period of years, it is referred to as chronic kidney disease (CKD). Kidney disease is divided into five stages and if it is caught early, medicines and lifestyle changes may help slow down the progress.

Stage 1 and 2 of chronic kidney disease

Stage 1 is asymptomatic, and is associated with mild kidney disease with normal filtration of the blood and waste products (Glomerular Filtration Rate [GFR] 90ml/min or above).

Stage 2 disease is usually asymptomatic, although the kidney does now have reduced function, with a GFR of between 60 and 89 ml/min. There are usually no symptoms to indicate the kidneys are damaged. Both stages require other evidence of kidney disease.

Stage 3

Stage 3 chronic kidney disease has kidney damage with a moderate decrease in GFR of 3-59ml/min. With stage 3 a person is more likely to develop complications of kidney disease such as high blood pressure, anemia (a shortage of red blood cells) and/or early bone disease.

Common symptoms that may appear in stage 3:

- **Fatigue:** Feeling tired is common for people with CKD and is often caused by anemia.
- **Too much fluid:** The kidneys may lose their ability to control how much fluid stays in the body. A person may notice swelling (edema) in their lower legs, hands or face around the eyes. With too much fluid someone could even feel short of breath.
- **Urination changes:** Urine may be foamy if there is protein in it, or dark orange, brown, tea coloured or red if it contains blood. A person may urinate more or less, or get up at night to go to the bathroom.
- **Back pain:** Back pain is usually felt as a dull ache anywhere in the mid-to-lower portion of the back, on one side or the other – this is sometimes referred to as loin pain.

- **Sleep problems:** Some people have trouble falling asleep or staying asleep. Itching, muscle cramps or restless legs can keep them awake.

As stage 3 progresses, it is advised that the patient sees a nephrologist (a doctor who specializes in treating kidney disease).

Nutrition is a critical component in the overall treatment of CKD and therefore the patient needs to be referred to a registered dietitian. An individual diet is calculated by assessing existing kidney function, lab results, anthropometric measurements, nutritional status, lifestyle requirements and health history. Thereafter an individualised meal plan is developed taking the above mentioned factors into consideration. Following a proper eating plan can help preserve kidney function and overall health.

A healthy diet for stage 3 CKD may recommend:

- Including a variety of grains, fruits and vegetables. Whole grains and some fruits and vegetables may be limited if blood tests show phosphorus or potassium levels are above normal.
- A diet that is low in saturated fat and cholesterol and moderate in total fats, especially if cholesterol is high or if you have type 2 diabetes or heart disease.
- Aiming for a healthy weight by consuming adequate calories and including physical activity each day.
- You may need to modify some nutrients in order to manage your kidney disease, such as protein, potassium, sodium and phosphorus.

Protein

Your body needs protein to help build muscle, repair tissue and fight infection. However, if you have kidney disease, you may need to closely monitor the amount of protein you eat to prevent protein wastes from building up in your blood. This can help your kidneys work longer. The recommended intake is 0.8 grams protein per kilogram body weight. Try to consume high biological value protein (lean meat, turkey, pork with all visible fat trimmed off, fish, skinless poultry, or eggs) at every meal. Peanut butter, nuts, seeds, dried beans, peas and lentils are food sources of protein, but should be limited because they are high in both potassium and phosphorus. Milk, yoghurt, and cheese also contain protein but are high in phosphorus and therefore should be limited.

Sodium

Sodium is a mineral found in varying amounts in foods and in table salt. Sodium affects blood pressure and water balance in your body. As healthy kidneys they regulate sodium in your body, sodium and fluid build up in your body with CKD. This can cause high blood pressure and other problems such as swelling of your ankles, fingers or eyes. Therefore, sodium must be restricted by limiting salt intake, avoid adding salt to food at the table, replace salt with spices and herbs in cooking and limit salty foods such as spreads (marmite, bovril, fish paste), snacks (biltong, potato crisps, salted nuts / peanuts) and processed foods.

Fluids

The amount of fluids you consume during the earlier stages of kidney disease is usually not restricted. If the filtration rate of your kidneys decreases, your doctor may restrict how much fluid you can have per day to delay dialysis.

Phosphorus, Calcium and Vitamin D

Phosphorus is a mineral present in a variety of foods but found in predominately in milk (whole, low fat or skim), cheese, yoghurts, ice-creams nuts, dried beans, peas and lentils, meats and soft drinks. As your kidneys fail to excrete the necessary phosphorus, high levels can cause the body to extract calcium from the bones to restore the balance. Over time your bones will become weak and brittle, other consequences of high phosphorus levels include joint or bone pain and skin ulcers.

It is essential to keep phosphorus intakes low and calcium high. This is difficult as high-calcium foods such as milk and dairy products are also high in phosphorus. To help control the high levels of phosphorus in your blood, you may need to take phosphate binders with your meals and snacks as prescribed by your doctor. Calcium and vitamin D supplementation are commonly prescribed to keep calcium and phosphorus levels in balance and to prevent bone disease.

Potassium

Potassium is a mineral found in most foods such as dried fruits, dried beans and peas, nuts, meat, milk, fruits and vegetables and also in salt substitutes. With CKD your kidneys fail to excrete the necessary potassium. It is recommended to limit the consumption of foods high in potassium and to monitor the levels closely.

Stage 4

A person with Stage 4 CKD has advanced kidney damage with a severe decrease in GFR to 15-30 ml/min. It is possible that someone with Stage 4 CKD will need dialysis or a kidney transplant in the near future. Further more complications can occur in stage 4 such as high blood pressure, heart disease and other cardiovascular diseases

Symptoms that are experienced in stage 4 are very similar to stage 3. However there are additional symptoms that you may experience such as:

- **Nausea and occasional vomiting**
- **Taste changes:** such as a metallic taste.
- **Uremic breath:** As urea builds up in the blood, it may be detected in the breathing causing bad breath.
- **Loss of appetite**
- **Difficulty in concentrating:** Having trouble in focusing, balancing and reading
- **Nerve problems:** Numbness or tingling in your toes or fingers is a symptom of CKD.



Nutrition is a critical component in the overall treatment of CKD and therefore the patient needs to be referred to a registered dietician.

- Headaches
- Fatigue and drowsiness
- Itchy skin, itchy eyes
- **Skin colour changes:** (grayish complexion, sometimes yellowish-brownish tone)
- **Difficulty breathing:** (due to fluid in the lungs, anemia)
- Swelling and puffiness
- Decreased urine output

Working with a registered dietician is critical in managing your chronic kidney disease (CKD). It is thus important that you obtain an individualised eating plan and menu to address the problems and metabolic consequences that occur within the different stages of the disease.

A change of heart



Joanne Lillie
Health Journalist

Source: Discovery website - https://www.discovery.co.za/discovery_coza/web/you_and_your_family/health/whats_happening_content/newsletter_articles/member_story.xml

Most women her age are stressing about reaching their 30s, panicking about how to reduce visible signs of ageing, or trying to juggle career and family. For Tina Beckbessinger (31) life has just begun.

Tina was born with a cluster of congenital heart defects, including a missing tricuspid valve, three holes, narrowed arteries and a fast and irregular heartbeat. She was what's known as a 'blue baby'.

"As time went on, my heart got bigger and bigger because it was working so hard to get blood and oxygen around my body," she says. "The doctors didn't think I would reach double digits."

The tendons around Tina's heart suffered under the strain of the enlarged organ and eventually Tina suffered heart failure and had her first pacemaker fitted at the age of 14. The second was when she was 22.

Normal life was out of the question for Tina and her childhood was punctuated by doctors' appointments, hospital stays and oxygen machines. Repeated chest infections kept her almost continuously on antibiotics during the winter months.

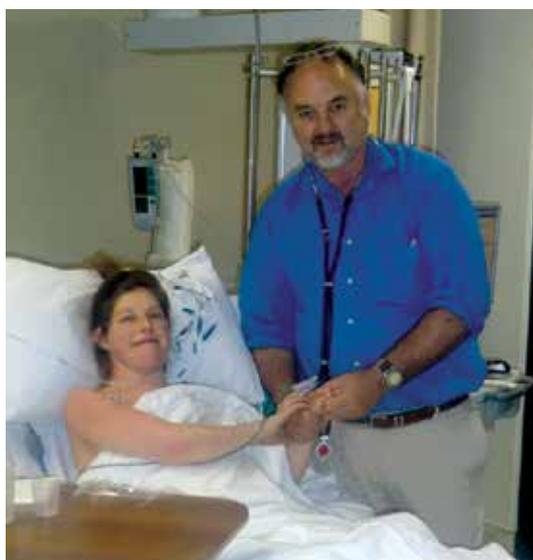
Tina was unable to complete her normal schooling and had to be home-schooled for the last two years of her school career. She managed to attend Varsity College two years after she matriculated but her second year of studies was just too much for her and her cardiologist, Dr Dave Gilmer, suggested she stop.

"Her lips were deep purple, she had black rings under her eyes and although her frame is tiny, her tummy was distended due to a swollen liver as she was retaining water due to heart failure. She was devastated: She was 21 years old

and destined to spend the next eight years of her life almost bedbound," says Tina's mom, Bev.

"I would sleep 22 hours a day, and I had to be on oxygen 99% of the time. I couldn't bath, wash my own hair or get dressed on my own. Eating was a major task for me. I would eat very

slowly because I couldn't breathe and eat at the same time and was so weak that chewing was very tiring. I find it difficult to describe how debilitating the weakness and tiredness was."



Tina with Dr Kleinloog after surgery.

"The lack of oxygen gave me blue lips and as the bone marrow, which was starved of oxygen, tried to make more red blood cells to carry more oxygen around my body, my blood became thicker and more toxic and more difficult for my heart to pump. Every six weeks I had to have blood drained (a procedure called venesection) through a large needle."

But her problems didn't end there. The small arteries of Tina's lungs became narrowed, resulting in abnormally high blood pressure within the lungs (pulmonary hypertension). It became clear that she needed a heart transplant as well as a new set of lungs.

"I appreciate every minute of my life and live it with joy. Just walking my dog to the end of the road, or blow-dying my own hair is marvellous!"

Tina's name was placed on the transplant list in 2009 and the wait began. Two and a half years later, on October 29 2011, she got the call that changed her life. "It's extremely rare to receive a heart and double lung transplant as three organs can save three lives, not just one."

"I am so grateful to the woman who became an organ donor and gave me a second chance at life. She must have been an incredible young woman because she decided just before she went into theatre for repair to damage resulting from a stroke that she would like to gift her organs should she not survive the surgery. If she hadn't done that, I probably wouldn't be alive today."

Tina's cardiothoracic surgeon, Dr Robert Kleinloog, and his team had a race against the clock to fly to another province to collect the organs. It was an anxious wait for Tina, who spent five hours at Ethekwini Hospital and Heart Centre in KZN, while doctors assessed the organs for viability for her. They had to be a tissue match as well as the right size to fit exactly in her chest. It was 10 p.m. on a Saturday night when the hospital's transplant co-ordinator, Cindy Goldie, came to tell Tina and her anxiously waiting family that the transplant would be going ahead.

The surgery took all night. "I remember saying to my mum 'see you tomorrow morning' as I was wheeled into theatre," says Tina. "I wasn't scared, just so, so excited."

"It's been more than a year since the transplant and I have literally never felt so fantastic in all my life. Each day just gets better and better!"

"There have been some teething problems getting the combination of medicines right and adjusting to a constantly suppressed immune system, which is necessary to keep my body from rejecting the organs. But in relation to how I felt before, I feel phenomenal. A few weeks after the op, I was able to do things normal people do; I said to my mum: 'do normal people feel this good all the time?' I couldn't believe it."

"I noticed her colour had changed by the time she came out of surgery," says Bev. "She had never had pink lips and nails before. She went from strength to strength after that," she says.

"Discovery has been incredible in their generosity and support," says Bev. "More than just paying the bills, they showed an interest in Tina's progress, were genuine throughout and were with us at every step."

"If it weren't for Discovery we would never have been able to afford this life-saving operation, not to mention all the different medications I will have to take for the rest of my life."

Tina is able to go shopping for groceries, swim, go out with friends and have a job for the first time in her life. "When I lift a 5kg pocket of potatoes I feel superhuman! I appreciate every minute of my life and live it with joy. Just walking my dog to the end of the road, or blow-dying my own hair is marvellous!"



Top: Tina's first ODF walk (before transplant) Above left: Tina is the image of radiant health after transplant Above: Tina's first cycle after transplant.

Tina is feeling so strong that, providing she has resolved her medication concerns, she has her sights on some pretty big goals. "I would love to participate in a future World Transplant Games."

"Slowly I am becoming the person I always dreamed of being, and I owe that to my donor, medical team and all the people at Discovery who have made it possible."

Become an organ donor

There are currently in the region of 4 300 South African adults and children awaiting life-saving transplants, but only around 600 of them will receive organs this year.

If you would like to save lives by donating your organs, call the Organ Donor Foundation tollfree on 0800 22 66 11 or register online at www.odf.org.za.

It's important to discuss your decision with your family, as they will need to consent to your wishes after you die. You can also place a sticker on your driver's license or in your ID book.

How does Discovery Health Medical Scheme (DHMS) cover organ transplant?

- You need to authorise and approve the procedure with DiscoveryCare Hospital Services.
- DHMS pays for organ transplants as long as surgeries are done by a Board of Healthcare Funders (BHF)-registered health care provider.
- DHMS will cover the work-up and procurement costs of the donor where appropriate.
- DHMS will cover the compatibility testing for the recipient and the donor from your hospital benefit where appropriate.
- Pre-op tests such as x-rays and blood tests are assessed for cover on an individual case review basis.
- Cover for hospital admissions is based on your specific plan. Most plans cover the hospital account up to the Discovery Health Rate.
- Medicines can be paid from Discovery Health Medical Scheme's Chronic Illness Benefit, depending on your plan type.

This article was originally published on the Discovery website and is republished here with kind permission from Discovery Health and Tina Beckbessinger.

Bone donation – Making a difference every day



Ms Sandra van den Berg
Tissue Procurement and PR
Centre for Tissue Engineering
Pretoria

“It is three years since that terrible accident on the N1 south near Beaufort West almost killed my husband. His recovery was slow and painful, but today he plays pool again, does fishing on the North Coast and participates in his beloved pigeon flying competitions all over the country again. All I know is that without the generosity of tissue donors and several bone implants, he would not even be able to sit up-right or walk at all.”

These are the words of Mrs Botha who wrote a 6 page long letter to tell her story and thank those who assisted in the recovery of her husband.

So what is it all about?

Bone Allograft is the term used to describe a bone graft donated by one person for transplantation into another. Musculo-skeletal bone, tendons and cartilage are retrieved from the limbs (arms and legs) of the donor after his death. Unlike organs, no tissue compatibility is necessary, therefore anyone can donate bone and anyone can receive it.

It is fascinating to know that in terms of quantities, bone tissue transplants are the second most common transplant performed on patients, second only to blood transfusions. This explains the urgent need for bone donors.

Bone transplants are commonly used in the orthopaedic, reconstructive, dental, neurosurgical and plastic surgery, performed by surgeons in their respective fields of speciality:

- Many patients suffer bone loss as a result of trauma or injury, joint replacement or arthritis
- Some patients with tumours face possible amputation but can be helped with allograft bone
- In spinal fusion, allograft bone plays a very important role in supplementing and supporting the patients own bone
- Treatment of some periodontal diseases affecting the jaw and gums require bone tissue
- Tendons are used to restore function to injured limbs and so many famous sport celebrities have already been recipients of donated bone and tendons.

Any one between the age of 16 and 80 years may donate bone tissue. There are however some factors that render donated tissue unsuitable for transplantation but each case is considered individually.

How to donate

The best way to ensure that your wish to become a tissue donor is carried out is to tell your family about your intention. Most people don't like to talk about the fact that we will all die at some point and therefore avoid discussion about important issues like organ/tissue donation. If the bereaved family knows how the person felt, the decision to donate will be so much easier. Prospective donors should also keep their donor cards with them at all times.

No tests are needed in order to become a donor. During the retrieval, however, blood tests will be done to screen and test for transmittable diseases, thus guaranteeing the safety of the tissue to the recipient. The results of all medical tests are treated with utmost confidentiality. Only professionals are employed and they are bound by very strict codes of conduct to ensure that each donor is treated with the utmost respect and dignity. It is also standard practice to retrieve tissue without compromising the funeral arrangements.

So who makes it all happen?

The Centre for Tissue Engineering became the first tissue bank in South Africa in 2009 to obtain the international ISO 13485 standard, which specifies requirements for a quality management system where an organisation needs to demonstrate its ability to provide consistent, safe, high standard and quality bone tissue allografts to the medical fraternity.

Over the last 10 years the CTE has procured more than 1700 bone tissue donors, prepared 10's of thousands of allografts for transplantation and made it possible for surgeons all over the country to treat thousands of patients and in so doing improved quality of life for ordinary South Africans.

The CTE-Bone Bank operates actively across the country; are members of the South African Transplant Society; the Organ Donor Foundation; the European Association of Tissue Banks and work in close collaboration with the Organ Transplant teams and the Eye banks in South Africa. Apart from procuring bone tissue, it is also part of the CTE's mission to inform and educate the SA public about the importance of organ and tissue donation through various media.

Bone is ideally retrieved within 48 hours after death, but can be successfully retrieved up to 5 days after death.

**For more information contact: Centre for Tissue Engineering
Cell: 082 325 3448, Office: 012-349 3507, Fax: 012-349 3514**