

Restoring hope for terminal cancer patients – a ‘St Jude’ legacy

Were it not for 80-year-old Prof. Ernette du Toit’s unceasing efforts to get South Africa (SA) and its donors on the global stem cell registry map, more than 100 of her compatriots would not be alive and fulfilling their dreams and ambitions today.

The unique work, which requires exact donor matching to replace diseased bone marrow after a terminally ill prospective recipient has been subjected to lethal chemotherapy to destroy it, demands nerves of steel from all involved – especially those heading their country’s stem cell donor registry. Du Toit, who retired as Medical Director of the South African Bone Marrow Registry (SABMR) in April this year after a 25-year stint with the registry, was able to translate her early work in Groote Schuur Hospital’s Laboratory for Tissue Immunology (LTI) into a bone marrow registry that today has international life-saving reach for patients suffering from certain end-stage haematological disorders. These include leukaemia, lymph node cancers, certain anaemias and SCIDS (severe combined immune deficiency syndrome, a rare genetic disorder in which affected children have no resistance to disease and must be kept isolated from infection after birth). Like many of life’s pivotal game-changers, she was, to use her own self-effacing description, ‘in the right place at the right time’ – and she grabbed the golden opportunity presented by her role in Prof. Chris Barnard’s first-ever heart transplant. In early December 1967, the LTI tissue-matched the heart donor for Louis Washkansky, who survived for 16 days, making history.

Over the ensuing months and years, the LTI moved from matching tissue for hearts to kidneys and then livers, its staff in the process touring the world with Barnard, giving them direct access to the world’s top haematologists and immunologists. The late Prof. Peter Jacobs had in the meantime broken new immunological ground in SA with stem cell transplants, first in rabbits and later in humans. While the chance of a genetic match in family members – hugely reducing the chance of immunological transplant rejection – was as high as 25%, the net needed to be thrown far wider. The obvious next step was to set up a tissue typing registry – stimulated by feedback by Dutch

haematologist Prof. Jon van Rood of the Haematology Department at the University of Leiden, who ran the Netherlands blood bank and co-ordinated the registration of unrelated potential stem cell donors worldwide. Explains du Toit: ‘Peter [Jacobs] said he’d do the transplant side and I was told by the international community [read Van Rood] that you cannot get donors from a global source unless you have a competent donor registry yourself – a kind of a quid pro quo and quality assurance set-up.’ She set to work to comply.

There are 76 bone marrow donor registries worldwide with 28 million registered donors, of whom just 71 000 are South Africans – the biggest ongoing issue being the tragically few black (global and local) donors and the gap between SA’s funded private transplant funding and unfunded state sector transplants. Add to this SA’s genetic diversity, in contrast to a more homogenous society like Japan, and you quickly realise how miraculous are the continued lives of the SA recipients, one now an around-the-world sailor and another, 5 years old at the time of the transplant, now a healthy teenager.

For over 70% of patients, their only hope is to find a donor via the SABMR, with the chances of finding a compatible unrelated donor standing at about one in 100 000.

The therapy itself, while risky because of the varying degrees of logistical complexity in the global donor cell retrieval (and ‘sell your house’ costly for the recipient and/or medical aid), has a 60 - 70% success rate, with 380 unrelated (i.e. non-family) bone marrow transplants conducted in SA since 1991 after the SABMR was set up.

All of which makes the reference to St Jude – patron saint of hope and impossible causes – so pertinent in Du Toit’s case. She says, with undiminished enthusiasm, ‘It’s miraculous and magical what we can achieve. You’re actually destroying an individual’s whole immunological system and replacing it with one from somebody who’s like an identical twin, but found in the general population.’ Finding the donor is merely the first hurdle. The next is transporting the stem cells, mostly from overseas (Germany being a frequent go-to country, because of its efficiency and healthy registry), with European countries preferred because of the shorter travel time



Prof. Ernette du Toit.

and a 72-hour stem cell expiry window. Du Toit tells stories of dedicated couriers (they carry a special cold-box at their feet, and even take it to the toilet with them) being delayed due to severe weather conditions, volcanic eruption clouds or technical flight hitches and having to catch a prebooked back-up flight, some arriving at the recipient’s bedside with just hours to spare. The drama and tension involved (the harvesting being done after the recipient’s immune system has already been destroyed several thousand kilometres away) are enough to give anyone grey hair. Du Toit, who speaks in strong, assertive but deeply empathic tones, reveals that international registry protocols prevent donors and recipients from meeting for between 1 and 5 years (SA is 5 years) after the transplant – for very good reasons. ‘You can’t afford for them to get emotionally involved. Bone marrow transplants are not infallible and the recipient might relapse, requiring a top-up from the same donor or a full second transplant. If they met, the donor would not have the freedom to make an independent choice and consent a second time. We’ve had donors changing their minds. When it works, it’s actually one of the most amazing things that can happen between two people.’

This miraculous exchange happens some 12 500 times a year worldwide, according to Terry Schlaphoff, deputy director of the

SABMR. Schlaphoff says that the setting up of the only internationally accredited tissue typing laboratory in Africa, introducing formal paternity testing in SA, hosting the World Marrow Donor Association conference in Cape Town in 2006 and helping discover a unique globally low-frequency HLA antigen called A43 (a rare genetic marker found mainly in Khoisan people) will remain lasting strains in her former boss's sonata. Asked about how she sees the future of stem cell transplants, Du Toit replies: 'You don't know today. I think stem cell transplant is probably pretty crude. There must be a development in the future where medication or some other intervention will be the answer. There's hope somewhere in the future and stem cell registries may go out of fashion.' She points to the 'haplo' transplants already taking place in SA, where recipients are 'half-identical' to the donor, making it cheaper and easier to find a match.

Du Toit tried to take early retirement 16 years ago (nobody could be found to replace her), and has just retired, with her medical doctor husband Len Anstey, to Century City outside Cape Town. It's a far cry from her rural origins on a farm near Montagu, but she's stayed a Capetonian, having graduated from the University of Cape Town in 1960, where Chris Barnard was one of her final-year lecturers. As a Groote Schuur house surgeon, she can remember his dedication in pitching up at a patient's bedside at 3 a.m. 'He'd look at the monitors, all normal, and then say, 'But the blood pressure's going up!' – he could work very intuitively, yet he also put together the first heart pumps. One day when the electricity went off he was able to instruct staff on how to keep it going manually,' she said. Asked about Barnard's reputation as a ladies' man, she laughed. 'I was always wary of getting too near him – he was not an easy man to work with, but

I was fortunate in being a young woman (which softened his interactions).' Now able to enjoy going to the theatre, indulge in some charity work and read – all things she seldom did 'because I wanted to get up early to work' – she sometimes drives her husband mad, indulging in her love for classical music and lieder (German music of the Romantic period with solo voice and piano accompaniment). It's not that surprising; she counts one of the high points of her career as having performed the Alto Solo in Handel's *Messiah* at the Cape Town City Hall during her early working career.

Her 'voice', it seems, will linger on well beyond that historic hall.

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