*Issue* 13

# FOUNDATION AWARDS 2019

Radiating hope throughout our nation.

A network of care.
A constellation of skills.

More than
R200 million invested
since 2006
in 400 specialists

# FOUNDATION AWARDS 2019

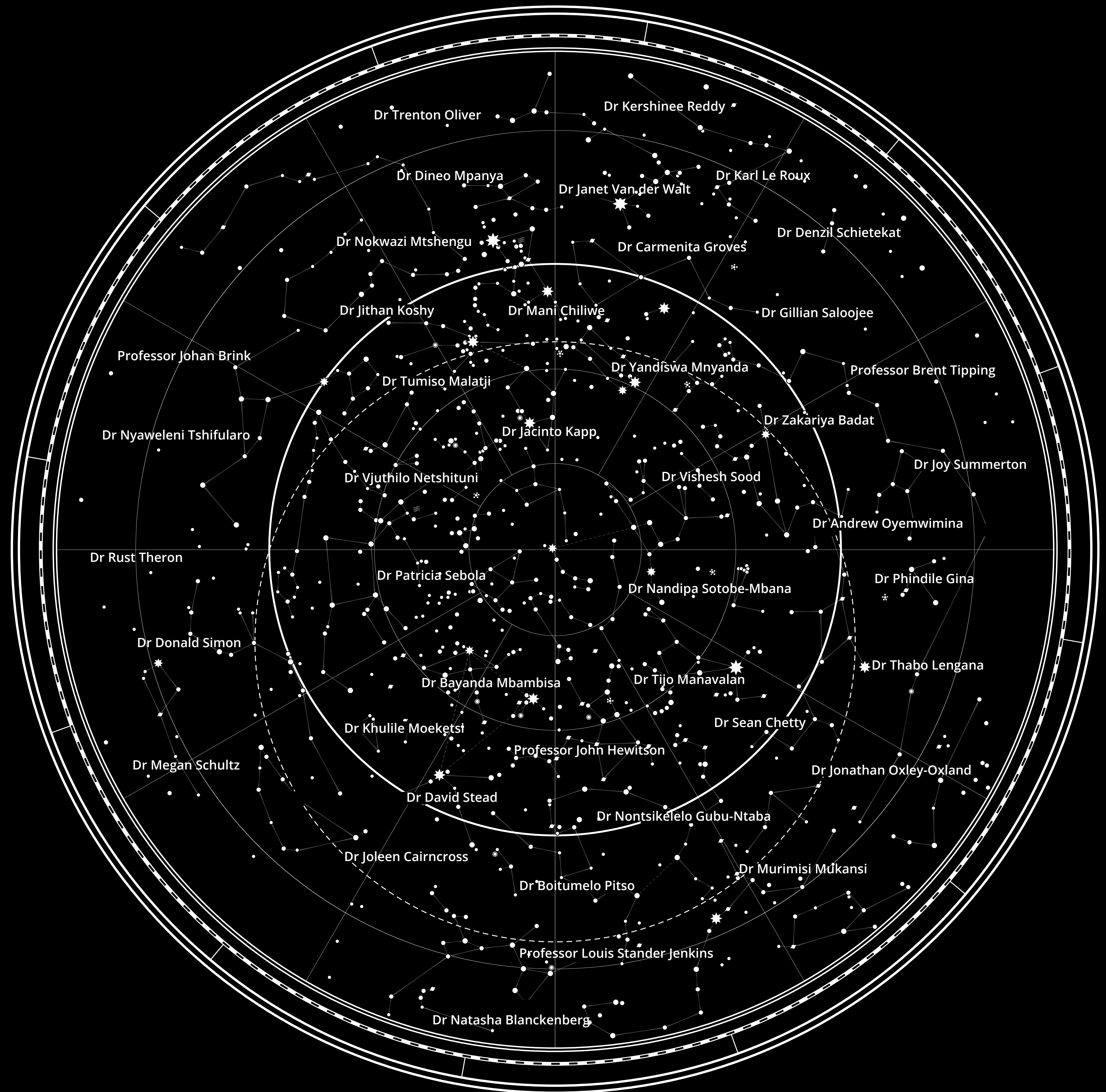
## Radiating hope throughout our nation.

Recipients across categories of the Discovery Foundation Awards have been carefully selected in effort to strengthen our public healthcare system in areas of need. Selfless, determined and driven to make a difference, these individuals and institutions are al adding to knowledge and excellence in healthcare.

Every recipient of a Discovery Foundation Award aspires to greater heights in improving healthcare – only to achieve their most satisfying reward of all. The smile of a grateful patient, the knowledge of a life saved, and discovering solutions to disease prevention, treatment and cure.

These Award recipients all have a dream of how it could be and are working hard towards this outcome. The Discovery Foundation Awards invested in these recipients and their work contribute to enabling better quality care, greater specialisation and building a network of knowledge and excellence that culminate in a constellation of skills in our rural and public health sectors.

Thank you to each of the remarkable recipients.




*A network of care.*

**A constellation of skills.**

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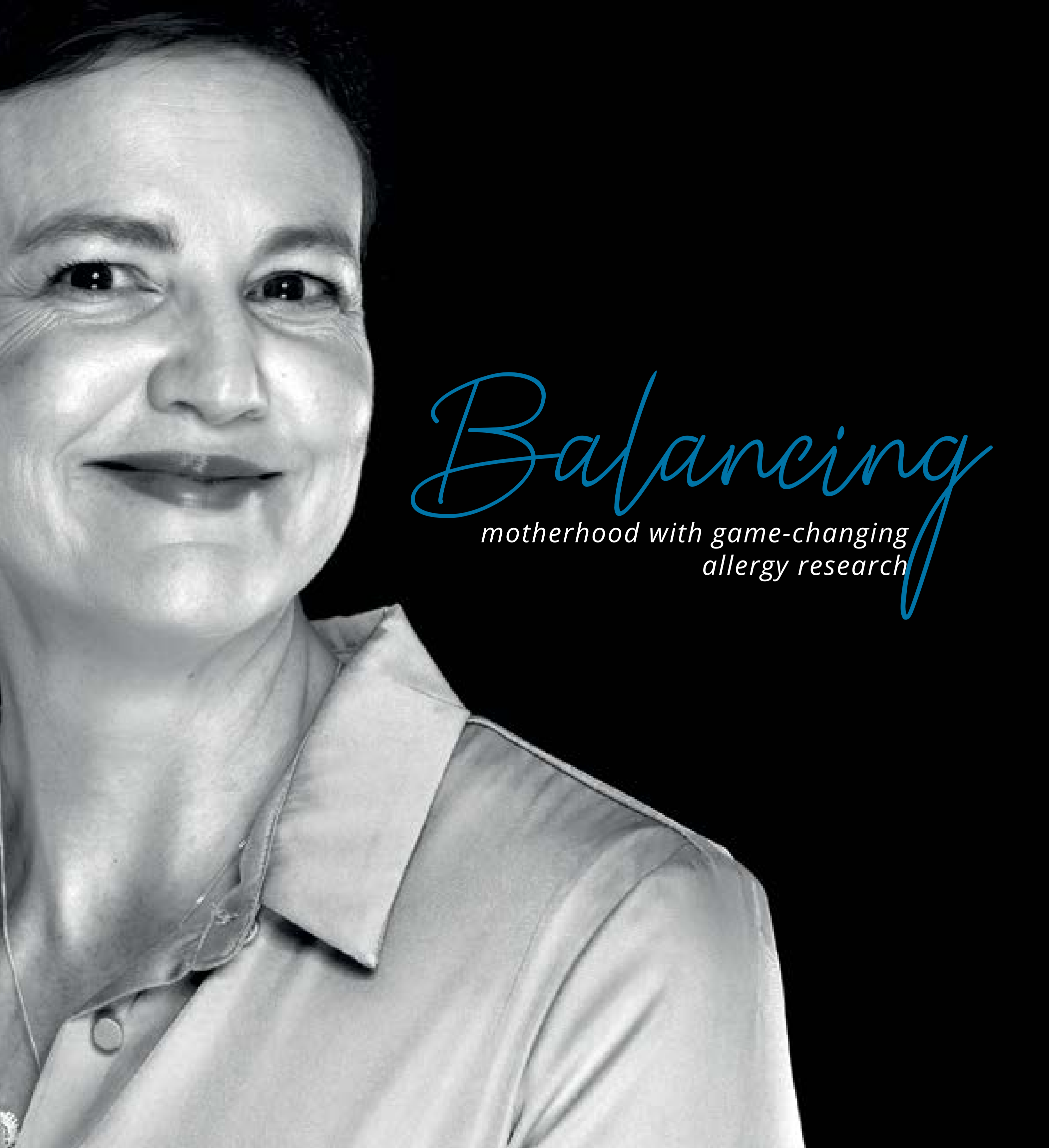
/01

# /General healthcare

**Improving general healthcare**

*through research, preventive programmes, resource and knowledge sharing.*



# Balancing motherhood with game-changing allergy research

## DR JANET VAN DER WALT

***Academic Fellowship Award***

*Allergies and clinical immunology*

*University of Cape Town*

/01

***Allergologist, Dr Janet van der Walt, from Durbanville, sees the suffering of people with severe allergies daily and decided it was time to tackle some gaping scientific knowledge gaps to improve their treatment.***

"Every week, we see people who struggle with symptoms like their lip or tongue swelling (angioedema) or more commonly, urticaria, (hives), which causes unbearable itchiness, resulting in sleep deprivation, and a swollen, blotched appearance, with all the social stigma that it involves. It can make people extremely anxious and becomes a huge factor in their lives," she says.

Professor Michael Levine, a peadiatric allergology consultant at the Red Cross War Memorial Children's Hospital in Rondebosch, piqued her interest in allergology after she attended his lecture.

*I'd been a family doctor for 25 years and was practicing in Cape Town's northern suburbs. Professor Levine pointed out that there was nobody who did allergy as a specialisation. I wanted to be good at something specific and improve myself. For years I'd been raising small children and this was something I felt I could now do.*

### Balancing family and research

Not that her child-raising days are over. Her two sons turned 15 and 12 and her daughter eight, in 2019. She's worked part-time as a family physician, while raising them.

"I was always hopeful that I'd be able to find funding for this very specific, niche field, which is so under-researched. I feel I can make a significant difference if my work succeeds," she adds.

She is only the second Family Medicine specialist with a sub-specialty in allergy in South Africa – the disease specialisation itself was registered six years ago.

The equation is disturbingly familiar in South Africa. In this case, the equation is alarmingly unbalanced with just 12 allergologists to deal with an escalating burden of allergy-related diseases, possibly driven by urbanisation, pollution and the high prevalence of additives in preserved foods. Add poverty and the accompanying change to diets, and you have the development of worrying levels of asthma and other allergic disease, such as urticaria.

Janet wants to increase the knowledge base among her colleagues to render them more effective in managing allergic patients at a lower cost, with fewer hospitalisations.

Her MPhil research is driven by the increase in urticaria (hives) and angioedema (swelling of deep skin and mucosal layers, sometimes with life-threatening airway constriction), in local clinics. She had been working as a volunteer at the University of Cape Town's Division of Allergy and Clinical Immunology − which was recently certified as an international centre of excellence for urticaria and angioedema. It's the first centre of its kind in Africa and one of only 60 globally.

While some patients react very well to high doses of anti-histamines, about half don't get much better. Other treatments, (including a very strict diet), sometimes work, but the medicines are extremely expensive and often difficult to access. Together with her supervisor Professor Jonny Peter from Groote Schuur Hospital, Janet wants to find the best all-round treatment. She hopes to define the burden of food-additive-induced urticaria and angioedema in Cape Town, using oral provocation testing. Additionally, she wants to determine the diagnostic accuracy of existing basophil activation testing for food-additive sensitisation and the relationship between food-additive sensitivity, H-pylori infection and alterations in gastrointestinal permeability in food-additive challenged urticaria and angioedema patients.

### A layman's guide

"We will do a thorough work-up to exclude any allergy to normal foods like eggs, beef and fish. Then you look at patients' background allergy history to aeroallergens as well. Once you have excluded other causes, you go to the specialised tests, using various preservatives to see if patients' cells react. We measure the amount of inflammatory substances that the cell releases and then correlate that with the oral food challenges," she explains.

Close monitoring of vitals and lung functions, plus checks for swelling every hour is important, with resuscitation equipment always on hand. A team including other doctors and researchers, led by Professor Peter, will then compare the physical reactions they observe with the blood tests. Demonstrating a very high food-additive driven burden of disease will have a direct impact on patient management, locally, and potentially, internationally.

Adds Janet enthusiastically; "We'd then be able to push government to improve food additive regulations and labelling in South Africa, not to mention begin nation-wide advocacy and educational campaigns."

/01

*I see the suffering daily and that's what motivates me to do this study to determine exactly what the problem is.*

**DR JANET VAN DER WALT**

# DR TUMISO MALATJI

## *Rural Institutional Award*

*University of Limpopo*

*To enable the set-up of a project to evaluate the management of non-communicable diseases (concentrating on cardiovascular diseases and diabetes) and to implement measures to improve the capacity of healthcare professionals to manage these diseases at primary healthcare level using implementation research principles at selected clinics in Limpopo.*



/01

***Conducting potentially game-changing research on the prevention and management of non-communicable diseases, (NCDs), at primary healthcare level in Limpopo, public health medicine specialist, Tumiso Malatji, does several daily high-wire acts.***

One is balancing the care of her two sons with her career. Another is convincing overworked clinicians and nurses at district clinics to work closely together by appropriately matching tasks to competencies. Perhaps one of the most challenging, yet most rewarding acts is providing the right resources and NCD training to clinic staff. By slowly providing the right skill-set, vital resources and changing the environment in which clinic healthcare staff work, she believes change is possible. Her long-term vision is to relieve the overburdened hospital departments by strengthening primary healthcare.

### Personal development

Tumiso grew up in Mankweng Township, just 30km from where she now works and lives. Her father is a Vice Rector at the nearby Limpopo University and her mother a high school teacher. The youngest of four siblings, she dared to dream about studying Medicine at the University of Cape Town, and this was made possible through the Limpopo Department of Health Bursary for medical students. "I always wanted to help people and still love to, I just didn't know it could sometimes be so complicated," she chuckles.

She counts herself fortunate to be doing public health medicine, having first been introduced to research, while completing her Family Medicine specialty.

### Finding solutions for Africa

She's driven by the University of Limpopo's vision of finding solutions for Africa. Her aim is to develop and pilot context-specific interventions to strengthen the management of hypertension and diabetes. This will create a network of referring facilities where health professionals will be able to more effectively manage these two top diseases.

The gravitas of her task is illustrated by a recent South African National Health and Nutrition Survey, which estimates that in Limpopo 32% (1.8 million people) and 5% (300 000 people) of the population are affected by hypertension and diabetes respectively. Using a 2016 grant from the Medical Research Council, Tumiso premised her baseline work on the findings from a prevalence study conducted in the Dikgale area. The study reported a startling 40% prevalence of hypertension and an over 10% prevalence of type 2 diabetes. However, little or no research exists on how clinics are responding to this disease profile.

I think I've moved from wanting to change one person at a time through Family Medicine to changing communities and the health system through public health. The impact is far larger and I can make more of a difference. However it's much more complex and extremely challenging in a resource constrained environment. This is why I've focused on raising funds outside of the public sector to do the things I want to do. That's given me a lot of satisfaction. Public health has given me a platform I'd never have had as a pure clinician.

**DR TUMISO MALATJI**

/01

## Stark difference between the disease and treatment profile

Tumiso's study found that at the four clinics in the district, patients are predominantly women older than 50, among whom 67% are hypertensive, with 25% of this group suffering from both hypertension and diabetes. Her audit of 427 treatment files at the clinics revealed only 11.2% had an overall audit score above 50%. More than 90% of the files she reviewed had no annual eye examination, no annual urine test for kidney function or a cardiac risk assessment. For patients with diabetes, the standard HbA1c test was recorded in 37% of the patient records, whereas annual foot exams were recorded in only 2% of the files. Only 23% of the records had an annual weight and waist circumference noted in the file.

Tumiso strongly emphasises that she worked from recorded notes and that the doctors and nurses surveyed did not have the basic equipment needed to carry out these tests.

Tumiso says the skewed HIV/TB treatment competence versus NCD treatment competence, while once highly appropriate, needs adjustment in the new ARV therapy era. "The longer you live with HIV, the more you're at risk of hypertension and diabetes, so having sub-optimal management of these conditions at primary healthcare level is a problem," she explains. She backs this up by citing the latest (2018) SA Mortality Report that reveals deaths from NCDs as a group have exceeded deaths from HIV/TB since 2010.

## Patient overload

"So I've quantified the problem and now through this grant, I can begin addressing it with this NCD training and capacity development project," she says. Further explaining that another reason doctors and nurses can't manage patients properly is simply because the patient load is so large. "Mankweng Hospital gets overloaded with stroke and ischaemic heart disease patients, because we are so ineffective at preventing complications at primary healthcare level. Once complications develop, for example, with ischaemic heart disease we have to refer patients to Gauteng. Access to dialysis for chronic kidney diseases is severely constrained with one dialysis centre in Polokwane for only 200 patients.

Therefore, it's absolutely critical that we prevent these complications. If you're not treating these things at primary healthcare level, it's virtually impossible and very expensive to treat at the Mankweng hospital level, and people die unnecessarily," she stresses.

Tumiso says poverty-reduction and good education systems are fundamental to mitigating the situation. "If we empower people and ensure access to healthy, affordable foods and encourage them to exercise more, it would drastically reduce pressure on the health system. Yet, you'd need to be very smart to design interventions that are affordable, culturally sensitive and accessible for rural communities."
she says.

Rural origins

inspire

eye care solutions

## DR BAYANDA MBAMBISA

***Rural Institutional Award***

*Livingstone Tertiary Hospital*

*To enable the set-up of a service to manage patients with keratoconus early — before they go blind — and to expand the corneal transplant service at the Port Elizabeth Provincial Hospital.*



/01

***Seeing the joy on the faces of patients her GP parents cured in the rural former Transkei town of Engcobo, inspired Bayanda Mbambisa. Now part of a tightly knit 12-person ophthalmological team at the Port Elizabeth Provincial Hospital, she muses,"It's funny how kids react − my sister was a bit grossed-out by the blood and guts part of medicine and said she'd never do that, but I was inspired."***

Some indigent patients brought them chickens, vegetables or mielies, whatever they had, as a token of gratitude for free treatment. "I saw the sick people coming and the joy they showed after my parents' successful intervention. The lives my parents saved are what stayed with me and pushed me in the direction of medicine."

Her parents still practice in Mthatha, but are now "semi-retired". Her father began studying further and by the time she was at Kingswood College (a boarding school in Grahamstown), he'd qualified as an obstetrician gynaecologist. It was something Bayanda admired and was to emulate, except she chose ophthalmology, graduating from the University of the Witwatersrand as a specialist after securing her MBBCh there in 1999.

Her deep connection to rural people and their struggles has given her the passion to make a difference in the lives of her patients, especially those with keratoconus, a progressive eye condition, which she and her team have the will and knowledge to treat and cure, but not always the tools. Untreated, keratoconus may lead to blindness, which only a corneal transplant can reverse. Early detection and intervention, and the ability to conduct corneal transplants, can transform the lives of young people who are typically affected by keratoconus in their early teenage years to their early twenties.

### Restoring sight miraculously

Bayanda explains that a corneal transplant for advanced keratoconus gives a 60% to 80% improvement in vision. This can take anything from a few weeks, up to a year depending on the patient. Most patients will still need contact lenses or glasses after the corneal transplant to restore full sight.

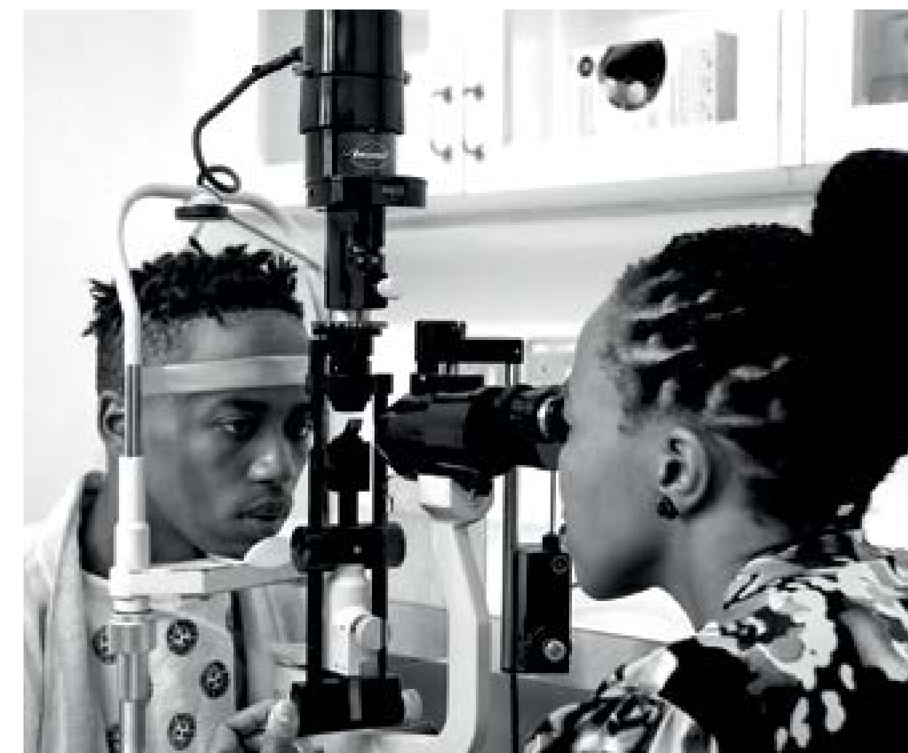
To illustrate the value of this intervention, Bayanda describes a 16-year-old who was failing because of his poor eyesight. "We did a corneal transplant on one eye and then the other. Within a few months, he could see on the board and no longer had to copy from others. He became functional and had a new lease on life. The same outlook is possible for other children or young adults with less advanced disease."

She says the condition has a reported incidence of around 1 in 2 000 people, the majority of them undiagnosed. It causes the normally round cornea to become progressively oval or cone shaped. Progressive steepening and thinning of the apex of the cone may lead to a break in the inner part of the cornea, releasing fluid from the inside of the eye into the corneal tissue, causing instant blindness. It affects both eyes but the severity may not be the same in each eye and it occurs in people who continually rub their eyes or have some ocular or systemic allergy. Certain medical conditions like Down syndrome or some connective tissue disorders also increase the index of suspicion.

*"This new material, and funds for the advanced training, and her team attending surgical technique workshops, make the Discovery Foundation grant "game-changing."*

**DR BAYANDA MBAMBISA**

/01



### Game-changing for doctors who provide eye care

Like other specialty departments, hers also has a huge patient load which has been exacerbated by the stopping of outreach programmes due to lack of finances. Sourcing or motivating for the equipment that enables early intervention to stabilise the condition, and enabling patients to read and write and continue with school or university unimpeded, has proved impossible – until now. Her grant will help with much needed equipment, including a Pentacam (to take a picture of the front and back surfaces of the cornea to detect pre-clinical keratoconus), an Ocular Coherence Tomography attachment to take cross-sectional pictures of the cornea to identify where the pathology lies and enable more accurate surgical intervention, supplies of Riboflavin (Vitamin B2) and UV lights, and hard contact lenses, plus the purchase of corneal tissue for transplants.

Bayanda says this new material, and funds for the advanced training of their optometrist or possible sessions by two other optometrists, plus her team attending surgical technique workshops, make the Discovery Foundation grant "game-changing."

She counts her biggest challenge so far as having to tell families, after taking a history, doing an examination and conducting various investigations to try and confirm a keratoconus diagnosis, that her unit doesn't have access to the intervention they require − and cannot help. "It's sad. Sometimes they manage to put the money together to get private sector assistance," she says. With the new equipment, they expect a dramatically increased patient referral inflow as the State healthcare network realises the benefits of vastly improved treatment.

## DR YANDISWA MNYANDA

***Rural Individual Fellowship Award***

*University of Fort Hare*

*Study of delayed presentation in victims of sexual violence.*

/01

***The daughter of a domestic worker and single mother from Mdantsane urban township, Yandiswa Mnyanda's teachers noticed her in Grade 10 when she consistently came out top of her class.***

They secured a scholarship for her to All Saints College in Bisho, a multi-racial private school, where she continued to work hard and excel, qualifying upon matriculation for a government bursary to study medicine. In 1999, she received her MBChB from Nelson Mandela University in Port Elizabeth and she has been Chief Medical Officer in the Accident and Emergency Department at Cecilia Makiwane Hospital outside East London since 2010. She has become intimately acquainted with her working environment, having completed both her internship and Community Service there.

*What she did not expect to see among her routinely injured and traumatised patients, was so many sexual assault survivors. An estimated 60 to 80 each month, increasing to 90 to 100 a month over the festive season.*

### When care increases stigma

"They'd sit there so awkwardly, in full view of everyone, sometimes accompanied by a policeman with a rape survivor's kit, mostly female and between the ages of 13 and 35. Occasionally we'd see outliers, younger than 12 years old, or grannies, often with horrific internal genital injuries – those ones still affect me the most," she confesses.

Today a mother of a 14-year-old daughter and a 22-year-old son (studying emergency care), Yandiswa was instrumental in helping set up the Thuthuzela Care Centre for sexual-assault survivors at the hospital in 2012 – one of only nine such facilities in the Eastern Cape. The Centre has made a quantum difference in the integrated quality of care for sexual violence survivors, reducing not only secondary victimisation, but also improving conviction rates and enhancing physical and emotional care.

Very little in her university medical curriculum prepared Yandiswa for this almost overwhelming experience. So, she attended a gender-based-violence course in East London. She learnt what to look for physically, how to describe and report on injuries, and how to work with police, social workers and the rest of the survivor support team. "That was huge – it gave me so many new insights," she says.

## Identifying an enormous research gap

Yet, the late presentation of so many of her patients troubled her deeply, increasing as it does the chances of sexually transmitted disease, unwanted pregnancy and the collection of valid forensic evidence for use by police and the courts.

“There are so many reasons why people report late, from being unable to afford or find transport, stigma, and alcohol or drugs to even straight ignorance of the all-round advantages of reporting for treatment within 72 hours,” she says. While men are among the minority of sexual abuse survivors, they are also among the most hesitant to report for care.

Yandiswa decided to identify what factors cause sexual violence survivors to report so late for care, and to quantify these as part of her ongoing study towards an MPhil degree. Her Discovery Rural Individual Fellowship will enable her to do a retrospective study of 1 300 files of sexual violence survivors at her unit between January 2017 and June 2018.

‘We should at least get an idea of where these delayed presentations are coming from, the prevalence and what causes the delays, and share this with the National Prosecuting Authorities, the hospital management and police. From there we can do outreach programmes at schools and community halls, talk to children about sexual assault and gender-based violence and promote the advantages of early presentation for medical care,” she says.

One excellent platform for this will be Mdantsane FM radio, a popular local source of news and entertainment, but television and other media are also in her sights. Her findings stand to influence local and national policy makers.

According to Stats SA, in 2018, the Greater East London area was rated the third worst region in the Eastern Cape for sexual assaults (19 reported cases) with the highest overall crime rate figure (13 812 cases). Asked how this compares with her experience, Yandiswa responds, “That’s quite important data as it reflects on what we’re doing. People aren’t reporting nearly enough. If we compare our reported cases with local and national figures, we’ll be able to see if we are going in the right direction in terms of holistic management.”

Given her existing estimation of the numbers of sexual violence survivors presenting at her unit, that is a humble and very scientific way of illustrating just how important her research findings stand to become.

They’d sit there so awkwardly, in full view of everyone, sometimes accompanied by a policeman with a rape survivor’s kit, mostly female and between the ages of 13 and 35. Occasionally we’d see outliers, younger than 12 years old, or grannies, often with horric internal genital injuries, those ones still affect me the most.

DR YANDISWA MNYANDA

# Imparting

## the basics of caring for the elderly

# PROFESSOR BRENT TIPPING

### *Distinguished Visitor Award*

*To enable increased training in assessment and care of poorer older persons from rural areas at the Tintswalo Hospital.*

/01

***The only problem with geriatric care is that you deal with children all day as opposed to paediatricians, who deal with parents all day. By sharing this ironic truth, Professor Brent Tipping, Head of the Division of Geriatric Medicine at the University of the Witwatersrand, reveals the quirky humour that endears him to rural healthcare professionals he's teaching geriatric care skills to, in Mpumalanga's impoverished Bushbuckridge district.***

He's delighted at the uptake of his Distinguished Visitor project to increase training in the assessment and care of poorer older persons from rural areas at the 432-bed Tintswalo District Hospital. The hospital is among a handful of health facilities that serve some 550 000 people in 135 settlements, close to South Africa's borders with Swaziland and Mozambique. An estimated 34.4% of people here are unemployed, with malnutrition, HIV and TB, STIs and drug abuse rife. Only 20% of toilets are connected to a sewage system and just 22% of homes benefit from weekly refuse removal.

One of the most worrying statistics for the slowly growing network of people caring for the elderly, is the 20% of their patients who are HIV positive.

Admits Professor Tipping, "Until you actually see the conditions and chronic diseases, you don't realise the challenge. Sometimes healthcare doesn't cover any of it."

He says chronic diseases like HIV and TB, diabetes and hypertension tend to age people far quicker.

### The folly of treating only symptoms

"A lot of patients are not just old but have become ill. Many healthcare practitioners write off their complaints and put them down to age – it's an entrenched treatment behaviour that a lot of symptoms and disabilities are put down to age, when it's actually disease. It's our job to manage disease.

There are also a lot of simple things we can do. Like explain to a Gogo that you won't get a knee replacement because your knee is sore, but the physios can teach you how to exercise and walk with a stick. We aim for the low-hanging fruit and to improve the clinician's confidence in a basic assessment. If we do nothing else but generate enthusiasm for the concept that old people are very important in the community, we'll have got somewhere," says Professor Tipping.

He says very few countries in Africa pay old people to stay alive. "The rural and pension grants are very important to them. We're not trying to change the world here, we're just focusing on how we can improve confidence in the care of old folk."

He outlines how Tintswalo's long-standing links with Wits University's medical campus has resulted in a steady stream of young medical students and doctors being posted at the hospital for their rural training − and how it has evolved into his current training project.

"I've only been involved for a year, but Wits has been sending students there for many years. One of my old class mates is now a senior doctor at Tintswalo, which is some 470km from Johannesburg," he says.

Tintswalo is a primary referral centre for all psychiatry patients in the area and Professor Tipping says rural and semi-urban health services are neglected in terms of support for training in subspecialist care, including that of older persons.

### Research-based on-site training

Wits is involved in longitudinal ageing studies within the Bushbuckridge area, providing vital baseline demographic and disease information about the older population.

Besides medical practitioners, Professor Tipping and his expert South African Geriatric Society colleagues will train nurses at the nursing school attached to the hospital and Clinical Associates.

He shares the "opportunity to serve," sentiment with so many others, but adds that it's also an opportunity for personal growth.

Asked to single out the most important lesson for anyone caring for old people, he says without hesitation, "Just listen to your patient. We have to understand our patients and listen to them. It's one of the tricks in geriatrics. For example, they'll leave the hospital complaining of a sore foot and one week later, they'll be back with the same problem because nobody listened to the problem. Doctors end up managing the symptom, not the problem."

Professor Tipping and his wife, a specialist physician in bone health, have next-door private rooms at the Donald Gordon Medical Centre. They have two children, a girl aged five and a nine-year-old boy. Asked about his seminal influences, Professor Tipping says he knows one thing for sure, "I hated obstetrics when I was an intern and trainee specialist. Geriatric practice allows permanent avoidance of obstetrics."

### Boosting grassroots geriatric care

"We know exactly what's wrong with people, but we need to get out to the clinics in the research areas and improve care at that level. There's an interesting change in dynamics in the care of older people. The previous care model was that the family looked after them. Now there's a need for old age homes. With just 13 geriatricians in South Africa (six in Gauteng, with one in training), the value of his project cannot be underestimated.

Tintswalo Hospital and the 14 primary healthcare clinics it serves, will benefit from the training over the next two years. "There's a Wits rural conference centre about 10km from Tinstwalo Hospital where we'll offer a basic geriatric programme from the South African Geriatric Society. When I first mentioned the idea, there was tremendous enthusiasm for it, so the uptake will be good," says Professor Tipping.

/01

*The most important thing is to try and understand our patients. The lovely thing about old folk is they always say thank you. There's also a pride and ownership of "their" doctor who looks after them regularly. You become part of their lives. It's kind of an old-school gratitude and very rewarding.*

**PROFESSOR BRENT TIPPING**

Homeboy

*set to help Hanover Park's elderly*

# DR DENZIL SCHIETEKAT

***Subspecialist Award***

*University of Cape Town*

*Geriatrics*

/01

***Caring for his terminally-ill god-mother in an underserved old-age home on the Cape Flats as an intern, and helping his late Anglican lay-minister father give communion there as a child, were seminal influences for Internal Medicine physician, Denzil Schietekat.***

A recipient of a Subspecialist Award for training in Geriatrics, Denzil says that since primary school, in the neighbourhood of Hanover Park, he was drawn to elderly people's wisdom, intelligence and sense of humour. "In my high-school years, there was also an old guy who lived a few streets away who drank heavily but was extremely witty. I loved cooking and these old people gave me the best recipes, delivering more wisdom and insight than I got from my peers," he adds.

The youngest of four children, Denzil's upbringing in the 3km square, low-income suburb of some 50 000 people, known for its gang warfare and strong community ties, was strict but fair. His father packaged and delivered dental clinic supplies while his mother was retrenched from a chandelier-making factory when Denzil was in Grade 7.

"We all had domestic home duties, but at least my mom was home and encouraged my reading and home work," he says.

## A warm-hearted, selfless community

He remembers working on maths and science formulae while watching the short-running TV hospital drama, 'Gideon's Crossing' and walking to the library with his books hidden in a plastic supermarket bag to avoid gang members accosting him and tearing out pages.

"I guess I was what you'd call a cool nerd. I soon learnt to do my reading and research in the library," he laughs. Yet, instead of nudging the Schietekat family's sole university graduate out of his harsh environment, the dominant experience of the warm-hearted, selfless community pulled him back.

He is married to a final-year teaching student and they have two daughters, aged five and 11. Living just two kilometres from Hanover Park, they have dreams of starting a properly equipped and staffed old age home there.

"My dream is to give our old people what they've never really had – proper care and facilities. Already we distribute adult nappies and food parcels in the area, but the need is so much greater," he observes.

His drive and passion were tinged with a poignant sadness. Denzil had just lost his father to smoking-induced Chronic Obstructive Pulmonary Disease, (COPD). "Like many older people, he didn't complain. He had a roaring chest infection and he never told anyone about it. I realised this when listening to his chest during a visit. It just shows how vigilant you need to be with older people. You have to constantly probe and listen," he adds.

/01

### Strong academic influence

Coming from an Afrikaans speaking community, a few dedicated Stellenbosch clinicians influenced his studies in Internal Medicine and his intention to research and study geriatric neurology.

“Actually, even at school, two Afrikaans-speaking teachers gave me a hard time and pushed me. When I questioned them, they said they could see my potential,” he recalls.

He cites working briefly with “the amazingly dedicated and energetic,” former Head of Geriatrics at Tygerberg Hospital, Dr Christiana Bouwens, for “helping the penny drop that Geriatrics was what I want to do.”

Adversity was, once again, what got him into Internal Medicine after obtaining his MBChB at Stellenbosch University. “I failed my FCP Part I twice. Repeatedly studying all that physiology and neuro-science helped me fall in love with it. I wanted to understand it all better,” he says.

Subsequently fascinated with the different presentations of dementia and neuro-degenerative disease in older patients, Denzil’s teacher and mentor, Professor Marc Combrinck, a neurologist and Head of the Division of Geriatric Medicine at the University of Cape Town, finally swayed him.

In his opinion, the lack of focus on geriatrics at undergraduate level means many primary healthcare physicians could be mismanaging elderly patients. Where he comes from and further afield, regular doctor visits to the local old age home are a luxury few enjoy. “I was speaking to my wife the other day. We need to make geriatric care popular. I want to become an advocate, perhaps starting by writing a handbook for healthcare staff on how to examine an elderly person,” he says.

*My dream is to give our old people what they've never really had, proper care and facilities.*

**DR DENZIL SCHIETEKAT**

### Looking ahead to neuroscience

“I want to get involved in geriatric neuroscience as a post-graduate research project. Basically, I want to pursue an Academic career with clinical, teaching and research work.”

With people worldwide living longer, Geriatric Medicine has become a highly regarded discipline in first world countries. South Africa, however, lags some distance behind. Denzil says the specialty is neglected and marginalised locally, in spite of an ageing HIV population and the potential collision of HIV-associated neurodegenerative disease, age-associated vascular dementia and Alzheimer’s disease. He cites statistics showing life expectancy at age 55 to be increasing in South Africa, with a population of some two million men and 3.5 million women over the age of 60, predicted by the year 2025.

“That’s going to put further strain on social security and pension systems and push up demand for healthcare, especially by older patients with chronic diseases – and the need for long-term care facilities,” he says passionately.

/02

# /Cardiology

**Building skills**

*infrastructure and coordinated systems of cardiac care through targeted research, training and interventions that improve patient outcomes.*

**DR ZAKARIYA BADAT**

***Rural Individual Fellowship Award***

*University of Kwa-Zulu Natal*

*Improving the management and outcomes of patients with acute myocardial infarction.*



# /02

***Growing up in the small rural farming town of Weenen, Kwa-Zulu Natal, where most people know one another, his local family physician was a real-life hero. Dr Zakariya Badat remembers with great clarity how his doctor fought, albeit unsuccessfully, to save the life of his trader-grandfather, shot three times while emerging from prayers at the local mosque in March 1998.***

The Badat family patriarch was due to testify in a burglary trial. "I remember the local GP, Dr Khan, battling throughout the night to save my grandfather but he died at five in the morning. It was a very influential incident in my life. I'd already witnessed, first-hand, the many lives that our doctor had made a difference to, but this was profound," says Dr Badat, today a Family Medicine Registrar at Wentworth Hospital in Durban.

Dr Khan had unwittingly instilled in the teenage Zakariya a passion to learn and grow.

"I chose to go forward and make a difference," Zakariya adds.

*I chose to go forward and make a difference.*

## Non-stop achiever

Zakariya attended Siraatul Haq Islamic School in nearby Estcourt and says he was privileged to have teachers who served as both mentors and friends. He defines all he has achieved as Grace from God. While excelling academically, he also committed time to his community, assisting the Al-Imdaad Foundation, the Muslim Students Association and the Islamic Medical Association in orphanages, circumcision clinics and community clinics. "I see myself as a life-long learner and strive to commit to the Batho Pele principles," says Zakariya.

While serving as a medical officer at the Inanda Community Health Centre in 2015, he helped develop and improve protocols on acute medical emergencies and chronic lifestyle diseases, continuing to support his peers by starting a fortnightly Journal Club.

/02

*"There's currently no study looking at outcomes at a district level of care, so we need data to analyse the impact of the current practice on the mortality of patients with MI," he explains. He fervently hopes that his findings will help develope skills, infrastructure and more coordinated systems of acute cardiac care that will prepare physicians for the looming epidemic."*

**DR ZAKARIYA BADAT**

## Boosting district hospital cardiac care

Zakariya's research will focus on the quality of care that patients with myocardial infarction, (MI) receive at Wentworth District Hospital. Wentworth, a relocation area under the former Group Areas Act, is heavily industrialised, with concomitant pollution, and beset with unemployment, drug abuse and lack of recreational facilities. Lifestyle disease prevalence may well be higher than the national figure of 55.5%, while Ischaemic Heart Disease (IHD), reflects the national rating as among the top 10 leading causes of death.

Zakariya wants to produce a healthcare baseline that can change policy and guidelines and improve overall care of MI patients in district hospitals. Wentworth Hospital is not a designated cardiology facility. Its doctors cannot conduct invasive procedures like inserting stents or doing angiograms. There is no fluoroscopy, cardiac catheterisation facility or ICU.

"We offer 24-hour cardiac monitoring through our accident and emergency service and high-care unit. We do have some cardiac biomarker and thrombolytic capacity, but if you're ventilating someone, it's normally for transfer to King Edward VIII Hospital or Inkosi Albert Luthuli Central Hospital," he says, painting a picture typical of many district hospitals.

## Study outline

Zakariya's study will analyse the management of patients presenting with STEMI (ST Elevation Myocardial Infarction) and NSTEMI, (Non-ST Elevation Myocardial Infarction).

A patient's mortality risk is gauged by using an electrocardiograph to discern which of these two conditions apply. Zakariya says the difference is important, as patients with STEMI tend to have a higher mortality than those with NSTEMI. Each requires different treatment approaches, but due to limited resources, the pharmaco-invasive strategy is used in the public sector. This usually requires clot-busting medicines upfront for those with STEMI, compared with the preferred inserting of stents upfront.

"We're going to look at patient demographics, risk factors for Ischaemic Heart Disease, (ISH), presentation symptoms, time to perform the ECG, time to fibrinolysis (administration of blood clot-busting medicines), time to follow up with cardiology, and 30-day mortality," he adds. He's begun collecting data from some 120 patients treated over one year in Wentworth Hospital's accident and emergency and high-care units, but hopes to cover even more, with records dating back to the inception of the unit in 2016.

As for the modifiable risk factors pushing the increase in noncommunicable diseases (NCDs), he wants to become more familiar with those that his patients are presenting. "Right now, we're mopping the floor and not addressing the tap that's leaking," he says quoting one of his mentors, Dr Gloria Mfeka-Nkabinde. He says Dr Selvandran Rangiah, his supervisor has ignited the flame and steered him to his passion and commitment to increasing available knowledge.

# Giving
his heart to the
old Transkei

## DR KHULILE MOEKETSI

*Rural Institutional Award*

*Walter Sisulu University*

*To support the implementation of a project that would capacitate medical doctors in rural hospitals with basic cardiology skills by offering tutorials and practical hands-on training on echo, as well as giving bedside teaching on cardiology clinical signs and symptoms.*

/02

***The cardiology chief at Nelson Mandela Academic Hospital, NMAH, in Mthatha, Dr Khulile Moeketsi, is a physician with a passion for reducing the large burden of heart disease in the Eastern Cape. The hospital where he works serves the needs of a population of some 3.2 million people.***

Khulile has devoted most of his medical career to researching heart disease and building up appropriate and sustainable care for locals suffering from the most prevalent heart conditions.

He is also an investigator of the multi-centre cardiomyopathy registry. Using the local, inter-provincial and national relationships he's developed over his 13-year association with NMAH, Dr Moeketsi has built his tertiary cardiology unit from scratch, sourcing funding and then coordinating, co-designing and directing the installation a R30 million catheter laboratory that is now the backbone of the region's cardiology service – with the assistance of the CEO of NMAH, Mrs Makwedini. He also recruited many doctors to the Eastern Cape as part of a human resource development initiative, headed then by Dr Rolene Wagner, the province's vibrant new Deputy Director for Hospital and Support Services.

*Without Nkosi Albert Luthuli Hospital's sterling support, we'd probably have a crisis. Emergency surgeries are usually done there within a week.*

### Basic cardiology skills-building programme

Dr Moeketsi was elected, through a Discovery Foundation and peer review process, as a Top Young Leader in Cardiology under the age of 40 earlier in 2019.

His latest initiative, using an existing teaching platform, is an outreach and in-reach basic cardiology skills-building programme that will include all 12 district and regional hospitals.

Using three vital new echocardiograph machines, Dr Moeketsi and a technologist will travel to offer on-site training on how to use the machines. They will also provide direly needed teaching in cardiology clinical signs and symptoms to improve diagnosis, treatment and referrals.

"There's a growing burden of cardiovascular disease in the rural Eastern Cape, the most common being hypertensive heart disease, valvular heart disease and cardiomyopathy. More and more black people are suffering heart attacks, which was rare 20 years ago. Clearly there's a lot of urbanisation with the accompanying diets and less-healthy habits, along with significant obesity and diabetes. Of course, HIV increases the risk of coronary artery disease by either upping the thrombotic burden or through some ARV medicines that cause dyslipidaemia (clotting of the vessels)," Dr Moeketsi explains.

Once they're properly trained, it's amazing how quickly they become enthusiastic and far more dynamic.

/02

## Targeted, prioritised intervention

Dr Moeketsi's training team will prioritise district hospitals with consistently high numbers of cardiology patients and the least echo-cardiograph training.

"We know the high and low risk districts because they all refer patients to us. Staff at some well-developed district hospitals like Zithulelele and Madwaleni, (on the coast, 99km south-east of Mthatha), know how to do basic echocardiography, so they're not a priority. We'll still get to them to upskill their doctors sufficiently to pick up the more complex cases, which they may not be doing," he adds.

Starting in 2019, Dr Moeketsi's team will schedule regular visits over the next three years to three or four district hospitals annually, eventually covering all of them.

They will piggy-back on a community clerkship programme that is currently run between Walter Sisulu University and Nelson Mandela Academic Hospital for fifth-year medical students and Cuban-trained doctors spending six months at a time in district hospitals. Consultants from various disciplines at NMAH already travel to different district hospitals to mentor this cohort of over 100 doctors. "All we need do is put the mobile echo-machine in the boot," Dr Moeketsi enthuses.

"The problem is that medical officers tend to leave. So for training, we'll identify those MOs likely to stick around. Once they're properly trained, it's amazing how quickly they become enthusiastic and far more dynamic," he adds. Dr Moeketsi says medical students already attend NMAH's inpatient and outpatient echocardiography service. The new programme will build on this.

## Relationship building and onward referral can avert a crisis

He says his unit offers diagnostic coronary angiography, percutaneous coronary intervention (stent implants) and inserts pacemakers. All adult patients needing cardiac surgery are referred to the Nkosi Albert Luthuli Academic Hospital, and heart transplant patients are transported to Groote Schuur Hospital in Cape Town.

"We have patients being transferred by ambulance to Durban almost every alternative day. Without Nkosi Albert Luthuli Hospital's sterling support, we'd probably have a crisis. Emergency surgeries are usually done there within a week," he says.

Dr Moeketsi has initiated a WhatsApp mobile phone group between the emergency medical services, the district hospitals and his unit, which has significantly improved scheduling and transporting of patients.

He cites the late Professor Mayosi as his biggest inspiration. "He was meticulous, his passion and love for patients and medicine, his humility and most importantly his integrity, all impacted me hugely," he says. Dr Moeketsi, with the selfless collaboration of the decorated and globally celebrated cardiologist, Professor Bongani Mayosi, initiated ground-breaking clinical cardiology trials. One was the world's largest study of pericarditis (IMPI 1).

A multi-centre trial, its largest patient cohort was drawn from the Oliver Tambo region. It probed the use of prednisone, a steroid, for constrictive TB-related pericarditis.

"The Medical Research Council flagship-grant trial (IMPI 2) will provide vital data on new potential strategies to treat constrictive pericarditis and re-accumulation of cardiac tamponade. We also hope the new strategy will reduce mortality and morbidity of pericardial disease," he adds.

The Mthatha-born Dr Moeketsi, initially studied chemical engineering, garnering six distinctions before falling in love with medicine through interaction with medical students. He says his teacher-parents backed his direction-change.

Besides having invested four difficult years in setting up the NMAH cath-lab, his other dream is to see rural cardiac patients getting the healthcare they deserve "and no longer sleeping in corridors and on chairs". As his colleague, Dr Ben Gaunt, Principal Medical Officer at the exemplary Zithulele Hospital, is so fond of saying; "If you don't have a dream, how can you ever have a dream come true?"

# Tenacious

capacity to heal damaged hearts

## DR JITHAN KOSHY

### *Distinguished Visitor Award*

*To support visiting experienced, clinicians to manage the current waiting list at the Cardiothoracic Surgery Unit. This will improve the sustainability of the service through a programme to train two current full-time cardiac surgeons in paediatric cardiac surgery at the Livingstone Tertiary Hospital and Port Elizabeth General Hospital.*

/02

***Initiating Zambia's first cardiac service as a newly registered specialist before coordinating the first public/private cardiac facility for State patients in Klerksdorp in 2015, Dr Jithan Koshy's work ethic is about to bear more life-saving fruit.***

Head of the cardio-thoracic unit at the Port Elizabeth Provincial Hospital alongside fellow consultant, Dr Jehron Pillay, he's moved quickly to address the lack of advanced paediatric surgical skills and thin anaesthetic support.

While his and Dr Pillay's cardiothoracic surgical skills can handle most adult heart operations, the complexity of corrective surgery for rheumatic heart disease and congenital heart conditions in some children, requires next-level dexterity and skill, which, with experience and help, they will eventually acquire. Which is why Dr Koshy invited two semi-retired veteran cardiothoracic surgeons to train and upskill him and Dr Pillay over the next 30 months. This will enable them to eventually handle all complex paediatric cases without referring them to the distant Groote Schuur and Red Cross Children's War Memorial hospitals in Cape Town, where their new tutors, Professors John Hewitson and Johan Brink, hail from respectively.

#### The epitome of nationally scarce skills

Showing his hard-won adaptability, Dr Koshy contacted the Discovery Foundation to see whether he can invite an anaesthetist from the Red Cross Children's War Memorial Hospital. Adding to the 'grey-power," of his tutor colleagues, semi-retired anaesthetist, Dr Robert Nieuwveld, who will now travel with Brink and Hewistson to enable the required training – and more surgery – to take place.

Dr Koshy said in his application that his paediatric cardiac surgery waiting list was growing at the rate of four patients a week. He explained, however, that the waiting list tally actually stays relatively stable because many patients simply return home or are lost to follow up. He's unable to say whether this relative stability is due to any deaths, explaining that most patients needing emergency or elective surgery are referred to them from the nearby Dora Nginza Hospital's paediatric cardiology ward.

"We prioritise emergency cases. We have a general paediatric ward where the paediatric cardio surgery candidates are admitted," he explains. Professor John Hewitson and Professor Johan Brink, regarded as two of the most experienced cardio-thoracic surgeons in the country, expressed surprise at the severity of the situation, saying that if the pair secure a full-time anaesthetist, they'd have the capacity to do "four to five pediatric operations a week".

"Hopefully our monthly visits will help and quite soon they'll be able to do 70% to 80% of the paediatric cardiac operations without more experienced help. We've been up there a few times already and they're fast learners."

### About the Distinguished Vistors

Professor Brink is the long-standing President of the College of Cardiothoracic Surgery within the Colleges of Medicine of SA, which sets standards, examines and certifies cardiothoracic surgery Registrars. He has also chaired several other prestigious national and regional surgical bodies.

Professor Hewitson was section head of Paediatric cardiothoracic surgery within the Chris Barnard Department at Red Cross Children's War Memorial Hospital from 1993 until his retirement in February 2019. He's currently a member of the Governing Council of the World Society for Paediatric and Congenital Heart Surgery. His special interests include paediatric thoracic surgery, cardiac valve repair techniques, rheumatic heart disease, and infant congenital cardiac surgery.

### Overcoming adversity

Professor Brink, who trained Dr Koshy as a registrar, said the junior cardio-thoracic duo inherited a difficult historical situation. "Professor Mervyn Williams built that cardiac unit into a top-class cardiothoracic surgery unit in the 1970s. It served the needs of the entire Eastern Cape without being attached to any university. However, since he retired more than 10 years ago, they've had challenges," he adds.

Dr Koshy says that before he and Dr Pillay joined the unit, the adult cardiac surgery waiting list stood at 150. "The hospital was using private sessional cardiothoracic surgeons. We've now got the adult waiting list down to about 45," he adds proudly.

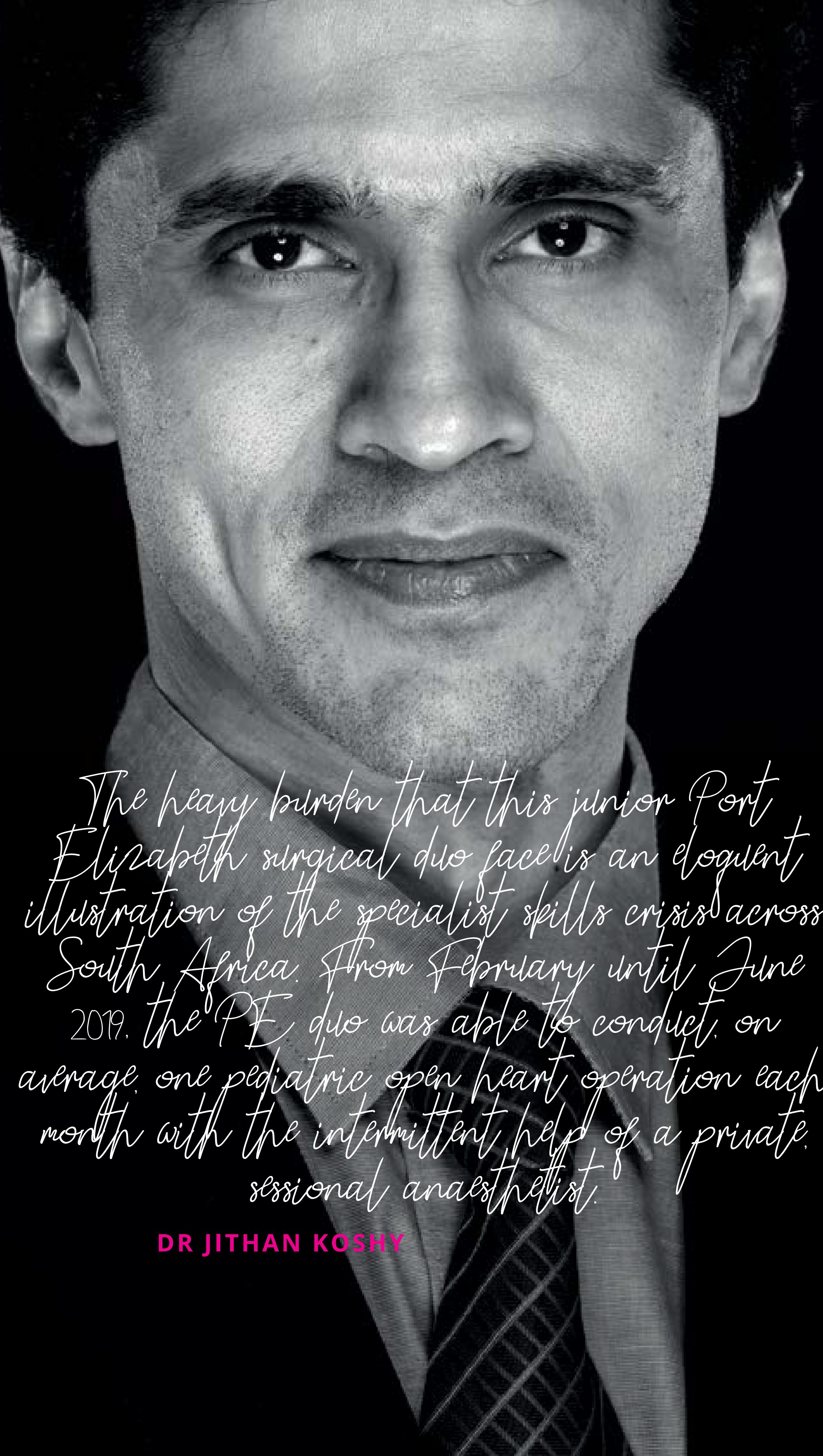
### Drivers of paediatric heart disease

Dr Koshy says the dire need for paediatric cardiothoracic surgery is driven by a high burden of rheumatic fever in crowded, low-income settings where streptococcal throat infections are easily passed on. Studies have shown some 25% to 30% of rheumatic fever sufferers will need surgery due to long-term damage to the heart and its valves.

Professor Brink said the other driver of paediatric heart disease was congenital. Globally every 10 in 1 000 live births developed a heart condition, regardless of income status. The global prevalence of coronary artery disease needing surgery in adults stood at about 100 per 1 000 coronary angiograms. "A lot of people in emerging economies develop coronary artery disease as they adopt Western lifestyles, leading to obesity, diabetes, hypertension and hypercholesterolaemia," Professor Brink added.

Meanwhile, Dr Koshy, who grew up in Zambia after his Indian-born teacher parents moved to Lusaka from Tanzania in 1984, says he has his mother to thank for his career in medicine and his wife to thank for his career in cardiothoracic surgery. "My mother put all her savings into enrolling me in medicine in Lusaka. I started medicine reluctantly, but once I got going, I put everything I had into it and succeeded. I then started a career in cardiothoracic surgery as an unpaid supernumerary registrar with a Beit Scholarship at UCT. This is where I met my wife who supported me through six years of my unpaid registrar training, while doing her internship, her registrar training in public health medicine and raising our daughter."

"There's very limited funding for healthcare and because of that, we're struggling to provide an impactful service. The limitations create a lot of discouragement, which results in a brain drain to private," adds Dr Koshy who is doing everything in his power to mitigate that – and is slowly succeeding.



*Besides reducing the waiting lists, short-term benefits of this training will include prioritising urgent cases, preventing a progression to inoperable conditions, and death. The on-site training would also enable continuity of service and improve staff morale and confidence. Long-term benefits include using the transferred skills and knowledge to sustain the paediatric cardiac service and build capacity in nursing, the ICU, theatre, and wards. "It's quite inspiring and exciting, there's a lot of enthusiasm within the hospital and management is encouraged that there are people willing to help."*

**DR JITHAN KOSHY**

# Turning
child's play into integrated cardiology research

# /02

***A floppy-disk computer left by her headmaster uncle in the bedroom she shared with her two sisters in Lamontville, Durban in 1996, when she was 12 years old, was all it took to pique Dineo Mpanya's curiosity into the world of medicine.***

"I was fascinated by this box thing. My uncle was passionate about building computers using recycled parts. I worked out how to connect it because I had seen him use it. I taught myself how to type and how to put in the floppy disc and store information on it," she recalls. By the time she was a boarder at the Sacred Heart Secondary School in Verulam in Kwa-Zulu Natal, she was so far ahead of her peers that the teacher appointed her Computer Room Monitor and watched her help others.

She and her six-year-older sister, Palesa, would also play with paper dolls, drawing models on cardboard and using tracing paper to design dresses, the wedding theme being a particular favourite. "My sister and friends soon got bored and stopped, but I carried on. I took things to another level and soon had a shoe box full of designs," she adds.

She informed her Guidance teacher at school that she wanted to study graphic design but heard she was "brilliant enough," to be a doctor, lawyer or chartered accountant.

"She advised me to continue designing as a hobby," Dineo chuckles.

Her next seminal influence was when the top academically performing children at her school, (where she ended up as Head Prefect), were taken on a tour of the Nelson Mandela University Medical School in Durban. "I was fascinated by a skeleton we saw. I wanted to know more and I kept asking questions," she says.

Today, thirty years later, Dr Mpanya is a nuclear medicine physician working at the cutting edge of medicine and computer science, using machine learning algorithms on thousands of heart-failure patients. She is also a much sought-after fashion designer among her friends and family, with plans to one day go commercial.


**DR DINEO MPANYA**

***Academic Fellowship Award***

*University of the Witwatersrand*

*Cardiology*

### Cutting-edge work

Receiving a Discovery Foundation Academic Fellowship Award, Dineo, will be integrating computer science and medicine to develop supervised machine learning algorithms that predict the risk of in-hospital mortality and hospitalisation in heart failure patients. She will also focus on applying machine-learning principles (artificial intelligence), in image analysis and interpretation. Her Masters was on cardiac patients referred to the nuclear medicine department for imaging with a Positron Emission Tomography (PET) scan.

"There are currently few predictive models derived from data originating in Africa". Her PhD project will also facilitate precision medicine and enable channelling of resources to those with the greatest need.

Dineo explains, "Internationally, they're far more advanced with electronic health records and have been collecting data on all their patients for years. We don't do anything approaching that scale, nor across disciplines. Also, the cause of heart failure in the Western world is primarily coronary heart disease, unlike in Africa, where hypertension and rheumatic heart disease are the leading causes of heart failure."

*There are currently few predictive models derived from data originating in Africa.*

### Her dataset will be globally unique and fully tailored to local conditions

"Once a predictive model has been created, it will assist clinicians in the risk stratification of patients with heart failure, with high-risk patients being triaged to the appropriate level of care," she adds. Her research is taking place in the Cardiology Department at Charlotte Maxeke Johannesburg Academic Hospital and involves an estimated 5 000 patients whose data dates back to 2009.

Asked what is next, Dineo says she would like to become a professor and teach, but is also keen to share her gifts with others, collaborating in both medicine and fashion.

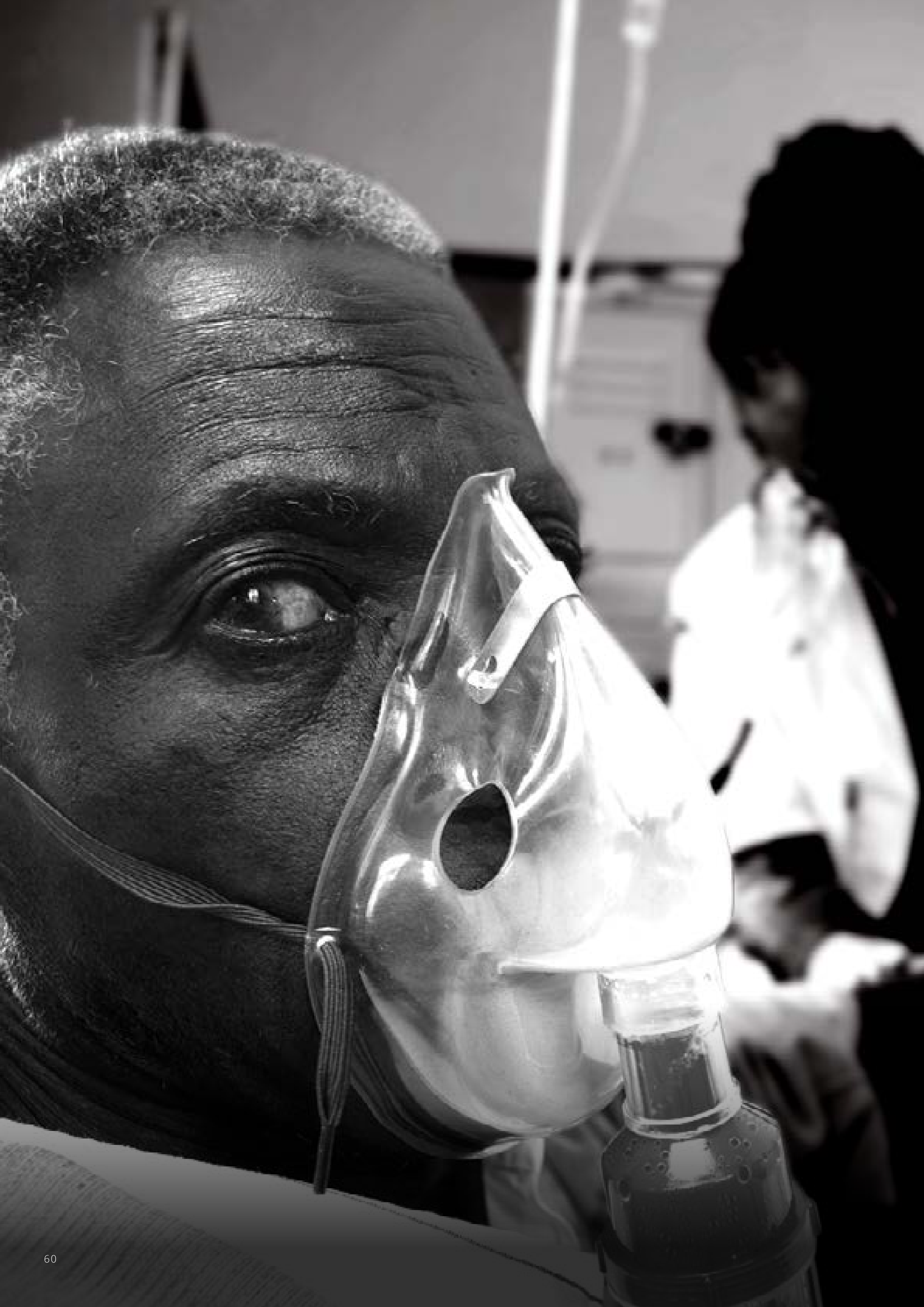
"A fashion show would be quite nice," she laughs. Dineo was expecting ethical clearance of her research with her PhD research nearing completion by December 2020.

### Machine learning algorithms for heart-failure patients

Her supervisor, Professor Turgay Celik from the School of Computer Science and Applied Mathematics at the University of the Witwatersrand, says Dineo has an excellent understanding of the research problem and will make "significant contributions," to both deep learning literature and risk modelling. With the dire shortage of healthcare professionals in South Africa, the ability to stratify heart failure patients according to their risk profile and admit them to the appropriate level of care will reduce pressure on all healthcare facilities. She says the local banking sector has been using machine learning for years, but medicine has lagged behind.

*Once a predictive model has been created, it will assist clinicians in the risk stratification of patients with heart failure, with high-risk patients being triaged to the appropriate level of care.*

**DR DINEO MPANYA**





# /Cancer

## Innovative diagnostic methods

*In South Africa, 1 000 children are diagnosed with cancer each year with a cure rate of 50%. Innovative diagnostic methods and a holistic approach to cancer care aim to encourage accurate and early diagnosis.*

# Training

*to fill a dire need*

**DR KERSHINEE REDDY**

***Subspecialist Award***

*Stellenbosch University*

*Paediatric oncology*

/03

***Should a paediatric-oncologist post be available in Kwa-Zulu Natal when she completes her training, paediatrician Kershinee Reddy will grab it with both hands.***

The Western Cape where Dr Kerishnee Reddy started her training at Tygerberg Hospital in 2019, is currently the only province with accreditation for paediatric oncology training. Before this, while working as a paediatrician at Edendale Hospital, she and her colleagues referred cancer patients to Grey's Tertiary Hospital in Pietermaritzburg. This hospital established a haematology oncology unit in 2013, staffed by one paediatric oncologist and one paediatric haematologist. Both these specialists have since left Grey's Hospital. Dr Reddy says, "The paediatric haematologist from Albert Luthuli comes to the Grey's Hospital unit twice a week. This unit now only has children receiving chemotherapy and some who have completed treatment and need follow-up. The majority of our new patients at Edendale Hospital are referred to Durban."

## Growing adept at adapting

Growing up in Chatsworth, Durban, Kershinee always wanted to do medicine. Her straight-A performance in matric was, however, not enough for university acceptance. She stared out studying pharmacy and after graduating, she was accepted to Wits Medical School. Realising her dream of becoming a doctor in 2008, Kershinee says, "Pharmacy wasn't fulfilling in terms of patient care, so when the opportunity came to do medicine, I went for it. I really enjoy the patient interaction and helping people."

Her interest in paediatrics began while doing her Community Service year at Piet Retief Hospital in Mpumalanga, after which she joined the registrar programme at Grey's and Edendale Hospitals in Pietermaritzburg and Albert Luthuli Hospital in Durban.

*The oncology workload is very high in Kwa-Zulu Natal. Sometimes they're overrun at Albert Luthuli Hospital.*

## Handling the emotional impact

The downside of paediatrics, for her, is seeing sexual abuse cases and having to take the sexual assault history and carry out the examination. "It is one of the worst things I've ever done. It is demotivating that people could be so cruel to children."

Sometimes you do everything you can for a child and they still do not make it. "Then you have to tell the family that their child has brain stem death and is going to die; or tell a 13-year-old with bone cancer that we found it was spreading everywhere." It is after experiences like these that she calls her sister, Deshinee, a nursing manager of the cardiac catheterisation and pain management laboratories at a New Orleans hospital.

"She understands and, together with my parents, always has encouraging words of support. Of course, my friends and colleagues in the same field are another great resource. We understand one another, but we still have to assess and remember why we're doing it."

Her parents taught a strong worth-ethic, with her mother a primary school teacher and her father a corporate paint buyer. "They instilled in us the importance of education and made sure we were educated and could stand on our own two feet. I put my continuing studying directly down to them," she adds. Thousands of patients in Kwa-Zulu Natal who are struggling with oncology diagnoses, access to treatment, challenging therapy and survivorship, will certainly be thankful to the Reddy family in years to come.

## Helping Kwa-Zulu Natal's children

Kershinee worked as a general paediatrician for two and a half years at Edendale Hospital near Pietermaritzburg, at the height of the oncology services crisis. She noticed many children admitted to Edendale Hospital's general paediatric ward with signs and symptoms suggesting cancer, with initial investigations pointing towards such a diagnosis. "I want to complete this training for myself, but also for the children. These kids are already subjected to the trauma of a cancer diagnosis and then they have to travel far for treatment, either to Pietermaritzburg or Durban."

*Sometimes you do everything you can for a child and they still do not make it. Then you have to tell the family that their child has brain stem death and is going to die or tell a 13-year-old with bone cancer that we found it was spreading everywhere.*

## DR THABO LENGANA

***Academic Fellowship Award***

*University of Pretoria*

*Nuclear medicine*

# /03

***Half-way through his registrar years, University of Pretoria and Steve Biko Academic Hospital nuclear physician, Dr Thabo Lengana, liked nothing more than picking a backing riff on his bass guitar for his band of musician friends.***

"We did mostly jazz, but also rhythm and blues – that was when I still had time to relax. Not since this PhD though. Right now, it's motivating me to finish this research so I can get back to it!" he chuckles when asked about his hobbies.

There's a wonderful metaphor between his potentially ground-breaking current research (into the superior efficacy of an injectable tracer agent in detecting recurring prostate cancer) and his musical role as a bassist. According to a study published in the National Academy of Sciences, our brains can find a song's rhythm more accurately by listening to the low tones played on the bass. While musicians love to joke otherwise, the bassist is the most important member in a band.

Thabo's "low-tones" in his current research are already fine music to the ears of physicians involved in detecting and treating prostate cancer. Through his research he hopes to publish the score on how accurate the injectable $^{18}$F-Prostate-Specific-Membrane-Agent (PSMA) 1007 is during scans.

### How unique injectable tracer works

$^{18}$F-PSMA 1007 is a tracer agent that travels through the bloodstream, singling out and only locking onto cancerous cells that express PSMA. Thabo is part of a small group of South African nuclear physicians who punch well above their weight globally in 'theranostics' – an approach where tracer agents are both diagnostic and therapeutic.

He's using his PhD enquiry, backed by a Discovery Academic Fellowship, to study patients with prostate cancer who present with biochemical recurrence after surgery or radiation.

While there are other PSMA tracers, their limitation is that they are excreted mainly via the kidney into the bladder. 'Agent 1007' is mainly cleared out by the liver into the gall bladder. This means $^{18}$F-PSMA 1007 avoids depositing visually obstructive tracer elements in the bladder, thus rendering the pelvic floor fully observable during a scan.

Thabo explains that about one third of prostate cancer patients will have a recurrence of the disease most commonly where the prostate gland is situated (below the bladder).

"If the bladder is full of tracer, it obscures the prostate and we can't visualise the prostate bed," he emphasises.

## Multiple benefits

With recurring prostate cancer, patients often have a surgical scar or fibrosis (from radiation treatment), meaning that dead and fibrotic tissue can render the identification of active disease difficult during a standard MRI or CT scan.

By locking only onto cancer cells, $^{18}$F-PSMA 1007 side steps this problem too, eliminating any confusion between cancerous cells and fibrotic or dead tissue. Thabo says this involves a whole-body scan with Positron-Emission Tomography (PET-scan), a nuclear medicine imaging technique used to observe metabolic processes in the body.

This enables precise identification of cancerous sites and therefore enables accurate radiation.

“We can see where it’s hiding, whereas other scans and agents can miss it – it’s a very real, unmet diagnostic need,” he adds.

His hope is that the findings of his research will demonstrate an increased sensitivity and lesion detection of prostate cancer cells at low prostate-specific-antigen (PSA) values that will result in $^{18}$F-PSMA 1007 replacing MRI and CT scans as the imaging standard in patients with recurrent cancer.

The audience applause, however, is reserved for the therapeutic version of PSMA. This destroys the cell DNA of the cancer cells. “So, we first identify the site of the cancer with the tracer $^{18}$F-PSMA 1007. Then, we inject a therapeutic version of the PSMA tracer, which locks onto the PSMA-expressing prostate cancer sites and gives off radiation that kills the cancerous cells while by-passing normal tissue that does not express PSMA,” he explains.

He says this theranostic approach has been available globally for about five years and accessible to his scientific team for about the same length of time. By mid-May 2019 they had reached their data analysis phase. If all goes to plan, they’ll be publishing by mid-2021.

“Overall, we’re hoping that outcomes will be much better,” he adds.

Asked what led him to medicine and research, Thabo says he can’t single out an event, but remembers being around his father’s doctor friends and thinking, “this will be a great thing to do.” He speculates that perhaps the influence was deeply unconscious because as an infant he was very sickly and would be in and out of hospital.

As a middle child whose father worked for a global petroleum company and whose mother took care of them at home, Thabo says his parents; “did the best they could with what they had.”

He’s married to a doctor working in healthcare risk management, and they have a daughter who is four years old.

His bass guitar case remains clipped shut. Yet, like his research, he can feel its promise and cannot wait to get back to grips, laying down those fundamental bass notes again.



# Nowhere to hide for cancer cells

*Asked to sketch the best-case scenario, Thabo says that at individual patient management level, the earlier identication of cancer recurrence would increase the chances of another curative procedure and thus improve survival rates.*

Early identification of sites of recurrence would give the treating doctor an opportunity to direct therapy to the specific metastatic site and avoid additional procedures and their associated complications. This could impact significantly at a population level.

So far, preliminary findings show that they are locating cancer sites missed by other imaging modalities. His team has also detected other cancers hiding elsewhere in a patient's body. "Overall, we're hoping that outcomes will be much better,"

# Elation

*of easing Limpopo's oncology burden*

## DR TIJO MANAVALAN

***Rural Individual Award***

*University of Limpopo*

*Post-radiation therapy hypothyroidism in patients with head and neck cancer*



/03

***Final year radiation-oncology registrar, Tijo Manavalan's earliest boyhood memories are of hiking in the Lesotho Mountains above Mohale's Hoek with his hard-working teacher parents, exploring caves and wading crystal-clear streams. His parents, originally from Kerala State in Southern India, were expatriates living in Kenya in the late 1970s, teaching science and agriculture, before moving to the Mountain Kingdom.***

"Neighbouring South Africa presented better educational opportunities for us and employment for my parents, so when I was six years old we moved to Mafikeng in North West Province where my dad was later appointed as the Chief Education Specialist in curriculum development. I was exposed to a diverse range of cultures and nationalities in Mmabatho High School, which had many children of expatriates. We were academically oriented and I did well, especially in science," he says.

His strongest memory of his parents and brother, and probably the biggest early influence on his subsequent medical career, is that they were "exceptionally hard-working".

"I remember my dad always studying and at one point being simultaneously registered at two universities for two different degrees. My brother became a super-achiever, garnering numerous awards during his medical training at the University of the Witwatersrand," he adds. Unsurprisingly, given his early outdoor adventures, he is an avid road and trail runner and mountain biker.

A first place in his category at the Eskom Expo for Young Scientists further fanned the flames of learning. After matriculating, his wanderlust took him to Romania where he acquired his MBChB in 2004 from the University of Oradea, adding Romanian to his mother tongue of Malayalam (spoken in Kerala State, India). After completing his Community Service, he considered entering the private sector. "I am glad I didn't. It is so much more rewarding working among the population in the State sector," he says.

### Making a difference

Currently thriving at Pietersburg Hospital in Polokwane under H.O.D. Dr Francis Ooko, the only fully qualified radiation oncologist in the public sector in Limpopo, Tijo has to plan his days carefully to make the most impact on his patient care.

"Our single biggest resource limitation is staff. In addition, we have only one linear accelerator for radiotherapy in the public sector in Limpopo, and we often treat cancers that are more advanced. There is also a waiting time of three to four months for radiotherapy after the first assessment."

The workload means Tijo and his colleagues work after-hours on patient scans to plan radiation treatments. Due to the geographical location of Limpopo, they serve what he terms "a significant population," from neighbouring countries that lack oncology services and a population of 6.5 million people in the province. Pietersburg Hospital is Limpopo's only oncology referral centre.

"Clinic and ward patients generally can't wait, so you have to see them during working hours and triage those who are more urgent and would benefit more from quicker care," he adds.

Tijo will study post-radiation therapy hypothyroidism in a cohort of some 30 patients with head and neck cancer.

## Thyroid testing uncommon in SA

He explains that the physical location of the thyroid gland means that patients who recieve sizeable doses of radiation can be at risk of hypothyroidism. Global retrospective studies put the incidence between nine percent and 56%, at five years after radiation therapy.

He says the 2018 international guidelines do recommend thyroid function testing six months after radiation. However, the changes have yet to filter down to the general clinical practice setting. In his research, he will measure the thyroid hormone before and after radiotherapy to find out if the levels are low or normal after treatment. Low thyroid hormone levels (hypothyroidism) is treated with oral hormone replacement to make up for the un-synthesised hormones of a damaged thyroid. Most symptoms are reversible with treatment. He plans to begin his research in July 2019 and complete it during the first half of 2020.

Tijo did most of his early training at Rustenburg Provincial Hospital, where he completed a diploma in anaesthesiology shortly after his Community Service.

Married to a clinical microbiologist, he has a three-year-old son. His longer-term goal is to become a clinician-researcher. "I enjoy the patient contact, which is why I didn't continue with anaesthesia," he laughs.

"With oncology one has the privilege to connect in a very special way with your patient's journey and it is often a longer and extremely rewarding relationship. Things that I want to research also come up often in such a rapidly evolving field. Ideally, my career would be a mix of both clinical medicine and research, with a bit of teaching thrown in," he says. He finds working in a resource-limited setting highly stimulating. "People are a lot more grateful, kinder and happier when you help them. You can make more of a difference," he says.

### Enhancing cancer survivors' lives

An un-surmounted hurdle for oncologists treating head and neck cancers is that the non-specific symptoms of hypothyroidism closely match those already present in a cancer patient. Most current treatment and follow-up protocols do not incorporate biochemical testing for hypothyroidism. Tijo decided to address this gap with his research.

"Symptoms are vague. The patient feels fatigued or depressed, they might gain weight or have cold weather intolerance or feel 'under the weather'. None of these would surprise you in a cancer patient. Unless you specifically look for hypothyroidism, you would not know it's there. In treatment planning, we aim to strike a balance between giving an adequate radiation dose to the tumour, while minimising the dose to normal tissues. The thyroid is one of the structures to which we would like to minimise the dose but it is not always contoured. If you don't know how much dose the thyroid is receiving and you're not following up on thyroid functions, you won't know if anything's wrong."

*Working in oncology one has the privilege to connect in a very special way with your patients journey and it is often a longer and extremely rewarding relationship.*

**DR TIJO MANAVALAN**

# Boosting

*Limpopo's child cancer survival rate*

## DR VHUTSHILO NETSHITUNI

***Rural Institutional Award***

*University of Limpopo*

*To support the development and implementation of a customised awareness, education and training programme about childhood cancer, in consultation with CHOC SA, at five regional hospitals and their 30 referral district hospitals in the province.*

/03

***It was during her paediatric department rotation at Sefako Makgatho University (then Medunsa) in 2003 that South Africa's first black female paediatric oncologist, Vhutshilo Netshituni, fell in love with children.***

Being admired for having broken through a historical barrier is far less important for Vhutshilo than doing what she loves. "I had no clue. I only found out about the barrier-breaking when I was waiting for my final exam results in 2016. For me it's not about being the first, but about doing what I love. At least two black female paediatricians (co-incidentally also from Limpopo), have qualified as oncologists since then, as have a handful of black men," she says keen to move on to what she's passionate about.

As Head of clinical unit of Paediatric Oncology at Pietersburg Tertiary Hospital in Limpopo, she's facilitating the training of selected nurses in the region. This helps colleagues deal more effectively with patients who come from low-income areas. Poverty, superstition and lack of education are tragic barriers to early diagnosis and appropriate care of children with cancer. She will work with Childhood Cancer Association of South Africa, (CHOC), to implement a three-year, customised awareness, education and training programme. CHOC will conduct intensive training of 10 carefully-selected professional nurses who will in turn train others to detect early warning signs of cancer, creating a healing ripple effect across the province's referring facilities.

### Tragically low cure rate

According to CHOC, the childhood cancer cure rate in South Africa is about 50%, compared with up to 80% in developed countries. Here a holistic approach ensures children are diagnosed early, can access paediatric oncologist care, and are supported throughout the lengthy treatment phase of up to three years.

By way of contrast, Vhutshilo tells of a young child recently referred to her unit with Stage 2 cancer. She received two cycles of chemotherapy before simply defaulting on treatment. She returned much later with what proved to be fatal Stage 4 cancer.

"So often it's a lack of understanding and cultural beliefs that get in the way. In most African countries, there's very little research or data collection, mainly because we have other health priorities. Internationally, they're experimenting with medicines and doing stem cell transplants. Yes, we're going somewhere, but we're just not there yet," she adds.

## Probing hidden symptoms is vital

Besides late referrals, another barrier to treatment is that cancer in children often presents with non-specific symptoms, which can, for example, be easily misdiagnosed as TB.

Vhutshilo says the CHOC training will teach nurse trainers to heighten their index of suspicion. "A child might present with night sweats, coughing and fever. It could be TB and you could start treatment − but if it doesn't get better, it's something else. If a child is bleeding, it has to be a haematological problem, so a simple full blood count can give you many answers. The problem is most healthcare workers don't look for cancer," she says.

It's not just Limpopo that suffers. Across the country, about half of the estimated 70 to 80 cancer-afflicted children in a child population of a million, do not survive due to late diagnosis. According to CHOC, some 1 000 children are being diagnosed with cancer annually when, based on international data, some 2 500 should be diagnosed.

Vhutshilo says CHOC is a vital partner in the Limpopo project. "When I started here in 2017, I had several meetings with them because they were involved in data capturing. I wanted to see how we could help with awareness and perhaps train more of our people. Once these 10 professional nurses complete the CHOC course, they'll go on to train district nurses and doctors together and empower them. After infiltrating each district, the trainers must then identify more nurses to help carry the torch," she says.

## Moving into communities

The next phase of the project will be raising awareness through community and faith-based organisations, the media, and local structures and groups. In the third year, improvements in the early diagnosis and referral of children will be monitored against the number of children being referred and the stage of cancer.

The daughter of a lifetime domestic worker and widow, Vhutshilo grew up in Tshilapfene village outside Thoyoyandou in Limpopo. A chance visit to the Medunsa campus when her family dropped off her cousin studying dental therapy, started her interest in medicine. She says, "It was so exciting. I was 14 and it was a holiday trip and the medical campus was fascinating."

A hiker during her registrarship at Tygerberg Hospital, she now runs 10km three times a week and enters 21km races whenever she can.

## Late referrals is a major issue

"The main issue is the late referrals and for our newly aware staff to teach the community not to sit with a sick child at home before going to a hospital. We want to increase awareness that there is cancer in children – too many are dying in district and regional hospitals due to healthcare staff not recognising the symptoms. By the time they get to our unit we often just diagnose, start one or two treatments and they die."

/03

*I'd make sure the child healthcare in government is the same as in the private sector, and I'd include South Africa in all the international research being done.*

**DR VHUTSHILO NETSHITUNI**

Being admired for having broken through a historical barrier is far less important for Vhutshilo than doing what she loves. "I had no clue. I only found out about the barrier-breaking when I was waiting for my final exam results in 2016. For me it's not about being the first, but about doing what I love. At least two black female paediatricians (co-incidentally also from Limpopo), have qualified as oncologists since then, as have a handful of black men", she says keen to move on to what she's passionate about.

**DR VHUTSHILO NETSHITUNI**

/04

# /Tuberculosis and pulmonology

## Leading infectious disease

*Tuberculosis is the leading infectious disease in South Africa and drug-resistant TB is increasing exponentially. Around 14 000 people developed drug-resistant TB while the WHO estimated that 558 000 suffered from the disease in 2017.*

**DR DONALD SIMON**

***Academic Fellowship Award***

*University of Stellenbosch*



/04

***While believing that education is one of the key strategies in addressing poverty, disease and crime in South Africa, specialist physician and pulmonologist, Donald Simon, says experience has taught him that knowledge is not necessarily power.***

Citing the ubiquitous Love-Life HIV prevention campaign aimed at teenagers when the AIDS pandemic burgeoned out of control from 2000, Donald says most young people knew HIV caused AIDS, yet failed to change their risky lifestyles.

"It's the same with non-communicable diseases, (NCDs). Some of our patients refuse to take responsibility for their own health. Sometimes medicine can't be practiced as the book suggests, so you probably need to tailor your approach."

## Research could revolutionise TB treatment

Donald is setting out to do just that – in spite of the country's dismal levels of formal education. He is researching treatment shortening of one of the country's biggest HIV-driven killers – tuberculosis, using the Academic Fellowship Award he received from the Discovery Foundation.

His team will combine single scan Positron Emission Tomography (PET) and computerised tomography (CT) scans to interrogate properties related to anatomy and metabolic activity of TB lung lesions. Patients at higher risk of poor outcomes (indicating six months of treatment), can then, for example, be singled out from those at lower risk.

Combining this with the GeneXpert cycling threshold value and medicine compliance, will help his team allocate patients to one of three study arms.

## Time horizon

Donald's work will start in earnest in January 2020, beginning with the first group of patients, some from two years ago and from whom they have taken blood and sputum samples. He will use these samples from the large bio-repository to identify relapses and failed treatment to begin his laboratory work, which he expects to take three years.

"We feel fairly confident. I've been looking at the failed trials so far and none of them used PET-CT scanning and GeneXpert cycling thresholds to divide patients into groups," he emphasises. He will be guided by separating out patients with large lung lesions that have not shrunk and those with high bacterial loads. By identifying the minority (some 15% to 20%) of patients with complications, they can avoid the side effects and costs of lengthier treatment in future and improve adherence to treatment.

/04

## Triumphing over adversity

If the TB epidemic, with its burgeoning multi-drug resistant and extreme-drug resistant manifestations, has proven a rough taskmaster for scientists, then Donald's upbringing and triumphs over adversity equip him admirably for his ambitious task.

Donald was born to an impoverished domestic-worker mother and epileptic security-guard father, in Galeshewe township outside Kimberley. With both his parents passing away within a year of one another when he was 21 and a full-time varsity student, Donald learnt independence early on. "We lived in a shack for most of my childhood and two years before I went to university, my parents finally secured a RDP house. I had a brother who was three years older but he was stabbed to death when I was 12 or 13. It was a pretty violent neighbourhood," he says.

His mother remains a lasting inspiration to him, having pulled him out of a township junior school to attend Adamantia High School in Kimberley, where he became an honours student within months. "It came at great cost to her. She worked her fingers to the bone to get me into a good school to improve my chances of becoming anything," he says.

He can remember loving history and considered journalism or photography early on. "One of my Afrikaans teachers prescribed a brilliant book entitled 'Die uurwerk kantel', by Marie Heese. I'll never forget that book because it inspired a service ethic in me." His determination and a good matric pass led to him applying to Potchefstroom University where he completed his first year of BPharm with 10 distinctions.

Unease with his initial career choice led him to apply for medicine at Stellenbosch University. Donald won the Stellenbosch University Rector's Award for Succeeding against the Odds, garnering distinctions in most subjects for his first three years.

"It was a sad experience for me, with my parents dying in my third and fourth years, but I didn't even have time to mourn, I had to get on with it. Failing anything was not an option. I'd realised early on that I had nobody to fall back on, no safety net," he adds.

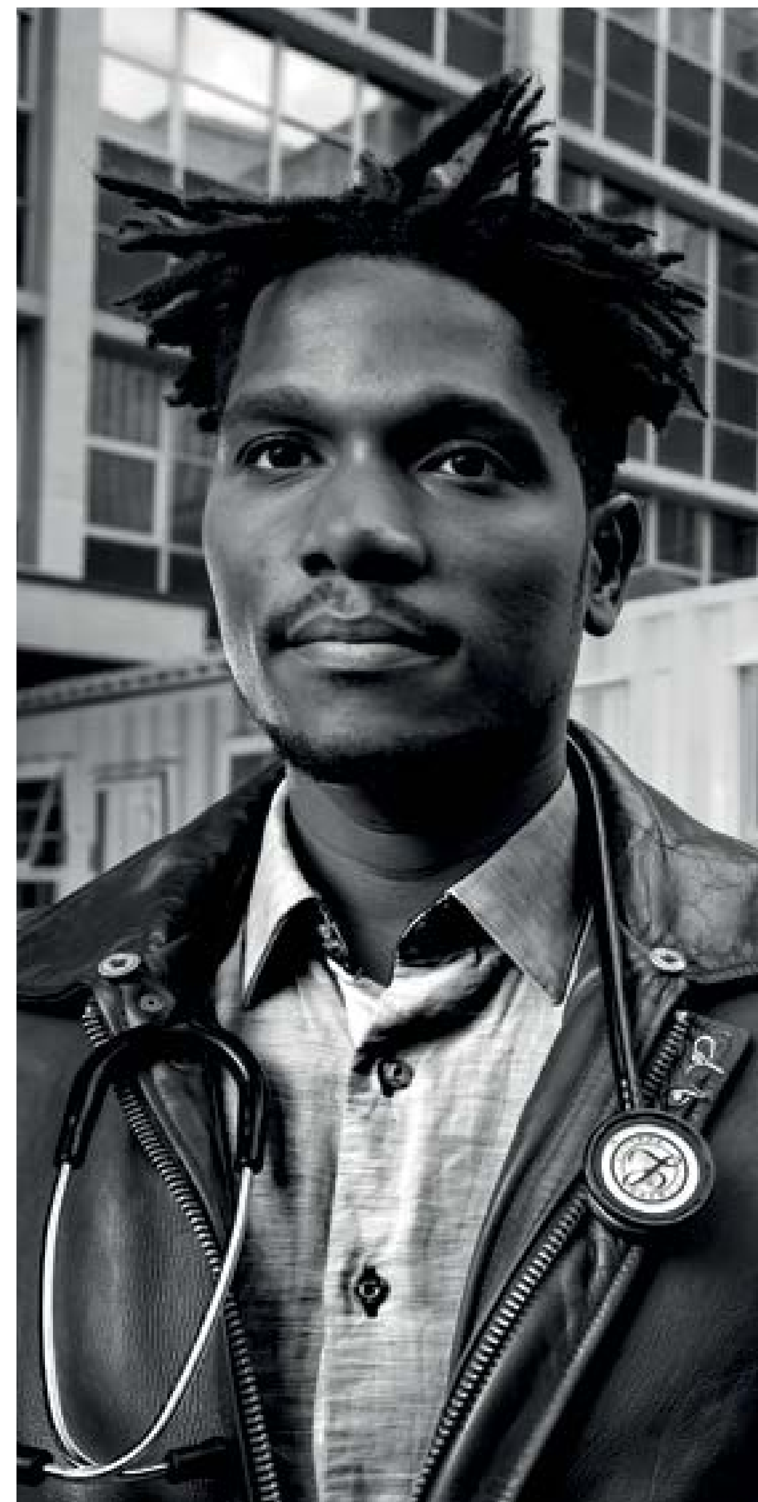
Instead, he turned his passion and Afrikaans-speaking background into tutoring his fellow students, especially the English speakers. He returned to Kimberley to do his internship and Community Service at the local hospital.

"I think I also wanted to complete my mourning properly, but I always had a dream of going back to help," he says.

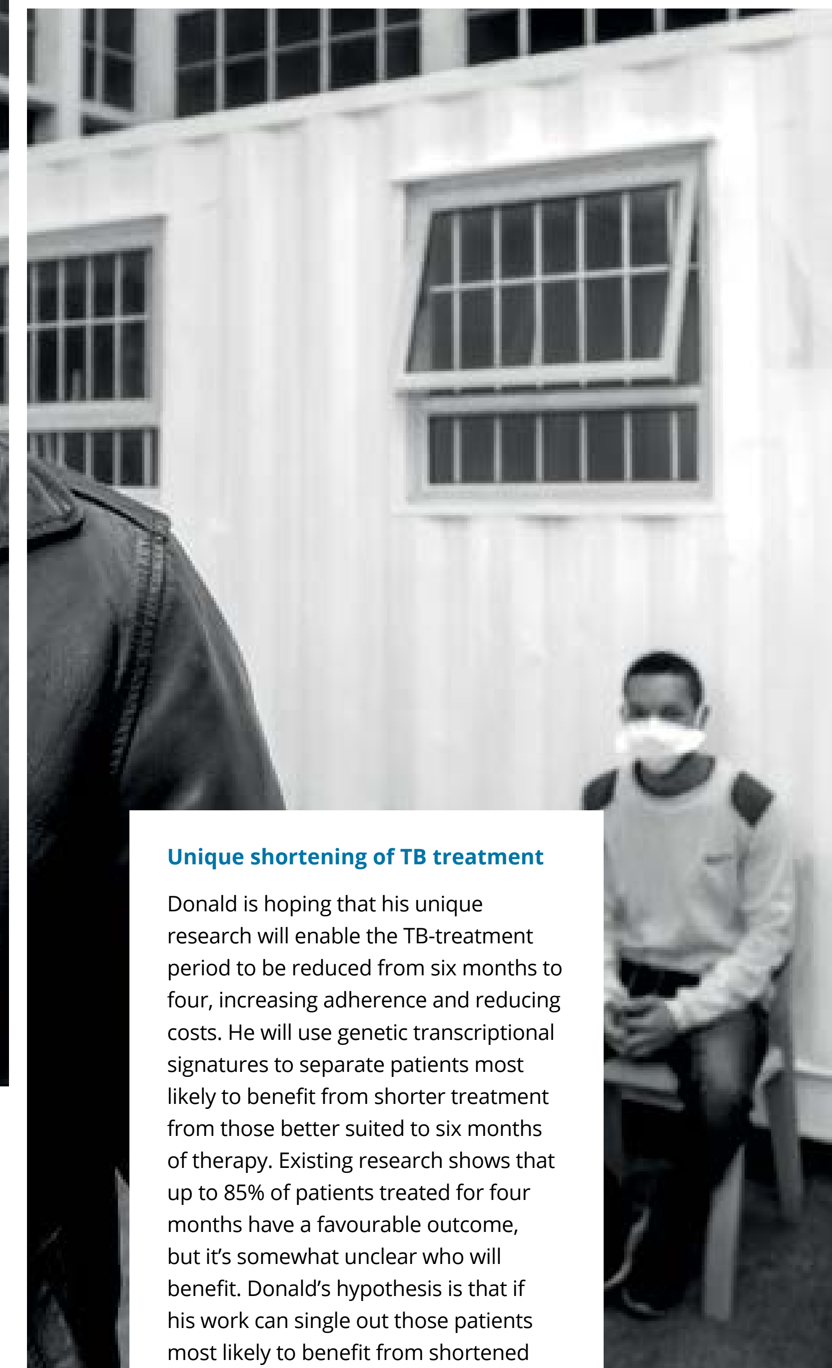
Donald cannot remember any specific event or person nudging him into medicine, but by the time he started his hands-on clinical training, the AIDS pandemic was in full swing. It was during his internship that he "fell in love" with medicine by experiencing first-hand how he could make a difference.

Unmarried and turning 37 in 2019, Donald commutes from Tamboerskloof to Tygerberg Academic Hospital where he balances his research with teaching and clinical work. With helping, guiding and teaching his peers and students engrained into his psyche, he sees education as the most efficient long-term cure for South Africa's problems.

"We're constantly trying to patch up holes. Why can we not bring the percentage of students who actually write matric up from 50% to 90%? Pass rates count for little, when you're dealing with that," he says. One could say he is a living example of what is possible.



*Failing anything wasn't an option. I'd realised early on that I had nobody to fall back on, there was nobody to help me out, no safety net.*



## Unique shortening of TB treatment

Donald is hoping that his unique research will enable the TB-treatment period to be reduced from six months to four, increasing adherence and reducing costs. He will use genetic transcriptional signatures to separate patients most likely to benefit from shorter treatment from those better suited to six months of therapy. Existing research shows that up to 85% of patients treated for four months have a favourable outcome, but it's somewhat unclear who will benefit. Donald's hypothesis is that if his work can single out those patients most likely to benefit from shortened treatment, this success percentage can be higher and can trim two months off the treatment time. This stands to revolutionise treatment globally by boosting adherence and dramatically lowering costs.

# Tribal wisdom

## benefits TB science

**DR PHINDILE GINA**

***Academic Fellowship Award***

*University of Cape Town*

*Pulmonology*



/04

***A Kwa-Zulu Natal tribal leader's wisdom in establishing a clinic alongside his family kraal and erecting a school nearby, could have indirectly led to his granddaughter today potentially helping control, or even end, the global TB epidemic.***

Dr Phindile Gina, a final year PhD student at the University of Cape Town, is currently pioneering a highly promising immunotherapy approach for treating TB and drug resistant TB. If she succeeds, she could help slow, or even halt, an inexorably spreading epidemic that has reached near-crisis proportions in South Africa.

Explaining her initial interest in medicine, she says, "I wanted to do medicine at a very young age. We were from the rural Jozini district in northern Kwa-Zulu Natal and my grandfather Johannes "Masongwevu" Gina, was an Induna who initiated several community projects. So, as children we had early exposure to missionary doctors who worked in the clinic alongside our home. My mother was a teacher at the local primary school and my dad was in the Department of Public Works. They played a huge role in our lives, always emphasising education. It was never a question – all five of us kids knew we would study."

### Awards tumble her way

In 2016, her MMed thesis on early morning urine sampling improving the diagnostic sensitivity for the LAM test in HIV/TB co-infected people, won her the Best MMed project prize. Two years later, her research team leader, Professor Keertan Dheda, won a global Scientific Leadership prize for a four-country study that demonstrated urine LAM-guided treatment strategy reduced mortality in hospitalised patients with advanced HIV by almost 20% (Lancet, 2016). Phindile was also part of this study. Today the World Health Organization (WHO) is rolling out and scaling up this strategy across Africa.

Then, in 2018 Phindile won the UCT Department of Medicine's Basic Science project prize for her PhD research project where she is using human lung cells to test if some of the FDA-approved drugs can kill TB bacteria by stimulating the body's immune system.

She's working whatever hours it takes to advance her laboratory experiments aimed at eventually conducting human clinical trials in a hope to get life-saving medicine to market – and changing the face of TB/HIV medicine.

"I usually work 14 to 20 hours a day. Sometimes I get home at two in the morning and I am back at the lab at six in the morning. Everything is time-critical in lab bench work. Seeing whether the compounds elicit any immune response requires constant monitoring. There is a tendency for it to degrade and dissolve. You cannot just put it in the fridge and look at it tomorrow. Once you've started an experiment, you have to finish it," she laughs.

## A radical new treatment approach

Phindile is adopting an entirely new approach to TB drug therapy, one that will affect the front end of the ordinary TB epidemic and the extraordinary multiple drug resistant and extreme-dug resistant strains that threaten thousands more lives every day.

Her Discovery Academic Fellowship Award gives her the financial ability to conduct pure research without worrying about earning an income. She's investigating the role of autophagy in tuberculosis, using human lung cells.

She explains, "Currently the drug treatment targets the mycobacterium tuberculosis. There's evidence that our immune cells should be able to kill any infection including TB – but somehow the TB bacteria is capable of producing toxins, which render our immune cells incapable of doing what they're created for. As a result TB can live inside the cells that are meant to kill it. I'm testing compounds that can unlock that system or activate our immune system such that our body is able to fight back this deadly infection. I am looking at the ways to manipulate the immune system by inducing autophagy for host-directed TB therapies."

Not short on ambition, Phindile, says that adding to the global TB medicine collection will help meet the WHO target of a 95% reduction of TB by 2035. The main vision is a world free of TB, zero deaths, disease and suffering due to TB.

"With the current medicine for extreme-and multi-drug resistant TB, I doubt we'll be able to meet those targets," she says.

She plans to take her project into clinical trials soon, emphasising that worldwide, the WHO estimated that about 558 000 people suffered from drug-resistant TB in 2017, posing a significant threat to populations.

"Everyone's at risk. Some people don't even know they have it. Because it is air-borne and so many of our people crowd together for whatever reason, this is a public health emergency. In South Africa, an estimated 14 000 people fell ill with drug-resistant TB in 2017. That may look relatively small in terms of numbers, but they're increasing instead of coming down," she stresses.

Her most optimistic outlook? "I might be biased," she chuckles, "but right now there's too much work being done on diagnosing and counselling patients. We have to look for new medicines. We have a limited window to treat this TB crisis. We can't continue down the same route."

Asked what she does to relax, Phindile laughs, "I sometimes get a weekend in a month. I'm an outdoor person, so I love hiking and running and doing half-marathons whenever I can." Her work might just see her breaking the global TB research marathon tape before anyone else.



*Phindile is adopting an entirely new approach to TB drug therapy, one that will affect the front end of the ordinary TB epidemic and the extraordinary multiple drug resistant and extreme-dug resistant strains that threaten thousands more lives every day.*

## Tactical research to benefit patients

Immunotherapy has been transforming cancer treatment in recent years and Phindile is using the same concept for discovery of possible compounds to treat TB. She has chosen two FDA-approved medicines, which seem to be working, to turbo-boost the speed at which they might reach patients. Among the advantages of the host-directed therapy, is that it's not susceptible to resistance. It rehabilitates the body's immune cells wherever TB infection occurs (mainly in the lung), and reduces inflammation and fibrosis, thus limiting lung-tissue damage. Phindile explains that secondary complications from TB-damaged lungs are a major problem, even among cured patients.

"If we can shorten the duration of TB therapy (currently up to six months), we can vastly improve adherence and thus begin to address the prevalence of extreme and multi-drug resistant TB," she adds.

# Exploring

community-acquired
pneumonia driven by HIV

## DR MURIMISI MUKANSI

***Academic Fellowship Award***

*University of the Witwatersrand*

*Pulmonology*

/04

***His father, a mechanic at a bus depot, and his mother, a homemaker, were fiercely determined that their children would rise above their circumstances through education. "My parents were very intelligent and extremely strong on education but had few resources."***

*The determination of his working-class parents and a tour of what was to become the Helen Joseph Hospital in Johannesburg in matric, steered veteran physician, Murimisi Mukansi, towards medicine.*

Now Director of the Intensive Care Unit at Helen Joseph Hospital where he has spent most of the past 26 years working as an Internal Medicine and Pulmonology consultant, Murimisi says two additional influences proved seminal in his career choice of medicine and academia.

The first was attending the two-week London International Youth Science Forum in 1982. A boarder at the Kheto Nxumayo Agricultural High School in Giyani, Limpopo, Murimisi was the top black matriculant in SA and won the 1982 SA Science Olympiad.

He found himself revelling in the company of students from all over the world during a London visit.

"It was very interesting and enjoyable and people were so receptive. It inspired me to dream and have ambition, to realise how much better opportunities could be back home," he recalls. "I had the opportunity to visit the Royal Marsden and Middlesex hospitals during this stint."

The second was cultural. His paternal grandfather was a Tsonga/Shangaan traditional healer, the last in a long line of tribal healers in the family. "I was named after him, so I believe that energy was channelled into me and my siblings going to medical school so we could move with the times," he chuckles.

/04

**From humble beginnings to leading a unique study**

Today, he is bringing the wisdom of his ancestors to bear through pure science and research. He will lead a unique two-year study of community-acquired pneumonia, (CAP), in a predominantly HIV-infected population with patients presenting at his emergency unit.

According to Statistics South Africa, CAP (classified as influenza and pneumonia), was the second-highest cause of death in the country in 2015 among both HIV-positive and -negative persons. Murimisi explains that in both these groups, the most common manifestation of pneumonia is pneumococcal pneumonia. Most global predictive modelling of CAP used in severity scores and biomarkers so far has excluded immunosuppressed people, including those who are HIV-infected.

**Research that is potentially game changing**

The results will enable doctors in South Africa and in other countries with a high HIV prevalence to better triage which CAP patients to admit and which to send home. By definition CAP is found in someone who has not presented at a healthcare facility for the past three months (community-acquired and not nosocomial or hospital or clinic acquired).

Murimisi says that according to the World Health Organization (WHO), an estimated two million people die of CAP globally. He estimates that some 60% of patients seen at Helen Joseph Hospital are HIV positive, a proportion he believes similar to other State hospitals. The percentage is important, because HIV drives CAP.

**Already changing treatment**

His work will build on published research showing that a user-friendly and time- and cost-saving severity-scoring predictive model is safe to use with excellent results in resource-constrained settings.

"In previous research, we showed that the scoring model, CRB 65 (Confusion, Respiratory rate and Blood pressure plus age 65), was every bit as effective as CURB-65, which requires urea measurement, an expensive and time-consuming laboratory test for kidney function," he says.

Murimisi says it could take between one and two years to recruit the 300 candidates for the study. "We're looking for infection that's just started," he emphasises. His team will check for inclusion criteria, if satisfied, take a history and examine them, checking their risk-factor profile, symptom presentation and sample nasopharyngeal and oropharyngeal swabs.

After doing an X-ray, an ECG and taking urine and blood specimens, they'll measure biomarkers and check for any acute cardiovascular events, diabetes, liver or renal disease prior to the two-week infection window – all of which can predispose to pneumonia. A month later, they'll contact the patient to see how they're doing.

Somewhat uniquely for a clinician, Murimisi also has a Master of Business Leadership (MBL) qualification, explaining that he felt it necessary to enhance his understanding of overall financial management so necessary in modern medicine. He says he stuck with Helen Joseph Hospital to build his career and research at Wits University. Murimisi's dream is to train more clinician researchers so they can contribute to society.

Taking away the

# suffering

of little children

## DR BOITUMELO PITSO

***Subspecialist Award***

*University of Pretoria*

*Paediatric Pulmonology*

/04

***With no healthcare role models while growing up in the small Northern Cape town of Kimberley, Boitumelo Pitso was enthralled by the nurses who spilled out of a mobile clinic van that pulled up at her school one day.***

"They were doing immunisation and I thought I'd really like to become a caring person like that," she says. Life was to prove generous with the intervention of a Catholic nun who helped her and other Grade 11 classmates with biology lessons after school. The nun drew out their dreams and ambitions, telling Boitumelo that she knew people who could show her more about nurses – and doctors. The result was a two-day guided visit to Kimberley hospital some two hours' drive away.

"That was very influential in shaping my eventual decision to become a doctor. Why become a nurse when you can make an arguably even bigger impact as a doctor?" Boitumelo recalls thinking.

Her single mother who was a teacher at a local school raised Boitumelo. Despite all the funding challenges for her undergraduate studies, she managed to pull through. Her other childhood memories as a middle-child in a six-sibling family involve playing nanny to small children in the neighbourhood and baby-sitting for her cousin and two older sisters during holidays.

### A natural with children

With a mild and patient temperament, she connected particularly well with children who seemed to innately trust her, "so I decided then and there that I should eventually specialise in paediatrics," she adds.

She was earlier and perhaps unsurprisingly, judged the best student in her final MBChB examinations on Paediatrics and Child Health. Winning a second award for outstanding clinical performance in Internal Medicine was a bonus when she graduated cum-laude from Medunsa in 2008. During her Community Service year, a six-month spell in the Paediatric Department at Kimberly Hospital boosted her passion for paediatrics; and she further became interested in Intensive care through a mentor who spent time with her in the paediatric ICU. In January 2019, Boitumelo, having qualified as a paediatrician a year earlier, began her Discovery-funded subspecialist training in Paediatric Pulmonology at the Steve Biko Academic Hospital.

*I think it was as an intern at "Boitumelo Hospital" that I decided the most vulnerable patients were the small children and the elderly that fed my passion to help the most vulnerable.*

### Chronic lung disease prevalence in children

The prevalence of paediatric chronic lung disease in South Africa is currently unknown, but suspicions are that it is alarmingly high and confounded by the burden of infectious diseases such as HIV.

“At least 60% of our follow-up patients have HIV-related bronchiectasis, often as a result of delayed diagnosis and late initiation of treatment,” Boitumelo reveals. On average, her unit at Steve Biko sees approximately 80 to 100 patients each month from Mpumalanga, Limpopo and Gauteng. Boitumelo describes patient and caregiver education as the cornerstone of management in Paediatric Pulmonology. When caregivers are not compliant with this treatment, the recovery process is affected. Failing to explain techniques as well as compliance to treatment makes controlling a condition much harder.

She says that patients with bronchiectasis should know how to do home physiotherapy, which may assist with clearing phlegm from the airway.

She feels that the PMTCT programme has been a great success as well as the ARV rollout programme but that much more has to be done in rural areas to improve HIV stigma and denialism.

Married to a business development manager with a daughter aged six and son aged three, Boitumelo lives in Centurion. Asked what her top intervention would be if there were no limits, she responds, “Access to medical care and establishing chronic lung-disease centres in all our provinces. Patients die because there’s no follow up and there’s poor communication between the referral centres.”

### Research that has also become her calling

Boitumelo has completed a Discovery-funded MMed dissertation comparing Polymerase Chain Reaction. This is a method widely used in molecular biology to make many copies of a specific DNA segment – with conventional culture in detection of respiratory pathogens in subjects with non-cystic fibrosis bronchiectasis. This MMed thesis was accepted for poster presentation at the 2019 European Respiratory Society congress in Spain.

She will spend much of 2019 and 2020 researching the role of airway clearance techniques in improving the quality of life of children with chronic lung disease.
“I’d like to assess the use of a flutter device, with or without physiotherapy, to clear out the lungs of children with chronic lung diseases. Secretions are associated with persistent coughing, which in turn may result in sleeplessness, daytime somnolence, poor concentration and overall poor school performance. Studies so far have focused primarily on cystic fibrosis. I want to broaden the spectrum to other conditions, with the purpose to improve quality of life.”

/04

"It was during a Discovery Foundation alumni congress at Pilanesberg that I heard about the subspecialty award and immediately decided to apply for it. In my medical officer days, I remembered the severe shortage of paediatric pulmonologists. There were just so many kids suffering from lung conditions. The two-year training also has a large critical care component, so it's a perfect fit"

**DR BOITUMELO PITSO**

/05

# /Quality of care

## Improving patient management

*Across South Africa, healthcare professionals are developing and implementing programmes to build leadership skills, knowledge and improve patient management for enhanced care.*

## DR JOLEEN CAIRNCROSS

***Academic Fellowship Award***

*University of Stellenbosch*

*Family Medicine*



/05

***Specialist Family Physician, health professions educator and PhD candidate, Joleen Cairncross, dreams of a network of primary care physicians with specialist interests at primary care clinics across the country to reduce the burden of referrals.***

Joleen is passionate about empowering patients with knowledge and training healthcare providers in primary care facilities. It is a dream she is living up to with her pilot project and research out of the University of Stellenbosch and its Tygerberg Hospital campus. Her aim to implement a comprehensive approach to patient education and counselling in primary care for the most common non-communicable diseases, has huge potential.

Raising a teenage son, having lost her potential life-partner and medical colleague in a motor vehicle accident in 2014 during her Family Medicine training, Joleen grew up in the low-income suburb of Uitsig and later Mitchells Plain on the Cape Flats.

"My dad is a priest in the Reformed Old Apostolic Church and my mother a housewife dedicated to her family and church. We were always busy with church and community activities and at school, I was part of a drug action committee and very socially involved," she reveals. Head girl at the Malibu Secondary School in Blue Downs, she was the top student in matric. This, despite being involved in a serious motor vehicle accident in matric where she narrowly escaped paralysis.

"Every day the thought crosses my mind that I want to help people," she says.

She duly graduated from the University of Stellenbosch with her MBChB, going on to study Family Medicine and aquiring her Masters in Health Professions Education at the University of the Free State. She then worked for about seven years as a junior lecturer, medical officer, GP locum and academic coordinator.

### Ever the innovator

It was at the University of the Free State that she nurtured her clinical and research skills by exploring innovative ways to improve the quality of healthcare in disadvantaged communities. Here she excelled and achieved various awards and recognition for her research.

However, just as she was approaching even greater heights in the Free State, she made a conscious career decision to uproot herself and return home. "My career needed a different challenge," she explains.

August 2018 saw her back in Cape Town, doing project management and research at the Tygerberg campus and living in nearby Durbanville. Her mentor on the Bloemfontein campus, Family Medicine senior specialist, Professor Dirk Hagemeister, lamented this in supporting her PhD application, "In my eyes she has great potential as a leader in society, service delivery and academia. I wouldn't hesitate to have her continue working with us."

Upon being reminded of this Joleen responds, "He role-modelled all of these qualities. I learnt from the best." She attributes her passion for research to another mentor and teacher, Professor Hannes Steinberg at Bloemfontein campus.

## Turning off the non-communicable diseases tap

She is now piloting a patient empowerment and healthcare-worker education project in the disadvantaged communities of Cloetesville and the slightly more distant Delft. The project takes on the four most ubiquitous and societally debilitating NCDs by training healthcare workers in brief behaviour-change counselling and facilitating group education sessions with patients.

Joleen is supporting and training eight healthcare workers from the Cloetesville Community District Clinic and 12 from the Symphony Way Clinic in Delft – all of them routinely treating patients with NCDs.

She says a typical workday in a chronic care clinic can involve each healthcare worker seeing up to 40 patients. Due to time constraints, patients are not taught to self-manage their chronic condition.





## Training modus operandi

By training groups of 10 to 15 patients with type 2 diabetes, asthma, chronic obstructive airway disease and hypertension, healthcare workers in Joleen's programme will significantly influence morbidity and mortality. "We're focusing on the uncontrolled, newly diagnosed, and non-adherent patients, starting with diabetes sufferers, before moving to groups suffering from the other chronic conditions," she says.

After the initial on-campus training, Joleen and her small team will visit the clinics to monitor and support the newly-trained healthcare staff to implement the programme.

"It's a new way to practice medicine, doing interventions with the patients instead of to them. The results are already showing, although my PhD won't focus on the clinical outcomes as much as the efficacy of implementation," she adds.

She stresses that in the wider context in South Africa with its ranking as the unhealthiest nation on earth, diabetes is currently the biggest killer of women from disadvantaged communities. NCDs account for 57.4% of all deaths in South Africa. Sub-Saharan Africa is undergoing rapid epidemiological transition as the rising burden of NCDs collides with existing chronic infectious diseases such as HIV and tuberculosis.

Ironically, getting healthcare workers to change their modus operandi is often the biggest challenge. "Initially, they tend to see it as adding more work to their already heavy loads, but we help them see the potential of a very different ending," she says.

Her trainees' patient-led guiding style is far more effective than "the doctor-says," top-down approach. "We ask what patients think about the information we provide and how they could do things differently to improve their health," she adds by way of illustration.

The Provincial and National Department of Health keenly follow her work. If she had a magic wand to wield? "I would take it back to the basics of how we train healthcare workers in communication skills and patient-centred care. Imagine if you had family physicians at clinics backed by medical officers. It could reduce the burden on specialist clinics. Imagine a primary healthcare practitioner with an interest in just one specialist discipline – how they could probably reduce referrals by 50 to 100 each month!"

## Empowering patients, reducing healthcare workload

People tend to do unstructured, ad-hoc patient counselling. There are pamphlets, guidelines and booklets, but the actual preventive work is not consistent. There is currently no comprehensive patient-training model at primary healthcare facilities in the Western Cape and Joleen's will be the prospective one. Her model teaches one-to-one counselling of patients through discussion of smoking, nutrition, exercise, alcohol abuse and adherence to medicine. In addition, they follow a structured group-education model to target NCDs. The outcome she is aiming for is systematic implementation of a sustainable model across the Western Cape, once her 'proof of concept,' research is complete.

Measuring the rural health

# impact

of a game-changing mobile app

DR NATASHA BLANCKENBERG

***Rural Individual Fellowship Award***

*University of Stellenbosch*

*Implementation of a value-based healthcare model*

/05

***Dealing with a complicated childbirth or a patient with an aggressive cancer without the input of, or referral to, an appropriate specialist can easily cost lives. Inevitably it saps doctor morale. Which is why rural medicine family physician, Dr Natasha Blanckenberg, has chosen to study the impact of the soon-to-be ubiquitous Vula cellphone application. This app enables faster, more efficient specialist advice and referral for patients in remote rural healthcare facilities.***

She has experienced the frustration and loneliness of a rural physician, especially when there's no specialist or management input. So, it is no coincidence that she will be among the first to complete the new MBA in Healthcare Leadership at the University of Stellenbosch. Her associated research aims to quantify the impact of a fellow rural trailblazer's work.

## Vula mobile app bringing specialist care to remote areas

Ophthalmologist, Dr Will Mapham, developed the Vula mobile app to help with rural diagnoses, specialist advice and referral, and to provide priceless remote, case-by-case learning. The system proved so effective that 20 specialties use it with the number growing. In 2018, Vula won the Western Cape Department of Health referral tender, although it is already in unofficial use nationwide. The referral device has led to a decrease of up to 25% in the need to visit a specialist in several rural areas. Specialists from different fields donated their time to work with the Vula team to design functionality for their own disciplines. This enabled the app to scale up and include referral forms for any number of specialties.

## Cutting down referrals

Blanckenberg wants to study the correlation between the number of Vula app referrals and visits to specialists in referral hospitals and quantify the drop in a decrease waiting times. "We should be able to bring about a significant drop in the number of patients who need to travel to referral hospitals to benefit from a specialist opinion," she adds. Her most recent three-year stint as a Medical Officer at Northern Cape Community Health Centres, Fraserburg and Sutherland, where a patient referral can sometimes mean a 1 600km round trip, proved instructive. Child care issues can result in women not making the trip.

"Many rural patients are illiterate, terrified and feel lost in big hospitals, causing some to refuse to go... If you can avoid sending them by using this app, that's great," she adds.

The Vula app stores the call roster input of each department in a network of secondary and tertiary hospitals, enabling instant access to the specialist on call. Blanckenberg's study will focus on the Western Cape, where there has been dramatic uptake due to the newly won Vula tender, rendering her data collection easier.

For the moment, however, she lives with her engineer husband at the South African Astronomical Observatory in Sutherland, where until 2018, she provided patient care, 24/7 emergency support and mentored nurses at two remote community health centres. She was the only doctor for 130km.

## Game-changing approach

She has followed a similar rural medicine path to Mapham, being forced to 'make a plan,' when faced with shortages of staff, essential equipment or supplies. This prompted her to collaborate with corporate donors to obtain medical equipment and supplies worth R400 000 for the remote Northern Cape community healthcare centres − and to organise alternative emergency transfers of patients when local receiving facilities were crippled by system failures. Like Mapham, she is a game-changer.

Blanckenberg chose to study for the new MBA in Healthcare Leadership after over a decade of rural work. She completed the McCord Hospital rural vocational training programme after a stint at Mseleni Hospital. Years of district hospital work followed in Kwa-Zulu Natal and Hermanus, where she completed her family medicine training through Stellenbosch University. She then worked at Nkhoma Hospital in rural Malawi. As a Medical Services Manager at Hermanus Hospital for three years she experienced hands-on healthcare leadership after years of being "in the trenches".

## Good healthcare leadership vital

"If you don't have good managers you can be the best healthcare worker in world but you're completely hamstrung," she says. Her decade of rural experience has sparked a passion to provide excellent quality, compassionate healthcare to those least able to afford it, thus, in her words, "affirming their human dignity and worth."

"I love finding creative ways to do more with less and feel most at home working in rural low-resourced settings, especially in the context of the district health system.

Past experiences have highlighted to me that even the most motivated and skilled doctors and nurses can be rendered ineffective, even crushed, by a badly run health system."

The Discovery Foundation Rural Fellowship Award will enable her to complete her research and move more quickly towards her next goal of becoming a district healthcare manager. With 0.3 medical practitioners for every 1 000 people, and 0.10 medical specialists for every 1 000 people in the public sector in 2018, the value of this duo's work becomes inestimable.

/05

"Patients are often illiterate, terrified and don't know where to go. If you can avoid sending them by using the Vula app, that's great."

## DR JACINTO KAPP

***Rural Individual Fellowship Award***

*Walter Sisulu University*

*Validation of the Simplified Acute Physiology Score (SAPS 3)*

/05

***For Internal Medicine registrar, Jacinto Kapp, a near-death experience gave new meaning to his research on adapting an international mortality prediction model for local ICUs.***

The inclusion of his own presenting vital signs in his 800-patient data set was only prevented by a motorist who stopped to help as he bled profusely from a gunshot wound in his arm, inflicted by would-be hi-jackers. Jacinto was on his way to Durban from Umtata's Nelson Mandela Academic Hospital to visit his parents in April 2005 when he slowed down for speed bumps on the N2 near Harding in Kwa-Zulu Natal.

"I just heard the passenger window breaking and felt blood coming from my arm. The bullet hit me just below the elbow joint and severed the radial nerve. I had no extension of the wrist or fingers, so I floored the car and drove as far as I could. I couldn't change gears," he recalls.

He pulled over after two or three minutes, got out and flagged down an approaching car in the gathering dusk, fortunately occupied by a generous and concerned driver.

"I'd lost quite a bit of blood by then, but didn't feel much until I stopped my car. It affected me quite badly and I was off work for nine months, with no function in my left arm. I had two operations including a tendon transfer and extensive rehabilitation to get it working again," he adds.

### Juggling study and child-raising

This father of two young children and his psychologist wife live in Port Elizabeth where she is a partner in a holistic private practice. He is in his third year of Internal Medicine, almost fully recovered, with only minor impairment.

Jacinto believes his decision to resume his Community Service in January 2006 at Uitenhage Hospital, 36km away from Livingstone Hospital, might have had something to do with the trauma he suffered.

"I think that was part of the reason. Somehow the environment affected me," he explains.

He has always wanted to be a doctor. His uncle, John Kapp, a Port Elizabeth GP, whom he later joined in private practice for four years, was a seminal influence.

"My parents moved to Durban while I was studying medicine and I always remember him in his office, the smells and kinds of things he was doing. It was always very interesting to me," he adds.

Like many health professional couples, Jacinto and his wife juggled study, work and child-raising while qualifying and setting up their careers, with Jacinto admitting, "it was quite a rough ride, swapping over from private practice to public service and vice versa – and doing all that at once."

His mother, Joey Kapp, a former high school teacher in Port Elizabeth and late father, Michael, a credit control manager, were sterling supporters of him and his two younger brothers, one a teacher in Stutterheim and the other an electrician in New Zealand.

"My parents never steered us, but rather supported us in whatever we chose to do," he says.

Which led him to medicine and his current development of the highly applicable, locally adapted Simplified Acute Physiology Score (SAPS 3) in a tertiary ICU.

*Severity scores are important because they describe an ICU population in a local ICU. In this case the Eastern Cape or more specifically the Livingstone Hospital.*

/05

## Developing a model for critical care specific to Africa

Jacinto explains that patient-cohorts from African countries were not included in developing the existing mortality prediction models.

“No African country was involved in the original validation of this widely used severity score. In Africa, we have a vastly different ICU population, with younger people, HIV, far more trauma, TB and more infectious diseases,” he adds.

Doctors use the SAPS 3 model when a patient is admitted to ICU to collate their blood pressure, pulse, blood values and several other vital readings, giving physicians a percentage score for use as a predictor of survival. Jacinto explains that the local validation and adaptation is necessary because very few South African ICUs use the SAPS 3 or older Apache 2 model.

“Consequently, there’s currently very little objective data of what we’re doing right or not. Severity scores are important because they describe an ICU population in a local ICU, in this case the Eastern Cape, or more specifically the Livingstone Hospital demographic area,” he says.

The adapted model will support evaluation of any local ICU’s standard of care and help doctors decide which groups of patients will benefit most from ICU admission. Jacinto’s study, which is almost complete, will also help with drafting broad ICU admission policies. Focused on Livingstone Hospital’s 12 ICU beds and four step-down beds, his study was conducted over 12 months on first-time ICU patients. He inadvertently reveals the amount of work that was involved in his research when asked what excited him most about it.

“That I’m almost done,” he quips. There are likely to be many grateful colleagues in emergency and critical care medicine as their work becomes more streamlined and effective by using this new fit-for-purpose assessment tool.

## The adapted model supports evaluation of care and setting ICU admission policies

“There’s currently very little objective data of what we’re doing right or not.”

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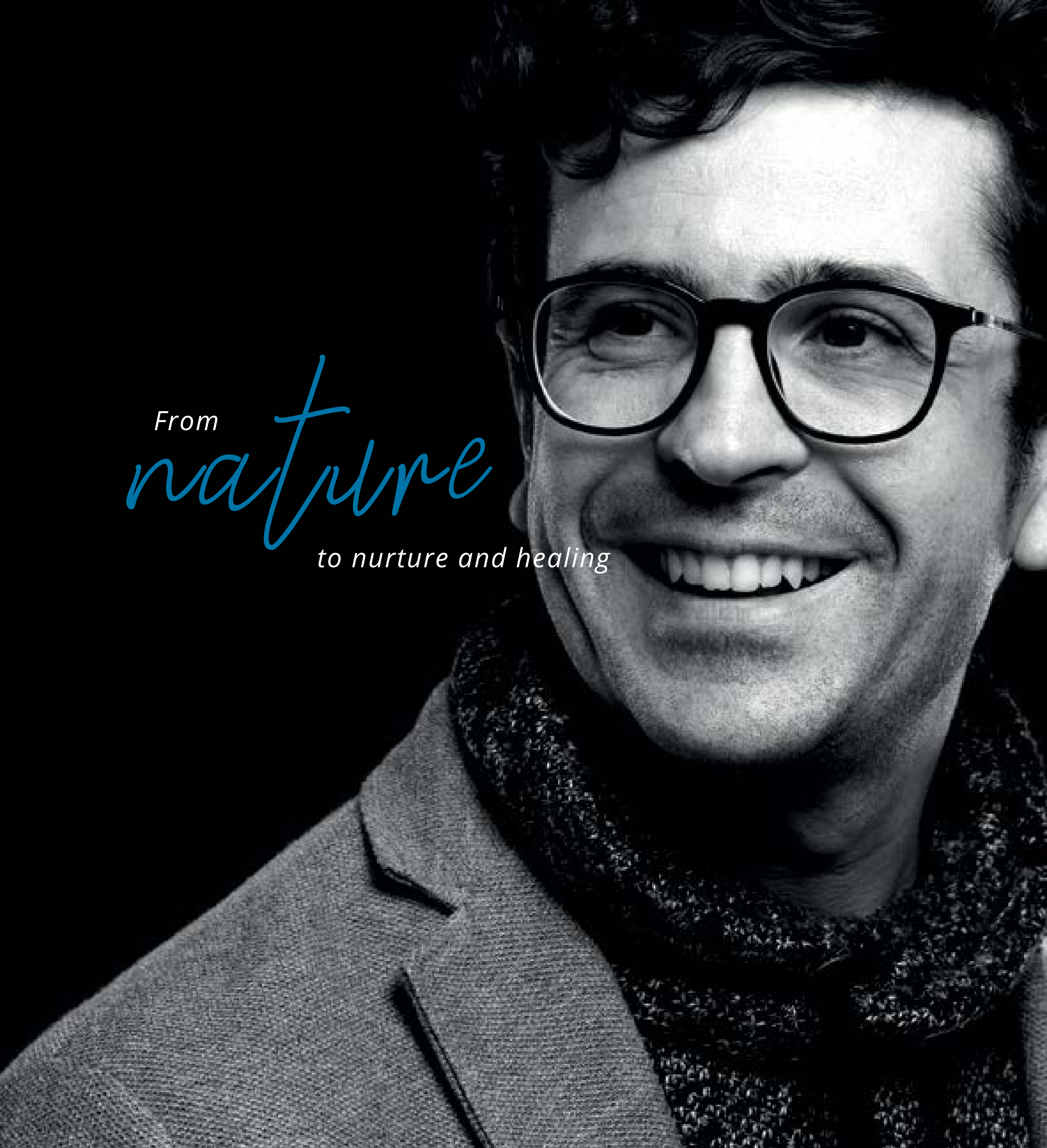



## DR JONATHAN OXLEY-OXLAND

***Rural Individual Fellowship Award***

*Walter Sisulu University*

*Assessing the scope and resource burden of severe Theophylline toxicity.*



/05

***For former Rondebosch Boys High School matriculant, Jonathan Oxley-Oxland, now a 32-year-old registrar in Internal Medicine at Livingstone Hospital in Port Elizabeth, his dad's career as a marine biologist was where it all started.***

"It began with an interest in biology and nature. Watching him work, I felt that the ultimate in applied biology would be medicine. Internal Medicine was a field where you have to take all systems into account. I loved the way everything was related. The whole body functions interdependently – and Internal Medicine forces you to have an understanding of all the different systems and how they relate to one another. I guess my decision to specialise in this discipline stems from that desire to see it all put together," he says.

Born a dozen years later than his three older siblings, Jonathan had more solo time with his dad, accompanying him on his marine expeditions and exploring the great outdoors. Jonathan chose to study medicine at the University of Cape Town, before travelling to the Eastern Cape for his internship. He was grateful to secure an extended tenure there through his Community Service posting. Working at various State hospitals in the Nelson Mandela Metropole, he settled down at Livingstone Hospital where he has been shifting between various departments as a medical officer since 2012.

A six-month spell as a casualty officer at a private hospital in PE gave him a taste of that sector, but the lure, challenges and thrill of a public hospital drew him back to Livingstone Hospital.

### His study aims to free up resources and create awareness

Supporting his application for the Rural Individual Fellowship Award, Dr Elizabeth van der Merwe, the Head of the Adult Critical Care Unit at Livingstone Hospital, expressed concern about the results of often-inappropriate use and over-prescription of Theophylline, a third line treatment for asthma and chronic obstructive pulmonary disease (COPD), in her unit.

Highly toxic and easily available in pill form, the ever-present use of Theophylline in primary care healthcare facilities is suspected of increasing the burden of patient care in the local ICU – not to mention the expensive use of scarce dialysis equipment to help detoxify patients. Dr van der Merwe wrote, "We as specialists have noticed the burden on limited resources caused by this preventable condition. Quantifying and characterising these cases may assist in advising regulators and clinical bodies involved in clinical practice guidelines on how to position Theophylline."

Jonathan will be conducting a retrospective, descriptive study assessing the scope and resource burden of severe Theophylline toxicity in Livingstone Hospital's critical care unit.

This inappropriate use of the medicine means more patients are coming to the ICU than necessary, putting avoidable pressure on all resources. Dialysis, which is required to clean the blood in cases of severe Theophylline overdose, also costs a lot of money. "There are always more patients that need dialysis than what we can offer, so we have to stratify to see if it's an appropriate case to get dialysis – and in severe Theophylline overdose it nearly always is," he stresses.

It began with an interest in biology and nature. Watching him work, I felt that the ultimate in applied biology would be medicine. Internal Medicine was a field where you have to take all systems into account. I loved the way everything was related. The whole body functions interdependently, and Internal Medicine forces you to have an understanding of all the different systems and how they relate to one another. I guess my decision to specialise in this discipline stems from that desire to see it all put together.

**DR JONATHAN OXLEY-OXLAND**



# /05

### Reducing the use of Theophylline

Jonathan says, “This medicine can cause seizures and it’s quite resistant to treatment. It can also cause severe abnormalities, like arrhythmia (irregular heartbeat), by depressing potassium levels. All of this, if not managed properly, can lead to death.”

He says such cases come to Livingstone Hospital from throughout the Nelson Mandela Metropole and beyond, emphasising that many patients have non-severe Theophylline toxicity, which his study will not cover.

Jonathan says Theophylline has been around for over 35 years and has been superseded by other, more expensive medicines – although in the South African public sector it still has a place – if used correctly. When overprescribed in an often critically under-resourced environment, it can have a severe knock-on effect.

### Over-prescription is a real danger

“It’s easier and cheaper to prescribe than an inhaler, which a clinician has to demonstrate how to use. My suspicion is that the lack of awareness around the current guidelines on asthma and COPD is contributing to its over-use,” he says.

He adds that it is so readily available that often a friend or family member of the patient uses it in a suicide attempt. “Para-suicide is a global problem – it just so happens that Theophylline is available and toxic. If it wasn’t this medicine, it would probably be something else,” he adds.

They key potential for his study lies in Livingstone Hospital being a tertiary hospital in an under-resourced referral environment, reflecting the situation countrywide. It will hopefully inform primary care practitioners of the risks involved in prescribing Theophylline and make them more careful when prescribing it. The study also hopes to inform the national essential medicine list of the risks and costs incurred at Livingstone Hospital – and influence policy makers.

/05

*My suspicion is that the lack of awareness around the current guidelines on asthma and COPD is contributing to its over-use.*

**DR JONATHAN OXLEY-OXLAND**

# DR TRENTON OLIVER

***Rural Individual Fellowship Award***

*University of Kwa-Zulu Natal*

*Rate of non-adherence to antihypertensive medicine in stable hypertensive patients*

/05

***First-year Internal Medicine registrar, Dr Trenton Oliver, has some very personal reasons for having gone into medicine and research. Busy with his specialist training rotation through several Durban academic hospitals, he lost his policeman father in an on-duty car crash as a one-year-old child. Then just four years ago, his grandmother, who he lived with during his high-school years in Durban, was diagnosed with metastatic breast cancer.***

Strangely, on 14 January this year, he remembered his father while treating a man admitted to the RK Khan Hospital suffering from a massive brain bleed sustained in a car crash, exactly 26 years to the day after his dad died – of the same cause, at the same hospital. "I thought, this is also someone's father," he says, adding that while growing up he often considered becoming a neurosurgeon as a direct consequence of his childhood loss, but soon realised that, "cutting and surgery are not for me."

Trenton wants to be a specialist physician within three years and then super-specialise in medical oncology. "I grew up in Queensburgh in Durban and attended Pinetown Boys High. I lived with my gran for my high-school years. We grew very close," he adds. "If I can better care for cancer patients and maybe prolong life that would be great. I don't expect to find the cure for cancer, but I've developed a huge love for research that can improve people's quality of life."

Trenton developed his social and empathic skills by doing a large variety of vacation jobs while studying for his MBChB and living in residence on the UKZN medical campus. He had secured a medical school bursary with his matric marks and continued his academic achievements on campus.

## Simmering love for research

Trenton's love for research began simmering strongly after he successfully applied for a Discovery Foundation Award to conduct a retrospective study of 170 stable hypertensive patients at the Prince Mshiyeni Memorial Hospital hypertensive clinic in Umlazi. With his data collected, he wants to uncover the rate of non-adherence to anti-hypertensive medication in his cohort of patients, correlating this with age, gender and the number of medicines prescribed. His research has the potential to introduce widespread, targeted preventive interventions that could save many lives.

Trenton outlines some of the consequences of poorly controlled hypertension as strokes, vascular disease, gangrene of the feet and hands leading to potential amputation and permanent disability, and irreversible renal failure requiring ongoing dialysis, or a kidney transplant. "High blood pressure affects even your basic senses, your ability to walk or even see. And that's just the morbidity," he adds.

He says many people do not understand the difference between compliance and adherence, the former involving the timing, dosage and frequency of taking prescribed medicines, and the latter being the act of refilling a prescription on time. "I want to further this study. If you really want to address compliance, you have to do a qualitative study. Take a smaller group of a dozen or so chronic hypertensive patients and interview them, do home visits and do recorded interviews," he adds passionately.

He says factors affecting medicine adherence and compliance include patients' age (the elderly and the very young being most vulnerable for obvious reasons), co-morbidities and "even simple things like the doctor-patient relationship and poor counselling. "Language is a huge daily barrier that too many healthcare providers face," he says citing Prince Mshiyeni's drainage area (Umlazi) as being 99% Zulu-speaking.

## SA a world-leader in 50-plus hypertension

He says data shows that South Africa has the highest reported rate of hypertension among the 50-plus age group globally. "We need better counselling and communication to improve adherence, more social workers and more translators. Just the record taking itself is fraught and involves taking a travel history (for malaria testing for example), and what immunisations or vaccines or any other prophylaxis they have had. Many of our patients would rather see a traditional healer before taking prophylactics for travel," he reveals.

He says that for children and the elderly, support services are crucial, especially for those with diabetes.

"The simplest thing like having a social or healthcare worker explain the importance of their daily insulin shots can save a life," he adds. "Purely as a doctor, how can I make a difference seeing 500 patients a week? I mean, if we just had a better transportation system, you'd see an immediate drop in mortality and morbidity," he observes.

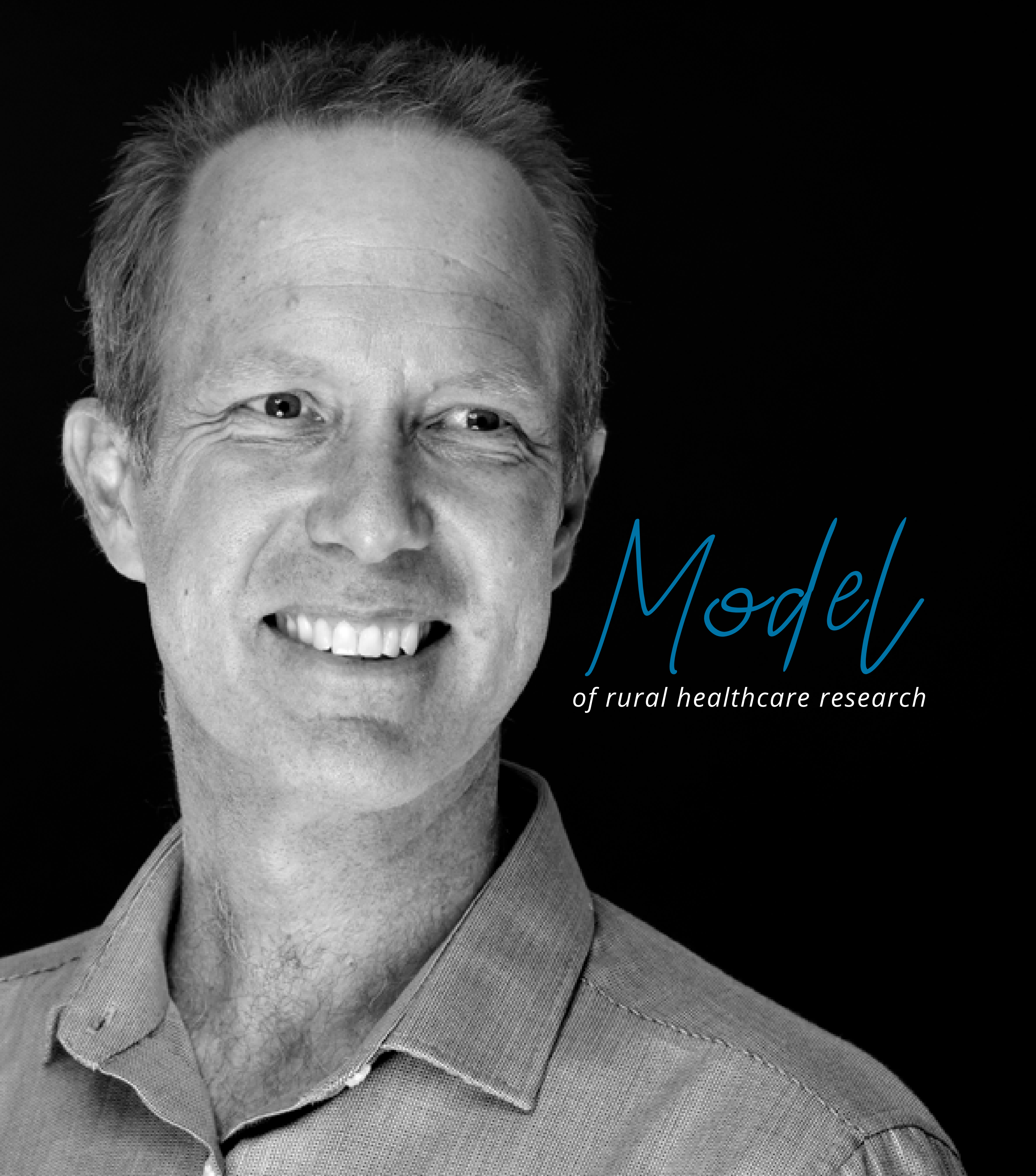
When his mind is not on his patients, Trenton is a surfer-lad who enjoys cooking, high-detail sketching (his art teacher was bitterly disappointed he did not study art) and spending time with his girlfriend who is also a medical doctor. "I would love for my study paper to be actioned while I take my research further," he concludes.

/05

*We need better counselling and communication to improve adherence, more social workers and more translators.*

## Awareness-boosting plans

Trenton is hoping to improve awareness of the dangers of uncontrolled chronic hypertension by persuading the Prince Mshiyeni Memorial Hospital to print and distribute catchy illustrated pamphlets, tailored to his specific local findings. He also hopes to place posters around the community and to start a multi-media messaging system, reminding patients of appointments and carrying preventive-behaviour messaging.




## DR KARL LE ROUX

### *Rural Institutional Award*

*Walter Sisulu University*

*To strengthen the capacity of the Zithulele Training and Research Centre in training rural healthcare workers and doing research that benefits rural medicine in South Africa and further afield.*



/05

***Four close friends who graduated from the UCT medical campus within a year of each other, shared the ideal of building a more equal society. They've since bonded further to create one of the country's most innovative deep rural district hospitals.***

Drs Ben and Taryn Gaunt and Drs Karl and Sally le Roux married before arriving at Zithulele Hospital in the Eastern Cape in 2005 and 2006 respectively. With a varied and complementary skill-set and open minds, they showed a willingness to get their hands dirty. The 146-bed hospital is snagged in a dusty web of rutted roads atop one of the rolling coastal hills near Coffee Bay, 99km from Mthatha. They immediately ran into the endemic challenges of many deep rural district hospitals, medicine and equipment shortages, low staff morale, a severe shortage of experience, lack of skills and supervision, and poor and scanty accommodation.

In the past almost 14 years, they have overcome nearly every obstacle, attracting and knitting together a large multi-disciplinary team of healthcare professionals, garnering several national awards. They've set up funding trusts, a local school, nutrition projects and a fast-expanding research and training centre to facilitate rural research and train healthcare workers. Neonatal mortality rates have plummeted, HIV and TB care is exemplary with incidence and death rates down, clinics run smoothly and some specific services, like eye-care, outstrip several regional Eastern Cape hospitals.

### Zithulele Training and Research Centre

They're a shining example of how "stick-ability," attracts like-minded healthcare professionals, eager to contribute and learn. The Zithulele Training and Research Centre will now also boost the research capacity of this on-site rural facility and significantly upgrade its digital, technical and physical infrastructure. This takes their initiative of three years earlier to source three funding streams and custom-build a research and training facility, to the next level. With an upstairs training hall seating up to 120 people, a boardroom, two offices, kitchen and leisure space, it also sleeps 30 people downstairs. It's uniquely linked to the hospital's paediatric and maternity wards by an upper-level walkway.

The funding of laptops, overhead projectors and data capturers, cabling and networking, voice-recorders and cellphones, support-staff and sound-proof room dividers opens the door wider for visiting experts and trainers to conduct on-site seminars and workshops for local and surrounding hospital and clinic staff.

## Ever-evolving and more focused on TB eradication

Karl le Roux is the Centre Manager who works on several research projects focusing on maternal and child health issues. "We're excited at the impact the centre's training, workshops and supervision will have on healthcare workers in the Eastern Cape," he says.

During a recent working visit to Princeton University, Karl and Sally met a TB expert and Professor of Global Health from Harvard, Proffessor Salmaan Keshavjee, a colleague of the world-renowned Dr Paul Farmer, the medical anthropologist, physician and author of the seminal, "In the Company of the Poor". "He described a more comprehensive approach to TB than we have in South Africa and different ways of treating and preventing TB, including latent TB infection. We'd like to use our centre as a base for an ambitious rural TB eradication programme, which we can then document to benefit rural areas in South Africa and other parts of the developing world. We're trying to get researchers out from Harvard, UCT, Stellenbosch and the Medical Research Council to put together a rigorous research protocol, using a health-systems approach so we can get on top of TB in our area, and ultimately our country," he enthuses.

The Zithulele clinical team has nurtured excellent ongoing relationships with all the aforementioned institutions. With the centre's new training and global digital connection capacity, it will provide an ideal base.

## Measured, practical steps

Tactically, the team took the exact right initial steps, addressing the constriction of life-blood in any deep rural hospital, financial support and accommodation. Their umbrella Jabulani Rural Health Foundation is a broad-based NGO that, besides supporting the hospital, now provides pre-school education, pays translators and builds and manages accommodation.

Both couples have raised children on site, the eldest now teenagers, Sally has also diversified. "She initially divided her time between home-schooling our kids and her paediatric HIV clinics. We saw a whole bunch of local kids attending schools that weren't equipping them for life. Some NGOs set up a school and tried to source teachers, but nobody applied. So Sally volunteered in 2016, and is now the 'headmistress' and studying to become a qualified teacher through a distance learning course," he says.

The Zithulele Independent School teaches 48 kids from Grade R through to Grade 4, and Sally still puts in four hours of HIV paediatric work each week at the hospital.

Karl's magic wand would be waved at allowing proven reliable rural hospitals to manage their own affairs so that procurement and supply-chain management is enhanced.

The original clinical quartet came to Zithulele out of a sense of calling to work in rural medicine. That's sustained them through the darkest times.

/05

*We're excited at the impact the centre's training, workshops and supervision will have on healthcare workers in the Eastern Cape.*

## DR RUST THERON

***Distinguished Visitor Award***

*University of Stellenbosch*

*Experienced clinicians to visit the Dr Harry Surtie Hospital to support clinical governance, implement systems as well as to develop and train local staff.*

/05

***If ever there was a potential illustration of how one carefully placed veteran specialist physician can help turn things around, then the beleaguered 327-bed Dr Harry Surtie Hospital in Upington, is a blank test canvass. The project is part of broader support of the relatively isolated Northern Cape hospital by the University of Stellenbosch Faculty of Medicine and Health Sciences, spearheaded by the Ukwanda Centre for Rural Health, under the leadership and guidance of Professor Ian Couper.***

As a Distinguished Visitor, Durbanville specialist internist, Dr Rust Theron, will conduct bi-monthly two-day visits to the regional hospital. The nearest tertiary hospital is in Kimberley, over 400km away, with Cape Town almost double the distance. With just 30 doctors spread unevenly across departments, Dr Harry Surtie Hospital has two medical officers running an orthopaedic department and a cataract elective surgery waiting list approaching the 400 mark. The Surgery Department has two Community Service doctors under a single surgeon.

### High mortality rate

Perhaps most tellingly, the hospital's bed usage rate is 81%, with 2 542 admissions and 454 deaths in the 2017/2018 financial year. Dr Theron's impending intermittent tenure over 18 months from July 2019 is already raising hopes and morale. Dr Wentzel willingly became point man for the collaboration with the Ukwanda Centre that sees some 30 University of Stellenbosch medical students rotating annually through all the disciplines at Dr Harry Surtie Hospital. The Ukwanda Centre also sends allied healthcare professionals there, and from August 2019, six Cuban-trained South African medical students will also complete a 15-week primary healthcare rotation that will include the referral community-based clinics in the area.

Professor Couper says, "The primary goal for Dr Theron is to fill the gap in Internal Medicine, although they also have big gaps in orthopaedics and ophthalmology, for instance. The big challenge is the number of district hospitals and clinics that refer into Dr Harry Surtie Hospital." He says University of Stellenbosch and Ukwanda have a long association with the hospital and the current initiative came from a visit by two Vice Deans and Professor Couper in January 2018. "We discussed the possibility of doing training and then followed up in May last year with a multi-specialist visit from our medical faculty, including occupational therapists, physiotherapists, a speech-therapist and a group of us from Ukwanda," he says.

He says Ukwanda's experience is that medical students respond well to working in small hands-on teams at district hospitals. As part of this new approach, Ukwanda sent four medical students to Dr Harry Surtie Hospital for the entire year with online and conferencing support from Tygerberg Academic Hospital and Ukwanda, to fill the on-site consultant gaps. There are plans to upscale student numbers from next year.

## Plugging the service gaps

He says Dr Rust Theron's bi-monthly two-day visits to Dr Harry Surtie Hospital is all about filling the current service gaps with indications that Community Service applicants for the coming year are already showing increased interest, "because they see something is happening here".

Dr Wentzel says there are 10 Commserve officers at Dr Harry Surtie Hospital, but that over the years the allocation has varied widely, with just five arriving in 2018. Professor Couper says that Dr Theron will also deal with the more difficult cases and help solve diagnostic conundrums, while training the medical team and auditing poor outcomes and the dismal mortality numbers.

"We're hoping to eventually get Dr Harry Surtie Hospital re-accredited for internship and in future perhaps do some post-graduate training there," Professor Couper adds. Dr Wentzel said Professor Couper helped push the Distinguished Visitor application because of the service needs that go beyond the University's mandate and resources. "The students being trained here may spread the word − it's exciting to those of us that want to do further teaching, degrees and write up articles. The daily functioning of the Internal Medicine Department will improve, if medical officers who want to do Internal Medicine hear that there's this great internal physician coming every two months. I want to help this hospital serve as it's supposed to. It covers a vast area and one of my five-year goals is to get internship accreditation to improve learning for juniors," he adds. He's now got some deep experience and wisdom behind his dream through support from Dr Rust Theron.

## Distinguished Visitor to make impact at Upington hospital

Dr Theron, who from January 2014 helped pioneer the training of medical students in private practice at the Durbanville Medi-Clinic where he's based, holds an MPhil degree in Health Professions Education, having graduated cum-laude in MMed (Internal Medicine) from University of Stellenbosch in 1995. He's a respected physician with a research portfolio, ranging from diabetes, cardiology and gastroenterology to hypertension. He will assess the situation at the hospital before prioritising areas to address, whether it be teaching during ward rounds, workshops or clinic visits. Says on-site paediatrician, Dr Brad Wentzel, "We're very grateful to University of Stellenbosch, Discovery Foundation and Dr Theron for this intervention – it's going to make a huge difference."

*Indications are that Community Service applicants for the coming year are already showing increased interest, because they see something is happening here.*

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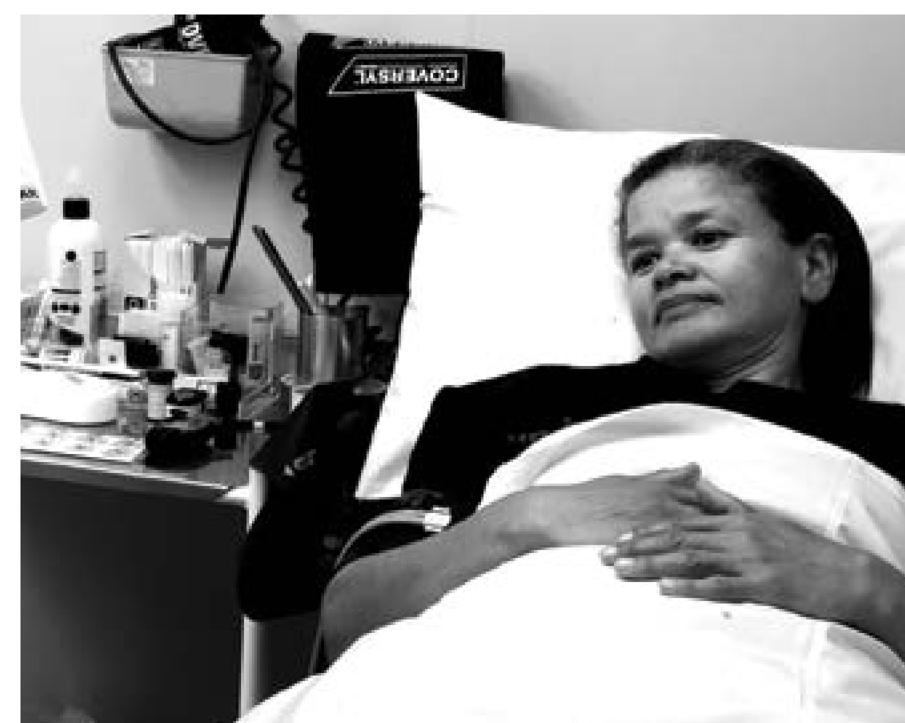

# DR DAVID STEAD

## *Rural Institutional Award*

*To support the district clinician's specialist hospital visits, their attachment to Cecilia Makiwane Hospital as well as curriculum and materials development in the central Eastern Cape.*



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***Junior doctors who are eager to learn give Dr David Stead, Head of the Division of Infectious Diseases at Cecilia Makiwane Hospital in Mdantsane, the greatest joy in his pressured daily work.***

Other things that delight and keep him going in the growing HIV and TB infection burden, are solving difficult medical cases and the gratitude that patients show. "I enjoy my patients, especially those I get to know in the outpatient setting and those who have responded well to treatment – that's always very gratifying. Unfortunately, there's also a lot of death and poor outcomes. But mentoring keen young doctors really energises me," he admits.

Dr Stead and three fellow consultants will embark on an ambitious but hopefully highly effective structured three-year programme to support inexperienced district clinicians. They're strung out among 12 district hospitals, five community health clinics and 150 clinics serving the estimated 900 000 people in the Amathole Region (former Ciskei). Cecilia Makiwane and East London's Frere Hospital are the only regional and tertiary hospitals. The population suffers from a high burden of HIV, TB and opportunistic infections that often overlap with lifestyle-related hypertension and diabetes.

The planned intervention was conceptualised by Dr Andy Parrish, a 25-year veteran at Cecilia Makiwane Hospital, Dr Jenny Nash, the Amathole District Family Physician and Dr Stead.

### Ideal mentoring skillset and experience

Dr Stead not only has a deep academic knowledge of infectious diseases and HIV medicine, but worked as the Principal Medical Officer in HIV Services at the former GF Jooste Hospital, which once handled most of the Cape Flats HIV and trauma burden. He cut his teeth further on HIV medicine by joining the ground-breaking Medicines Sans Frontiers team in Khayelitsha to roll out antiretroviral treatment well before 2004.

His experience is what the Eastern Cape desperately needs. The HIV prevalence in the 15 to 49-year old population reached an alarming 25.2% in 2017, according to the SA National Household HIV Survey. The same local survey five years earlier showed HIV prevalence in the Eastern Cape to be 19.9%. The World Health Organization's TB incidence figures for the province in 2015, were the highest in the country at 692 cases for each 100 000. "So, we're keeping more people alive on ARVs, but have made little progress in preventing new HIV infections," Dr Stead observes.

## Making a plan

Before this initiative, Dr Stead says there were ad-hoc district clinical support teams that made about three outward visits a year. "The consultants tended to get a heavy work load when they arrived, instead of teaching. We want to create the opposite of dependency through building skills and hopefully taking some pressure off the regional hospitals," he emphasises.

Dr Stead was born and grew up in Cape Town, the son of a biochemist father who did related computer-based training and set up rural computer skills training in the Eastern Cape. Dr Stead's wife is an ordained minister who runs a counselling practice. His grandfather, Dr Halley Stott, was the founder of the pioneering Valley Trust in Kwa-Zulu Natal providing nutrition, agricultural support, primary healthcare and sanitation across the deeply rural Valley of a Thousand Hills beyond Durban.

About his biggest influence in rural medicine, he says, "As interns, a friend and I chose East London, knowing we probably wouldn't get a post in Cape Town. I remember the paediatric and medical outreach trips over bumpy roads to sites like Cofimvaba with some legendary tutors. It got under my skin. That's why I came back," he confesses.

## Creatively supporting district clinicians

"Ideally, complex cases require specialist care. Because it's so rural and with limited access to ambulances, many patients are managed at primary healthcare level and at district hospitals. These young doctors shouldn't be handling these patients without senior support, but they simply have to," he says.

Dr Stead plans to implement a structured rural training and support programme over three years. The three colleagues will make monthly visits to district hospitals and bi-monthly visits to smaller hospitals assessing their clinical needs and challenges, improving communication, building relationships and helping them manage and learn from difficult cases. An average of four district clinicians will also spend a week every month at Cecilia Makiwane Hospital to receive training according to the skills they most need. "We must understand their limitations in resources and what they have to work with. We have to adapt the training to the resource gaps," stresses Dr Stead. District clinicians will also receive a handbook of internal medicine tailored to the Eastern Cape and connectivity for weekly Skype-based discussions.

*Mentoring keen young doctors really energises me.*

# Changing

*our ways of being – The 'Leadership in Action' initiative*

## PROFESSOR LOUIS JENKINS

***Rural Institutional Award***

*University of Stellenbosch*

*To assist George Hospital to implement a sustainable leadership development model, based on the Values-driven Leadership in Action programme initiated by the Academy of Business in Society (ABIS), for healthcare services in rural districts.*



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***Imagine how much better patient care would be, if we instilled in overworked healthcare staff a constant awareness of their common humanity, mutual respect and patience, with active on-site leadership?***

Add to that collaborative team work, listening to one another in a more flattened hierarchy and mutually acknowledged best care practice, and you very quickly have a more functional, efficient healthcare system. That's the working theory, but Professor Louis Jenkins, Head of Family and Emergency Medicine at the Stellenbosch University-linked George Hospital wants to help turn it into a sustainable leadership development model. Pragmatic, ethical and values-driven team practices will lie at the core of the envisaged leadership training.

This George Hospital-based veteran physician has targeted two health districts in the Western Cape for a two-year values-driven 'Leadership in Action,' outreach workshop programme.

### Solid corporate and academic backing

Besides the Discovery Foundation, he has some formidable backing through the Department of Family and Emergency Medicine at University of Stellenbosch, the Academy of Business in Society, the Nottingham Business School, the IBM Corporation, and Glasko-Smith-Klein Pharmaceuticals. With Professor Arnold Smit, Head of USB Social Impact at University of Stellenbosch School of Business and Dr Zilla North, his George Hospital medical manager, the team will host cross-disciplinary, weekend workshops in the Garden Route and Central Karoo Districts. If they achieve the desired impact, the model will be rolled out to other districts, even provinces.

George Regional Hospital serves 10 district hospitals and Professor Jenkins, with his substantial rural health experience, is intimately familiar with the human resource, equipment and administrative challenges of rural primary healthcare.

"We know from experience that stable, robust rural healthcare teams are built on a long-serving, dedicated and committed leadership core. We want to impart the skills and values-driven practices that help make sustainable leadership possible," he says.

## Systems implode without the right leadership

He cites an example of the Beaufort West District Hospital losing its medical manager. "Suddenly the junior doctor team was without leadership. It impacted hugely on their social worker, nurses and allied health professionals. Eventually, a medical officer became the clinical manager and then the medical manager, and has now been there for five years. Today, it's one of the most robust hospitals in our area," he says.

Asked to outline on an ethical dilemma, Professor Jenkins cites a medical doctor, working in eye clinics where 60 to 70 patients are booked daily, who often works until 20:00 on clinic days. "The ethics of balancing good patient care with wholesome self-care will be explored in these workshops. Understanding what values drive us, and developing better self-management, are just some ways to keep colleagues healthy and retain them in the rural areas," he adds.



## Assumptions are destructive

Often there are assumed values around respect and trust, which illustrate a power gradient. "For example, when a community service doctor at a district facility calls a more senior regional hospital doctor who snappily asks why they cannot do the procedure themselves. It's very easy for regional staff to be presumptuous, not realising what their district or primary healthcare clinic colleagues are up against," he adds.

Building trust involves taking time to ask after one another. "We want to recognise the common humanity among staff and our patients," he says.

"If somebody refuses to do something, going the disciplinary route can be destructive. Instead, ask them what's going on. They might be having financial problems or be a single, divorced mother. Asking in an unguarded moment can build, heal and restore meaning for this person at work. If somebody's lost their joy and bordering on burnout, that helps. It's about awareness, listening unconditionally and caring. That's what brings us together," he stresses.

Asked how one builds resilience to avoid burn-out, Professor Jenkins says experience has taught him that it's not just about hard outputs such as the number of patients you attend to, operations, outreaches or cost-efficiencies.

A Western Cape survey conducted three years ago on behaviour change, organisational behaviour and performance in the provincial healthcare system, highlighted some concerns. "Staff reported that they experienced the workplace hierarchial and that they weren't appreciated or being heard. Since then, there's been an active process of culture change to improve things at all levels – and our work is aligned with this," he says. As part of his work, a graphic designer will develop a high-quality practical workbook to bolster the training and to help develop more trainers for the rollout of the values-driven 'Leadership in Action' programme.

Professor Jenkins observes that South Africa has gone through a period of "very questionable" ethics in many sectors recently. "But there's been a turn and we recognise that to practice ethical medicine, ethical leadership is critical. We want to be part of new hope in South Africa," he adds. Married to a former primary school teacher, Professor Jenkins runs three times a week and loves gardening and planting trees on his smallholding near Wilderness.

## Ethical leadership development

The programme will focus on ethical dilemmas with systemic consequences. The goal is to build relationships and enable communication and collaboration to resolve health-system issues. Professor Jenkins says there will be five annual workshops consisting of three multi-disciplinary ones, one train-the-trainer and one trainer-accreditation workshop. "We'll ask all facilities to nominate people. We're keeping the workshop down to about 15 people to ensure it is interactive and allows people to discuss real ethical dilemmas."

# Upskilling

*disability peer supporters –*
*The Manguzi Rehabilitation Team*

## MALUMULELE ONWARD, ADRI CRONJE, DR GILLIAN SALOJEE

### *Distinguished Visitor Award*

*To assist the Manguzi Hospital in improving the outcomes in children and adults with moderate and severe disabilities and enable the peer support services in Manguzi to evolve into parent-led services.*



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***Rehabilitation therapists at the deep-rural Manguzi District Hospital in northern Kwa-Zulu Natal, and beneficiaries of 40 years of trailblazing care, are building on a fundamental human truth about caregiving, 'nobody knows a child better than his or her parents'.***

The other is, 'nobody can empathise, understand or win the trust of a disabled person like another person with that same disability'. This second fundamental truth is most effectively applied in rehabilitation of patients with spinal cord injuries. Occupational therapist, Adri Cronje, has devoted the past 12 years of her life to working with children with cerebral palsy and more recently, training and counselling their caregivers. Adri is a person the community has grown to trust and love. Quoting a grandmother at a recent peer training workshop, she says, "The Gogo said to me, 'this is nothing you haven't told us, but we couldn't believe you because you're not the mother of the child. You have all this book knowledge and theory and experience but mothers relate to mothers."

This experience cemented a belief long-held by Adri and her colleagues that training primary caregivers, especially mothers, significantly improves the quality of life and longevity of their patients.

"I realised my job was to guide and supervise, and let them get on with it by teaching and supporting each other. We believe they're the ultimate therapists," she says. That week-long workshop was led by one of her first trained peer-supporters and was aimed at mothers of children with cerebral palsy. Called the Carer-to-Carer Peer-Support-Club (C2CPSC), it has proved enormously successful. A powerful illustration of the value of parent-support of one another and of disabled people, emerges from the follow-up records of Manguzi's disabled outpatients. In 2015, when Discovery Foundation funding was first secured, the follow-up rate was 25%. Three years later it is 61%.

*Carers and peer supporters in the community keep patients in touch with the hospital and identify and recruit new patients, many that suffered tragic neglect. Manguzi's team has built up a network of 183 children with cerebral palsy and their caregivers who are working with a "parent-facilitator" or "peer-supporter".*

## Sustained peer-supporter training kicks off

A Distinguished Visitor in the person of rehabilitation veteran and physiotherapist, Dr Gillian Saloojee, will begin visits to Manguzi Hospital in August 2019 (Gillian is the founder of the pioneering Malamulele Onward NPO that works with children with disabilities, in particular children with cerebral palsy living in rural, resource-constrained settings. Gillian and the Malamulele Onward team will make six week-long visits over 18 months. A Master-parent-facilitator trainer, Lydia Ngwana, and monitoring and evaluation specialist, Vutomi Ringane, will accompany the team.

Their aim is to improve outcomes in children and adults with moderate to severe disabilities and enable the peer-support services in Manguzi to further evolve into parent-led services. As Gillian says from bitter experience, “A short-term intervention is really quite meaningless”. Her mortality data tragically illustrate this. Her recent research in the Nquthu district of Kwa-Zulu Natal revealed an alarmingly high mortality rate of 79 in each 1 000 children and adolescents with cerebral palsy. Additionally, only half the children needing rehabilitation were accessing it, while no teenager or young adult was receiving any kind of support. “Teenagers and young adults living with cerebral palsy are an invisible population,” says Gillian.

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In contrast, at Manguzi Hospital, Adri has cared for and organised trained parent care for cerebral palsy patients who’ve lived well into their 20s and 30s. Gillian’s evolution and creation of Malamulele Onwards, (Malamulele meaning The Rescuer in Shangaan), began after working at Chris Hani Baragwanath Hospital in Johannesburg where she ran the cerebral palsy clinic, seeing some 300 children a month.

“I had to wonder what real difference I was making with so many kids and so few resources. So, I went off to research that and try and discover how one could improve on this seemingly hopeless situation. I spent two years interviewing parents attending public service hospitals throughout Gauteng and Limpopo, and saw just how desperate mothers were for services and support.” she says. An unanticipated outcome was the non-profit organisation, set up to find innovative solutions and ways of providing effective rehabilitation to children. The organisation was named after the village of Malamulele in Limpopo where the project was first piloted. Much has changed since this first outreach with nine volunteer therapists who worked with 27 children over a five-day period.

“We’ve learnt that while therapy can result in amazing improvements over a short time, we cannot make a real, meaningful and lasting difference unless we adopt a comprehensive and holistic approach to create a nurturing and supportive environment. This includes the child’s mother, family and the local rehabilitation services. Cerebral palsy is for life, it does not take a break and caring for a child needs to become a way of life. The ultimate therapist is the child’s mother and we need to give her the skills, knowledge and confidence to understand and bond with her child, to do everyday things in a helpful way and to feel prepared for a lifetime of caring. We have discovered that the best way to do this is to train mothers as parent facilitators or peer supporters to train and support other mothers in their communities. A mother with the experience of caring for a child with a disability is a powerful game-changer – she speaks from her own experience and instantly connects with other mothers in a way that therapists will never be able to,” says Gillian.

*Teenagers and young adults living with cerebral palsy are an invisible population.*

## Manguzi – a long and fortunate history

Manguzi Hospital is among the early beneficiaries of Dr Pam McLaren, an occupational therapist who pioneered rural rehabilitation services, winning the Lifetime Achievement Award from Rural Rehabilitation South Africa in 2015. She and one of the several current stalwarts of Manguzi, Jabu Ndlovu, (winner of the Rural Doctors of South Africa, Therapist of the Year Award in 2016), are responsible for Manguzi being one of the oldest, most effective rural rehabilitation departments in the country, having first visited in 1980.

Manguzi's rehabilitation chief, multiple-award winning veteran physiotherapist, Maryke Bezuidenhout, runs the spinal cord injury service. She works with occupational- and physiotherapists to strategise, network and provide psychosocial support, imparting critical wheelchair skills and providing a wheelchair repair service. "Not enough is known about the inputs, outputs and impact of peer-support work in rural areas and Dr Saloojee and her team will begin to address this," Maryke explains.

Another local innovation, Manguzi's High Risk Baby Programme, established in 2006, has 3 600 babies on its data base. The local rehabilitation team identifies high-risk babies before categorising them by disability (Downs syndrome, cerebral palsy or developmental delays). This information is included in the mother's maternity file, and coded red, orange or blue based on the risk. This improves nursing and doctor care, allowing the therapists to help out at the first sign of complications. Again, educating mothers, many of them teenagers (the highest defaulters on follow-up visits), is crucial.

Maryke skillfully negotiates the 16km of sand-dune roads from her home to the hospital on her scrambler motorbike, and uses it to conduct outreach visits. "The other day, some spinal cord-injured guys asked me if they could use a bike like mine to get around. I told them it would be physically impossible. But now I'm on a four-by-four quad bike fund-raising mission, because that would transform their lives," she laughs.

## Unleashing skilled "Mom power"

Malamulele Onward founder, Dr Gillian Salojee says, "We've pioneered the unusual concept of going straight to the parents so we can access kids with disabilities in remote areas where education and transport are major challenges. It's a problem-solving approach, not a systems approach. Rural women might be unsophisticated or even uneducated but they're amazingly resilient and strong, holding their families together. We want to turn them into leaders in their communities and unleash a huge amount of power. Generally, a cerebral palsy child in the public sector gets 35 hours of therapy in their lifetime. In the private sector it's 90 to 100 hours a year. Without increasing resources, we've found a way of tripling the therapy time in a public sector setting."

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# big brother

## makes all the difference

**DR NYAWELENI TSHIFULARO**

***Distinguished Visitor Award***

*University of Limpopo*

*To enable the support of visiting experienced clinicians who will improve the pre-transfer management, knowledge and skills of all clinicians in both general surgery and the paediatric department at Mankweng Hospital.*

***Pretoria paediatric surgeon, Dr Nyaweleni Tshifularo's older brother, then a teacher, used his highly developed social skills to secure education bursaries for every one of his four siblings. Today, thanks to big brother, Dr Johannes G Tshifularo, now a tribal chief, retired psychologist and teacher, they're all contributing hugely to South African society in fields as diverse as business, education and medicine.***

"In 1986, when I went to the University of Kwa-Zulu-Natal funded to do medicine and began studying engineering, my brother was very upset with me. He said I must return to medicine, so reluctantly, I did. I loved fixing things, but I'd always loved the little ones and I slowly grew to love medicine, so the transition to surgery and paediatrics was natural."

His brother knew about government bursaries and helped them to apply, Dr Tshifularo recalls. Perhaps the best-known of their siblings is ENT surgeon, Professor Mashudu Tshifularo, who developed a pioneering surgical procedure using 3D-printed middle-ear bones for conductive hearing loss rehabilitation. He successfully performed the world's first ear transplant surgery on a 40-year old man at the Steve Biko Academic Hospital in March 2019. His other siblings, born to their entrepreneur parents in Germiston, Gauteng, are two mathematics teachers and a chartered accountant.

"I was born after Mashudu. If it wasn't for chief Dr Johannes G Tshifularo, we wouldn't have attained what we have. There was no way my parents could have afforded to put us all through varsity, even though they solidly backed us doing so," Dr Tshifularo says.

He remembers his father as a strict man who kept a sjambok behind a bedroom door (but never used it), sending him off to his tribal family village of Mbahela in Thohoyandou in the Vhembe district of Limpopo, for his schooling. "He said he wasn't having me grow up in a potentially distracting environment in Katlehong," he laughs.

Again, his oldest brother intervened just before Nyaweleni's matric year, getting him accepted into the Mbilwi High School near Thohoyandou in the former Venda, which Dr Tshifularo remembers as "a science-oriented school". "He wanted me to sharpen up my science subjects for university," he adds.

## Migrant work his norm

Living in their Mbahela mud-brick home and spending holidays in Katlehong in Germiston with their parents became the norm, something that's stood him in good stead today as he flies from Pretoria to Cape Town most weekends to be with his nursing-lecturer wife at their Pinelands home. They have two children, both in their penultimate years at the University of Cape Town, a son studying electrical engineering and a daughter studying law.

Dr Tshifularo is Principal Paediatric Surgeon at the George Mukhari Academic Hospital in Pretoria. Since 2014, he's been travelling at his own cost to spend two days a month at the Mankweng Academic Hospital, supporting and training their four general surgeons for nine months of the year. In 2018, the doctors there saw 2 100 patients in the surgical outpatient department, 1 700 were admitted and 800 were operated on, illustrating how highly valued his training and hands-on support is.

As the only appropriately qualified surgeon, he was appointed Acting Clinical Executive Director at Mankweng. He says about a third of the 2 100 surgical outpatients are children, admitting that it's an 'unsatisfactory situation'. "However, most of that total number will be repeats, returning later to get blood test results. In the private sector, if you send for blood counts, it takes at most an hour. At Mankweng, they get sent home and told to come back in two weeks," he adds.

After doing his surgical registrar training through University of Cape Town-linked hospitals, Dr Tshifularo worked as a General Surgeon at Mankweng Hospital in 2008. In 2009, he left Limpopo and returned to Stellenbosch to subspecialise until 2011. This was motivated by seeing the plight of Mankweng's sick children. He returned to serve this community for two more years and moved to the University of Limpopo to train new paediatric surgeons. "When I left Mankweng, there was a big void," he says.

He would get calls from Limpopo's district and regional hospitals, asking him for advice and direction.

"When GPs and patients realise there's a service, they come in increasing numbers. Later on, well after moving to Pretoria, I found myself getting more patients referred and following me at George Mukhari Hospital in Pretoria," he says. Unfortunately, his scarce skill set was now dedicated chiefly to the Gauteng region. With Dr Tshifularo's interest and some considerable experience in neo-natal surgery, he became even more sought after.

A colleague and general surgeon at Mankweng Hospital, Professor Mirza Bhuiyan, (Head of General Surgery), decided to apply for a Distinguished Visitor Award for Dr Tshifularo. He succeeded, and from April 2019 until April 2020, Dr Tshifularo's travel and accommodation costs will be fully covered, enabling him to do teaching rounds, attend at the Surgical Outpatients Department, do elective operations and conduct mini-symposiums.

"I usually travel up in the early hours of a Friday and work that day and the Saturday, so it doesn't take too much from my work at Mukhari. We usually go out for a meal on the Friday evening and discuss the general situation," he adds.

To keep himself trim, Dr Tshifularo runs 5km, three times a week, double that on weekends and has so far completed 12 Comrades Marathons. He's an avid fresh-water angler, saying it helps him unwind.

## Substantial, incremental progress

The situation at Mankweng Hospital, although still difficult, has improved markedly since his early supportive visits. "From the beginning of 2019, they employed a paediatric surgeon, Dr Elliot Motloung. He's been thrown in the deep end, so they collect all the difficult cases for when I'm there. Teaching him and supervising surgeries is an important part of what I do. He says ironically, "because of the volumes of patients, Dr Motloung will probably be able to stand on his own feet in no time and I will look for new outreach. He'll also help empower the local surgeons. They'll probably occasionally steer a patient in my direction – this is major progress," says Dr Tshifularo.

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# A chance

*to ease South Africa's pain burden*

## DR SEAN CHETTY

***MGH Fellowship Award***

*University of Stellenbosch*

*Pain management*

***Being gifted with the opportunity to significantly impact on the critical shortage of pain management skills in South Africa was totally unexpected for anaesthesiologist and critical care specialist, Dr Sean Chetty, of University of Stellenbosch.***

"My boss at the time, late in 2018, asked me to represent our department at a local Discovery Foundation presentation held in the faculty to increase awareness of their Foundation Awards. I was on call, but it sounded interesting. Walking back, I bumped into Dr Brian Allwood, a colleague in Tygerberg Hospital's pulmonary unit who received the MGH Fellowship Award in 2017. He was enthusiastic about his learnings there and urged me to apply. I said maybe, but it felt kind of tongue-in-cheek," recalls Sean.

Paging through the Discovery Foundation booklet that weekend, his intent solidified. He put an application together and contacted Massachusetts General Hospital (MGH) to locate a mentor. He received a call from them several weeks later to clarify certain things in his application. "It was a very casual, friendly chat – I was telling her why I like pain management, she said thanks, and that was that. The next thing I got an email to say I had it!"

It's a strange anomaly that in a country with a quadruple burden of disease, nobody can legitimately call themselves a pain specialist. While pain management is recognised as a field of study by the Colleges of Medicine, the Health Professions Council of South Africa has yet to register it. Sean, one of the most knowledgeable physicians in pain management in the country, reckons there are probably only five to 10 people in South Africa with the expertise to manage chronic pain. To him that's an "abomination."

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*Whether acute, traumatic or chronic pain, we need to educate our healthcare professionals to recognise and treat patients appropriately.*

## Chronic pain a silent epidemic in South Africa

"There's a silent epidemic of pain in South Africa. Nobody's actually taking ownership. A surgeon's priority is operating. There is some pain, but the anaesthetist sorts it out. GPs worry about pneumonia, renal or heart failure. Nobody's thinking about the patient's quality of life. The problem is so big and affects every area of medicine," he asserts.

He says patients are cared for up to a point. As a specialist in Critical Care, he enjoyed looking after his patients post-operatively – but once they were recuperating in a ward, he never saw them again.

Trained at Wits University's Chronic Pain Management Unit and now Head of Clinical Department: Anaesthesiology and Critical Care at University of Stellenbosch, Sean is passionate about promoting the bio-psycho-social model of pain management.

"I'm an anaesthesiologist with a special interest in pain. A lot of GPs even call me a pain specialist, but the HPCSA would censure me if I claimed that," he says with a chuckle before returning to the paucity of pain management. "Rather than just a procedure and giving medicine, we need to probe other aspects of the patient's life that impact on their pain. What coping skills can we convey, how does their core musculature contribute to pain management? It's also very much about rehabilitation and psychological management. Most pain can be managed at GP level," he contends.

"Amazingly, sometimes patients just need someone to talk to. With pain, stoicism does not make you stronger. Whether acute, traumatic or chronic pain, we need to educate our healthcare professionals to recognise and treat patients appropriately," he says.

Sean will spend at least a year at the cutting-edge MGH Centre for Translational Pain Research. He sees his role upon his return as holistically improving patients' quality of life, through teaching, prevention, care and advocacy.

## SA lacks continuity of care

"We simply don't have continuity of care here. For example, we have millions of people living with HIV and TB, yet nobody is tracking them after they're medicine complaint. Both conditions, and others across many other disciplines, are associated with significant neuropathic pain," he says.

Because of South Africa's large burden of disease, doctors are forced to choose areas of medicine that will make the biggest difference − and for years communicable diseases took centre stage. Though pain is the most common presenting symptom, it's hardly taught at undergraduate level, with perhaps the odd curriculum devoting a day to it.

"An orthopaedic surgeon will tell you about a fracture, but pain is not treated as a disease entity," Sean says. He sees pain management as reaching widespread acceptance as a registered discipline in South Africa in about the same time that it took Critical Care (12 years). His work at MGH will involve pre-clinical research, especially around modulating neuropathic pain (pharmacological and interventional management), work in a pain laboratory (unavailable in South Africa), and translational pain research and clinical observation of interventional pain procedures.

## A desire to be involved in patient outcomes

Growing up in the Kwa-Zulu-Natal South Coast town of Isipingo, Sean's father was a sales rep and his mother did admin jobs, while helping raise an older sister. He worked 'really hard' at school and loved watching the Bill Cosby Show on TV. (Cosby's character, Bill Huxtable was a gynaecologist and his wife, a lawyer).

"I decided I wanted to be a gynaecologist and went to med school with the one goal in mind – to become an obstetrician." However, his first rotation in gynaecology as an intern put him off as instead a love for paediatrics developed. Life, however, had other plans and his application for a medical officer's post in Johannesburg was accepted. He was later offered a registrarship in anaesthesiology.

"My Professor said just try it for a year. I think my competitive streak came out and before I knew it, four years had passed and I was a specialist in anaesthesiology!" he says. His desire to be more involved with patient outcomes then led him to qualifying in Critical Care. Sean is married to a physiotherapist who is currently doing a Master's degree in Physiotherapy and she will also be working on her research while in the USA. They have two girls, aged 10 and eight. "Her supervisor is allowing her to work on her research while we're in Boston, so it's worked out brilliantly," he enthuses.

*Everything there is to know*

# about pain

*Dr Chetty's time at MGH will involve pre-clinical research, especially around modulating neuropathic pain (pharmacological and interventional management), working in a pain laboratory (unavailable in South Africa), and translational pain research and clinical observation of interventional pain procedures.*

**DR SEAN CHETTY**

/06

# /Mother & child health

## Maternal and foetal medicine

*More maternal and foetal medicine specialists and targeted initiatives to train healthcare providers, enable life-saving healthcare to reduce the rates of mother and child deaths.*

Fulfilling

*a life-long desire to offer comfort*

**DR MANI CHILIWE**

***Rural Individual Fellowship Award***

*Walter Sisulu University*

*Family Medicine*

/06

***Growing up in Humansdorp in the Eastern Cape, Mani Chiliwe, due to qualify as a paediatrician in 2020, vowed he would one day help his severely under-served community where child illnesses and premature mortality were ubiquitous.***

*There were so few doctors where I came from. In fact, few professionals of any sort. Those that we saw were either teachers or, less often, doctors*

"There were so few doctors where I came from. In fact, few professionals of any sort. Those that we saw were either teachers or, less often, doctors – but the few GPs I did see inspired me because they helped people so much," says Mani.

He decided he also wanted to make such a difference. Matriculating from the Lungiso High School in Kwanomzamo in Humansdorp, he enrolled to study medicine at the Walter Sisulu University in Mthatha, qualifying in 2011.

After completing his internship and Community Service in the Port Elizabeth (PE) Hospital Complex, he settled in as a medical officer at the Dora Nginza Hospital in PE, where he saw the full extent of child disease and death, much of it avoidable.

"I saw a lot of diarrhoea in HIV-positive kids, prolonged and complicated by dehydration and malnutrition. They tended to die more often than other children," he says.

## Taking action

By the time he'd began his four years of registration towards paediatrics, he was convinced that this set of presenting symptoms, with patients often presenting tragically late, cried out for further investigation.

That is when he applied for a Discovery Foundation Rural Fellowship Award. His study, which will hopefully help him and his fellow physicians tailor more appropriate treatment to various cohorts of child patients, is entitled; "The outcomes of children less than five years of age, admitted to Dora Nginza Hospital with diarrhoeal disease; HIV positive versus HIV negative children."

"Most of the kids admitted with HIV tend to also have TB or vice versa. It seems that many of the kids with HIV/TB have prolonged diarrhoea and end up staying in hospital for longer. Children who do not have HIV seem to stay for up to half the time. But we now need to prove that with data," he adds.

The intention, through a retrospective comparative cohort review of inpatient folders of children in the two eight-bed gastro-intestinal wards over 12 months, will hopefully uncover the causes relating to prolonged hospital stays and enable Mani and his colleagues to reduce deaths and improve outcomes.

"There are compounding factors like malnutrition and other co-morbidities that lengthen hospital stays, so we'll have to take those into account," he adds.

He emphasises that, while they treat many children with diarrhoea, very few actually require admission, the specific exceptions being those who are severely dehydrated.

## The SA childhood diarrhoea context

Existing South Africa studies confirm prolonged in-hospital stays of HIV-infected children suffering from diarrhoea and complicated by dehydration and malnutrition. Alarmingly, global literature also links diarrhoea with an eleven-fold increase in mortality.

Mani is married to Zikhone, a first year Medical Officer at the same hospital, and they have a five-month-old son, Xhanti. He says that with being on hospital call while specialising, and domestic child-minding duties, he does not find much leisure time. However, he does manage to watch the occasional soccer or rugby match on television.

"I support the Kings and the Sharks, and PE's Chippa-United and Kaiser Chiefs in the PSL. I'm also a former Manchester United fan," he chuckles, alluding to the popular side's mixed fortunes.

Most of the time, however, he will continue to fulfil his childhood ambition of making a difference in under-resourced communities.

## Dealing with diarrhoea is vital

"Diarrhoea is a leading cause of death in children under five, especially in under-resourced communities, like most of the areas referring patients to Dora Nginza Hospital," Mani stresses. No data, however, exist to quantify the relation between diarrhoea and HIV infection in children seen at Dora Nginza Hospital.

The Discovery Foundation funding will make this specific knowledge possible through his research. He will detail demographic patient data, HIV status, length of hospital stays, mortality and contributing factors to diarrhoea, such as breastfeeding, co-morbid conditions, and nutrition and hydration status upon admission.

## DR VISHESH SOOD

***Rural Individual Fellowship Award***

*University of Cape Town*

*Family Medicine, Tuberculosis (child health)*

/06

***Mention the words "abdominal ultra-sound" and "TB" in the same breath to radiologists and physicians and you can be guaranteed of a debate. However, one thing is certain, for paediatricians it does offer significant value in honing in on a TB diagnosis – when all other factors are considered.***

A final-year radiology registrar, Vishesh Sood, currently at the Red Cross Children's War Memorial Hospital in Cape Town, explains, "It's preferable to avoid radiation from CT scans in a young child, while access to MRI is limited, making ultrasound particularly useful." Radiologists and their colleagues working with children have become somewhat accustomed to the vagaries of abdominal ultrasound tests in indications for TB–and the wide variation in reporting. Abdominal ultrasound is often requested when the diagnosis is "failure to thrive," with TB being one possible reason.

### Going where few dared

Vishesh decided it was time to grasp the nettle. "I think it's as simple as nobody getting around to researching this. Consultants are busy and do not necessarily have the time to undertake all of the possible research questions that arise. I came across so much talk about it – it came up all the time, so I decided to go for it."

He will study "the utility of abdominal ultrasound in the diagnosis of paediatric tuberculosis." Because abdominal ultra-sound can detect features of TB, it has become popular as a diagnostic tool, but discerning whether imaging findings such as enlarged lymph nodes or splenic abscesses are consistent with TB, remains an inexact science.

"We know there is a high likelihood that a scan displaying such features will be abdominal TB, but other diseases can also present this way. We only hope that our colleagues think and report about it in the same way, though at present it tends to be quite variable," he admits. His research will be aimed at standardising reporting of ultrasound exams for abdominal TB (indeterminate, normal or likely to be TB), and clarifying the parameters for use of the investigation.

He will do this by reviewing hundreds of examination findings over five years (from January 2013 to December 2018) at Red Cross Children's War Memorial Hospital, calculating the percentage of those considered "positive" for abdominal TB, and the range of diagnostic findings. Two paediatric radiologists will also review the positive findings to see that they agree on the features representing abdominal TB. Vishesh will then correlate this data with several clinical and biochemical parameters pertaining to a TB diagnosis.

He adds that patients infected with HIV will be more likely to disseminate infection, while also considering environmental factors like TB infection in family members.

Asked why the abdomen is a target for diagnosing TB when it normally affects the lungs, Vishesh says in South Africa's high prevalence of HIV and malnutrition patients routinely present with TB disseminated to the abdomen or brain, TB meningitis being all too tragically common.

## Children innocent victims of TB

"The sad part about it, is that children are innocent bystanders in this epidemic. They are not responsible, it is in their environment. If they are exposed and don't get treated, it's not their fault. Their entire lives can be derailed by a single episode that is treated too late, resulting in advanced lung disease. It affects their growth and development, their ability to go to school, play with their friends and just generally to get on with their lives. Also, once their lungs are damaged, they're predisposed to different kinds of infections throughout their lives," he says. "We see young adults coughing up blood because they previously had TB and now have an aneurysm in their thorax – it is very sad," he adds.

## GP mother a big influence

Vishesh was born in the United Kingdom, with his parents immigrating to South Africa when he was two years old. He subsequently attended Westerford High School in Rondebosch, going on to study medicine at UCT, doing his internship at Tygerberg Academic Hospital and his Community Service in Kimberley. Going into medicine was almost a no-brainer. His mother, Geeta Dua, was a doctor at the Red Cross Children's War Memorial Hospital where she still does sessions.

Vishesh is keen on sub-specialising in cardio-thoracic or interventional imaging where minimally invasive techniques are used to perform complex procedures with significantly less morbidity. "It will require me going overseas to train at some high-volume centre, probably Australia, America or even Canada where my brother is working as a GP." Hopefully, his return to this country will further benefit his patients.

## Improving accuracy is resource-friendly

Besides the obvious patient benefits, the advantages for doctors, when Vishesh succeeds, are manifold. "If I can say that this test will be useful in certain well-defined clinical contexts that support the findings, there will be less pressure on resources all round, meaning that waiting times across disciplines will be reduced." Asked what clutch of interventions he thought would most affect the large burden of TB across South Africa, Vishesh says that besides TB's social determinants, earlier diagnoses and appropriate interventions that can be followed through are of paramount importance. "One of the biggest problems is treatment for long periods. For various reasons, adherence falters and TB becomes drug resistant. This is a scenario where medicines are hard to come by and you can have 18 months of treatment, with no result."

## DR NANDIPA SOTOBE-MBANA

***Subspecialist Award***

*Walter Sisulu University*

*Paediatric critical care*

# /06

***Sometimes a single carefully focused intervention – like funding the training of an intensivist for an under-staffed, under-equipped ICU – can be the catalyst for dynamic change.***

Paediatrician Dr Nandipa Sotobe-Mbana, currently undergoing her two-year training in paediatric critical care at the Chris Hani Baragwanath Hospital in Gauteng, is about to become a living example of the power of one. She comes fortified with the fundamentals of passion, dedication and a determination to make a difference. Her return to Mthatha in 2021, will have a ripple effect across the province.

Unless there is another intensivist posting, she will be the only paediatric critical care subspecialist in Mthatha's private and public sectors, teaching registrars, tackling the shortage of ICU nurses and improving liaison with the other two ICUs in East London and Port Elizabeth.

Nelson Mandela Academic Hospital is the only critical care referral centre for some 6.8 million people across the former Transkei. "Not one of the 20 or so referring hospitals can fully support critically ill patients, nor do they have adequate ventilation facilities or appropriately trained staff," says Dr Mbana.

NMAH has seven paediatric ICU beds and eight paediatric High Care Unit beds, overseen by two paediatricians (one, now that Dr Mbana is in Gauteng) and one ICU nurse to two patients.

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## Demands of the job

"It can be physically and emotionally strenuous. It is often difficult to choose whom to admit. You have to look at their prospects of survival or else you can block a bed for others, possibly for days. Sometimes you just keep working because you are concerned about a particular patient. It's often difficult to let go and you can work into the night," she admits.

Asked how the paediatric ICU she's training in at Chris Hani Baragwanath Hospital compares, she says. "At least here at Bara you can find another ICU to hold the patient. If a patient does not get in at NMAH, there is nowhere else to go. Our mortality at NMAH is higher than other ICUs in the country, mainly because of the lack of expertise. However, mortality has declined slightly since the constant attendance of a paediatrician since 2015." If she could change her home ICU, she would prioritise a life-saving high frequency oscillatory ventilator. Her second wish would be more qualified ICU staff and nurses, while training up people who can support critically ill patients in referring hospitals.

## ICU patient profile

The majority of her child patients at NMAH are medical cases. Vehicle accident victims with traumatic brain injuries, and patients with pneumonia, meningitis, cardiac failure and post-operative patients are common.

Dr Mbana is intimately acquainted with the daily challenges many South Africans face. Born to a teenage single mother who died in 1996, aged 30, and raised by her grandparents, her Gogo was a nursing matron at Mthatha General Hospital and her grandfather a lecturer at Walter Sisulu University.

"My grandfather died two years ago at the age of 88, two years after graduating with a PhD degree in theology," she adds proudly. Dr Mbana is married to an Mthatha civil engineer and moved with her two children to Roodepoort for the duration of her training. Dr Mbana's upbringing was the first single, carefully focused intervention and it has borne huge fruit, seeding her Discovery Subspecialist Award for paediatric critical care. Few in Mthatha will forget her legacy.

## Seeing opportunities everywhere

Another revelation for her while sub-specialising in Gauteng, is the collaboration between hospitals. "In the Eastern Cape, everyone seems to work independently. There's great potential to grow the three ICUs and share the load (in spite of the distances)." She is enthusiastic about the benefits of her current training. "Besides the teaching I can offer, I can help develop policies and ethical guidelines. I really want to strengthen capacity. Countrywide we have huge trauma-related pathology. Managing suitably qualified specialists has shown to improve patient outcomes and reduce costs," she says.

# DR NONTSIKELELO GUBU-NTABA

***Subspecialist Award***

*Walter Sisulu University*

*Maternal-foetal Medicine*

/06

***Seeing her mother teach her classmates at the St Joseph's Junior School in Mthatha, and then go on to secure a Bachelor of Education degree during her high school years, inspired Dr Nontsikelelo Gubu-Ntaba to enter academia.***

The oldest of three children whose father was an agricultural inspector, she matriculated in 2000 before going on to study medicine. Seeing a close relative of hers succumb to AIDS in 1996 had a major impact on her career choice.

"I know it seems like every doctor says they wanted to help people, but that truly was the case with me. I find witnessing the joy of people interacting with healthcare professionals who have a positive impact on their lives and restoring hope, quite amazing. I remember being asked to write an essay at school on what we wanted to do with our lives. I'd already acquired a basic understanding of HIV and initially thought I'd like to work in that," she says.

## Training to save mothers' lives

Today, Nontsikelelo is an Mthatha-based obstetrician/gynaecologist in the first of her Discovery Foundation-funded two-year Foetal Medicine subspecialty, training at Nkosi Albert Luthuli Academic Hospital in Durban.

When she returns from Durban to the Nelson Mandela Academic Hospital, where she's invested 14 years of her life and heads up the obstetrics and gynaecology department, Nontsikelelo will be the only public sector Foetal Medicine consultant in the Eastern Cape. She has ambitious plans to boost maternal care in the Oliver Tambo region, having already conducted multiple "fire drill" training sessions in Essential Steps in Managing Obstetric Emergencies.

This has resulted in a significant reduction in emergency cases presenting to her unit.

"More of the mothers or infants arriving have been resuscitated and stabilised, which frees up much-needed space in the ICU as they only require admission to the High Care ward. We can then treat the really urgent cases instead of being overwhelmed," she says. By teaching interns, medical officers and advanced midwives how to deal with obstetric emergencies, and to identify high-risk patients early in real life situations, she and her 10 obstetric/gynaecologists at the Nelson Mandela Academic Hospital have created more tertiary capacity.

They do weekly "fire drills" on how to handle the most serious cases at the three lesser-staffed district hospitals in their region and conduct twice-yearly intensive workshops. "What this means, is that we get to know the people, improve the quality of their resuscitation and even speak the same language on the referral forms. They also feel more comfortable in calling us for advice because we've developed relationships," she adds.

She wants to extend the training to paramedics who accompany women with birth complications in ambulances, for journeys of up to five hours from outlying rural districts hospitals and clinics.

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## Skills training outreach

Her research for her Foetal Medicine subspecialty at the Albert Luthuli Academic Hospital is on high-risk pregnancies involving identical twins. The Albert Luthuli Hospital Foetal Medicine Unit typically sees at least two such cases daily, reviewing them fortnightly for complications. The greatest risk period is between 14 and 26 weeks of pregnancy. "We see far fewer of these pregnancies at NMAH, where pre-eclampsia complications are the main challenge. I want to establish at what gestational age it's safer for us to allow such twins to be cared for by an obstetrician/gynaecologist," she explains.

She says things have improved at NMAH over the past two years.

"We still need more equipment and a dedicated obstetric and gynaecology theatre. At present we tend to share instruments and machines with other surgical disciplines. A hysteroscope and laparoscopic machine would also make a big difference. This all impacts on our ability to attract young specialists," she observes.

However, her qualification in Foetal Medicine will boost training at the NMAH/ Walter Sisulu University medical campus and save significant cost on travel and accommodation for future generations, not to mention save more lives and avoid complications for her patients.

"We're getting much closer to a multi-disciplinary approach because we have a paediatric cardiologist and an adult cardiologist, an intensivist, a gynaecological oncologist and a general oncologist. I'll also be using the neo-natal ICU. This team means, for example, that mothers and babies with cardiac conditions can be managed on-site without being referred out of the province."

## Managing her domestic life

Nontsikelelo has a 10-year-old girl, a six-year-old boy, and a self-employed husband who is also studying. She left him behind at their Mthatha home, taking her children and nanny of six years to stay in a rented house in Durban. A marathon runner, Nontsikelelo, does eight to 10km runs three to four times a week and up to 18km on a weekend, if she is training for a full 42km marathon. "I also do weight training with the kids," she jokes.

Nontsikelelo says obstetrics has always been her primary interest. "When I got into obstetrics and gynaecology, I initially thought great, take care of the pregnant woman and send home a happy mom and baby. I think gynae caught me along the way, but doing Foetal Medicine is following my first love."

## Considerable impact on care

The impact she expects to make at NMAH when she returns is significant. "I think I'll be able to improve both pre- and post-delivery care. Help my staff prepare for high-risk births, take care of the high-risk mothers better and enhance follow-ups, knowing what complications to look for. We can also train on-site instead of sending registrars away to other tertiary hospitals. That's a lot of financial relief and improved quality of care for our patients."

# Persistence

and faith win out to specialise in maternal care

**DR PATRICIA SEBOLA**

***Subspecialist Award***

*University of Pretoria*

*Maternal and Foetal Medicine*

/06

***Were it not for her determination to subspecialise in Maternal and Foetal Medicine against major odds, Pretoria obstetrician/gynaecologist, Dr Patricia Sebola's newly acquired scarce skills would have been lost to the healthcare sectors. She is now six months into her two-year training, rotating between Tembisa, Kalafong and Steve Biko Academic hospitals.***

Dr Sebola is the mother of three young children. She began her initially self-funded subspecialist training in October 2018. After deciding she needed to "differentiate" herself as part of her academic growth, she applied to the Gauteng provincial health department to allocate her an unpaid Fellowship post. In December 2018, she breathed a sigh of relief, when her application for a Discovery Foundation Subspecialist grant was successful. She now divides her days equally between the Netcare Pretoria East Hospital where she has worked as an obstetrician/gynaecologist since 2013, and her State subspecialty training duties.

I strongly wanted to subspecialise, so when Tembisa Hospital advertised an unpaid honorary post, I applied.

Because of Discovery Foundation funding, she is now able to convert her post from four years to two years.

For Dr Sebola, each weekday begins early in the morning with some academic reading or preparing for cases. "I try to go to bed by 21:00. I also do overnight hospital calls for two weekdays a month – so weekends are precious times to spend with the family," she adds. Her working day, currently at Kalafong Hospital, ends at 13:00 before she makes the 45- to 60-minute drive to her private practice in Pretoria East, which is luckily close to home.

Dr Sebola was raised in Phalaborwa, Limpopo, along with her younger brother, by her nursing sister mother and businessman father.

Her early education started in Rethabile Primary School in Namakgale township. She then attended the large Frans du Toit High School from 1993, with two other black children. "I have good memories of the education, but not the social part. Some of the schoolchildren were mean. The kind of thing that wouldn't survive in this day and age," she observes dryly. She studied medicine at the University of Pretoria, where she also later specialised, going on to become one of the first black doctors at Netcare Pretoria East Hospital.

## Choosing posts by heart

She did her internship and Community Service at the Polokwane/Mankweng Academic Hospital Complex in Limpopo, continuing there as a medical officer.

She says she stayed on at the hospital because she loved working in the department of obstetrics and gynaecology, having fallen in love with the world of mothers and babies as an intern.

“Looking after pregnant women and bringing life into the world...it’s a miracle of creation. I remember reading for the first time how a human being gets formed. I found it miraculous, God’s work,” she says.

Her biggest dream, she says without hesitating, is to “fully capacitate State Hospitals. If we could just manage our State Hospitals properly. I’d also love not to worry about resources and doctors being unable to get jobs. I never thought in a million years that a doctor or specialist would struggle to find a job,” she says.

“I try and do something with my kids every weekend. It’s not an easy task but I find a balance between studying, resting and spending time with the family.”

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*I pray every day for Gods guidance to live according to the purpose I have been destined for. The Discovery Foundation grant is a blessing that I am truly grateful to have received*

/06

# Creating
## respectful maternity care advocates

## DR JOY SUMMERTON

### *Rural Institutional Award*

*To support the implementation of a programme aimed at mentoring maternal unit operational managers and maternity care champions to improve intrapartum care at district and regional hospitals in Limpopo.*



/06

***Restoring hope to demoralised Limpopo Province healthcare workers by showing them the fruits of Respectful Maternal Care (RMC), has become an all-consuming passion for social scientist, Dr Joy Summerton.***

Limpopo's neonatal mortality rates are among the worst in the country. However, a series of strategically targeted Discovery Foundation funding initiatives, today aimed at mentoring maternity unit managers and healthcare workers, has contributed to a neonatal mortality plunge of 13% between 2013 and 2017.

It was so poor in 2016 that still-births and neonatal mortalities were everyday occurrences. At that stage, a staggering 26% of neonatal deaths were attributable to birth asphyxia and the in-facility maternal mortality rate was hovering at 130 out of every 100 000. "We were losing babies of 2.5kg and above for no logical reason and women in labour weren't being properly monitored," says Joy, Project Manager for the Limpopo Initiative for Newborn Care (LINC) and Limpopo Maternal CARE (LimMCARE), programmes in the province.

Their biggest challenge is reducing a neonatal mortality rate that has stayed at about 11 deaths per 1 000 births, with low birth-weights an ongoing problem. One of the interventions is introducing Continuous Positive Airway Pressure, (CPAP). "However, only 40% of Limpopo's rural hospitals have medical air," Joy reveals. This intervention also requires high level nurse training. Luckily, LINC received a generous donation of low-cost, low-maintenance bubble CPAP (bCPAP) machines that do not need medical air. These were distributed to hospitals throughout Limpopo, with a specific focus on the Mopani District. The distribution of the bCPAP machines was accompanied by onsite support and mentoring, as well as basic trouble shooting if they encountered problems.

By using World Health Organization recommendations for maternal care and the Maternity Care Guidelines for South Africa as best practice, Joy and her team are slowly working wonders. The Discovery Foundation Rural Institutional Award to LINC will be implemented over three years. "We have seen it is best to start really small and focus our support and mentoring. You have to make sure that facilities you are supporting are at least crawling, or even better walking on their own, before you refocus support on new facilities."

The first phase will be to support the Greater-Letaba sub-district in Mopani District, which has one district hospital and 21 feeder clinics. Joy says the plan is to document lessons as they roll out the project, ensuring sustained behaviour change among all staff working in all maternity units. "Once we have proof of concept, we can roll it out over the entire province," she adds.

We have seen it is best to start really small and focus our support and mentoring. You have to make sure that facilities you are supporting are at least crawling, or even better walking on their own, before you refocus support on new facilities

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## The formidable champions of Respectful Maternal Care

"For Respectful Maternal Care (RMC) to be sustainable, we need champions. Doctors or nurses who are passionate about pregnant women and newborns. By equipping them with skills and knowledge to train other front-line healthcare providers, we get the knock-on effect," she says. Since LimMCARE was introduced in 2017, Joy has found two pivotal champions who are central to their successes. "The first was Jason Marcus, an advanced midwifery lecturer from the University of Cape Town, where RMC first began in this country," she says. Together with LimMCARE clinical mentor, Sister Mapei Moshabela, a former Limpopo Province maternal manager who now describes herself as "re-tyred," they're a formidable team.

Joy outlines one problem that contributes to deaths. "The primary healthcare clinics in Greater-Letaba sub-district stopped delivering babies – they close their gates at 17:00 and refer women to Kgapane District Hospital." Official policy is that clinics should deliver babies of low-risk mothers, referring them to a district hospital only when there are complications.

"If clinics do not follow the policy, those moms and babies stack up at the district hospital, occupying beds that should be for those that need it. This overwhelms healthcare providers at the hospital and inevitably compromises the quality of care. So, we need to deliver, observe and discharge at the clinics − which must be open 24 hours a day," she emphasises.

## Transforming attitudes is inspiring

The most uplifting part of her job is watching healthcare providers transform. "At the start they're demoralised, angry even. They don't want to try anything new. Just getting them to allow family or friends into the labour ward was the biggest hurdle. After a while you see the smiles and then they're even having conversations with patients," she enthuses.

LINC has introduced Respectful Maternal Care award ceremonies with trophies for starting the programme, and a floating trophy for the best facility. "We did the first 24-hour shift with one clinic on 21 April 2019, just to show it can be done."

The granddaughter of an Englishman who settled down to farm in Hogsback with his brother, both marrying Xhosa women from the nearby village, Joy has "out-of-the box" thinking in her DNA. Raised in a family of Western medicine healthcare workers, she did her PhD on the role of traditional health practitioners in the treatment and care of people living with HIV and AIDS, "which turned my entire world view and belief system on its head," she laughs.

"I found that you need to work with traditional health practitioners because no matter how many times you scream at your patients, they share a world view with a large majority."

She became frustrated with pure research because, "you end up opening a can of worms and hoping someone else will solve the problem. I wanted to be part of the solution. Identifying the problem and working collectively to intervene successfully. Ask them what change they want and then say, let's do it together.

Then we can look back and see how far we've come, asking; what's next? That's what gets me up in the morning," she says.

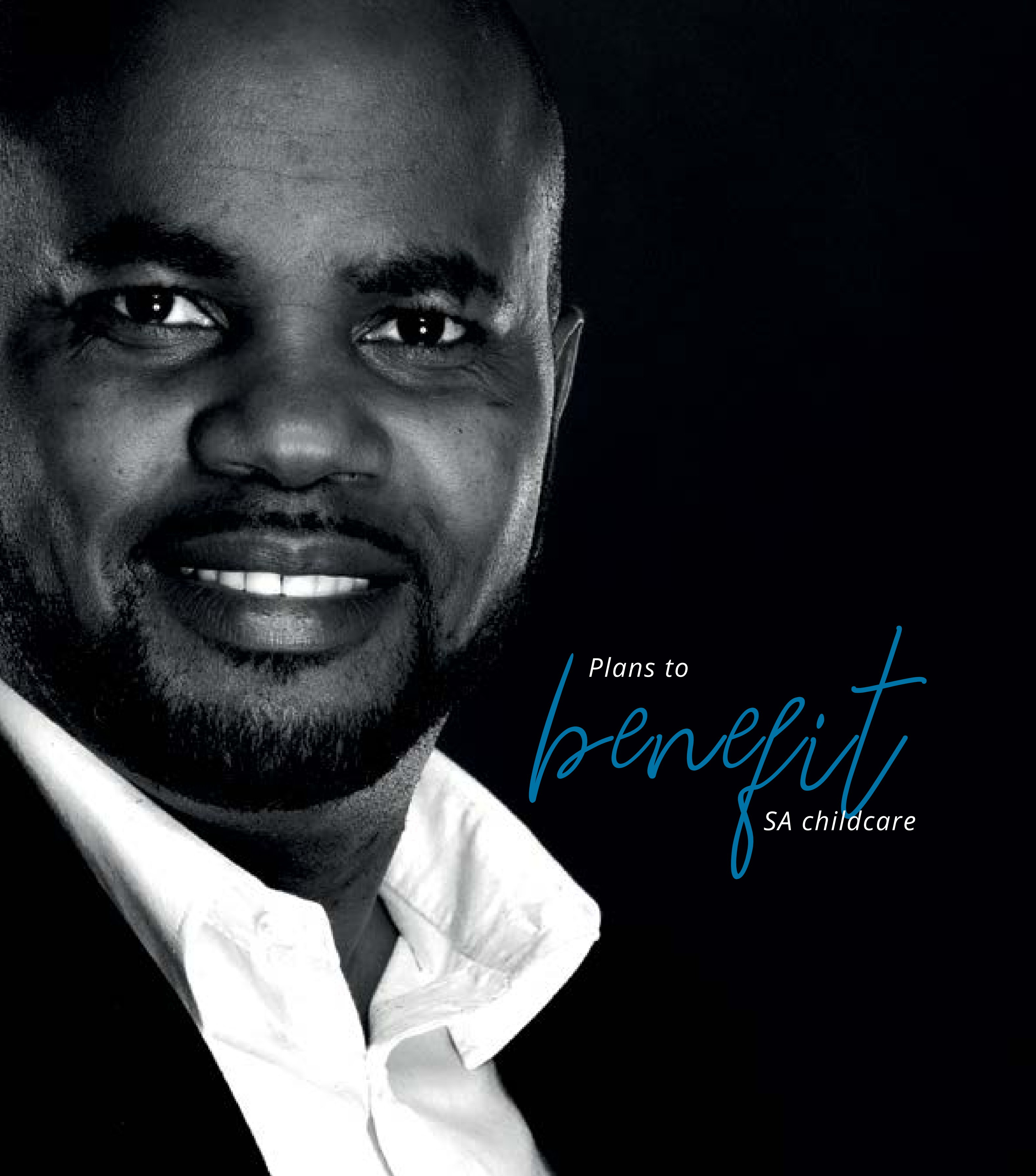
A single mother of three children, Phiwokuhle, Sphamandla and Sinethemba, all conceived through artificial insemination, Joy lives outside Polokwane with several dogs and a large garden, all of which she revels in.

## Better maternal care boosting trust

One thing Joy is aiming for is to persuade mothers to attend Ante-Natal-Clinics as soon as they fall pregnant, increasing the chances of regular attendance. LimMCARE has also taken the bold step of introducing a minimum of 12 antenatal care visits for pregnant women in Mopani district, as opposed to the standard eight visits. This is already making a huge difference in the management of pregnant women, especially picking up complications timeously. "If you treat women well and with respect, word travels.

We're trying to get the pull factor so any complications can be picked up early. Education is vital to help mothers make informed decisions, from conception to birth, otherwise you've failed them," she says.

Another pillar of RMC is teaching mothers to identify birth companions. "It needs to be somebody you trust who helps you remember stuff. It's been amazing, they're choosing the birth companions on their own now after we tell them about all the benefits."

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***Paediatrician, Dr Andrew Oyemwimina's original plan was to emmigrate from his home town of Warri, Nigeria, to the USA to practice. After being accepted to practic medicine in South Africa, he found the education so good that he stayed.***

Today, he's making a difference at the Nelson Mandela Academic Hospital, (NMAH), in Mthatha where he's just completed his research with the topic: The prevalence of HIV infection among paediatric patients admitted to NMAH in the Eastern Cape. NMAH is located in OR Thambo District and this tertiary hospital receives referrals from Mthatha and surrounding areas.

Andrew's study is the first of its kind in the Eastern Cape that looks at the prevalence of HIV infection among paeditric patients who were admitted to hospital in 2016. Similar studies have been done at King Edward VIII Hospital in Durban (2001) and at Chris Hani Baragwanath Hospital in Gauteng (2012). He says,"My reaserch was a cross-sectional retrospective study completed between 1 July 2018 and 31 December 2018."

The ages of the 419 patients in the study population who were admitted to hospital in 2016 ranged betweeen one month and 12 years old. Talking about the conclusion of his study, Andrew says, "The prevalence of HIV infection in the study population of 419 patients, including both HIV infected and non-infected patients, was 7.3%. The prevalence of HIV infection in the subgroup that was exposed to HIV and received prevention of mother-to-child transmission (PMTCT) was 11.8%, which was above the national percentage."

"In 2016, when these patients were admitted, the prevalence of HIV infection among children exposed to HIV and who received prevention of mother-to-child transmission across provinces varied from 1.4% to 5.9% according to the 2016 National Strategic Plan. The transmission rates at NMAH was higher than that at 11.8%. This high rate compared with the national rates of 1.4% to 5.9% in 2016 will form part of another study that I plan to conduct to look at the factors reposnible for the high HIV prevalence rate of 11.8%, even after patients received prevention of mother-to-child transmission."

## DR ANDREW OYEMWIMINA

***Rural Individual Fellowship Award***

*Walter Sisulu University*

### Obstacles to PMTCT in rural settings

A lot of people in the region prefer traditional care over Western medicine, so education and awareness are important. Studies in the rural Eastern Cape have shown that socio-economic constraints, poor roads and telecommunications, and an under-developed transport system, are obstacles to accessing PMTCT services. The NMAH serves 13 clinics in the OR Thambo District of Mthatha, and most hospitals in the former Transkei region refer patients to them.

### National PMTC – a major success story

PMTCT became an official National Department of Health policy in 2010. By 2016, UNAIDS estimated that more than 95% of HIV positive pregnant South African women were receiving ARV medicine to reduce the risk of MTCT. The results were impressive. MTCT rates nation-wide fell from 3.6% to 1.5% between 2011 and 2016, achieving the 2015 target of a transmission rate below 2%. According to the SA National Aids Council, SANAC, the country is now on track to eliminate MTCT.

Andrew, is married to a computer scientist with an MBA, and they have three boys. "My wife and the boys live on the north coast of Kwa-Zulu Natal," he says. Andrew was the middle child in a family of eight raised in Warri, Nigeria. After matriculating, he moved to Benin City where he studied medicine at the University of Benin before completing his internship and community service. "I worked there for a few years but then decided I want to specialise. I initially spent several years at the Stanger Provincial Hospital in Kwa-Zulu Natal before coming to Mthatha to specialise in paediatrics." Andrew plans to specialise further in paediatric cardiology. When he gets time, he enjoys listening to R&B and watching Premiership English football.

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*In 2016, when these patients were admitted, the prevalence of HIV infection among children exposed to HIV and who received prevention of mother-to-child transmission across provinces varied from 1.4% to 5.9% according to the 2016 National Strategic Plan. The transmission rates at NMAH was higher at 11.8%*

/07

# /Mental health

*Mental health care includes many facets, from nutrition and understanding symptoms to interpreting patient feedback. Research and skills-sharing create greater potential to influence policies and effective treatment.*

/07

Vitamin deficiency evidence – a likely

# game-changer

in mental health

## DR MEGAN SCHULTZ

***Rural Individual Fellowship Award***

*Walter Sisulu University*

*Family Medicine*

***During her early post-graduate years, Megan Schultz, a psychiatry registrar at Dora Nginza Hospital in Port Elizabeth, did a lot of clinical work in local townships. Whether it was Kwanobuhle, Motherwell, Missionvale or New Brighton, she noticed that many mentally ill people had one thing in common; they were malnourished and living in severe poverty.***

It triggered her determination to research the nutritional state of mentally ill people. When she shared this idea with her senior colleagues and supervisor, their advice was to select a single nutritional marker of high significance for mental illness. They pragmatically suggested that she establish her initial study at Dora Nginza Hospital, which takes patient referrals from the township clinics where she worked. It did not take her long to single out vitamin B12, an extremely important vitamin for brain and nerve function, as her marker. Its moderate to severe deficiency is also a proven cause of neuropsychiatric symptoms. Currently, if this deficiency is identified and treated early enough, physicians can reverse these symptoms and prevent countless complications, following the acute presentation of the condition.

### Links with anaemia and dementia

“Besides clear links with anaemia and dementia, we’re not sure of everything else that vitamin B12 deficiency causes. There are many studies globally showing other links, but not exactly how it works,” she adds.

Over three months, she will review the files of 135 patients admitted to Dora Nginza Hospital’s Mental Health Unit, documenting vitamin B12 deficiency levels. Her objective is to tailor the WHO-approved borderline levels to South African conditions, set an appropriately tailored local level and perhaps, after more research, influence policy and legislation around health-promoting additives to common foodstuffs.

Documenting the benefits of healthy vitamin B12 levels will be central to her research – the genesis of which probably lies in her upbringing.

*I theorised that even if the vitamin B12 deciency wasn't causing the psychiatric symptoms, it was contributing to them.*

## Schooling shapes her world view

Megan attended a multi-racial school in Graaf Reinet and grew up in Uitenhage, which shaped her outlook on life. Her attitude is best illustrated by her response when asked why she was drawn to work in the townships. "It wasn't so much going to the townships. This is the Eastern Cape; this is who we are. My work has been a natural progression from working in the outreach clinics – I really enjoyed it and slowly fell in love with our communities. There is a great homeliness to working in the townships. I never wanted to run away from it," she says passionately.

Like many medical officers and registrars, she had her rough edges smoothed off during her Community Service year.

"You either work in casualty or the labour wards. At Uitenhage Provincial Hospital, I would work in the psyche ward in the day and in the labour ward at night, with weekends in high care. The upside was I could see my patients through. For example, for new mothers, I'd make sure she was bonding with her baby," she explains.

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## Heading up the mental health unit

One of her most valuable experiences was running the mental health unit at Uitenhage Hospital during her second six-month Community Service stint, a common generic experience for young doctors in our healthcare environment.

"They decided this small hospital doesn't need a consultant psychiatrist. I found myself in the deep end and had to deal with whatever came my way – I was the only one there. I will say that it gave me some breathing room in how I structured my day. I also experienced the joys of seeing pregnant mothers get better. I often visited them and their babies in the psyche ward, and it was wonderful to see the positive outcomes," she adds.

It was here that she started doing vitamin B12 testing after she noticed marked deficiencies in young patients with mood disorders and a whole spectrum of psychiatric illnesses, which seemingly conflicted with the available literature about vitamin B12 deficiency symptoms.

"I started doing extra tests and after two weeks, I picked up the phone to the lab and asked if their machine was working properly or if it had gone out of calibration. They assured me it hadn't!" she recalls. She explains that, although suffering psychiatric symptoms, these patients were young and seemed healthy – yet they showed severe vitamin B12 deficiency.

"I theorised that even if the vitamin B12 deficiency wasn't causing the psychiatric symptoms, it was contributing to them," she adds.

Her ambition, should her research show causal links, is to expand the testing into other hospital departments. "If these deficiencies are present in the general population and not just a psychiatric problem, it will give us even more grounds to introduce minimum vitamin B12 amounts into prescribed dietary requirements, perhaps even introducing legislation for staple foods like mealie-meal and bread," she says.

## Establishing maximum vitamin B12 deficiency levels

While the World Health Organization-recommended level to identify vitamin B12 deficiency is between 150 and 221 nanograms in each millilitre of blood, locally the recommended cut-off level stands at 136. Megan thinks this is too low, adding that an ideal minimum level should be tailored to each country's unique demographics, gender and age profile. She is confident that at 150 in South Africa, treatment can begin.

"Anything over 221 is less likely to be a vitamin B12 deficiency," she asserts.

One scientific caveat is that in South Africa, the marker used in testing is relatively crude compared with the more expensive testing cascade method – but it is the most affordable. The outflow from Megan's work stands to significantly improve the lives of many people, especially if bolstered by evidence-based policies and changes in nutrition-related laws.

# Easing
## the mental health hardships in rural mothering

**DR NOKWAZI MTSHENGU**

***Rural Individual Fellowship Award***

*Walter Sisulu University*

*Family Medicine*

# /07

***Psychiatry registrar, Dr Nokwazi Mtshengu, 29, hated accounting. She saw herself more as a 'science-head,' at high school – yet in matric, she passed accounting with a distinction. Her ability to persevere in the face of difficulty has stood her in great stead in her career, which is currently in an exciting research-phase as she assesses and translates a globally accredited psychiatric tool for post-partum depression into isiXhosa. She credits her late mother, Sylvia, a high-school teacher, for instilling her fierce determination.***

*I had no idea why I was torturing myself with accounting. I really struggled and wanted to change it as a subject in Grade 11. My mother refused. Instead, she guided me on how to overcome the challenge and it was one of the subjects I got a distinction for in matric.*

Soon afterwards, Nokwazi had to adapt to a far more fundamental challenge – losing both her parents in quick succession. She grew up in a loving home as an only child in Flagstaff in the Eastern Cape and later on in Margate, Kwa-Zulu Natal. Her father, an inspector of education and a property investor, died of poisoning in 2012 and her mother of a stroke a year later. Her father's death coincided with her final year qualification in medicine, her mother's, with an orthopaedic rotation block during her internship at Grey's Hospital in Pietermaritzburg.

"It was a very difficult time. With my mother's passing, the consultants I was working with at Grey's were supportive – I could not function optimally and missed several days. It probably contributed to me subsequently leaning towards psychiatry and a therapeutic direction," she adds.

The female patients she is helping to treat in the Psychiatric Department at Dora Nginza Hospital in Port Elizabeth have become a source of great inspiration and joy to Nokwazi.

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### This specialisation is a privilege

“This specialisation is a privilege – it’s the ultimate opportunity to help others. I love working to improve the mental health care of all people in their most vulnerable times – and address the associated stigma. People can be overlooked and stigmatised, because the scar is often not physical,” she adds.

It has been challenging for her to balance extended family, full-time study and work since starting the registrar programme. Yet, for Nokwazi, there is nothing better than seeing patients who, after a long battle with mental illness, get better.

“We don’t see much acute illness. Most people have suffered for so long that they and their families have adapted and found ways of coping with the disability. When they present, they have often given up. So, we obviously get some amazing responses. Seeing them get better after suffering for so long with something they thought was incurable, is more uplifting than words can explain,” she says earnestly.

### Improved diagnosis and referral

Nokwazi and her colleagues assess often-illiterate patients who speak only isiXhosa, using the English-language Edinburgh Post-Natal Depression Scale questionnaire. Both this diagnostic instrument and the more general depression diagnostic tool, mini international neuropsychiatric interview, are fraught by difficulties in patient understanding and self-reporting.

Her MMed research aims to translate and render the depression scale questionnaire more understandable for her patients, enabling more accurate depression diagnoses and facilitating prompt referrals. “My team will check responses against the English version for reliability of scores and test-taking behaviour. Work in South Africa has mainly been focused on cross-cultural validation, reliability, specificity and correlation to diagnostic manuals – it’s unclear to me why a translation took so long,” she says.

Another passion of hers is the psycho-education of families and the patient’s support system. “Families typically live with the patient, so their inclusion in the management plan is important. They can become an extra set of eyes to notice early warning signs of relapse and minimise the risk to the baby and mother,” she adds. Nokwazi expects her work to improve identification, referral, proper diagnosis and treatment of perinatal depression, not only on her home turf, but far wider afield.

### Symptoms being over- or under-estimated or missed altogether

Worldwide, perinatal depression affects 15% to 20% of women after childbirth. It is a significant public health problem in South Africa, where the rate among women in relative poverty is three times that of high income countries. Unfortunately, perinatal depression often goes undetected. While the depression questionnaire was translated into IsiXhosa for a previous sample study in Khayelitsha, Nokwazi’s patients come from an arguably more poverty-stricken and far more rural setting, with its own unique challenges.

# DR CARMENITA GROVES

***Rural Individual Fellowshp Award***

*Walter Sisulu University*

*Treatment and study of catatonia in an acute mental health unit*



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***Her analysis of arguably the largest cohort of patients diagnosed with catatonia in South Africa, observing their presentation, management and outcomes, is already boosting referrals within her own hospital, says psychiatry registrar, Carmenita Groves.***

She says catatonia can be divided into two types, malignant and non-malignant, the former being characterised by autonomic instability (elevated temperature and tachycardia), rigidity and altered mental status.

"Since malignant catatonia can be fatal and requires early detection and prompt treatment, it's vitally important to educate all medical professionals not working in psychiatry," she asserts.

One of her department's most recent achievements was an increased number of referrals for patients with catatonic features, following a sustained effort to increase awareness of the condition among her colleagues. This involved presenting a case study at an interdepartmental meeting, held regularly at Livingstone Hospital, while at the same time increasing the psycho-education of patients and their families about catatonia and its relapse symptoms.

## Unexpected findings

Carmenita is excited about the direction her research has taken within the Acute Mental Health Unit at Dora Nginza Hospital in Port Elizabeth where she is working.

"I'd gathered a lot of information and explored a number of variables until I was able to formulate my research proposal. I presented my preliminary results at the World Psychiatric Congress in Cape Town in November 2016, and it was well received by my senior colleagues. This increased my motivation to expand my research and to add more variables. The data from my preliminary results showed the majority of patients (82.5%) were younger than 35, with 18% younger than 18 years of age, and 68.8% of them black males.

Dora Nginza Hospital's mental health department was a unique, stand-alone observational unit until May 2015, which meant that the hospital catered for a diverse population of patients with mental illness. Since then, it has been an acute mental health unit.

In her research, she is analysing the data from a sample of 80 patients diagnosed with catatonia over the past five years in the hospital's acute mental health unit.

## Preliminary results

The results suggest that the most common diagnoses associated with catatonia, are, in descending order, catatonic disorder due to another medical condition (26.3%), bipolar 1 disorder (23.8%), schizophrenia (20%) and substance-induced psychotic disorder (10%). The most prevalent general medical condition associated with catatonia is HIV (16.3%). The study also shows that 55% of participants used substances, 32% of these participants used a single substance and 21% used more than one substance − 36.3% of patients used cannabis followed by methamphetamine or Tik (25%), alcohol (23.8%) and methaqualone or Mandrax (2.5%).

## Drawing awards and excellence

Carmenita, from Bethelsdorp in the Port Elizabeth area, is the first person in her large family to study medicine. She was a top academic performer at school and played provincial schools volleyball.

"I did get bursaries for things like electrical engineering, but I have always loved everything about medicine and helping people. When I was accepted to study for an MBChB at University of Stellenbosch, my parents paid for the first three years and I later secured a bursary from the Eastern Cape Health Department. That made things a lot easier," she says.

"As a child in our community, I remember one student in our school had leukaemia and needed money, so I began a community fund-raising programme. I didn't even know her. I've always been that way, a provider and nurturer," she adds.

Married to an electrical engineer, Carmenita decided that at age 37 she was ready for motherhood. Today, her son, Riley, is the light of her life.

## Juggling roles is a challenge

"Motherhood has been wonderful and everything I thought it would be, but it's very difficult separating my role as mother from my role as doctor, while studying for a specialisation. Ryan and I strive to make it work and have a lot of social support from our large family. My dad has 15 siblings and my mom 12, so you can imagine the family circle," she laughs.

"During my free time I focus on my own wellbeing, I enjoy reading English literature and spending time with my family." Meanwhile, her focus on the wellbeing of others, through her research, looks set to bear abundant fruit.

## Early symptoms and the research

Dr Groves says many non-psychiatric doctors may not recognise the subtle early symptoms of catatonia. These include echopraxia (mimicking of examiner's movements), echolalia (mimicking of the examiner's speech) and verbigeration (repetition of phrases or sentences). Not recognising these subtle symptoms, can delay diagnosis and treatment, which results in prolonged and costly hospital stays. With her research, she will be outlining the most common symptoms of catatonia and identifying the factors that serve as predictors of severity. She'll also identify the cohort's demographics and underlying causes of catatonia. Her data source will include a retrospective analysis of folders of patients who met DSM V criteria or the Bush-Francis Catatonia Rating Scale between January 2013 and December 2018.

*The data from my preliminary results showed that the majority of patients (82.5%) were younger than 35, with 18% younger than 18 years of age, and 68.8% of them black males.*

**DR CARMENITA GROVES**

*Through financial support of research, training and capacity-building programmes, Discovery Foundation hopes to help strengthen healthcare in SA*

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