

NICD PULSE

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BALANCING ACT: A CAREER IN RESEARCH

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PG.6

Understanding
COVID-19 vaccine
side effects



**NATIONAL INSTITUTE FOR
COMMUNICABLE DISEASES**

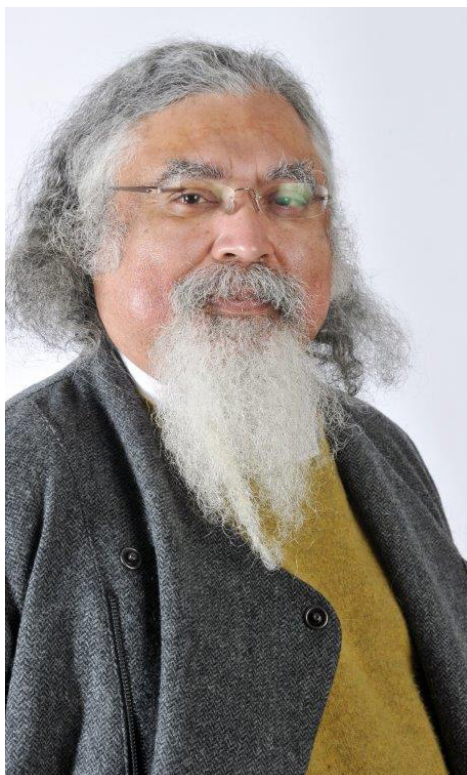
Division of the National Health Laboratory Service

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MESSAGE FROM ACTING EXECUTIVE DIRECTOR



So, the second journey song, “The Long and Winding Road”, is the PhD track and the how-to-get-there. Several of us have tales to tell of the slog, disappointment, late nights, and write-up that impacted relationships. Yes, there are the wonderful moments of discovery and insights, and the first published paper that inspires. And of course that final triumph of handing in the bound document! I cannot wait for the next instalment called the Post-Doc track...“Up, up and away”. Speaking of which, we congratulate Professors Freaan and Govender on their appointments, and there is an inspiring narrative from Dikeledi Kekana, from CHARM who is embarking on her scientific career.

Up next is “Look Into The Future”. Several diseases still burden society and the elimination of these may, at times, look distant. An approach to malaria control using the Malaria Molecular Surveillance platform is described and established at the NICD. Congratulations to Dr Jaishree Raman and her team on the Grand Challenges Explorations (GCE), a Bill and Melinda Gates Foundation initiative. It is encouraging to see that critical health awareness days such as World Malaria Day are creatively commemorated by the NICD.

“Journey to the Center of Your mind”.

Yes, vaccine hesitancy is “a thing”. What is needed is less judgment and more listening to understand and assist those concerned about COVID-19 vaccines. Here we detail some background on the approved vaccines and capture valuable responses to some frequently asked questions that you or your family and friends might be asking. Please also visit the link provided. Commentators have said that COVID-19 is about two epidemics. The first epidemic is what we are experiencing now. The second epidemic is to deal with the sequelae of the infections. We tell you more about an NICD-led post-COVID-19 study, what to look out for and if you or someone you know wishes to participate in the survey, details on how to participate.

And finally “Leaving on a Jet Plane”. Yes, I am sure we cannot wait to have a break, although the song will have to take on a more eco-friendly line with the climate emergency. The World Health Organization (WHO) and its COVAX partners are working with a South African consortium comprising Biovac, Afrigen Biologics and Vaccines, a network of universities and the Africa Centres for Disease Control and Prevention (CDC) to establish its first COVID mRNA vaccine technology transfer hub. The role of the NICD is described.

Reading through this edition of the Pulse, I could not help but think about songs themed around journeys. The first song that comes to mind is “Somewhere down the Crazy River”. We are living in unusually troubling and challenging times, and the “third wave” is no longer the Kevin Bacon six-steps removed, but with us in many ways. I urge you all to take care of yourselves and those around you by adhering to health regulations.

KEY NICD CONTACTS

Department	Contact Number	Email Address	Contact Person
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NICD Communications	011 386 0544	lesegos@nicd.ac.za	Lesego Sibilanga
NICD IT	011 386 5401	Helpdesk6@nhls.ac.za	IT Helpdesk
NICD Maintenance	011 386 6022	Maxwell.mugadza@nhls.ac.za	Corporate Workshop
NICD Procurement	011 555 0523	AdelleB@nicd.ac.za	Adelle Baijoo
NHLS Main Gate	011 386 6536		
NHLS Reception	011 386 6000		
Canteen	011 386 6088		

The NICD knows that it is helpful to have all key contacts and information at your fingertips. Whether you need to check on a delivery at reception or the main gate, fix a faulty door or a problem with your emails, we have you covered. Listed is all key NICD contact information that you can print for your convenience.



PARTNERING WITH GLOBAL ROLE-PLAYERS TO ESTABLISH A COVID-19 VACCINE HUB

By Lesego Sibilanga and Prof Penny Moore



On 21 June 2021, an exciting announcement was made by President Cyril Ramaphosa and the World Health Organization (WHO) that they will be supporting the South African Consortium to establish the first COVID-19 messenger ribonucleic acid (mRNA) technology transfer hub for COVID-19 vaccines. The National Institute for Communicable Diseases (NICD) is also involved in this innovative project.

Manufacturing vaccines against COVID-19 is a pressing challenge. The NICD is involved with many partners around the world to ensure it meets its mandate of communicable disease research and surveillance.

“As a leading public health institute, the NICD is excited and honoured to be involved in an undertaking of this calibre that will help South Africa reach its vaccination goals.”

The role of the NICD

The NICD is part of the Network for Genomic Surveillance in South Africa (NGS-SA) consortium, which continues to identify SARS-CoV-2 variants of interest. Based on circulating

strains, viable candidates will be selected for second generation vaccines, in the same way that pharmaceutical companies presently work to incorporate the Beta spike. These sequences will be used to generate mRNA vaccine candidates with Prof Patrick Arbuthnot's lab, which has a wealth of experience in RNA technology. These will be tested in pre-clinical trials, and the blood from those pre-clinical trials will be sent to the NICD, which will perform binding and neutralisation assays to determine how these compare with the ancestral strain and with one another. In other words, the NICD will determine the most promising candidates. On the basis of these studies, the Institute will assess equivalence, or superiority, which will form the basis of a move to larger scale manufacture at Afrigen, followed by preclinical and clinical trials.

Helping South Africa

This will help South Africa move towards having the technology in the country for RNA vaccines, which have proven to be vastly effective against treating SARS-CoV-2. Ultimately, the transition to human clinical trials will form the basis of RNA vaccines against other pathogens of local relevance. It has the potential to go way beyond SARS-CoV-2 and will hopefully help address many of the gaps in vaccine development in South Africa. WHO Chief Scientist, Soumya Swaminathan said it would likely take between nine and 12 months to produce a COVID-19 mRNA vaccine at the new South African technology transfer hub.



A YOUNG SCIENTIST'S QUEST TO FIND MEANING BEHIND THE RESULTS

By Puseletso Kobedi

Youth Day is celebrated every year on the 16th of June, a day where South Africans pay tribute to the lives of the young Sowetan students who fought to be liberated from the apartheid regime. In remembrance, the National Institute for Communicable Diseases (NICD) thought it befitting to recognise the work of young scientists.

Whether it's collecting specimens, analysing genomic data or doing research, the NICD has innovative, young scientists who are doing their bit towards public health in South Africa. In this edition the Communications Unit connected with Dikeledi Kekana, a 23-year-old second year Masters student working at the Centre for Healthcare-Associated Infections, Antimicrobial Resistance and Mycoses (CHARM). We asked her why she chose a career in science, what research she's involved in, what challenges she has experienced and what the most rewarding part of her work is.



Kekana chose to study and work in science because of her fascination with exploring the microscopic world, which she explains as "a universe on its own with its vastness, complexity and diversity". For her, this field offered the greatest understanding of the world around us and even the world within us. Her current study focuses on *Candida auris*, a fungus that usually affects people who are hospitalised for prolonged periods. She is investigating an outbreak that occurred in a neonatal ward affecting admitted infants. The aim of the study is to determine the cause of the outbreak and how the fungus was introduced into the ward. This is being done by using the DNA of the fungus and the ward location of the patients to see how these cases relate to each other.

As one can imagine, research can have many challenges. Because of Kekana's background in physiology, the analysis of sequences was completely new to her. She enthusiastically exclaims,



"It's one thing to be able to successfully get an output from a bioinformatics tool/software, but it is an immense accomplishment to actually give meaning to the results."

When Kekana is not in the lab analysing data, she spends her time learning how to play the keyboard, and pre-COVID, she frequented the theatre and got lost in musical theatre that tugged at her heartstrings.

The NICD celebrates Kekana and other young scientists; they are a force to be reckoned with, who work actively towards changing the status quo and breaking barriers in public health.

THERE IS STILL TIME TO MAKE A DIFFERENCE

By Nileen Gale

Mandela Day, celebrated on 18 July, needs no introduction. Now in its 11th year, the day is recognised globally in honour of former statesman and philanthropist, the iconic Nelson Mandela. The objective of the initiative is quite simple, but tremendously impactful in encouraging individuals to open up their hearts and give 67 minutes of their time to change lives.

The devastating aftermath of the COVID-19 pandemic has greatly affected the socio-economic conditions in the country, which has catapulted the needs of those most

vulnerable to new heights. This heartbreaking reality mobilised Dr Melinda Suchard and the Centre for Vaccines and Immunology (CVI) team to get involved. CVI called on their counterparts at the National Institute for Communicable Diseases (NICD) to step up by donating tinned foods to the Norwood Orange Grove/Houghton Community Action Network, or NOAH CAN in short.

"The support has been wonderful, in keeping with the spirit of the organization, whose staff have chosen their career paths based on a desire to help others. We are extremely grateful to those who have contributed," says Dr Melinda Suchard, Centre Head for CVI. "However, we would like to do more and have extended the deadline for donations to 29 July 2021. So whether you can donate



one can of tinned food or 10, we encourage you to get involved and will gladly accept any donation that can help feed a needy family.

For those who would like to get involved, please deliver the tinned foods, particularly proteins, to your Centre Administrator. For more information, contact Angella Musisi on angellam@nicd.ac.za



BALANCING ACT: A CAREER IN RESEARCH



By Dr Shuné Oliver

In the Science Focus dated November 2019, the importance of cultivating a research culture was highlighted. But how do persons cultivate a career in research?

One of the starting points is through a Doctor of Philosophy, or PhD degree, a qualification that usually sets the tone for an individual's research career. Once attained, many newly graduated PhD students feel lost, even before they are out of the starting blocks, begging the question, "what now?" The National Research Foundation (NRF) has a mandate to increase the number of PhDs that South Africa produces and for many emerging researchers, navigating these waters can often feel like a rite of passage into a secret society. Although Universities facilitate the completion of the PhD, establishing the way forward post-graduation is tricky. Here are some practical tips to consider:

Get going: If you are reading this, you are most likely employed by the National Institute for Communicable Diseases (NICD). This means that one of the biggest hurdles to an academic career has been cleared, namely placement. Once you have a placement it is important to think strategically about your research career and this is where the first piece of advice comes in: you have to plan. Think about your five-year plan, what your key research interest is, and most importantly, how

you will balance life, work, research and possibly teaching?

Get published: Publications are regarded as academic currency, and getting published might be a challenge at first. However, once you have recovered from the hard work put into attaining your PhD degree, you should be mindful that the absence of publications means you are less likely to be funded and offered other academic opportunities. Without funding it is unlikely that you will be able to generate novel data, so until then be strategic and use this opportunity to expand your network by getting involved in projects, with the prospect of publishing. With the backing of your line manager, ensure that you understand the process of selecting an appropriate journal, and that funding is available to pay for your publication. It is also beneficial to be findable by other scientists, and showcasing your work on the likes of Google Scholar, Web of Science ID and Orcid ID is the best way to achieve this.

Get funded: Funding attracts funding, and it is immensely liberating to the budding scientist. Emergent scientists at the NICD should consider K-funding, a unique opportunity to not only obtain initial funding, but to also manage a grant. Excellent opportunities exist at the [National Health Laboratory Service Research](#)



[Trust Development Grant](#) and the [NRF Thuthuka Programme](#).

Independent funding makes it easier to get published and although the funding can initially be relatively small, the skills you will gain from managing your grant are invaluable.

Get involved: Academic citizenship is a critical part of your academic career, where you can give back to the community by joining the local academic society and through peer reviews. [Publons](#) provide useful guidance on how to review and is a great way to get recognition and expand your portfolio.

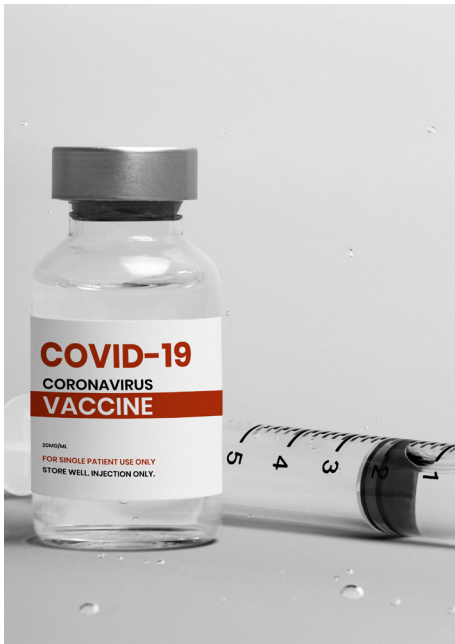
Get talking: Science engagement is not everyone's favourite part of the scientific process. Yet, if you have applied for funding, you have to embrace the ever-growing application section of science engagement. Communicating your science to the public means that you will have to develop a deep understanding of your work. And although emerging scientists are unlikely to be invited to speak to the media, PhD graduates and students alike can contribute to [The Conversation](#), an excellent forum to share your research with the public.

Although a successful career in research is a bit of a balancing act, this journey promises to be one of the most intellectually stimulating and rewarding endeavours you will ever pursue.



COVID-19 VACCINES IN SOUTH AFRICA: When are you considered fully vaccinated?

By Sinenhlanhla Jimoh, Dr Melinda Suchard and Dr Mukhlid Yousif



Vaccines save countless of lives each year by training and preparing the body's natural defences, the immune system, to recognise and fight off disease. If an individual is exposed to the disease post-vaccination, his or her immune system will identify the disease and go to work to prevent severe illness. But in the context of vaccines in South Africa, when is a person considered fully vaccinated?

Four vaccines have been approved by the South African Health Products Regulatory Authority (SAHPRA) to be used in South Africa. Oxford's AstraZeneca and Pfizer from BioNTech, which requires two doses, Jansen's single dose Johnson and Johnson, and most recently the double dose CoronaVac, manufactured by Sinovac Life Sciences. If a person has been administered the Pfizer vaccine, the recommended waiting period between the two doses is six weeks, and 14 to 28 days for CoronaVac, to allow the body enough time to respond. If the second dose is received before or after the recommended time, one does not have to repeat the course. And if a person contracts COVID-19 whilst awaiting the second dose, it's recommended to wait at least 30 days after recovery before going for the second dose of vaccine.

A person is considered fully vaccinated after two weeks from the time they received the second dose of the Pfizer vaccine, or after two weeks from the time they received the single dose Johnson and Johnson jab. Even when fully vaccinated, persons should not

change their behaviour and continue to practice the prescribed health regulations. No vaccine is perfect, which means it is still possible for vaccinated individuals to develop COVID-19, although disease is likely to be much milder than if a person had been unvaccinated.

There is no difference between isolation or quarantine guidelines for vaccinated and unvaccinated individuals. Even if a person is fully vaccinated and becomes exposed to a person with COVID-19, they will still need to quarantine for 10-days. Reason being, in South Africa we have not yet reached herd immunity levels when community levels of vaccination become protective against rapid disease transmission. And at a population level, individuals exposed to COVID-19 are still required to quarantine in order to halt the spread of the disease.

Achievements



Prof Nelesh Govender

The University of Exeter, based in the United Kingdom, has appointed Prof Nelesh Govender, fungal disease expert and Centre Head for Healthcare Associated Infections, Antimicrobial Resistance and Mycoses at the NICD, as an Honorary Professor at the MRC Centre for Medical Mycology. Having started his career in public health 15 years ago, the appointment follows Prof Govender's ongoing collaboration with the institute and his unwavering commitment towards advancing fungal and antifungal resistance research efforts to help guide government policy.



Prof John Freaan

Associate Professor in the Parasitology Reference Laboratory at the Centre for Emerging Zoonotic and Parasitic Diseases, Prof John Freaan recently received another feather in his cap by being bestowed the honour of Extraordinary Lecturer at the Faculty of Veterinary Science, at the University of Pretoria. Prof Freaan has contributed to various zoonotic disease projects in his capacity at the NICD and is currently working on a metagenomics study focusing on the role of tick-borne pathogens in acute febrile illness.



THE FINAL HAUL TOWARDS ELIMINATING MALARIA

By Drs Jaishree Raman and Shuné Oliver

The NICD's Centre for Emerging Zoonotic and Parasitic Diseases (CEZPD) plays an integral role in South Africa's efforts to eliminate malaria. It is widely acknowledged that novel strategies are going to be required to walk that last mile to halt the transmission of malaria within South Africa's borders.

Malaria Molecular Surveillance (MMS) is currently being touted as a potential game-changer in elimination efforts across Africa. To assess the value of incorporating MMS into routine malaria surveillance activities in support of South Africa's elimination agenda, the CEZPD's Dr Jaishree Raman has been awarded a grant by the Grand Challenges Explorations (GCE), a Bill and Melinda Gates Foundation initiative, to establish a targeted amplicon sequencing platform at the NICD.

Currently in South Africa, malaria cases are classified as either locally-acquired or imported based on patient travel histories, which are often incomplete and/or inaccurate. The parasite relatedness data generated through this sequencing platform will enable more accurate classification of malaria cases, allowing malaria elimination certification to be awarded to districts within the three malaria-endemic provinces, namely the KwaZulu-Natal, Limpopo and Mpumalanga provinces. As more genomic data becomes available, it will be used by the national and provincial malaria control programmes to guide evidence-based decision making around malarial elimination intervention selection and targeting, accelerating the country towards malaria elimination.

A component of the GCE grant focuses on building capacity in MMS, so we need your help in walking that last mile to eliminate malaria by increasing



CEZPD staff involved in malaria surveillance and research

the number of malaria genomic experts and the uptake of malaria genomics surveillance by the National Malaria Elimination Programme.

RECOGNISING WORLD MALARIA DAY 2021

By Drs Jaishree Raman and Shuné Oliver



World Malaria Day, observed annually on the 25 April, recognises the global control efforts to contain one of the world's deadliest diseases. The day has its origins in Africa Malaria Day, that was originally established to raise awareness of malaria in sub-Saharan Africa. The theme for World Malaria Day 2021 was 'Zero Malaria - Draw the Line against Malaria'. The Centre for Emerging Zoonotic and Parasitic Diseases (CEZPD) took this challenge quite literally and on 23 April 2021 employees at the National Institute for Communicable Diseases (NICD) were invited to draw a line, using wool, against malaria. Malaria posters were placed in the PRF auditorium and employees were encouraged to draw a line using wool in a colour of their choosing.

Although notable successes in controlling malaria were reached between 2010 and 2015, with case and death rates dropping by 21% and 29%, respectively, previous successes are plateauing. Now more than ever a renewed commitment and vigour is needed to achieve the ambitious goal of eliminating malaria, and the CEZPD would like to thank everyone who made their mark by drawing a line against malaria.



FLIPPING THE LID ON BOTTLE TOPS AND BREAD TAGS

By Nileen Gale

Over five years ago the National Institute for Communicable Diseases (NICD) embarked on an ambitious Mandela Day initiative spearheaded by Medical Technologist, Lisa Ming Sun, to assist individuals in need of wheelchairs. Ming Sun literally 'flipped her lid' for a worthy cause by mobilising her colleagues and other employees to donate bottle tops and bread tags, items that would normally end up in the dustbin. The collection drive saw employees support the project by donating an overall 280kg bottle tops and 25kg in bread tags.

The chosen beneficiary, Bread Tags for Wheel Chairs, has since inception donated in excess of 800 wheelchairs to disadvantaged children and adults, and through the NICD donation hopes to change the lives of two further individuals.

Thank you to all the NICD employees who have donated towards the project over the years, and a special thank you to DBB who assisted with the bulk of the storage, the NICD Safety Committee for



their involvement, and to PRL for checking and sorting the thousands of items.

Employees are encouraged to continue their recycling efforts and are welcome to visit www.breadtagsforwheelchairs.co.za if they would like to get involved in their personal capacity.

Thank you to the authors for their contributions!

Please continue to send content of interest to: NileenG@nicd.ac.za

On behalf of the editorial and production team, happy reading!

Sinenhlanhla Jimoh | Senior Communications Manager

National Institute for Communicable Diseases

