

NICD PULSE



NATIONAL INSTITUTE FOR
COMMUNICABLE DISEASES

Division of the National Health Laboratory Service

COVID-19 VACCINES AND VARIANTS

WE ALSO GO
BEHIND THE
SCENES OF THE
STI SECTION

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Message From The Acting Executive Director

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Dear colleagues

The year 2020 was crowned with the extraordinary announcement of the success of no less than three anti-SARS CoV-2 vaccines, that completed phase three trials. The fact that the first two vaccines were mRNA-based vaccines, with efficacies exceeding 90%, made the results even more exciting and lent hope to end the COVID-19 pandemic. Amidst a severe resurgence in the country, the vaccine successes could not have come sooner.

After much clamour and relief, the National Department of Health announced the introduction of a phased introduction of

the AstraZeneca (AZ) vaccine. The development of vaccines is not for the faint-hearted, and the road to vaccine success is met with high attrition. One warning signal about the effectiveness of the AZ vaccine was that the resurgence was characterised by the presence of a new lineage, presently the dominant lineage in circulation in South Africa. The variant contained several concerning mutations as the amino acid changes were critical in antibody responses. Amidst much concern, we should not think that effective vaccines will not become available, either through modification of the current vaccines or further vaccine development. We should prepare ourselves for vaccines and encourage as many individuals to be vaccinated.

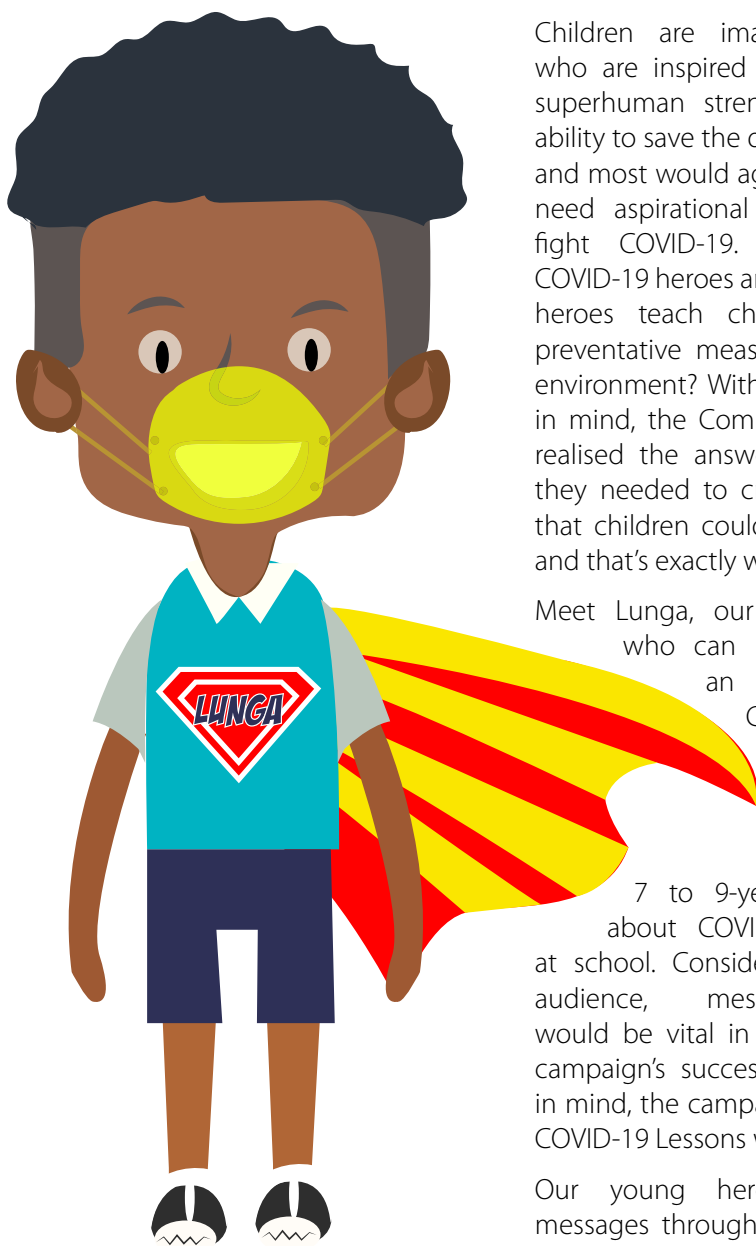
In this feature Prof Penny Moore discusses variant 501Y.V2 in more detail and what this means for vaccine development. Dr Jinal Bhiman describes how the analysis was performed, implications thereof and the importance of continued molecular surveillance. Professor Lynn Morris details her experience in a vaccine trial, why it was vital to participate and which vaccine trial to participate in. Lynn's choice (even though she was blinded to whether she was in the vaccine or placebo arms) reveals an interesting decision algorithm! To address public concerns of the vaccine, we focus on addressing vaccine hesitance with Dr Simone Richardson. We also dispel vaccine myths and share the NICD's innovative "I will vaccinate" campaign.

In anticipation of the start of the 2021 public school year, it is important to keep children informed and in doing so allay fears and anxieties. With the help of our COVID-19 hero, Lunga, we share practical ways children can stay safe from the virus in COVID-19 Lessons with Lunga.

In addition, we focus on STIs and the STI section at the NICD. We also extend a warm welcome to Dr Michelle Groome, who now leads the Public Health Surveillance and Response Division.

With the start of the new year we are hopeful that we can address broader public health concerns, that are not overshadowed by the COVID-19 pandemic. We appreciate that all staff have valiantly tried, and very often successfully and amidst challenges, to keep the NICD programmes alive. Thank you all for demonstrating patience, persistence and perseverance, important qualities we all need to embrace as we enter the next phase.

Our COVID-19 Hero Gets Full Marks For Sharing Key School Safety Tips



Children are imaginative beings who are inspired by heroes. Their superhuman strength, speed and ability to save the day are admirable, and most would agree that children need aspirational heroes as they fight COVID-19. But what are COVID-19 heroes and how can these heroes teach children COVID-19 preventative measures in a school environment? With these questions in mind, the Communications Unit realised the answer was simple – they needed to create a character that children could easily relate to, and that’s exactly what they did.

Meet Lunga, our COVID-19 hero who can be described as an unassuming COVID-19 savvy character with the sole purpose of educating 7 to 9-year old children about COVID-19 prevention at school. Considering the young audience, message delivery would be vital in determining the campaign’s success. And with this in mind, the campaign was dubbed COVID-19 Lessons with Lunga.

Our young hero delivers the messages through five educational posters, each focusing on important and practical tips to help children become COVID-19 ‘schoolwise’. In lessons one and two Lunga reminds youngsters what the preventative

measures are to minimise their risk and what the common COVID-19 symptoms are. The importance of asking a trusted adult for help if they feel unwell at school is the focus of the third lesson. In lesson four Lunga gives practical school examples on how to prevent the spread of germs, and finally lesson five sees children earning their COVID-19 hero badges.

These lessons intend to elicit positive and lasting behavioural change, the kind of change that is not only practised in the classroom and on the playground, but also at home. In addition to the posters, the campaign also features stimulating activity sheets for children to test their COVID-19 knowledge and a series of visually appealing animated videos truly brings Lunga to life.

Through the COVID-19 Lessons with Lunga, the hope is that youngsters will understand that heroes do not always fly overhead or shoot spiderwebs from their wrists. True heroes can be found anywhere; one could be the person standing behind them in the queue, sitting next to them in the taxi, or it can be the reflection they see in the mirror. The message to them is simple: be like Lunga and be a COVID-19 hero.

The educational posters, activity sheets and animated videos are available for download from the NICD website.

COVID-19 LESSONS WITH

LUNGA

**TEACHING CHILDREN COVID-19
SCHOOL SAFETY**



Why I Volunteered To Take Part In A COVID-19 vaccine Trial – Prof Lynn Morris

I am a volunteer in one of the vaccine trials being run at the Chris Hani Baragwanath Hospital in Soweto by Professor Shabir Madhi. So far I have attended 6 appointments with another 2 to go. After the screening visit to make sure I am healthy and not currently infected with SARS-CoV2, I had 2 vaccinations that were 3 weeks apart. Then at set intervals after each vaccination, I returned to have bloods taken to monitor how my immune system is responding. Every visit I have a nasal swab for a PCR test. The last 2 visits are to see if my antibody response lasts for 6 months or even 12 months.

As a participant on a trial, you are asked to keep a diary for a week after you get the vaccine. You record your daily temperature and whether or not there was any tenderness or redness at the site of the injection. I had a very small red spot for a day or two afterwards that hardly seemed worth reporting. But I did, as the recording of any side-effects is a critical part of a trial. First and foremost, vaccines need to be safe because they could end up going into millions, even billions of people. I also received regular SMSs to ask if I had any symptoms and if so, to report back to the clinic.

Of course I don't know whether I actually got the vaccine or not. The trial is placebo-controlled. In other words, I have a 50% chance of getting the vaccine or getting the placebo (salt water). Not even the principal investigator, attending doctors or the study nurses know. This is to make sure that the results from the trial are free of any biases and the data can be completely trusted. Statisticians will compare the number of SARS-CoV-2 infections (called trial endpoints) among the people who got the vaccine and those who got the placebo to see whether or not the vaccine worked.

I had no hesitation in deciding to take part in a trial; the only question was



which one. Do I join the ChAdOx1 nCoV-19 trial (from Oxford University and AstraZeneca) or the NVX-CoV2373 trial (from Novavax Inc)? Both vaccines aim to stimulate neutralising antibodies to the spike protein of SARS-CoV-2 but using different approaches. The ChAdOx1 is a harmless virus vector carrying DNA for the SARS-CoV-2 spike protein that the body uses to express the protein, while the Novavax vaccine contains the actual spike protein encased in a lipid nanoparticle that is injected together with an adjuvant. Studies have already shown that both vaccines induce good neutralising antibodies and the premise is that these will protect us from infection. Of course, we now know that that the CHAdOx1 vaccine works and so do other COVID-19 vaccines. In the end, I joined the Novavax trial because I have seen in my own laboratory how proteins stimulate better antibody responses. I am eagerly awaiting the Novavax trial results!

The blood samples from a number of COVID-19 vaccine trials are being tested at the NICD using a neutralising antibody assay that was originally

developed for HIV. This meant we were able to do this quickly and we also knew how to make sure the results we produced were reliable. These results will be used to help us determine how the vaccine worked – in what is called a correlate of protection analysis. Specifically, it will tell us what level of antibodies are needed for protection, which will be important as we may need to boost these responses in subsequent years. It has been very satisfying to both participate in a vaccine trial as a volunteer and to be supporting the laboratory assessments of the vaccine itself.

Vaccines are our best chance of getting the COVID-19 pandemic under control. South Africa will soon start rolling out vaccines to all health care workers and other vulnerable groups, and in time, to the majority of the population. NICD's ongoing involvement in the vaccine program will be critical, including monitoring viral evolution and sequencing vaccine failures to ensure that we stay ahead of the curve.

Don't Let These COVID-19 Vaccine Myths Keep You From Getting The Jab

To get the COVID-19 vaccine or not to get it? That is the question that most of us will be grappling with. This past year has seen hundreds of vaccines in development worldwide in response to the growing coronavirus pandemic, but many have expressed their concerns and fears about this vaccine. However, the growing concern has been largely motivated by misinformation.

In this article we tackle three major vaccine myths that research has shown to be baseless:

Myth 1: The COVID-19 vaccine is not safe because it was developed quickly.

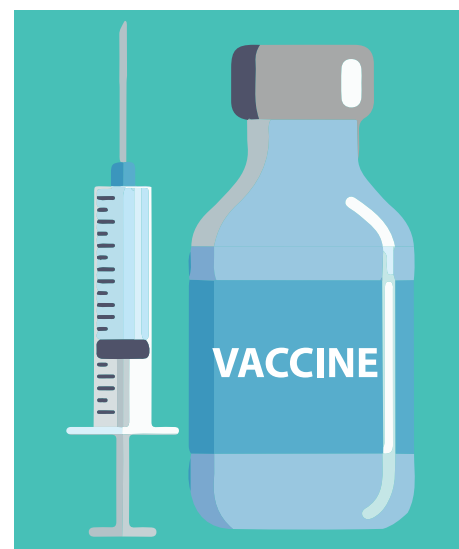
Truth: Significant resources were invested in quickly developing a vaccine for COVID-19 because of the worldwide impact of the pandemic. The emergency situation warranted an emergency response but that does not mean that safety protocols were bypassed. The safety of COVID-19 vaccine will continue to be closely monitored by the Centers for Disease Control and Prevention (CDC) and the FDA.

Myth 2: People who have had COVID-19 and have recovered don't need to get a COVID-19 vaccine

Truth: There is not enough information currently available to say how much natural immunity one acquires, and early evidence suggests that natural immunity from COVID-19 may not last very long. It is recommended to get the COVID-19 vaccine, even if you've had COVID-19 previously. However, those that had COVID-19 should delay vaccination until about 90 days from diagnosis. People should not get vaccinated if in quarantine after exposure or if they have COVID-19 symptoms. It is not harmful if one is vaccinated for SARS-CoV-2 during asymptomatic infection with SARS-CoV-2.

Myth 3: Possible side effects of the vaccine could be worse than COVID-19 disease

Truth: While some people that receive the vaccine may develop symptoms as their immune system responds, CDC states that the side effects from the COVID-19 vaccine may feel like flu and



might even affect your ability to do daily activities, but they should go away in a few days.

There are more myths about the COVID-19 vaccine but it's important to focus on what is known and true. Firstly, that getting a COVID-19 vaccine may help keep you from getting seriously ill even if you do get COVID-19 and secondly, getting vaccinated yourself may protect people around you, particularly people at increased risk for severe illness from COVID-19. Whatever you decide, let it be driven by research and not misinformation and fear.

Groomed For This Position



The National Institute for Communicable Diseases is excited to announce the appointment of Dr Michelle Groome as the Head of the Public Health Surveillance and Response Division (DPHSR). Dr Groome boasts an illustrious career spanning more than 15 years' experience in the field of infectious diseases and vaccinology, including clinical vaccine trials. Her expertise includes respiratory and diarrhoeal disease surveillance programmes and observational studies assessing vaccine impact, effectiveness, immunogenicity and safety in South Africa.

Qualified as a medical doctor (Wits), Dr Groome previously led the diarrhoeal disease portfolio at the SAMRC: Respiratory and Meningeal Pathogens Research Unit. Her portfolio of public health contributions includes providing the first rotavirus vaccine effectiveness data from Africa, which was pivotal to inform public health decisions. Furthermore provided evidence for sustained use of this vaccine in low and middle-

income countries, evaluating the safety and immunogenicity of a novel injectable subunit rotavirus vaccine in South Africa.

With more than 70 publications in local and international peer-reviewed journals, Dr Groome obtained a Master of Science in Medicine (in the field Epidemiology and Biostatistics), completed her PhD in Public Health (Wits) and also has a Diploma in Child Health. She holds a joint appointment as Senior Researcher (School of Pathology) at the Faculty of Health Sciences at Wits, where she lectures and supervises post-graduate students.

As a celebrated scientist, Dr Groome has received several awards, including the Emerging Global Leader Award from the Fogarty International Center, National Institutes of Health (2016), and the SAMRC Scientific Merit Award (2017). She has a South African National Research Foundation C1 rating and is a regular presenter at local and international conferences.

STI: Behind the Scenes

Sexually transmitted infections (STIs), remain a major public health problem globally. The STI section within the NICD's Centre for HIV and STIs plays a pivotal role in tackling the STI burden in South Africa by conducting STI surveillance and research.

In light of the STI/Condom awareness week commemorated on the 8th -14th of February, we go behind the scenes to learn more about the work that the STI Section does, as well as to meet the faces behind the work.

What they do:

The STI Section is involved in conducting microbiological surveillance of patients presenting to primary healthcare clinics with STIs. The national STI reference laboratory within the Section performs phenotypic and molecular testing to determine the causes and antimicrobial resistance patterns of common STIs. In addition, serological testing is conducted for surveillance purposes and tests performed include herpes, HIV, hepatitis B and syphilis serology using both manual and automated testing platforms.

STI research is done in collaboration with local and international research and public health institutions such as the World Health Organization.

The STI reference laboratory is not a routine STI diagnostic laboratory but performs specialised testing on referred specimens, such as those from suspected paediatric sexual abuse cases, or patients who present with persistent STI infections and/or treatment failure.

One of the principal functions of the STI reference laboratory is to culture and monitor antimicrobial resistance

patterns of *Neisseria gonorrhoeae* which is the most common cause of male urethritis in South Africa. *Neisseria gonorrhoeae* can rapidly develop resistance to recommended antimicrobial therapy and has been identified as a priority pathogen by the World Health Organization.

The work done by the STI Section is used for public health action. The clinical and microbiological data gathered inform the national STI treatment guidelines issued by the National Department of Health. Furthermore, data is submitted to the WHO Global Antimicrobial Resistance Surveillance System and this represents gonorrhoea antimicrobial resistance data from South Africa.

Meet the Team

The STI section is led by Dr Ranmini Kularatne and her team comprises laboratory staff, research and surveillance staff, admin as well as data staff members.



When asked what makes a great team, Dr Ranmini said, "A great team is one that shares the same vision and is dedicated to fulfilling the mission and objectives of the organisation they work for. There is a spirit of unity, cooperation, support and shared goals among our staff within the department and out in the field. We have the knowledge and skills to collectively produce high-quality work outputs". She further shares that she loves what she does as a Clinical Microbiologist because she is inspired and motivated by the constantly evolving nature of the work, by the people she works with at the NICD, and by their collaborations with local and international professionals.

STIs continue to be a burden in South Africa and we thank the STI team for their continued commitment and hard work in tackling this burden. Their surveillance and research focuses on aspects that are important for STI control in South Africa and will lead to a better understanding of STI epidemiology, transmission dynamics and antimicrobial resistance in the country.

COVID-19 Vaccine Efficacy - A Storm In The Vial

The textbook definition of a vaccine is a substance used to stimulate the production of antibodies that provide immunity against one or several diseases. It is prepared from the causative agent of the disease and this is where the water gets murky. The COVID-19 vaccine that the South Africa Government procured is based on the original SARS-CoV-2 lineage, which begs to question its efficacy on the new variant.

To understand the way forward, Prof Penny Moore, SARChI Chair in the HIV Virology Section answered the following questions:

Question: Under normal conditions, how long does it generally take to develop a viable vaccine?

Answer: Vaccines have historically taken many, many years to develop and to test for efficacy. We saw the beginning of accelerated vaccine design and testing in the most recent Ebola outbreaks, but nothing that has come before, compares with what we have seen for SARS-CoV-2. In this case, the process from the discovery of the pathogen to the design and testing of multiple vaccines has happened within months, not years, and we expect efficacy data any day now. This has fundamentally changed our approach



to vaccines, which will be invaluable going forward as we continue to tackle emerging pathogens – because there will be more.

Question: What does the current research suggest about the vaccine's efficacy in relation to the new variant?

Answer: Our research has shown that antibodies from people previously infected with the “old” variant show substantially less activity, and in half of cases, no activity against the new SARS-CoV-2 variant, 501Y.V2. This suggests potentially lower vaccine efficacy, and indeed, is supported by the recent release of the Novavax data where efficacy in SA was lower than in the UK.

Question. What challenges have/are you and your colleagues facing in relation to the new lineage?

Answer: The main challenge in getting the work done has been the need for rapid, reliable data to inform public health responses. This required huge commitment from the people in the lab – some of them have worked crazy hours through the holidays to generate this important data – they are an exceptional team!

Question: Some individuals feel strongly against taking the vaccine (any vaccine). What would your advice be to these individuals?

Answer: Vaccines have saved innumerable lives and hugely increased our global quality of life. They are tested extremely carefully for safety, always the first concern of people who develop them, and for their ability to protect. I have huge faith in vaccines to end this pandemic, and return us to normal life. For that reason, I look forward very much to receiving my jab of a SARS-CoV-2 vaccine. But more importantly I look forward to seeing our healthcare and frontline workers receiving the vaccine-elicited protection they need to continue their incredible efforts.

In conclusion, we have learned that the SARS-CoV-2 501Y.V2 harbours concerning mutations associated with increased transmissibility and neutralising antibody resistance. Recent data also suggests that the new lineage may be predominant throughout South Africa. As January 2021 marks one year since the first case was reported in South Africa, much has transpired and although the future might seem a little daunting, one thing is clear. Exceptional scientific minds, collaborative efforts and research will turn the tide on the COVID-19 pandemic.



Team HALO, Using Social Media To Discourage Vaccine Hesitance

The COVID-19 vaccination program may have a significant effect on reducing the intensity of the pandemic and potentially stopping it, but it is met with an increase in negative attitudes that contributes to an increase in COVID-19 vaccine hesitance. In response to the vaccine hesitance challenge to public health, Dr Simone Richardson of the NICD and over 100 scientists worldwide joined hands (virtually) to bust myths and exchange knowledge on the safety and efficacy of vaccines through social media under the United Nations and The Vaccine Trust Project initiative called Team Halo.

The development of a COVID-19 vaccine has been an important part of the world's vision of decreased mortality and reduced severe illness from COVID-19 infection, and of the chance to live a near-normal life. Vaccination attempts could be postponed due to people's misinformed rejection of the vaccine.

Vaccine hesitance is often due to misinformation, a lack of trust in the importance, safety, and/or effectiveness of vaccines. On social media, misinformation and negative sentiments can spread instantaneously, giving anti-vaxxers a thriving platform to convince others of their opinions. The World Health Organization (WHO) declared vaccine hesitancy as one of the top ten threats to global health in 2019.

Using the same social networking sites to make serious points in innovative ways, the Team Halo volunteers are determined to crack myths and tell people what they want to hear about the science and stories behind the names. They will humanise the experience of vaccinations, garner trust through transparency, and demonstrate the safety, effectiveness and importance of COVID-19 vaccinations through the

#TEAMHALO



sharing of real-life stories of individuals affected by COVID-19 vaccination.

Team Halo aims to highlight the work undertaken by scientists in South Africa, India, UK, US, Qatar, UAE, France, Spain, Peru, Canada and Brazil, and create a platform for communication between the scientists working on COVID-19 vaccines and the citizens of these countries. Dr Richardson and other scientists are keen to emphasise the global nature of their work and recognise the contribution made by thousands around the world. Collectively they are producing creative, social media-friendly videos

on topics such as COVID-19 vaccine science, personal experiences and reactions to COVID-19 vaccine news items. Dr Richardson made a video titled: COVID-19 is mutating, should you be worried? And, explains exactly what is in the Moderna vaccine.

Through this amazing initiative, a new world view can be granted to a global nation to learn about one another and personal experiences toward ending this pandemic. Thank you to our heroes.

Follow the Team Halo on Twitter: <https://twitter.com/projecthalo>

See other volunteers: <https://teamhalo.org/>



Achievements



The L'ORÉAL-UNESCO for women in science programme recognises Simone Richardson for her groundbreaking research

Dr Richardson is investigating how diverse antibody functions that target and eliminate infected cells can be harnessed to protect against COVID-19 in HIV-infected individuals. This is crucial to understand COVID-19 vaccine design and efficacy in South Africa.



Jessica Yun receives the SARA LOWTHER FETP Memorial Award

The NICD congratulates Jessica Yun, SAFETP resident, on receiving the Sara Lowther FETP Memorial Award for her award-winning proposal, 'Evaluation of the CoughWatchSA application as a digital participatory surveillance platform, January – July 2021'. The project will evaluate the digital participatory surveillance platform, and its ability to detect and monitor symptomatic acute respiratory illness in South Africa.



Faith Moyo - Young Investigator Award

Faith Moyo (CHIVSTI) won Young Investigator Award (Best Oral Presentation) at the International Workshop on HIV Pediatrics 2020, Virtual Conference 16-17th November, for her presentation: 'Longitudinal evolution of maternal viral loads during pregnancy and postpartum among women living with HIV in South Africa.'



To stay up to date with the latest NICD information, all colleagues are invited to connect with us on LinkedIn - (<https://bit.ly/3722qr8>)

COVID-19 Vaccine: 'I Will Vaccinate' Campaign

Social media has changed the communications landscape, enabling individuals to connect in an instant. It is considered a leading resource of news and information, and at this moment a cornucopia of COVID-19 vaccine information, both factual and false, dominates social media feeds globally.

So how does one break through the noise? By being different, and the Communications Unit did exactly that with their 'I Will Vaccinate' social media campaign. "The team realised that a personal approach was the best way to get people talking," says Senior Communications Officer, Sinenhlanhla Jimoh. With this in mind, the team approached NICD Centre Heads to share their personal reasons for choosing the vaccine. Each Centre Head shared their reasons, without bias or prejudice, in the hope of influencing public perception of a substance that had come under severe scrutiny. "The power of this campaign lay in its simplicity and delivering content that was different. Using images of our Centre Heads, coupled with powerful 'non-scientific' quotes meant our community members could relate, and although some members were quite outspoken, you can't argue with a person's reason."

The two-week campaign yielded encouraging results, specifically on Facebook and generated a reach of more than 780 000 and an engagement rate exceeding 31 000. "The objective of the



campaign was clear, to vaccinate remains a choice. And these statistics support the fact that we struck a cord and got our community members talking," Jimoh concludes.

'I Will Vaccinate' is the preamble to the

more ambitious and comprehensive COVID-19 vaccine campaign, scheduled to launch soon. It aims to create vaccine awareness by addressing burning questions, dispelling myths, allaying fears and talking to the facts.



COVID-19 Hits Home

For many of us, COVID-19 was just a virus we dealt with in the lab, heard about on the news or an inconvenience that took away our freedom as we were forced to be confined to our homes. With time, however, as some contracted COVID-19 and some lost their loved ones, COVID-19 became a reality. We asked a few of our colleagues to share their experiences on how COVID-19 affected them.

For Cardia Fourie, a Medical Technologist from the Centre for Respiratory Diseases and Meningitis, testing positive brought about a lot

of anxiety because of her comorbidities. While dealing with the physical effects of COVID-19, when she had difficulty breathing, she also battled with the thought of how she could protect those close to her from getting the virus.

Vusumzi Tshetu, an ICT Infrastructure Engineer, shares how he was scared to test because of the stigma around COVID-19. He eventually got tested and knowing what he was dealing with gave him some sort of relief. As someone who stays alone, recovery for Vusumzi was difficult and he appeals to those who are still taking COVID-19 lightly, to not get to the place where they experience COVID-19 first hand or lose a loved one to it.

Like many, Puseletso Kobedi, a Web Content specialist from the Communications Unit, thought that children don't get COVID-19 or that they don't get badly affected. This, however, was not the case when Puseletso tested positive for COVID-19 after contracting it from her children. With her being sick as well as nursing two sick babies, recovery was a challenge but fortunately, everyone made a full recovery. She does not know where or how her little ones got infected and she urges parents to take extra care.

These are just a few accounts of how COVID-19 affected the lives of some of our colleagues and we know that there are many more stories like these right here on our campus. If you have been affected or infected by COVID-19, may you get the courage to share your story and save a life. To watch these stories, you may visit the NICD's YouTube channel at the National Institute for Communicable Disease or follow us on social media.

The COVID-19 Chronicles – Variant 501.V2



In September 2020 a spike in numbers of COVID-19 cases placed the Nelson Mandela Bay Metro firmly under the microscope, and for good reason. Genomic scientists noticed that a particular variant had increasingly dominated the specimens collected, which ultimately led to the SARS-COV-2 variant, 501.V2, being identified.

To better understand this process, Dr Jinal Bhiman, Principal Medical Scientist at the Centre for Respiratory Diseases and Meningitis (CRDM) shared her insights. In order to identify a variant, “a laboratory method called sequencing is used to identify the RNA or DNA that makes up a virus [genome],” Bhiman says. Since March 2020 only five specialised laboratories in South Africa have been sequencing the coronavirus from the diagnostic samples and through a continual process of sequencing, Bhiman and her colleagues have been monitoring the virus and also noted the mutation.

Before the variant can be understood, one needs to understand why mutations in viruses occur in the first place. “RNA viruses, like the coronavirus, are more prone to mutations and this process is a completely natural part of its life cycle,” says Bhiman. Viruses are intracellular parasites and can be classified based on their genome, either DNA or RNA. The RNA virus is a molecule composed of ribonucleotides packed inside a protein shell and mutations happen when the RNA is being replicated.

“Just when we figured out how to play the game, the rules changed,” Bhiman laughingly quips, since understanding the new variant inadvertently came with a few challenges. Bhiman and her colleagues were tasked with cultivating the virus and testing the effects of the mutations. “To rapidly understand the impacts of the mutations over the December 2020 period was a challenge, as many companies who supply laboratory reagents were closed. But we soldiered on and got through it.” When asked about how to identify possible future mutations, Bhiman says that routine sequencing of samples, from all provinces in South Africa, is an ongoing process and that they continue to monitor whether new mutations arise.

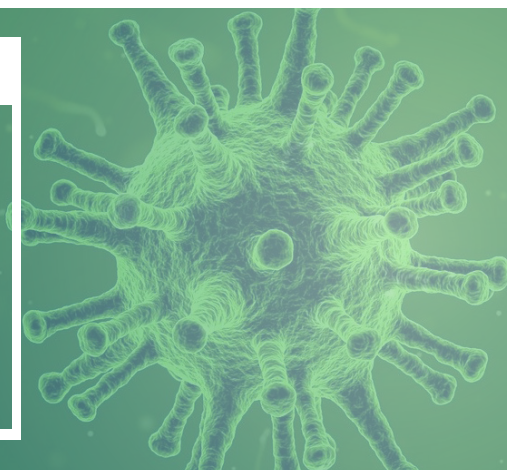
Whether the new variant is more transmissible between individuals in comparison to the original virus, is still open for discussion. A recent study suggests that either increased transmissibility or escape from immune responses may

have driven the spread of this variant (or ‘lineage’). “There are between 20 to 40 changes in this lineage, compared to the older lineages. What is noteworthy is the numerous changes in the spike protein of the virus, which it uses to bind to human cells.” Laboratory studies have shown that one of the mutations in the new lineage allows the virus to bind better to human cells, but this does not necessarily mean that the virus is more transmissible between humans.

In the context of Hollywood blockbuster movies, the word “mutation” normally conjures up frightening images of laboratory experiments gone wrong. But the mutation of COVID-19 is not fiction and although the path of the virus remains uncertain, further significant mutations are not completely unlikely. Regardless of how the coronavirus will change, Bhiman and her colleagues will be watching and documenting every step of the way.

EDITORIAL

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We would like to hear from you. To share your stories and achievements with us please email Thapelom@nicd.ac.za