



In this Issue

Our feature story this month focuses on a study describing the role of individualised treatment for drug resistant tuberculosis published in the journal *Clinical Infectious Diseases*.

On page 2 we announce that Prof Salim Abdool Karim was named in the 100 influential Africans list by Jeune Afrique, a new study funded by the NIH and SAMRC through the U.S.-South Africa Program for Collaborative Biomedical Research and the Point-of-Care collaborative study with the University of Oxford.

We highlight the successful launch of two observational SARS CoV-2 studies as part of the newly formed NIH-funded Covid-19 Prevention Network (CoVPN and congratulate Dr Anushka Naidoo for her exceptional results in the Harvard GCSRT programme on page 3.

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CENTRE FOR THE AIDS PROGRAMME OF RESEARCH IN SOUTH AFRICA

Newsletter

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Individualized treatment for drug-resistant tuberculosis

In the recent case report, published in the journal *Clinical Infectious Diseases*, CAPRISA researchers demonstrate how significant advances in whole-genome sequencing (WGS) technology for *Mycobacterium tuberculosis* can be harnessed to provide personalized care for patients with drug resistant tuberculosis (DR-TB).

This case study highlights the considerable clinical and diagnostic challenges associated with DR-TB management and limitations in the ability of the current standard-of-care diagnostic platform in providing comprehensive drug susceptibility profiling results in inappropriate treatment selection.

This report describes the clinical impact of an individualized treatment strategy incorporating results from whole genome sequencing, expanded phenotypic drug susceptibility testing (DST) and enhanced case management for a MDR-TB patient enrolled in the CAPRISA 020 INDEX study led by Professors Nesri Padayatchi and Kogie Naidoo.

Through this intervention, we show how the standard diagnostic pipeline resulted in the patient receiving suboptimal treatment with fewer effective drugs than the current WHO recommendation. This could have resulted in delayed sputum culture conversion and treatment failure. The individualised approach, incorporating an individual-level DST significantly impacted the clinical course and disease outcome in this patient.

This report reflects a commonly occurring scenario in high-burden settings, specifically regarding the lack of appropriate diagnostics to establish the appropriateness of short-course regimens.

The use of standardized regimens after the diagnosis of rifampicin-resistance is likely to result in suboptimal treatment for significant proportions of patients in many settings and likely contributes to resistance amplification.

- Dr Navisha Dookie (CAPRISA Scientist)

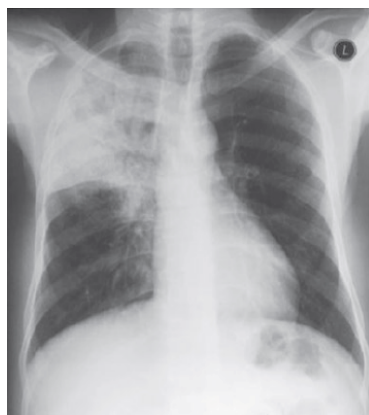


Image 1: At start of treatment: Consolidation of the right upper & middle lobes

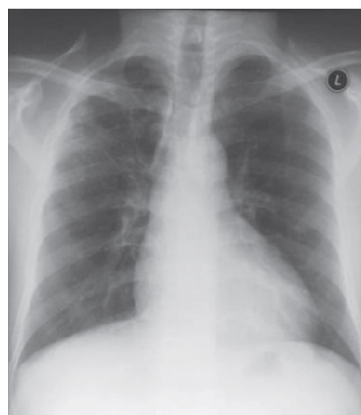


Image 2: Resolution of Disease—End of intensive phase treatment

For further reading see:

Dookie N, et al. [Individualized Treatment of Multi drug resistant Tuberculosis Using Whole-Genome Sequencing and Expand-ed Drug-Susceptibility Testing](#). *Clin Infect Dis*. 2020; doi: 10.1093/cid/ciaa526.



Professor Salim Abdool Karim named among the 100 most influential Africans in 2020 in *Jeune Afrique*



CAPRISA's Director, Professor Salim Abdool Karim, has been named among the 100 most influential Africans in 2020 by the Paris-based publication, *Jeune Afrique*. The publication includes leaders of major companies, sportsmen, prominent artists, scientists or politicians who are among the 100 African personalities who have been essential in this extraordinary year.

The publication's ranking is based on three broad categories: influence/or the ability to shape public opinion, media exposure and

popularity on social networks and the dynamics of each individual's journey.

Professor Abdool Karim, who chairs the South African Ministerial Advisory Committee on Covid-19, was ranked 63 and according to the publication gained world-wide recognition through his Covid-19 work. 'Salim Abdool Karim became one of the main faces of the fight against Covid in South Africa, and on the continent'. *Jeune Afrique* is a French-language pan-African weekly news magazine, published in Paris.

Second generation INSTI's for the treatment of HIV in patients with TB

CAPRISA Scientist Dr Anushka Naidoo has been awarded a \$1.75 million grant over five years through the U.S.-South Africa Program for Collaborative Biomedical Research, funded by the National Institute for Health and the South African Medical Research Council.

The collaborative team of investigators include Dr Anushka Naidoo (PI), Prof Kelly Dooley (Co-PI) from John Hopkins University (US), Prof Kogieleum Naidoo from CAPRISA (Co-I), and Dr Moherndran Archary from UKZN (Co-I).

The project will investigate the use of second generation integrase strand transfer inhibitors (INSTIs), dolutegravir and bictegravir, for the treatment of HIV in patients with tuberculosis on rifampicin-based TB treatment in KwaZulu-Natal South Africa. INSTI's are highly potent antiretroviral drugs, recommended by WHO as first-line treatment of HIV.

The proposed study is timely and relevant, explained Naidoo. "It will generate knowledge needed to support evidence-based use of INSTI's in adults and younger children with HIV-associated TB, in high burden settings. This is the first time Bictegravir will be evaluated in Africa and will provide an alternate INSTI option in this setting."

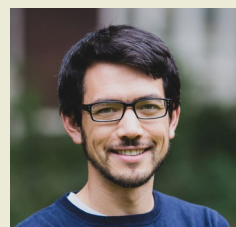


L-R: Dr Anushka Naidoo, Prof Kelly Dooley and Prof Kogieleum Naidoo

Collaborative study investigates point of care impact

The CAPRISA 255 Point-Of-care viral load testing to

Enhance Re-suppression (POWER) study enrolled its first participant on Thursday 20th August. POWER is a collaboration between the Nuffield Department of Primary Care Health Sciences at the University of Oxford, the eThekweni Municipality Health Department, the University of Washington, and CAPRISA. The study builds on the successful STREAM study, which found that amongst people who were doing well on antiretroviral therapy (ART), point-of-care HIV viral load testing and task shifting improved viral suppression and retention in care.



Principal Investigator Dr Jienchi Dorward (in the photo) says that 'POWER will focus on people who have a high viral load, which can be caused by poor adherence to treatment, or HIV drug resistance.

This study will investigate whether point-of-care viral load testing can play an important role in helping people failing ART to re-suppress the virus faster.'

The study is being conducted at the Prince Cyril Zulu Communicable Disease Centre and the CAPRISA eThekweni CRS, and results are expected in 2021.



CAPRISA Clinical Research Sites launch Covid-19 Prevention Network studies

The CAPRISA HIV Prevention teams at the eThekweni (ECRC) and Vulindlela Clinical Research Sites (VCRC) successfully launched two observational SARS CoV-2 studies as part of the newly formed NIH-funded Covid-19 Prevention Network (CoVPN).

The aim of the CoVPN 5001 and HVTN 405/HPTN 1901 is to study viral kinetics and immune system responses among acute and convalescent volunteers.

Under the leadership of study PIs Dr Hali-ma Dawood and Dr Disebo Makhaza, the VCRC was the first site in Africa to receive full site activation and to enrol a participant into the HVTN 405/HPTN 1901 study. The CAPRISA team has since enrolled a further 29 participants from the eThekweni and uM-gungundlovu districts in KwaZulu-Natal.

Dr Nigel Garrett, Head of Vaccine and Pathogenesis Research at CAPRISA and study PI at ECRC, stressed that studies of natural immunity to SARS CoV-2 are crucial to inform the interpretation of vaccine responses in upcoming vaccine trials that are due to start in September.

The CAPRISA team expressed their gratitude to General Practitioners and volunteers for their contribution to these studies.



The ECRC team. (L-R): Dr Nigel Garrett, Mpume Khoza (Nurse), Bongi Zuma (Study Coordinator), Dominic Shange, (Driver) and Thembelani Nyathi (Counsellor) conducting a home visit in Verulam, KwaZulu-Natal



The VCRC team (L-R): Callin Chetty (Study Coordinator), Dr Disebo Makhaza (Research Clinician), Nokuthula Mkhize (Professional Nurse), Princess Ndwandwe (Professional Nurse).

Dr Anushka Naidoo is among the top students in Harvard's Global Clinical Scholars Research Training program



We congratulate CAPRISA scientist Dr Anushka Naidoo (left), who was among the top ~25 students from the class of >250 students internationally to successfully complete the Harvard Medical School Global Clinical Scholar Research Training (GCSRT) Program with Commendation for her "CAPSTONE" project. Naidoo will graduate at a virtual ceremony in September and was awarded the commendation for excellence in her research proposal. The GCSRT program is a one to two-year program in clinical and epidemiological research training, with a strong focus on Biostatistics.

Naidoo said that the course provides 'an excellent platform to advance scientific and research skills and network with Harvard Medical School faculty as well as over 250 other early career scientists from around the globe'.



Scientific papers published in 2020

- 39* Singh AA, Poee O, Kwezi L, Lotter-Stark T, Stoychev SH, Alexandra K, Gerber I, Bhiman JN, Vorster J, Pauly M, Zeitlin L, Whaley K, Mach L, Steinkellner H, **Morris L**, Tsekoa TL, Chikwamba R. Plant-based production of highly potent anti-HIV antibodies with engineered posttranslational modifications. *Scientific Reports* 2020; 10(1):6201. doi: 10.1038/s41598-020-63052-1.
- 40 **Molatlhegi RP, Liebenberg LJ**, Leslie A, Noel-Romas L, Mabhula A, **Mchunu N**, Perner M, Birse K, **Ngcapu S**, Adamson JH, Govender K, **Garrett NJ, Samsunder N**, Burgener AD, **Abdool Karim SS, Abdool Karim Q, Passmore JS, McKinnon LR**. Plasma concentration of injectable contraceptive correlates with reduced cervicovaginal growth factor expression in South African women. *Mucosal Immunology* 2020; 13(3):449-459.
- 41 Boffa J, Mhlaba T, Sulis G, Moyo S, Sifumba Z, Pai M, **Daftary A**. COVID-19 and tuberculosis in South Africa: A dangerous combination. *South African Medical Journal* 2020; 110(5):341-342.
- 42 **Singh JA**, Moodley K. Critical care triaging in the shadow of COVID-19: Ethics considerations. *South African Medical Journal* 2020; 110(5):355-359.
- 43 Chikovore J, Pai M, Horton KC, **Daftary A**, Kumwenda MK, Hart G, Corbett EL. Missing men with tuberculosis: the need to address structural influences and implement targeted and multidimensional interventions. *BMJ Global Health* 2020; 5(5): e002255. doi: 10.1136/bmjgh-2019-002255.
- 44 Nimmo C, Brien K, Millard J, Grant AD, **Padayatchi N**, Pym AS, **O'Donnell M**, Goldstein R, Breuer J, Balloux F. Dynamics of within-host Mycobacterium tuberculosis diversity and heteroresistance during treatment. *EBioMedicine* 2020; 55:102747. doi: 10.1016/j.ebiom.2020.102747.
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- 46 **Daftary A**, Viens AM. Solidarity in Global Health Research-Are the Stakes Equal? *American Journal of Bioethics* 2020; 20(5):59-62.
- 47 **Dookie N, Padayatchi N, Lessells RJ**, Naicker CL, Chotoo S, **Naidoo K**. Individualised treatment of multi-drug resistant tuberculosis using whole genome sequencing and expanded drug susceptibility testing. *Clinical Infectious Diseases* 2020. ciae526. doi: 10.1093/cid/ciae526.

*continuation from previous newsletter

Dr Lenine Liebenberg #WomenAtTheHeartOfSTEM

The National Research Foundation (NRF) is celebrating **#WomenAtTheHeartOfSTEM** during the month of August who, through their research and/or outreach efforts, are making the world a better place for us all. CAPRISA mucosal immunology

scientist, Dr Lenine Liebenberg was an NRF Research Career Advancement Fellow from 2013 to 2018, and in 2017 she also obtained her NRF Y-rating as a “promising young researcher in her field”.

Read Lenine's story [here](#)



CAPRISA hosts a DST-NRF Centre of Excellence in HIV Prevention



UN AIDS
CAPRISA is the UNAIDS Collaborating Centre for HIV Research and Policy



CAPRISA hosts a MRC HIV-TB Pathogenesis and Treatment Research Unit
CAPRISA hosts a DoH-MRC Special Initiative for HIV Prevention Technology



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