Antiretroviral treatment in men linked to HIV incidence reductions in young women

The findings from a community-based longitudinal study suggest that the contemporaneous improvement in the uptake of ART, together with local outreach campaigns such as the Isibaya SamaDoda campaign, to improve ART coverage in men in KwaZulu-Natal may have been key to reducing HIV incidence in women in this region.

The HIV Incidence Provincial Surveillance System (HIPPS) study published in the journal JAMA Network was undertaken between 2014 and 2017 among men and women age 15-49 years in Vulindlela and Greater Edendale in KwaZulu-Natal.

The analysis showed that among the 9,812 respondents enrolled in the 2014 Survey and 10,236 respondents enrolled in the 2015 Survey, HIV prevalence was 36.3% and 35.2% respectively.

Simultaneously, improvements in knowledge of HIV status increased from 52% to 63% in men and 65% to 73% in women (Figure); self-reported medical male circumcision increased from 32% to 36%, ART coverage of HIV-positive individuals increased from 37% to 49% in men and 46% to 59% in women. Corresponding to the increase in ART coverage, viral suppression increased from 42% to 50% in HIV-positive men and from 55% to 62% in HIV-positive women.

Increasing coverage of these key indicators of HIV services showed that among HIV negative men and women, the overall HIV incidence was 2.31 per 100 person years in the 2016 Cohort and decreased to 1.96 per 100 person-years in the 2017 Cohort.

The 43% decline in HIV incidence in women aged 15 to 19 years from 4.63 to 2.74 per 100 person-years, was most likely linked to the increase in ART uptake and better viral suppression observed in older HIV-positive men. However, HIV incidence declines were marginal or remained unchanged among men and women in other age groups. This study also identified important gaps in the programmes and groups of individuals not accessing programmes.

These findings suggest that it is imperative that HIV prevention and treatment programmes are targeted, scaled-up and intensified to further reduce the number of new HIV infections.

- Ayesha Kharsany (PhD)

Quarraisha Abdool Karim receives A1 rating from the NRF

Professor Quarraisha Abdool Karim, Associate Scientific Director at CAPRISA, has been awarded an A1 rating from the South African National Research Foundation (NRF) following a rigorous peer-review evaluation.

According to the NRF, A-rated scientists are “researchers who are unequivocally recognised by their peers as leading international scholars in their field for the high quality and impact of their recent research outputs”. The NRF’s re-evaluation and rating process is held every five years.

“It is an honour to receive this recognition as an acknowledgement of the high impact, cutting edge research being undertaken at the entire CAPRISA team to address key challenges in responding to the HIV epidemic in South Africa,” said Abdool Karim.

Abdool Karim is Professor in Clinical Epidemiology at the Mailman School of Public Health, Columbia University, in New York and is Pro-Vice Chancellor for African Health at the University of KwaZulu-Natal. At a global level she is the UNAIDS Special Ambassador for Adolescents and HIV. She co-leads the UNAIDS Strategic Advisory Group and is a member of the Scientific Advisory Board of PEPFAR.

IgG3 enhances neutralization potency and Fc effector function of the CAP256-VRC26.25 antibody

In yet another interesting angle to the CAP256 story, researchers at the NICD discovered that members of the CAP256-VRC26 antibody lineage were naturally expressed as IgG3. This antibody isotype is known to mediate the broadest range of Fc effector functions and IgG3 has been associated with HIV vaccine efficacy and HIV control.

Simone Richardson (right in the photo), a post-doctoral fellow at the NICD engineered and expressed the CAP256-VRC26.25 broadly neutralizing antibody (bNAb) as an IgG3. She found that IgG3 variants had significantly higher phagocytosis and trogocytosis compared to the IgG1 version. Interestingly, neutralization potency was also significantly higher for IgG3 bNAbs, particularly against viruses lacking the N160 glycan.

She was able to confirm experimentally that the long hinge region was responsible for this improved functionality probably due to the flexibility of the IgG3 molecule.

These data suggest that isotype may be tuned to enhance both neutralization and cytotoxic activity of bNAbs that could improve the efficacy of passive immunization strategies for HIV prevention. This study was published in *PLoS Pathogens* in December 2019 and Simone is now exploring whether IgG3 can be used to improve the functionality of other bNAbs.

Prof Lynn Morris elected a Fellow of TWAS

Professor Lynn Morris, Interim Executive Director of the National Institute for Communicable Diseases (NICD), has been elected a Fellow of The World Academy of Sciences (TWAS) and joins the Academy’s membership of accomplished scientists from across the globe.

Prof Morris, an National Research Foundation A-rated researcher, has made significant contributions to understanding how the antibody response to HIV develops. HIV vaccine development is a major focus of her research.

Morris is an honorary senior scientist at CAPRISA.
MIT students enjoy an interactive visit to CAPRISA

Students from MIT and the Ragon Institute in the US photographed at the CAPRISA Vulindlela Research clinic, enjoyed an interactive visit to CAPRISA on 22nd January. Accompanied by Professor Bruce Walker, Director of the Ragon Institute of MGH, MIT and Harvard they engaged with researchers on HIV Prevention studies that are underway at the research clinic in Vulindlela and gained insights into the socio-behavioural indicators that influence the high HIV incidence rates. At CAPRISA’s headquarters students participated in a round table discussion with Professors Salim Abdool Karim, Director of CAPRISA and Quarraisha Abdool Karim, Associate Scientific Director on the challenges in controlling the HIV epidemic and the impact of CAPRISA’s scientific discoveries.

Honours with distinction!

Congratulations to Elizabeth Venter (left in the photo) from the National Institute for Communicable Diseases who obtained her BSc (Hons) degree with distinction. Elizabeth studied the effect of post-translational modifications on the potency of bNAbs isolated from CAPRISA donor CAP255, and was supervised by Dr Dale Kitchin, Dr Thandeka Moyo and Prof Penny Moore.

Congratulations to CAPRISA’s new AAS Affiliates

CAPRISA scientist Dr Lenine Liebenberg (PhD) (top right in the photo) and CAPRISA honorary scientist Dr Veron Ramsuran (PhD) are among 40 African early career scientists who were competitively selected to become Affiliate members of the African Academy of Sciences (AAS) from 2020-2024. The new affiliate members were drawn from 19 countries across five African regions, and have each demonstrated excellence in the development and application of science in Africa. During the Affiliate-ship’s five-year period Drs Liebenberg and Ramsuran will receive professional development support including grant writing, publishing and science communication.

As a scientist in the CAPRISA Mucosal Immunology Laboratory, Liebenberg’s research has highlighted the role of poor female genital health in enhancing HIV acquisition and focuses on understanding the causes of genital inflammation and the mechanism of its association with HIV acquisition to inform on the design of effective interventions that prevent HIV infection in women. Ramsuran, a Group Leader at the at KwaZulu-Natal Research Innovation and Sequencing Platform (KRISP), is interested in examining the effect that host genetics play on HIV and TB disease. He has special interest in examining the Human Leukocyte Antigen (HLA) genes, the epicentre of disease associations across the human genome, as determined by genome wide association studies. Liebenberg and Ramsuran are also Future Leaders – African Independent Research (FLAIR) Fellows.
Scientific papers published in 2019


Scientific papers published in 2019 continued


*continuation from previous newsletter.

Congratulations to CAPRISA colleagues...

(R-L): Prof Salim Abdool Karim presents awards to Prof Kogie Naidoo, Mrs Kim Cousins, Mrs Noli Neil and Mr Shailen Singh.

We congratulate Dr Kogie Naidoo, Mrs Kim Cousins, Ms Noli Neil and Mr Shailen Singh who were presented with CAPRISA Achievement Awards at the end of 2019. CAPRISA’s Director Professor Salim Abdool Karim presented the awards for excellence recognised by an external partner.