



CAPRISA

CENTRE FOR THE AIDS PROGRAMME OF RESEARCH IN SOUTH AFRICA

Newsletter

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Relationship between semen exposure, STIs and BV

In this Issue

Our feature story this month focuses on the study recently published in *Frontiers in Immunology* that examines the relationship between semen exposure, STIs and BV.

We highlight Prof Quarraisha Abdool Karim's presentation at the France-SA Dialogue on vaccines, on page 2.

On page 3, we report on the Director of the Africa CDC, Prof John Nkengasong's, visit to CAPRISA & Prof Salim Abdool Karim's appointment to the Commission on African Covid response.

The CAPRISA Cares Fund, a staff social responsibility initiative, that donated money to 3 charities is featured on page 4.

Research from the Mucosal Immunology Laboratory that was recently published in *Frontiers in Immunology* provides evidence of a relationship between recent semen exposure, bacterial vaginosis (BV) prevalence and altered cytokine concentrations.

The study, which was led by Khanyisile Mngomezulu, aimed to evaluate the extent to which partner semen alters cytokine profiles and assessed the relationship between semen exposure and incident sexually transmitted infections (STIs) and BV.

The concordance between self-reported consistent condom use and the presence of semen biomarker was also assessed. The semen biomarker, prostate-specific antigen (PSA), was used to evaluate recent unprotected sex.

There was substantial discordance between self-reported consistent condom use and PSA positivity. PSA was detected in 70% (30/43) of SoftCup supernatants from women who had self-reported condom use at their last sex act. PSA detection was significantly associated with prevalent BV

(Relative Risk (RR), 2.609; 95% Confidence Interval (CI), 1.104 - 6.165; $p = 0.029$), after adjusting for potential confounders such as age, sexually transmitted infections, current contraceptive use and condom use. Furthermore, women with detectable PSA had higher median concentrations of macrophage inflammatory protein- beta (MIP-1 β) ($p=0.047$) compared to those without PSA (Figure).

Inflammatory cytokine concentrations and BV-associated bacteria in female genital secretions may influence HIV risk, although the effect of recent sexual intercourse on incident BV and the cytokine milieu of cervicovaginal secretions has rarely been measured in previous studies.

PSA is therefore a useful tool to include in reproductive and sexual health studies that investigate biological markers in the female genital tract and self-reported condom use.

For further reading see:

Mngomezulu K, et al. *Frontiers in Immunology* 2021; 12:695201. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8221111/>

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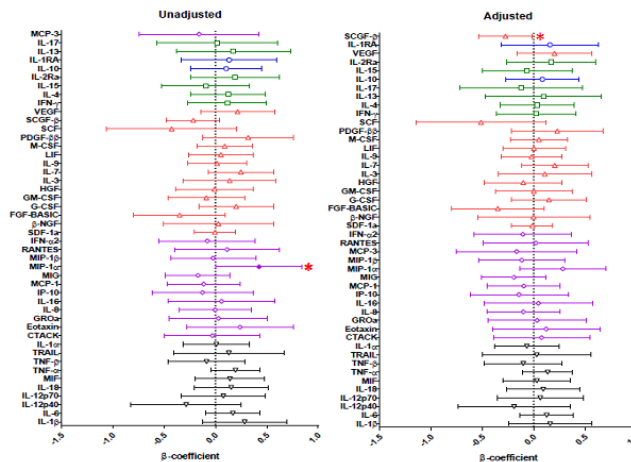


Figure: Linear regression model was used to evaluate the relationship between cytokine concentrations in menstrual cup supernatants and PSA from 248 HIV uninfected women. The error bars indicate 95% confidence intervals. A significant association is shown by a shade circle and red asterisk ($p < 0.05$). Unadjusted is for the univariate analysis and adjusted is for the multivariate analysis. Cytokine functions: pro-inflammatory – black inverted pyramid, chemokines – purple diamond, growth factors – red triangle, adaptive – green squares and anti-inflammatory cytokines – blue circles.



Contributing to the high-level France-SA dialogue on Enhancing Vaccine Production and Manufacturing Capacity in Africa

On 28th May CAPRISA’s Associate Scientific Director, Professor Quarraisha Abdool Karim, addressed a distinguished audience at a high-level dialogue on the future of vaccines in Africa led by South African President Cyril Ramaphosa and French President Emmanuel Macron hosted at the University of Pretoria’s flagship Future Africa Institute and campus.

In her address, Abdool Karim highlighted the stark disparities in the inequitable access to vaccines for poorer nations adding that 68% of the 1.8 billion vaccine doses administered were in the top 6 countries that had developed vaccines or manufactured vaccines. By comparison, she said, “the bottom 124 countries had received less than 5% of all the vaccine doses in the world with 28 million vaccine doses administered in Africa and with 8 countries yet to receive their first Covid-19 vaccines.” She added that “While there are now enough vaccines to provide a dose to 20% of the world’s population, Africa only had “enough doses for 2% of its population. This deplorable 10-fold inequity in vaccine availability should never be allowed to occur again.”

Despite 6 vaccines being tested in vaccine trials in African countries, Africa had to join the back of the queue for vaccines. Abdool Karim outlined six lessons to be drawn from countries that secured vaccines through local manufacturing: “firstly, the critical importance of government leadership and political commitment; secondly, long-term investments in science and technology, especially in vaccine manufacturing infrastructure and facilities; thirdly, the value of public-private partnerships; fourthly, access to IP such as the



Photo credit: University of Pretoria

Prof Quarraisha Abdool Karim (at the podium); Seated (R-L): Minister of Higher Education, Science and Innovation Dr Blade Nzimande; French President H.E. Emmanuel Macron; South African President H.E. Cyril Ramaphosa and UP Vice-Chancellor Professor Tawana Kupe. Photo credit: University of Pretoria

voluntary licence obtained by the Serum Institute of India for Covishield; fifthly, long-term investments in training scientists, technicians and engineers for the high-level technical expertise required to run vaccine manufacturing facilities; and sixthly, collaborations across countries and continents like the one we are witnessing today are essential,” she said.

“Africa’s self-reliance in vaccines is a laudable dream – one that will take some time but importantly bring security of vaccine supply in the future.” she concluded.

You can watch the high-level meeting here: <https://youtu.be/JK76ENzNnIU>

Beta variant elicits cross-reactive neutralizing antibodies

Drs. Thandeka Moyo-Gwete and Mashudu Madzivhandila, and colleagues from the HIV Virology Section at NICD examined the antibody response to the Beta variant (501Y.V2) in a cohort of patients hospitalized with Covid-19 in early 2021 - when over 90% of infections in South Africa were attributed to the Beta variant. They showed in a paper published in the *New England Journal of Medicine*, that robust binding and neutralizing antibody titers to the Beta variant developed, and that binding antibodies displayed high levels of cross-reactivity for the original variant, from the first wave. In contrast to an earlier study where sera from individuals infected with the original variant showed dramatically reduced

potency against the Beta variant, sera from Beta variant-infected patients maintained good cross-reactivity against viruses from the first wave. Furthermore, sera from Beta variant-infected patients also neutralized the Gamma variant (P.1) first described in Brazil. Collectively these data suggest that vaccines designed with the Beta variant sequence may elicit more cross-reactive responses.





Director of the Africa CDC visits CAPRISA

Dr John Nkengasong the first Director of the Africa Centres for Disease Control and Prevention visited CAPRISA on 26th May. "I am here to thank you for your support and guidance to the Africa CDC's work.

CAPRISA, he said "is an inspiration to the continent and the world." Nkengasong was accompanied by Dr Nicaise Ndembi (*Senior Science Advisor*), Dr Andrea Thiel (*Senior Strategy Advisor*) and Ms Laura Ambe (*Executive Assistant*) from the Africa CDC, in Addis Ababa, Ethiopia. The delegation had an informative tour of CAPRISA led by Professor Salim Abdool Karim.

In his virtual address to CAPRISA staff and fellows Nkengasong presented an epidemiological update in Africa and an update on Covid-19 in Africa. As the continent was entering a third wave, he said Covid-19 highlighted Africa's dependence on vaccines from abroad - 99% of vaccines are imported and 1% manufactured locally. He expressed concern that vaccine roll out was slow on the continent - 24m doses administered compared to 1.5 billion globally. Nkengasong called for the expansion of antigen testing capacity, the monitoring of the Covid-19 situation and the enhancement of public health measures on the African continent.

On his return to Addis Ababa, Nkengasong, wrote:



Back Row (L-R): Ms Hlekani Liesbeth Mangate & Mr Edward Matlaila (Dept of Health); Dr Nicaise Ndembi; Dr Andrea Thiel; Ms Laura Ambe (Admin Assistant to the Director). Front Row (L-R): Prof Salim Abdool Karim (CAPRISA: Director); Prof Quarraisha Abdool Karim (CAPRISA Ass Scientific Director); Dr John Nkengasong & Prof Tulio de Oliveira (Director: KRISP).

"After more than a year of working together (with Prof Salim Abdool Karim, Director of CAPRISA) on the Consortium for COVID-19 Vaccine Clinical Trials (CONCVACT) and having benefitted from your experience and guidance on different aspects of the continental COVID-19 response, it was truly a pleasure to meet you and your team in person."

CAPRISA's Director serves on the Commission on African Covid-19 Response

Prof Salim Abdool Karim has been appointed to serve as a Commissioner on the Commission on African COVID-19 Response established by the President of South Africa, H.E. Cyril Ramaphosa in his capacity as the African Union Champion on Covid-19.

The 14-member Commission, chaired by the President and deputised by the Director of the Africa Centres for Disease Control and Prevention (Africa CDC), Dr John Nkengasong, held its inaugural meeting on 22 June 2021. Members of the Commission represent a cross-section of society, including civil society, academia, the continental scientific community, the public health sector, the medical fraternity, the private sector, and development finance institutions.

The VIth UNGA HIV High Level Meeting, New York

The new UN HIV political declaration was launched and adopted in New York on June 8 2021 at the VIth UN General Assembly of member states. Several side events were hosted around this launch and announcement of the new UNAIDS strategy and the 2025 HIV targets. Quarraisha Abdool Karim was a panelist, together with several global science leaders, at the 'Science, HIV and Covid-19 - Where are we headed?' side event moderated by *Science* journalist, Jon Cohen.

Abdool Karim reflected on the contrasts of the South African responses to HIV and Covid-19 underscoring the importance of science based policies and strong political leadership and commitment in responding to epidemics and pandemics. She also emphasized the importance for member states to sustain and strengthen their HIV responses and not let the current focus on Covid-19 relegate HIV to other unfinished pandemics.

Celebrating 20 years of the Global Fund for AIDS, TB and Malaria at the G7 Summit

On 9th June, Prof Quarraisha Abdool Karim was a panelist in a virtual high-level side event to the G7 Summit to celebrate 20 years of the GFATM that reflected on the lessons from the fight against AIDS, TB, and Malaria for Covid-19 and future global health challenges.

She called for an acceleration in investments to sustain the HIV, TB and Malaria responses and to build on the GFATM infrastructure expertise and experience to enhance national and global capacity to better prepare for future pandemics. Covid-19 and HIV has highlighted how the intersection of race, poverty, and gender renders some individuals and communities more vulnerable to new threats and the time has come to reinvigorate efforts to address these inequalities.



CAPRISA employees making a difference to the less fortunate

As part of its social responsibility commitment, CAPRISA launched the CAPRISA Cares fund – an employee initiative for staff to voluntarily give back to society through personal donations from their salaries – that are made monthly, annually or as a one-off donation.

To-date 63 employees have pledged contributions and a sum of R150,000 was donated and shared among three registered non-profit charities in KwaZulu-Natal whose vision and activities are aligned to CAPRISA’s ethos and values.

The charities include: Isiaiah54 Children’s Sanctuary on the Bluff; the Denis Hurley Centre in central Durban; and the ThinaSonke Creche in Mafakatini, Vulindlela. Each charity received a sum of R50,000. The funds will be used for feeding schemes, hygiene products and critical medicines for HIV and TB treatment.

“This important initiative is central to the values of CAPRISA as we continue to strive to make a difference to society”, said Professor Kogie Naidoo Deputy Director, CAPRISA “We were moved by the incredible work of each of the centres and their reach to the poor and downtrodden and walked away deeply moved and admiration for their selfless efforts.”

“We are really honoured that CAPRISA staff and directors chose us as a recipient for this grant, said Mr Raymond Perrier, Director of the Denis Hurley Centre. “This donation is a vote of confidence from CAPRISA in the lifesaving work that we are doing on the streets of Durban with the poorest and most vulnerable. We are pleased to be partners together in improving the health of all the people of South Africa.”

The Fund is administered by a committee of contributing staff members to the Fund. Contact Ashley Anand in the HR department at Ashley.Anand@caprisa.org. who will provide you with information to enable you to make a difference!



Cheque presentation at the Denis Hurley Centre. Front row: Prof Kogie Naidoo and Ms Thobile Mungwe from CAPRISA with Raymond Perrier, Director of the Centre. Back Row: Ms Roburn Wells, Ms Ruth Birtwhistle and Mr Thulani Hlophe from CAPRISA.



Presentation at the Isiaiah54 Children’s Sanctuary on the Bluff: (L-R) Ms Roburn Wells, Glynnis Dauth, founder of the home, Prof Kogie Naidoo & Ms Thobile Mungwe.



Presentation at the Thina Sonke Creche in Mafakatini, Vulindlela: Dr Disebo Makhaza from CAPRISA with Ms Thandekile Hlela, from Thina Sonke creche and Unathi Zondo from CAPRISA.

Important Notice - Protection of Personal Information Act in SA

The introduction of the South African Protection of Personal Information Act (POPIA) has come into effect from 1st July 2021. The Act gives you, the recipient of the CAPRISA newsletter, the choice to either continue receiving newsletters from CAPRISA or the opportunity to opt out. Should you wish to opt out, please click on the unsubscribe button in the cover email of the newsletter mailer.



Scientific papers published in 2021

- 33* Malherbe DC, Vang L, Mendy J, Barnette PT, Spencer DA, Reed J, Kareko BW, Sather DN, Pandey S, Wibmer CK, Robins H, Fuller DH, Park B, Lakhashe SK, Wilson JM, Axthelm MK, Ruprecht RM, **Moore PL**, Sacha JB, Hessell AJ, Alexander J, Haigwood NL. Modified Adenovirus Prime-Protein Boost Clade C HIV Vaccine Strategy Results in Reduced Viral DNA in Blood and Tissues Following Tier 2 SHIV Challenge. *Frontiers in Immunology* 2021; 11:626464. doi: 10.3389/fimmu.2020.626464.
- 34 **Mtshali A, Ngcapu S, Mindel A, Garrett N, Liebenberg L**. HIV susceptibility in women: The roles of genital inflammation, sexually transmitted infections and the genital microbiome. *Journal of Reproductive Immunology* 2021; 145:103291. doi: 10.1016/j.jri.2021.103291.
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- 41 **Abdool Karim SS, de Oliveira T**, Loots G. Appropriate names for COVID-19 variants. *Science* 2021; 371(6535):1215. doi: 10.1126/science.abh0836.
- 42 Mitchev N, Allam M, Kwenda S, Mnyameni F, Ismail A, Niehaus AJ, **Ramsuran V, Garrett N**, Singh R, **Mlisana KP**. Genome Sequences of Five Novel Neisseria gonorrhoeae Sequence Types Isolated in KwaZulu-Natal, South Africa. *Microbiology Resource Announcements* 2021; 10(9):e01424-20. doi: 10.1128/MRA.01424-20.
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*continuation from previous newsletter



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



UNAIDS
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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