Research by the CAPRISA Mucosal Immunology research team was recently published in JAIDS. The study shows that mucosa-biased gradients of IP-10, macrophage inflammatory protein–1b, IL-8, and monocyte chemotactic protein-1 are associated with an increased risk of HIV infection.

Understanding host predictors of HIV risk has important implications for risk profiling and design of better HIV prevention methods. Mucosal and systemic immune mediators have been independently associated with HIV acquisition risk, but the relationship between compartments remains unclear.

In this study the concentrations of 12 cytokines were compared in matched plasma and cervicovaginal lavages (CVLs) from 57 HIV-positive women before their acquisition of HIV (cases) and 50 women who remained uninfected (controls) during the CAPRISA 004 trial.

Although genital IP-10 concentrations were significantly higher in cases, plasma IP-10 concentrations were inversely associated with HIV risk. Comparing differences in mucosal and systemic cytokine concentrations between cases and controls, mucosa-biased gradients indicating higher CVL relative to plasma concentrations were observed for all 5 chemokines in the panel. Four were significantly associated with HIV acquisition, including IP-10 (odds ratio [OR] 1.73, 95% confidence interval [CI]: 1.27 to 2.36), macrophage inflammatory protein–1b (OR 1.72, 95% CI: 1.23 to 2.40), interleukin (IL)-8 (OR 1.50, 95% CI: 1.09 to 2.05), and monocyte chemotactic protein-1 (OR 1.36, 95% CI: 1.01 to 1.83). None of the other 7 cytokines tested predicted HIV risk. Decision tree analyses (figure) confirmed this association, with gradients of IP-10, IL-8, and granulocyte-macrophage colony-stimulating factor concentrations correctly classifying 77% of HIV outcomes.

These data underscore the importance of chemokines as determinants of HIV acquisition. Further studies to validate these findings could provide critical biomarkers for HIV risk profiling, allowing accurate classification of risk to implement more targeted HIV prevention strategies or conduct more rapid efficacy assessments of HIV prevention candidates. Translation of these findings through safe and effective manipulation of chemokine gradients, or by limiting their production or effects, could represent a novel and targeted host-directed HIV prevention modality.

Fake news: A new threat to the fight against AIDS

Fake news is emerging as a scourge; influencing amongst others, presidential elections and share prices. Recently a fake news story has re-emerged and is doing the rounds, aimed at deliberately undermining the fight against AIDS. Pretending to be genuine, an image of newspaper article with a photo of eminent scientist, Robert Gallo in his laboratory claims that he created HIV, the virus that causes AIDS, as “a secret weapon to wipe out the African race”. While the story is, without doubt, simply nonsense and lies, it plays on the fanciful imagination of those who persist in wanting to believe conspiracy theories about the west trying to destroy Africa.

Fake news is not new – just a reincarnation of what was previously called “propaganda” or “disinformation”. What is new, however, is the way the internet and social media has given these age-old enemies of the truth, an opportunity to spread uncontrollably to every corner of the globe almost instantaneously. These platforms currently provide an unfettered avenue to spread lies and falsehoods without identification or consequences for the purveyors of fake news.

Of deep concern is the detrimental impact fake news on health issues can have on the wellbeing and lives of millions of people, particularly the poor and vulnerable in society. Fake news is particularly dangerous when reports on HIV/AIDS proliferate falsehoods about the epidemic and puts our society at greater risk. South Africa is in a particularly precarious position, given that the Thabo Mbeki era has influenced sectors of the South African population to consider and, in some instances, believe outrageous conspiracies on HIV and AIDS. AIDS denialism and far-fetched claims of prevention and treatment for HIV/AIDS has made the South African population more susceptible to misinformation about the epidemic.

These fake claims about the origins of HIV only serve to draw the focus away from the reality of the HIV/AIDS epidemic, such as the increasing number of adolescent girls and young women being infected with HIV in South Africa. In this context, distractions with falsehoods undermine current research underway to develop an HIV vaccine and new ways to help women protect themselves from HIV. The current online landscape allows everyone a space to have their say and state their opinions, an important facet to freedom of speech and freedom of expression. However, it is important to note that an opinion should be supported by facts and is not a means through which to spread misinformation. In a time where citizen journalism is on the rise, it is the responsibility of the individual to be circumspect and refrain from baseless content that can have serious ramifications.

This is an excerpt from the original article written by Professor Salim Abdool Karim Director CAPRISA and Ms Aisha Abdool Karim CAPRISA Research Placement, published in The Daily News on 8th February 2017.

Passionate about HIV vaccine research

The February issue of The Lancet Infectious Diseases published a profile on Professor Lynn Morris, Head of the HIV Research section of the Center for HIV and STIs at the National Institutes of Communicable Diseases (NICD) and CAPRISA Research Associate. In an interview with Tony Kirby, Professor Morris speaks about her goal of being part of the team that discovers an HIV vaccine and her highly acclaimed scientific work on broadly neutralising antibodies. Dr John Mascola, Director of the Vaccine Research Center and member of the CAPRISA scientific advisory board, said, “When we do finally learn how to make an effective HIV vaccine, it is likely that we will look back at Lynn’s work as the pivotal first step toward understanding how to generate protective antibodies against HIV.”

The full article by Tony Kirby can be accessed here: http://www.thelancet.com/journals/laninf/article/PIIS1473-3099(17)30021-X/abstract

Prof Lynn Morris, CAPRISA Research Associate heads the HIV Research section of the Center for HIV and STIs at the NICD in South Africa.
A new study that focuses on mucosal injury from sexual trauma (MIST) was recently awarded to principal investigators Professor Jo-Ann Passmore from CAPRISA and Dr Heather Jaspan from the Seattle Children’s Research Institute. This National Institutes of Health grant, over a four year period, will fund the scientists’ work to investigate socio-behavioural, physiological and biological factors associated with vaginal insertion practices, specifically tobacco and alum, in women at high risk for HIV infection.

The study, which commenced in 2017, will include a cohort of 300 adolescents and 100 adult women from Vulindlela in KwaZulu-Natal. “The behavioral, physiological and immunological factors that may render younger women more vulnerable to HIV acquisition than older women are not well understood,” explains associate Professor Passmore who heads the HIV Mucosal Immunology group in the Division of Medical Virology at UCT.

Professor Passmore says that “the skewing of HIV risk towards young women is likely fueled by high rates of intimate partner violence; high levels of male control in a woman’s current relationship; and a preference for dry sex (vaginal insertion practices to dry/tighten the vagina)”. This cohort study aims to evaluate the reproductive anatomical, immunological and microbiological characteristics following both consensual vaginal sex, sexual violence and intravaginal product use in female adolescents compared to older women, at 48 hours following sex (to define biomarkers of mucosal trauma) and at 7 days post exposure (to assess wound healing and epithelial barrier repair).

Accolade for CAPRISA’s Research Pharmacist


The study was conducted within the Improving Retreatment Success Clinical (IMPRESS) trial, which compared the pharmacokinetics of moxifloxacin during co-treatment with rifampicin or when dosed alone in African patients with drug susceptible, recurrent tuberculosis, the majority of whom were HIV co-infected and on efavirenz-based ART. “The conference was a really great opportunity to share our study findings with the TB research community,” said Naidoo. She said receiving the best presentation award “was really exciting and an honour for myself and the study team.”

The ICTT is considered the premier interdisciplinary forum for the presentation of new advances and research results in the field of tuberculosis therapy.

Role of interferon exposure in acquisition of HIV

Dr Lyle McKinnon, a CAPRISA Research Associate, was recently awarded a grant from the Canadian Institutes for Health Research to investigate mucosal type I IFN desensitization and the risk of HIV acquisition. The project is a collaboration between the University of Manitoba, University of Nairobi and CAPRISA and includes co-investigators Dr Tom Hope, Professor at Northwestern University; Dr Thomas Murooka, Associate Professor at University of Manitoba; and Steven Bosinger, Director of the Yerkes Functional Genomics Team Emory University.

This study will investigate whether prolonged expression of type I interferons in the female reproductive tract increases HIV risk by impairing HIV target cells in their ability to upregulate antiviral interferon pathways, thereby increasing their ability to support HIV replication at the time of HIV exposure in the mucosa. This study will contribute to research regarding how the immune system is exploited by HIV at the time of virus transmission and will provide information on the role of interferon exposure in acquisition of HIV. The research produced by this study has the potential to provide a better understanding of HIV transmission and could have important implications on risk profiling in clinical interventions.
Scientific paper published in 2017

8* Garrett NJ, McGrath N, Mindel A. Advancing STI care in low/middle-income countries: has STI syndromic management reached its use-by-date? Sexually Transmitted Infections 2017; 93(1):4-5.


*continuation from previous newsletter

Scientific Reviews

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12TH INTERNATIONAL WORKSHOP ON HIV TRANSMISSION

PRINCIPLES OF INTERVENTION

PARIS, FRANCE • 21-22 JULY 2017

Don’t miss the opportunity to attend the 12th International Workshop of HIV Transmission, which is scheduled to take place on July 21 and 22, 2017 in Paris, France, prior to IAS 2017. Should you wish to attend, please contact Cheryl Baxter cheryl.baxter@caprisa.org