

In this Issue...

Our feature story this month focuses on the research by the mucosal immunology team, which shows that inflammatory cytokine biomarkers could be used to predict which women would benefit from sexually transmitted infections (STIs) treatment

CAPRISA's new TB and HIV treatment integration study, which is funded by the MRC-Newton Fund, is announced on page 2.

On page 3 we highlight CAPRISA's participation in the HIVe Mysuru 2015 conference that was held in India in December 2015, Natasha Samsunder's visit to the CDC in China and the sexually transmitted infection workshop that evaluated the current epidemic and care provision in KwaZulu-Natal.



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Using cytokine biomarkers to identify women at high risk of HIV

Research by the Mucosal immunology research team at CAPRISA has demonstrated that the assessment of certain inflammatory cytokine biomarkers could be used to predict which women would benefit from sexually transmitted infections (STIs) and bacterial vaginosis (BV) treatment.

Untreated STIs and BV cause genital inflammation and increase the risk of HIV infection. Current guidelines for the treatment of STIs and BV recommend syndromic management based on signs and symptoms. However, these genital conditions are asymptomatic in a large proportion of women. As a result STI and BV management is severely limited as women with asymptomatic infections go untreated.

This cross-sectional study evaluated genital cytokine profiles as a biomarker of STIs and BV to identify women with asymptomatic, treatable infections. The concentrations of 42 cytokines were measured in cervicovaginal lavages from 227 HIV-uninfected women using Luminex. All women were also screened for BV by microscopy and STIs using molecular assays.

Multivariate analyses (Figure) showed that seven cytokines (interleukin (IL)-1 α , IL-1 β , tumour necrosis factor- β , IL-4, fractalkine, macrophage-derived chemokine, and interferon- γ) most accurately predicted the presence of a treatable genital condition, with 77% classification accuracy and 75% cross-validation accuracy (sensitivity 72%; specificity 81%, positive predictive value (PPV) 86%, negative predictive value (NPV) 64%).

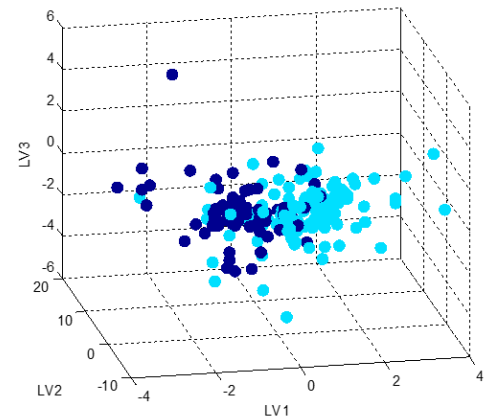


Figure: Identification of multivariate cytokine profiles associated with sexually transmitted infections and bacterial vaginosis

A concomitant increase in IL-1 β and decreased IP-10 concentrations predicted the presence of a treatable genital condition without a substantial reduction in predictive value (sensitivity 77%, specificity 72%, PPV 82% and NPV 65%), correctly classifying 75% of the women. This approach performed substantially better than clinical signs (sensitivity 19%, specificity 92%, PPV 79% and NPV 40%).

Therefore, supplementing syndromic management with an assessment of IL-1 β and IP-10 as biomarkers of genital inflammation may improve STI/BV management for women, enabling more effective treatment of asymptomatic infections and potentially reducing their risk of HIV infection

For further reading see:

Masson L, et al. *Inflammatory cytokine biomarkers to identify women with asymptomatic sexually transmitted infections and bacterial vaginosis who are at high risk of HIV infection*. Sex Transm Infect. 2015 Oct 28. pii: sextrans-2015-052072. doi: 10.1136/sextrans-2015-052072



MRC-Newton grant for TB and HIV study

CAPRISA received a R10 million grant under the MRC-Newton Fund for a study that aims to address the challenges in scaling up TB and HIV treatment integration in public health settings in South Africa. This study will be led by Dr Kogie Naidoo, head of HIV and TB treatment research at CAPRISA. The announcement was made at a South African Medical Research Council media briefing held at the 46th Union World Conference on Lung Health held in Cape Town.

The study, a cluster randomized controlled trial, will test the effectiveness of implementing a quality improvement model to integrate HIV-TB service delivery in rural primary health care clinics.

“This study addresses the highest ranking health research priority in South Africa, which is, to develop and test optimal models of HIV-TB service delivery that will enhance case detection, and appropriate treatment initiation, in HIV-TB co-infected patients with the goal of reducing HIV associated TB mortality,” explained Dr Naidoo.

“Despite the adoption of clinical trial evidence into treatment guidelines, several challenges exist in implementing HIV-TB treatment integration within health care facilities, thereby preventing translation of clinical trial evidence into reduced morbidity and mortality.” Naidoo said, “health

systems strengthening of integrated HIV-TB services in KwaZulu-Natal will be undertaken in partnership with BroadReach Health Care Africa and the Institute for Health Care Improvement.”



Dr Kogie Naidoo at the MRC press conference announcing the awards

The study will be conducted in 40 clinics in the Ugu and uThungulu districts in KwaZulu-Natal. The anticipated outcomes of the study include the development of a low cost, practical, implementable and robust model for HIV-TB service integration in public health facilities that will improve management of HIV-TB co-infection.

CAPRISA director praises SA science progress

South Africa has made significant strides in science over the past decade, CAPRISA director, Professor Salim Abdool Karim, told the country's inaugural National Science Forum hosted by the Department of Science and Technology in Pretoria. In his Keynote Address for the Forum, held at the CSIR International Convention Centre, Abdool Karim highlighted the challenges that remain in HIV and AIDS research—in order to turn the epidemic around.

He presented encouraging data showcasing South Africa's progress in all areas of science over the past ten years. For instance, he said, the number of black Africans graduating with a PhD in the country has more than tripled since 2004. In 2013, black graduates outnumbered their white counterparts for the first time.

The number of publications in internationally-indexed journals produced by South African researchers has also seen a healthy growth in the last decade, he said. So has



the country's share of world publications: From around 0.5% in 2004 to just under 0.8% in 2013.

And in HIV research, around half of the research papers published on HIV globally in 2012 had contributors from South Africa.



Partnering with HIV & TB scientists in India

CAPRISA colleagues were invited to participate in the HIVe Mysuru 2015 conference held in India in December 2015, which was attended by almost 200 medical doctors and scientists.

CAPRISA's Deputy Director, Dr Nesri Padayatchi, and Head of HIV TB treatment, Dr Kogie Naidoo, presented and co-chaired sessions, including the inaugural Dr Suniti Solomon lecture—the late Indian physician pioneered AIDS research in India. The three CAPRISA presentations titled, HIV and Drug resistant tuberculosis, Addressing the challenges of TB-HIV integration and an Overview of Challenges in HIV/TB – the South African experience, elicited robust discussion.

A memorandum of understanding to further knowledge and research exchange in HIV and TB as well as experiential learning between scientists at CAPRISA and the Ashakirana Charitable Trust hospital in India will be formalised.



Knowledge exchange with Sichuan CDC



Natasha Samsunder (second from left) with colleagues at Sichuan CDC

As part of the co-operation agreement between the Sichuan CDC and CAPRISA, Natasha Samsunder, CAPRISA Laboratory Manager, visited the Sichuan CDC laboratories in Xichang and Chengdu as well as several health care facilities, project sites and laboratories. During the visit Samsunder delivered lectures on HIV-TB Integration and Laboratory Quality Assurance to CDC staff and participated in several discussion sessions on optimising systems to enhance all aspects of laboratory procedure. Natasha said that it was “a wonderful, unique experience and I am confident that ongoing knowledge exchange between CAPRISA and Sichuan CDC will further enhance science and research in both countries”.

A Mysore journalist highlighting the plight of patients with Drug resistant TB with Dr Nesri Padayatchi

Advancing STI Care in KZN

CAPRISA hosted a STI workshop on 27th January “to evaluate the current epidemic and care provision in KwaZulu-Natal (KZN) and to discuss the latest evidence for and against the transition to a diagnostic care model,” said Dr Nigel Garret Head of Vaccine and Pathogenesis at CAPRISA and convenor of the workshop. Objectives of the workshop included a review of the Department of Health's strategy on STIs in KZN, and discussions on the clinical importance of STIs and their contribution to HIV risk, and laboratory capacity and new technologies for STI diagnosis.



Participants at the workshop including (third from the right): Dr Nigel Garret from CAPRISA, Professor Koleka Mlisana from the National Health Laboratory Services and University of KwaZulu-Natal and Dr Adrian Mindel from Australia



Scientific papers published in 2015

- 72* Sanders EJ, Wahome E, Powers KA, **Werner L**, Fegan G, Lavreys L, Mapanje C, McClelland RS, **Garrett N**, Miller WC, Graham SM. Targeted screening of at-risk adults for acute HIV-1 infection in sub-Saharan Africa. *AIDS* 2015; 29(Suppl 3):S221-S230.
- 73 **Baxter C, Moodley D**. Improving maternal mortality in adolescents. *South African Medical Journal* 2015; 105 (11): 948-951
- 74 **Abdool Karim Q**. Adolescent Health. *South African Medical Journal* 2015;105(11):948.
- 75 **Dellar R, Waxman A, Abdool Karim Q**. Understanding and responding to HIV risk in young South African women: Clinical perspectives. *South African Medical Journal* 2015;105(11):952. DOI:10.7196/SAMJ.2015.v105i11.10099
- 76 **Naidoo K, Munsami A**, Moheemdran Archary. Adolescent antiretroviral management: Understanding the complexity of non-adherence. *South African Medical Journal* 2015;105(11):953. DOI:10.7196/SAMJ.2015.v105i11.10150
- 77 **Dawood H**. Adolescent HIV treatment issues in South Africa. *South African Medical Journal* 2015;105(11):953. DOI:10.7196/SAMJ.2015.v105i11.10130
- 78 **Kharsany AB**, Cawood C, Khanyile D, **Grobler A, Mckinnon LR, Samsunder N, Frohlich JA, Abdool Karim Q**, Puren A, Welte A, George G, Govender K, Toledo C, Chipeta Z, Zembe L, Glenshaw MT, Madurai L, M Deyde V, Bere A. Strengthening HIV surveillance in the antiretroviral therapy era: rationale and design of a longitudinal study to monitor HIV prevalence and incidence in the uMgungundlovu District, KwaZulu-Natal, South Africa. *BMC Public Health*. 2015 Nov 20;15(1):1149. doi: 10.1186/s12889-015-2179-2.
- 79 **Masson L**, Arnold KB, Little F, **Mlisana K**, Lewis DA, Mkhize N, Gamielidien H, **Ngcapu S**, Johnson L, Lauffenburger DA, **Abdool Karim Q, Abdool Karim SS, Passmore JS**. Inflammatory cytokine biomarkers to identify women with asymptomatic sexually transmitted infections and bacterial vaginosis who are at high risk of HIV infection. *Sex Transm Infect*. 2015 Oct 28. pii: sextrans-

*continuation from previous newsletter

Scientific Reviews

Abstracts submitted for review		Manuscripts submitted for review		Ancillary studies submitted for review	
Total#	Cumulative ^a	Total#	Cumulative ^a	Total#	Cumulative ^a
10	340	0	221	1	65

for month, ^a since committee initiation

Conference & Workshop Reminders

Conference	Dates	Deadlines		Website
		Abstracts	Registration	
Conference on Retroviruses and Opportunistic Infections - Boston, Massachusetts, USA	22-25 Feb 2016	30 Sept 2015	26 Jan 2016	http://www.croiconference.org/
21st International AIDS Conference (AIDS 2016) - Durban, South Africa	18-22 July 2016	4 Feb 2016	18 Feb 2016	http://www.aids2016.org/
HIV Research for Prevention - Chicago, Illinois	17-20 Oct 2016	11 Apr 2016	1 Jul 2016	http://hivr4p.org/



National Research Foundation

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

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