

**PRESS RELEASE (Updated)**

**EMBARGO: 13h00 South African Time (07h00 EST) on Monday, 18<sup>th</sup> July 2016**

## **New evidence on why young women in South Africa are at high risk of HIV infection**

***Three CAPRISA studies provide new information on high rates of HIV infection in young women in South Africa resulting from the “cycle of HIV transmission” involving age-disparate sex and on two vaginal bacteria - one increasing HIV vulnerability and another undermining the efficacy of tenofovir-based topical pre-exposure prophylaxis***

**DURBAN, SOUTH AFRICA (July, 18, 2016)** – New evidence was presented by the Centre for the AIDS Programme of Research in South Africa (CAPRISA) consortium of South African and North American researchers today at the AIDS 2016 Conference in Durban shedding new light on why young women in South Africa have high rates of HIV infection.

In a study of 9,812 individuals, the genetic code of HIV from each of 1,589 HIV positive people was analysed to better understand the relentless spread of HIV in a rural and urban community in South Africa. It revealed a “cycle of HIV transmission” driven by high rates of new HIV infections in adolescent girls and young women from men, on average 8 years older. Many of these men were also partners of similarly aged women who have HIV prevalence rates exceeding 60%.

In a second study investigating the genetic codes of vaginal bacteria of 119\* South African women, those with an overgrowth of *Prevotella bivia* had an almost 13 times\* higher chance of acquiring HIV than those with low levels or absence of this vaginal bacterium. Further, it was found that *Prevotella bivia* may be increasing women’s vulnerability to HIV by inflammation in the vagina through its release of “lipopolysaccharide” (LPS), a well-known immuno-stimulatory molecule in HIV infection.

In the third study, an analysis of 3,334 genital bacterial proteins from 688 women showed that the three out of five women who had a “healthy” lactobacillus dominant vagina showed that tenofovir gel pre-exposure prophylaxis was effective in preventing HIV, while the women who did not have lactobacillus dominance, showed little benefit from the gel. Follow up laboratory studies showed that *Gardnerella vaginalis*, which predominates in the vagina when lactobacillus levels are low, absorbs tenofovir thereby reducing the availability of the drug to prevent HIV infection.

These three studies provide scientific evidence, using state-of-the-art research technologies, to guide targeted HIV prevention interventions to break the cycle of HIV transmission and impact the course for HIV in South Africa and potentially in other high burden settings. Since the *Prevotella* and *Gardnerella* bacteria raise the vaginal pH, a readily available, quick, simple and cheap test can be used to ascertain

which women require treatment for bacterial vaginosis, an imbalance in the vaginal bacteria. Combined, these interventions could have a significant impact on the spread of HIV in women in South Africa and beyond.

Dr Margaret Chan, Director-General, World Health Organization, commented that, “Young women in Africa have missed out while others have benefitted from global progress against AIDS. The new studies point the way to HIV prevention opportunities that can help rectify this imbalance.”

“The new evidence from the UNAIDS Collaborating Centre – CAPRISA takes us closer to understanding the very high rates of HIV among young women and adolescent girls in southern Africa” said Michel Sidibé, the Executive Director of UNAIDS. “We cannot leave women and girls behind in this Fast-Track response—in addition to scaling up the options we have, effective new tools are required urgently to meet their HIV prevention needs if we are to end this epidemic by 2030.”

“Reducing new HIV infections in young women is one of PEPFAR’s highest priorities”, said Dr Deborah Birx, United States Ambassador and Global AIDS Coordinator. “The CAPRISA findings provide us with a greater understanding of how to protect young women. # This new insight will allow us to move forward with a different understanding of how best to protect women from HIV”.

“The big take-away for us from these game-changing findings is that no one drug, or one program intervention will end AIDS,” said Nancy Mahon, Global Executive Director of the M·A·C AIDS Fund, “We must work collaboratively across disciplines and think on a global level about truly locally tailored solutions.”

In most of southern and eastern Africa, HIV incidence in young women (less than 25 years) continues to remain unacceptably high. About 380 000 new HIV infections occur in adolescent girls and young women aged 16-24 years each year. These young women experience HIV rates several-fold higher than their male peers, making the reduction of infection rates among young women one of the most crucial challenges in HIV prevention in Africa.

“Reducing new HIV infections in young women is one of the greatest challenges in southern Africa,” commented Professor Salim S. Abdool Karim, Director of CAPRISA and leader of the research team, “Based on our results, implementing a combination of evidence-based targeted interventions to break the cycle of HIV transmission while effectively treating bacterial vaginosis could enhance HIV prevention in women in the highest HIV-burden region of the world.”

**For more information, contact: Smita Maharaj at [smita.maharaj@caprisa.org](mailto:smita.maharaj@caprisa.org) (082 - 8069931)**

*This revised version dated 17 July 2016, is an updated version. It also includes 2 revisions of the first issue of this Press Release:*

*\*Note: A typographical error has been corrected here – the number of women analysed was 119 and the correct adjusted Odds Ratio is 12.7 for HIV risk - the sentence now correctly reads as “almost 13-fold”.*

*#Note: The previous version had an error in this quote. The erroneous sentence has been removed.*

# Additional information:

## 1. FUNDERS OF THE RESEARCH

### 1.1 Funders of the individual projects

**PEPFAR** - [www.pepfar.gov](http://www.pepfar.gov) the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) is the U.S. Government initiative to help save the lives of those suffering from HIV/AIDS around the world. This historic commitment is the largest by any nation to combat a single disease internationally, and PEPFAR investments also help alleviate suffering from other diseases across the global health spectrum. PEPFAR is driven by a shared responsibility among donor and partner nations and others to make smart investments to save lives.

**Centers for Disease Control and Prevention (CDC)** - [www.cdc.gov](http://www.cdc.gov) the Centers for Disease Control and Prevention (CDC) is the leading national public health institute of the United States. The CDC is a [federal agency](#) in the [Department of Health and Human Services](#) and is headquartered in the Atlanta, Georgia metro area. CDC works 24/7 protecting America's health, safety and security. Whether diseases start at home or abroad, are curable or preventable, chronic or acute, CDC is committed to respond to the most pressing health challenges. In South Africa, CDC partners with the South Africa government, private institutions, universities, and non-governmental organizations focused on the country's public health foundation to respond to HIV, TB and emerging public health risks.

**M·A·C AIDS Fund** - [www.macaidfund.org](http://www.macaidfund.org) the M·A·C AIDS Fund, the philanthropic arm of M·A·C Cosmetics, has raised more than \$425 million since its inception in 1994, exclusively through the sale of M·A·C VIVA GLAM lipstick and lipgloss. The Fund is the heart and soul of M·A·C Cosmetics, encompassing diversity while celebrating life and the outspoken attitude of the company. Partnering with bold, visionary, and brave organizations to confront the epidemic in communities where people are at highest risk around the world, the M·A·C AIDS Fund is ending AIDS, one lipstick at a time.

**United States Agency for International Development (USAID)** - [www.usaid.gov](http://www.usaid.gov) is the lead U.S. government agency that works to end extreme global poverty and enable resilient democratic societies to realize their potential. With headquarters in Washington, D.C., USAID's strength is its field Missions around the world. The Agency works in close partnership with private voluntary organizations, indigenous organizations, universities, the private sector international agencies, other governments, and other U.S. government agencies.

**Canadian Institutes for Health research (CIHR)** - [www.canada.ca/en/institutes-health-research](http://www.canada.ca/en/institutes-health-research) the CIHR is Canada's federal funding agency for health research. Composed of 13 Institutes, we collaborate with partners and researchers to support the discoveries and innovations that improve our health and strengthen our health care system.

### 1.2 Additional research support was obtained from:

**Department of Science and Technology (DST)** - [www.dst.gov.za](http://www.dst.gov.za) the mission of the DST is to provide leadership, an enabling environment, and resources for science, technology and innovation in support of South Africa's development.

**National Research Foundation (NRF)** - [www.nrf.ac.za](http://www.nrf.ac.za) the mandate of the NRF is to promote and support research through funding, human resource development and the provision of the necessary research facilities in order to facilitate the creation of knowledge, innovation and development in all fields of science and technology, including indigenous knowledge, and thereby contribute to the improvement of the quality of life of all South Africans.

**Medical Research Council (MRC)** - [www.mrc.ac.za](http://www.mrc.ac.za) the South African Medical Research Council (SAMRC) was established in 1969 with the aim to deliver on a mandate to promote the improvement of the health and the quality of life of the population of our country through research, development and technology transfer.

**National Institutes of Health (NIH)** - [www.nih.gov](http://www.nih.gov) The National Institutes of Health (NIH), a part of the U.S. Department of Health and Human Services, is the nation's medical research agency — making important biomedical discoveries that improve health and save lives. NIH is located in Bethesda, Maryland.

## 2. Institutions involved in conducting research

The three studies were undertaken by the CAPRISA consortium involving researchers from South Africa, Canada and the United States.

### 2.1 South African research institutions

**Centre for the AIDS Programme of Research in South Africa (CAPRISA)** [www.caprisa.org](http://www.caprisa.org) is a multi-institutional AIDS research organization, with its headquarters at the University of KwaZulu-Natal in Durban, South Africa. CAPRISA is a designated UNAIDS Collaborating Centre for HIV Prevention Research and a DST-NRF Centre of Excellence in HIV Prevention. The main goal of CAPRISA is to undertake globally relevant and locally responsive research that contributes to understanding HIV pathogenesis, prevention and epidemiology, as well as the links between tuberculosis and AIDS care.

**University of KwaZulu-Natal (UKZN)** [www.ukzn.org](http://www.ukzn.org) Investigators involved in this research was from the Nelson R. Mandela School of Medicine of the University of KwaZulu-Natal (UKZN). UKZN is a multi-campus, residential, teaching and research-led university located in the province of KwaZulu-Natal South Africa. The University has a proud and rich heritage of academic excellence and is ranked as one of the top higher education institutions on the African continent.

**University of Cape Town (UCT)** [www.uct.ac.za](http://www.uct.ac.za) Investigators involved in this research was from the Institute of Infectious Diseases and Molecular Medicine (IDM) at the University of Cape Town. Founded in 1829, the University of Cape Town has a proud tradition of academic excellence and effecting social change and development through its pioneering scholarship, faculty and students.

**Epicentre** - [www.epicentre.org.za](http://www.epicentre.org.za) is a South African company that specializes in implementing Health Research studies. Epicentre collaborates with other research organisations and universities throughout South Africa and Globally taking responsibility for the field work and data management component of research studies. The main goal of EPICENTRE is to undertake research that contributes to HIV, TB, Chronic Diseases prevention, treatment and understanding the epidemiology of these conditions.

**National Institute for Communicable Diseases (NICD)** [www.nicd.ac.za](http://www.nicd.ac.za) The National Institute for Communicable Diseases (NICD) is the national public health institute for South Africa. It provides reference microbiology, virology, epidemiology, surveillance and public health research to support the government's response to communicable disease threats. The NICD primarily supports the programmes of the National and Provincial Departments of Health and also provides public health services such as collaborating laboratory or regional reference laboratory functions for global programmes of the World Health Organisation (WHO).

### 2.2 North American research institutions

**Columbia University's Mailman School of Public Health** [www.mailman.columbia.edu/](http://www.mailman.columbia.edu/) Investigators involved in this research were from the Center for Infection and Immunity and the Department of Epidemiology of Columbia University's Mailman School of Public Health. Columbia University has been a leader in higher education in the nation and around the world. Columbia is both global and local in focus. As a vital part of New York, our research and teaching are enhanced by the vast resources of one of the world's greatest cities. The University offers an outstanding and comprehensive array of academic programs.

**Public Health Agency of Canada** [www.publichealth.gc.ca](http://www.publichealth.gc.ca) Investigators involved in this research were from the National HIV and Retrovirology Labs, JC Wilt Center for Infectious Diseases of the Public Health Agency of Canada (PHAC). With more than 2,400 staff members, the PHAC is the country's leading public health institute. It works to prevent chronic and infectious diseases, build health capacity in terms of research and training, prepare for and respond to public health emergencies, and minimize avoidable injuries.

**University of Washington** [www.washington.edu](http://www.washington.edu) Investigators involved in this research were from the [Department of Pharmaceutics, School of Pharmacy, and the Washington National Primate Research Center, University of Washington](#). The UW is one of the world's preeminent public universities. Ranked No. 10 in the world in Shanghai Jiao Tong University's 2015 rankings, the UW educates more than 54,000 students annually. It is a multi-campus university in Seattle, Tacoma and Bothell, as well as a world-class academic medical center.

### 3. Key study investigators

The three studies were undertaken under the umbrella of the CAPRISA consortium led by Professor Salim S. Abdool Karim, Director of CAPRISA, CAPRISA Professor of Global Health at Columbia University and Pro Vice-Chancellor (Research) at the University of KwaZulu-Natal. The individual projects were led by:

*Presentation 1:*

***Who is infecting who? Community-wide phylogenetic transmission networks reveal young women's high HIV exposure from older men with low ART coverage***

**Professor Ayesha BM Kharsany**, Centre for the AIDS Programme of Research in South Africa (CAPRISA).  
[Ayesha.Kharsany@caprisa.org](mailto:Ayesha.Kharsany@caprisa.org)

**Professor Tulio de Oliveira**, University of KwaZulu-Natal - Centre for the AIDS Programme of Research in South Africa (CAPRISA) and the Africa Centre for Population Health [tuliodna@gmail.com](mailto:tuliodna@gmail.com)

*Presentation 2:*

***Role of vaginal microbiota in genital inflammation and enhancing HIV acquisition in women***

**Dr Brent L. Williams and Dr W. Ian Lipkin**, Center for Infection and Immunity, Columbia University, New York.  
[bw2101@columbia.edu](mailto:bw2101@columbia.edu)

*Presentation 3:*

***Uncovering the role of the vaginal microbiome in undermining PrEP efficacy in women***

**Dr. Adam Burgener**, National HIV and Retrovirology Labs, JC Wilt Infectious Disease Research Centre, Public Health Agency of Canada. [adam.burgener@phac-aspc.gc.ca](mailto:adam.burgener@phac-aspc.gc.ca)