CAPRISA
CENTRE FOR THE AIDS PROGRAMME OF RESEARCH IN SOUTH AFRICA
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The vaginal microbiome and its impact on preterm birth

Preterm birth remains one of the leading causes of newborn illness and death worldwide; however, its underlying causes are not fully understood. In this review, we examine the growing evidence that the vaginal microbiome, a community of bacteria naturally present in the vagina, plays a major role in determining pregnancy outcomes.

A key finding is that vaginal communities dominated by beneficial Lactobacillus species, particularly *Lactobacillus crispatus*, are consistently associated with healthy pregnancy. These bacteria help maintain a protective vaginal environment, reduce inflammation, and strengthen the body's natural defenses against infection.

In contrast, bacterial communities associated with bacterial vaginosis are linked to increased inflammation, disruption of protective barriers, and a higher risk of spontaneous preterm birth.

The review also highlighted that vaginal microbiome composition differs across populations, with women of African ancestry more frequently exhibiting non-*Lactobacillus*-dominated communities. While these differences may contribute to disparities in preterm birth rates, the relationship is complex and is influenced by social, environmental, and biological factors.

Importantly, we identified promising new opportunities for intervention. Emerging microbiome-based therapies, including live biotherapeutic products (beneficial bacteria), endolysins, bacteriophages, and vaginal microbiota transplantation, have the potential to restore vaginal health and reduce the risk of adverse pregnancy outcomes.

Overall, this review underscores the vaginal microbiome as a potentially modifiable factor in pregnancy and highlights the need for inclusive, globally representative research to develop effective strategies for preventing preterm birth.

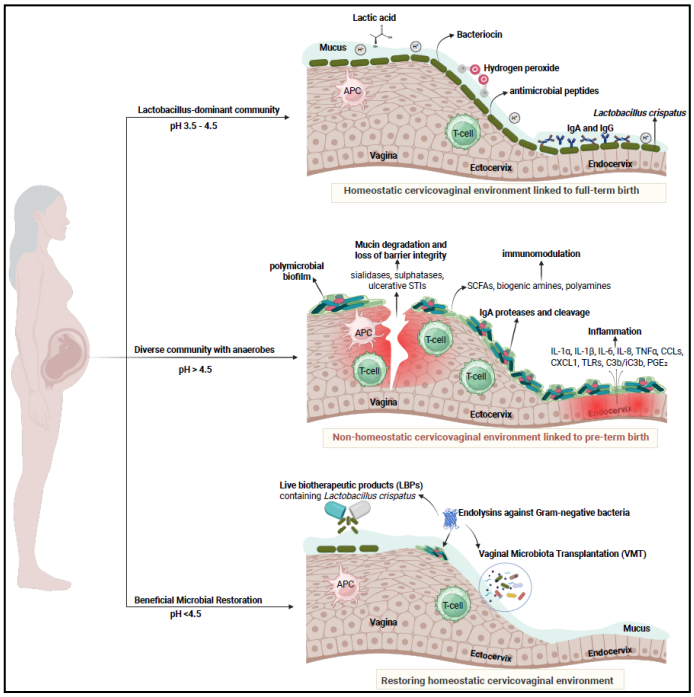

Figure 1: The cervicovaginal environment during pregnancy. A healthy state is characterised by *Lactobacillus* dominance, an intact epithelial barrier, and balanced immune responses that support full-term pregnancy. Microbial dysbiosis can disrupt these protective mechanisms, leading to inflammation and increased risk of preterm birth. Emerging microbiome-based therapies, including live biotherapeutics, endolysins, phages, and vaginal microbiota transplantation, aim to restore vaginal health and promote favourable pregnancy outcomes.

For further reading: Pillay N, Short CS, Mzobe GF, et al. The vaginal microbiome in pregnancy and preterm birth: mechanisms, disparities, and therapeutic opportunities. *NPJ Biofilms Microbiomes*, 2026; https://doi.org/10.1038/s41522-026-00945-5

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Boots on the ground in Bunia in the DRC: Reflections of the Ebola outbreak

Professor Salim Abdool Karim visited the Democratic Republic of Congo on behalf of the Africa CDC to better understand that country's response to the current Ebola outbreak in central Africa. According to the WHO, The Bundibugyo virus - a severe and often fatal form of Ebola - disease is a zoonotic disease, with fruit bats suspected to be the natural reservoir. The WHO declared the ongoing outbreak of Ebola disease in the Democratic Republic of the Congo and Uganda as a Public Health Emergency of International Concern (PHEIC) on May 17th.

Professor Abdool Karim began his journey with a visit to the national DRC's laboratory in Kinshasa, the National Institute of Biomedical Research lab in Kinshasa where he met with Congolese microbiologist and the INRB's Director-General Professor Jean-Jacques Muyembe-Tamfum. He then boarded a United Nations Humanitarian Air Service flight to the epicentre of the current Ebola outbreak to Bunia, the capital city of Ituri province where he was met by Professor Yap Boum, a senior public health expert at the Africa CDC. With Dr Kyeng Mercy of Africa CDC, the trio visited hospitals treating suspected and confirmed Ebola cases. They visited Evangelical Hospital, one of Bunia's largest public Ebola treatment hospital and Rwampara district hospital, amongst others. Read more about Professor Salim Abdool Karim's visit and take a closer look at Bunia's healthcare workers on the frontlines here: https://www.caprisa.org/Pandemics/Ebola.

In other Ebola related news, our Pandemic Preparedness and Response Programme - a multidisciplinary team - has been working to support the response to the outbreak. Apart from authoritative resources and key media interviews, a highlight on our Ebola Portal is the Outbreak Tracker capturing regularly updated case and death statistics in the DRC and Uganda. Programme Head and Senior Scientist, Dr Safura Abdool Karim, together with her colleagues Dr Sharana Mahomed and Lara Lewis state their case for the dire need for a rapid diagnostic test in an article in *The Lancet* entitled, "Urgent need for a reliable rapid diagnostic test for the Ebola epidemic caused by Bundibugyo virus in Africa."

Pics (Top, left): Prof Abdool Karim with Dr Kyeng Mercy (Africa CDC), Dr Yap Boum (Africa CDC) & Dr Papys Lame Musey (ALIMA) at Rwampara Hospital. Bottom, left: Prof Abdool Karim with Dr Tony Wawina-Bokalanga at the National Institute of Biomedical Research lab in Kinshasa. Right: Bunia's largest Ebola treatment hospital, Evangelical.

South African Tuberculosis Conference
Vuka! Let's unite towards a TB-free world!

CAPRISA had a strong presence at the 9th South African TB conference, with contributions spanning scientific leadership, plenary presentations, oral abstracts, poster presentations, and conference rapporteur activities. This year, CAPRISA Deputy Director Professor Kogie Naidoo and member of the conference's Organising Committee, emphasised during her plenary address, the importance of sustaining the global momentum to end TB and highlighted the need for continued innovation, collaboration, and commitment to achieving TB elimination.

Senior scientists showcased important advances in TB and HIV research. Dr Anushka Naidoo delivered a plenary presentation on the implications of the Lenacapavir rollout in the context of TB treatment and prevention in South Africa. She highlighted that people receiving Lenacapavir (LEN) for PrEP can initiate rifampicin or rifabutin at any time using supplemental LEN dosing, while noting that there is currently no dosing recommendation for initiating LEN for PrEP in individuals already receiving rifampicin. Naidoo also presented findings from the CAPRISA 093 INSIGHT study evaluating twice-daily bictegravir/FTC/TAF during rifampicin-based TB therapy. The study demonstrated high rates of viral suppression, favourable TB treatment outcomes, good tolerability, and no treatment discontinuations or deaths attributable to therapy. These findings provide encouraging evidence for expanding antiretroviral treatment options for people receiving concurrent HIV and TB therapy, while discussions highlighted the importance of monitoring weight changes observed among some participants.

Professor Rubeshan Perumal, CAPRISA's Head of Treatment's plenary presentation entitled "Are we ready for a Pan-TB Regimen? Novel DR-TB Drugs and regimens", highlighted that for the first time in the history of drug-resistant TB, science has delivered the tools to contemplate a Pan-TB regimen. While the potential rewards of a universal regimen are revolutionary, he emphasised that poor implementation could have catastrophic consequences. He stressed that implementation realities and person-centred approaches must guide clinical evaluation from the earliest stages of clinical trials.

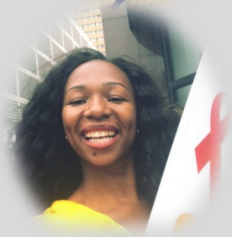
Pic (Left to right): Team CAPRISA: Renée Khouri, Dr. Nonzwakazi Ntombela, Professor Kogie Naidoo, Professor Rubeshan Perumal, Kynesha Moopanar, Senamile Ngema, Pinky Motsomi and Dr. Anushka Naidoo.

SA TB conference cont... CAPRISA's rising TB researchers

Research assistant **Kynesha Moopanar** presented findings from a retrospective analysis of 684 patients with drug-resistant TB in Durban (2011–2024). Her study showed that cavitary lung disease remains highly prevalent, affecting nearly 60% of patients despite advances in TB diagnosis and treatment. Cavitary disease was associated with higher bacterial burden and significantly poorer treatment outcomes, highlighting the need for earlier identification and targeted, individualised

PhD candidate **Senamile Ngema** presented her work on Minimum Inhibitory Concentrations, Distributions, and Genotypic Profiles of Bedaquiline-Resistant Mycobacterium tuberculosis Clinical Isolates, demonstrating that bedaquiline resistance exists across a spectrum of phenotypic resistance associated with Rv0678, pepQ, and Rv1979c mutations. Most patients exhibited low to moderate resistance, suggesting that some may benefit from bedaquiline dose escalation.

Study Coordinator **Pinky Motsomi** presented findings from the **TARGET-TB** substudy evaluating the spatial distribution of Xpert MTB/RIF Ultra cycle threshold values and TB transmission. The study demonstrated that integrating Xpert Ultra Ct values with spatial analysis could help identify TB transmission hotspots, enabling public health programmes to better target prevention and control interventions in high-burden settings.



Study co-ordinator **Doctor Nonzwakazi Ntombela** served as a Track 2 rapporteur and presented a poster on Clinical and Behavioural Predictors of Delayed Sputum Culture Conversion among Patients with Recurrent Tuberculosis. The study found that substance use was independently associated with delayed sputum culture conversion among participants with recurrent drug-susceptible pulmonary TB, highlighting an important behavioural factor that should be addressed to improve treatment outcomes.

Social worker **Hlengiwe Nyilana** presented findings from the ADAP-TIV study on the feasibility and potential of theory-informed social work interventions for people living with HIV in South Africa, demonstrating the value of integrating psychosocial support into HIV care.

A selection of scientific papers published in 2026

31 **Abdool Karim S, Mahomed S, Lewis L, Abdool Karim SS**. Urgent need for a reliable rapid diagnostic test for the Ebola epidemic caused by Bundibugyo virus in Africa. *Lancet*. 2026 Jun 13;407 (10546):2346-2348. doi: 10.1016/S0140-6736(26)01093-7

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33 **Osuala EC, Nkuhairwe IN, Letsoalo MP, Naidoo K, Perumal R**, Rooney JF, Wiesner L, Wasmann RE, Denti P, Dooley KE, **Naidoo A**; INSIGHT Study Team. Pharmacokinetics of Twice-daily Tenofovir Alafenamide in Adults With HIV-associated Tuberculosis on Bictegravir/Emtricitabine/Tenofovir Alafenamide and Rifampicin. *Clin Infect Dis*. 2026 Apr 30;82(4):720-727. doi: 10.1093/cid/ciaf732

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38 **Govender V**, Govender K, **Moodley D.** Genital tract infections, antiretroviral treatment and HIV-1 viral load in early postpartum women: : implications for sexual and breastfeeding HIV transmission. *BMC Infect Dis*. 2026 Jan 31;26(1):462. doi: 10.1186/s12879-026-12621-2

39 Nelson KN, Harton P, Cohen T, Willis F, Yoshii H, **Naidoo K**, Lutchminarain K, Campbell A, Omar SV, Auld SC, Brust JCM, Gandhi NR, Shah NS. COVID-19 pandemic changes in social behavior relevant for transmission of Mycobacterium tuberculosis. *BMC Res Notes*. 2026 Jan 24;19(1):83. doi: 10.1186/s13104-026-07675-z

40 **Abdool Karim S**, Faden R, Barnhill A, Brown VA, Kahn J, Kass N, Mastroianni A, Morain S, Ravitsky V, Tuckson R. Navigating "Wicked" Disagreement in Public Health. *Am J Public Health*. 2026 Apr;116 (4):544-551. doi: 10.2105/AJPH.2025.308350

For the complete list of publications see here: https://www.caprisa.org/Publication/1/1