INTRODUCTION
The biological mechanisms underlying HIV risk in younger women is unclear. HIV is primarily transmitted across the genital mucosa and preferentially infects CD4+ T-cells. We investigated the influence of asymmetric sexually transmitted infections (STIs) and bacterial vaginosis (BV) on CD4+ T-cell activation and inflammation in the genital tracts of adolescents from South Africa.

METHODS
As part of a longitudinal cohort study involving 16-22 years old young women, cervical mononuclear cells were obtained from 149 adolescents by cytobrush and the T-cell expression of activation and proliferation markers (CD38, HLA-DR, Ki67) was measured by FACS. Women were tested for bacterial vaginosis (BV) and STIs (C. trachomatis, N. gonorrhoea, T. vaginalis, M. genitalium, HSV-1 & 2, H. ducreyi, T. pallidum and L. venereum). For comparison, 11 HIV-negative adult women were also included (Jaspans et al., 2009). An array of 48 inflammatory, anti-inflammatory, regulatory and hematopoietic cytokines was measured using Lumix.

Adolescents generally have higher T-cell activation levels compared to adults

STIs and Bacterial vaginosis result in a cumulative increase in genital T-cell activation

Having at least one STI, despite being asymptomatic, was accompanied by a general increase in T-cell activation, especially for the CD4+ T-cell population. The same trend was seen for participants with BV, where CD38+HLADR+ expression was upregulated in CD4+ T-cells. Having both STIs and BV appears to have a cumulative effect where the upregulation of CCR5 and the activation markers was more pronounced.

CONCLUSION
Adolescents are known to bear the burden of the HIV epidemic in South Africa, especially young women, with about 76% of HIV-positive young people in sub-Saharan Africa being female. We found significantly heightened levels of genital immune activation in the South African young females from this cohort, compared to adult women. This could be partly due to the particularly high prevalence of STIs (though asymptomatic) and BV among this population. Having higher genital inflammation and higher frequencies of activated potential target cells could put them at higher risk of infection and may explain the greater vulnerability of adolescents to HIV.

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