

# The cervicovaginal microbiome before and after HIV seroconversion

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## Conclusion

The cervicovaginal microbiome of seroconverters shifted to (more severe) dysbiosis after seroconversion. Further studies need to investigate which microbiome compositions increase HIV risk and whether treatment decreases HIV acquisition and further transmission.

## Introduction

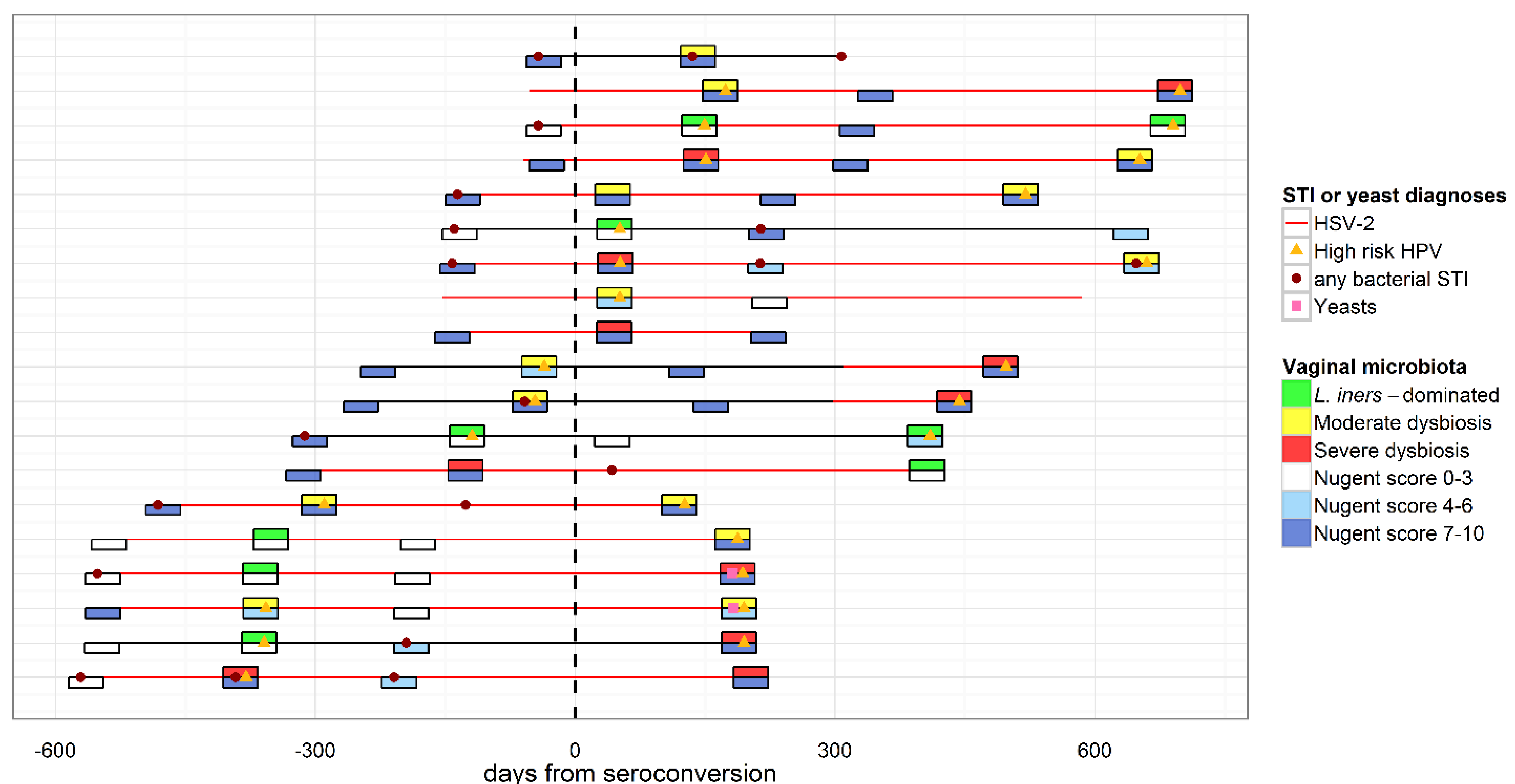
Bacterial vaginosis (BV) is associated with an increased risk of HIV acquisition and further female-to-male transmission. However, longitudinal studies are scarce and have not involved the use of molecular methods.

## Microbiome analysis

The cervicovaginal microbiome, as measured by a phylogenetic 16S DNA microarray, was measured at two timepoints during follow-up; before and after seroconversion (n=10), or twice after seroconversion (n=5). Microbiome compositions were analyzed as four categories (*Lactobacillus crispatus*-dominated, *L. iners*-dominated, moderate dysbiosis (mixed anaerobes with intermediate total bacterial abundance), and severe dysbiosis (mixed anaerobes with high total bacterial abundance)).

## Longitudinal changes in microbiome

Before seroconversion, none of the women had a *L. crispatus*-dominated microbiome, four had a *L. iners*-dominated microbiome, four a moderately dysbiotic microbiome and two severe dysbiosis.



## Study participants

HIV-negative (n=397) female sex workers in Kigali, Rwanda, were followed for two years. Demographic, behavioral, clinical, HIV, sexually transmitted infection, and cervicovaginal microbiota data were collected at regular intervals. Women that seroconverted for HIV (n=19) were selected for this secondary study.

The microbiome composition of four women remained stable before and after seroconversion, five shifted to (more severe) dysbiosis, and one shifted from dysbiosis to a *L. iners*-dominated microbiome. After seroconversion, 26% had a *L. iners*-dominated microbiome, 32% moderate dysbiosis, and 42% severe dysbiosis. When comparing the microbiome of women at two timepoints after seroconversion, the dysbiosis persisted but remained relatively stable.

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