

# Sex is associated with the persistence of non-optimal vaginal microbiota following treatment for bacterial vaginosis: a prospective cohort study

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## Background:

Underpinning a woman's sexual and reproductive health is an optimal vaginal microbiota (VM), characterised by *Lactobacillus* species. The most common non-optimal VM is associated with bacterial vaginosis (BV) and is characterised by diverse facultative and strict anaerobes. Despite our understanding of the composition of the VM in women with BV, the pathogenesis of BV-recurrence is poorly understood. We investigated the factors associated with the composition of the VM of women treated for BV.

## Methods:

This was a prospective cohort study of 75 reproductive-age women diagnosed with BV and treated with first-line antibiotics at the Melbourne Sexual Health Centre. Women self-collected vaginal swabs and completed questionnaires at enrolment, the day following antibiotics, and monthly for up to 6 months until BV recurrence, or no BV recurrence (N=430 specimens). Bacterial composition was determined using 16S rRNA gene amplicon sequencing. The effects of ongoing factors on VM composition (utilising 291 monthly specimens) were assessed using generalised estimating equations population-averaged models, which accounted for repeated measures within individuals.

## Results:

Women who reported ongoing sex with a regular sexual partner (RSP) had a VM comprised of increased relative abundance of non-optimal BV-associated bacteria (Adjusted co-efficient=11.91 95%CI:3.39, 20.43, p=0.006) and a decreased relative abundance of optimal, *Lactobacillus* species. (Adjusted co-eff=-12.76, 95%CI:-23.03, -2.49, p=0.015). A history of BV was also associated with decreased relative

abundance of *Lactobacillus* spp. (Adjusted co-eff=-12.35, 95%CI:-22.68, -2.01, p=0.019). The relative abundance of *Gardnerella*, *Atopobium* and *Sneathia* spp. increased following sex with an RSP.

**Conclusion:**

Sex with an untreated RSP after BV-treatment was associated with a VM comprised of non-optimal BV-associated bacteria, suggesting that treatment strategies solely directed to sexually-active women with BV will unlikely achieve high levels of cure. Treatment approaches may need to include partner treatment in order to achieve a sustained optimal VM associated with improved health outcomes.

**Disclosure of Interest Statement:**

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