

The impact of partner treatment for bacterial vaginosis on the genital microbiota of heterosexual couples

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Background:

More than 50% of women experience recurrence of bacterial vaginosis (BV) within 3-6 months following first-line antibiotics. Increasing evidence suggests that reinfection from an untreated regular sexual partner contributes to BV-recurrence. We conducted a pilot study of combined oral and topical antibiotic treatment of male partners of women being treated for BV, and investigated the impact of concurrent partner treatment on the genital microbiota of couples.

Methods:

Women attending Melbourne Sexual Health Centre with symptomatic BV (≥ 3 Amsel criteria and Nugent Score=4-10) were recruited between March 2018-2019 with their regular male partner (RSP). Women received first-line BV-treatment and their RSP received oral metronidazole 400mg *BD* and 2% clindamycin cream topically to penile skin *BD*, for 7-days. Couples self-collected genital samples (vaginal swab, penile skin swab, and male first-pass urine [representing the urethral microbiota]) immediately post-treatment (i.e. day-8) and then 4-weekly for up to 12-weeks. Specimens underwent microbiota analysis using 16S-rRNA gene sequencing. Changes in the relative abundance of bacteria between pre- and post-treatment specimens were assessed using the Wilcoxon rank-sum test.

Results:

Data from 31 couples was available for microbiota analysis. The bacterial composition of the male genital microbiota differed at the penile skin site and the

urethral site. Partner treatment reduced the relative abundance of BV-associated bacteria in the genital microbiota of both men and women immediately post-treatment. Specifically, *Prevotella* and *Sneathia* were reduced at the vaginal ($P < 0.001$), penile skin ($P = 0.005$) and urethral ($P < 0.001$) sites post-treatment compared to pre-treatment. Post-treatment, *Gardnerella* was reduced in the urethral ($P = 0.02$) and vaginal ($P = 0.001$) microbiota, and not in the penile skin microbiota but this was likely due to the low relative abundance of *Gardnerella* at this site.

Conclusions:

Treating sexual partners of women with BV reduces the abundance of BV-associated bacteria in the vaginal, penile skin and male urethral microbiota immediately post-treatment.

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