

Women's Health Victoria



Bacterial Vaginosis: A Literature Review August 2007

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Published by Women's Health Victoria
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First Published August 2007

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Introduction

Bacterial vaginosis (BV) is the most prevalent form of vaginal disturbance in women of reproductive age¹. Rates of infection vary from about 10% generally to 35% of gynaecology inpatients and up to 60% in women attending a sexual health service¹. There are known risk factors associated with BV but the exact cause is unknown. It is more often irritating and embarrassing than harmful, but BV infection can put some women at increased risk of premature birth, miscarriage and sexually transmitted diseases including HIV².

What is BV?

BV is overgrowth of bacteria in the vagina. The vagina usually has large numbers of lactobacilli, aerobic bacteria that produce lactic acid and hydrogen peroxide, which keeps the vaginal environment acidic. Women with BV have increases in bacteria of up to 1000-fold above usual levels. These bacterial organisms can include *Gardnerella vaginalis*, *Mycoplasma hominis*, *Mobiluncus bacteroides* and *Prevotella*. During a woman's reproductive years the pH (measure of acidity) of the vagina usually sits between 3.8 and 4.2, but in women with BV the pH levels increase to more than 4.5. This compromises the survival of the lactobacilli.

What are BV symptoms?

About 50% of women with BV are not aware that they have it. Diagnosis usually occurs after a routine pap smear or by way of Amsel's four-point criteria, which includes the presence of discharge, pH levels greater than 4.5, a positive amine test and detection of clue cells on microscopic examination.

The symptoms for women to look out for are:

- A watery grey or milky vaginal discharge, and
- A strong or unusual vaginal odour³, often described as 'fishy'.

How is BV transmitted?

It is unclear how BV is transmitted but it is more common in women who are sexually active and can sometimes develop soon after intercourse with a new partner. Women are advised to use condoms with casual male sexual partners, which may also reduce the risk of contracting other sexually transmitted infections. It is suggested that women who have sex with women can transmit BV on fingers or sex toys.

¹ Foran, T. (2007) Bacterial vaginosis. Therapy Update, Women's Health. *Australian Doctor*, 13 July: 37-40.

² Leung, CC (2007) What a difference \$20,000 makes, *The Age*, 28 August. Online article, available at: <http://www.theage.com.au/news/national/what-a-difference-20000-makes/2007/08/28/1188067111160.html> Accessed 31 August, 2007.

³ *Better Health Channel* (2006) Bacterial vaginosis explained, *Better Health Channel: healthier living online*. Online article available at: http://www.betterhealth.vic.gov.au/bhcv2/bhcarticles.nsf/pages/Bacterial_vaginosis_explained?OpenDocument Accessed 31 August 2007.

What are the risk factors?

Increased risk of having BV is associated with:

- Lower socioeconomic status;
- Having multiple sexual partners;
- Having an intrauterine device;
- Having sex with other women; and,
- Douching (more common in African and Afro-American women who have higher pH levels than Caucasian and Asian women).

BV is more prevalent among women who have had more than three male or female partners during a twelve month period. Having non-protected sex with men is also a risk factor. A 2004 American study of 151 Peruvian women found that unprotected sex predicted recurrence. Women who had responded to treatment and who were found to be clear of BV in a first follow-up, but who had subsequent intercourse without using condoms, were more likely to be reinfected with BV⁴.

BV and prison

Research indicates that being in prison is also a predictor of having BV. One 2003 study of 110 women from a Victorian prison who volunteered to attend services from the Melbourne Sexual Health Centre (MSHC), found that 43 women (39%) tested positive for BV⁵. Ninety-two percent (101) of the 110 women were injecting drug users (IDUs). Results indicate that women in prison have a higher percentage of BV than the average population. A number of the women were asymptomatic and required no treatment unless pregnant. However, the researchers highlighted the increased risk of HIV infection for women with BV, stating that the risk of HIV infection has a 2-4 fold increase in women who are BV positive. IDUs who are also BV positive have greater potential risk of HIV infection.

BV and pregnancy

BV is associated with an increased risk of premature rupture of the membranes, preterm delivery and post-partum endometritis. BV is not a strong predictor of early miscarriage but may be a predictor in miscarriage after 13 week's gestation⁶. It is uncertain whether prompt treatment reduces the risk of premature birth. A 2006 study involving 5888 women found that bacteria overgrowth decreased in pregnant women with BV treated with antibiotics, but that the number of babies born prematurely did not decrease⁷.

⁴ Sanchez, S., Garcia, P., Thomas, K., Catlin, M. & Holmes, K. (2004) Intravaginal metronidazole gel versus metronidazole plus nystatin ovules for bacterial vaginosis: a randomized controlled trial. *American Journal of Obstetrics and Gynecology*, 191: 1898-906.

⁵ Nicholson, J. Almond, L., Nilofar, R. & Fairley, C. (2003) Low prevalence of STIs among women in prison, but bacterial vaginosis is common. *Australian and New Zealand Journal of Public Health* 27(4): 464-465.

⁶ Oakeshott, P., Hay, P., Hay, S., Steinke, F., Rink, E. & Kerry, S. (2002) Association between bacterial vaginosis or chlamydial infection and miscarriage before 16 weeks' gestation: prospective community based cohort study. *BMJ* 325: 1-5.

⁷ McDonald, H., Brocklehurst, P. & Gordon, A. (2007) Antibiotics for treating bacterial vaginosis in pregnancy. *The Cochrane Library*, 3: 1-53. Online article available at: <http://www.mrw.interscience.wiley.com/cochrane/clsystrev/articles/CD000262/frame.html> Accessed 31 August 2007.

Pregnant women with BV are found to be at increased risk of urinary tract infections⁸. Endometritis and pelvic infection are also more common in women with BV when a caesarean section, termination of pregnancy or insertion of an intrauterine device is performed.

The antibiotic, metronidazole, is generally used to treat pregnant women, although most clinicians state that it should not be used in the first trimester. Clindamycin, a vaginal cream, is often the treatment chosen for pregnant women and for women who have experienced severe side effects. However, the cream is expensive and is known to target vaginal lactobacilli, which increases likelihood of reinfection.

Pregnant women with BV are advised to consult their obstetrician about treatment options.

How is BV treated?

If there are no symptoms then treatment is generally not necessary. However, treatment should occur if there are visible signs or if a doctor has noticed signs.

Treatment usually involves antibiotics, specifically metronidazole or tinidazole, which is taken as a single dose or more often in resistant cases. Nausea and stomach complaints can occur with this antibiotic and alcohol consumption should be avoided. A bitter metallic aftertaste is also associated with longer courses of this treatment. A Metronidazole gel is available in some countries and has fewer side effects, but it is not available in Australia. In about 70% of women with BV antibiotic treatment will settle the symptoms.

In Australia, there is also a product called EcoVag, which is a seven-day course of vaginal capsules containing two forms of lactobacilli. The capsules are intended to repopulate the vagina with lactobacilli, which will ideally restore acid balance. There are few side-effects associated with this treatment option, but results of its effectiveness are inconclusive.

Treating male partners of infected women does not seem to reduce the risk of re-infection or recurrence.

⁸ Sharami, S., Afrakhteh, M. & Shakiba, M. (2007) Urinary tract infections in pregnant women with bacterial vaginosis. *Journal of Obstetrics & Gynaecology*, 27(3): 252-4.