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# Bacterial Vaginosis

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Bacterial vaginosis (BV) is the most common cause of abnormal vaginal discharge in women of reproductive age.

## Aetiology<sup>[1]</sup> <sup>[2]</sup>

BV is caused by an overgrowth of predominantly anaerobic organisms in the vagina. The most common organisms include *Gardnerella vaginalis*, *Prevotella* spp., *Mycoplasma hominis*, and *Mobiluncus* spp. However, many others have been identified. They replace lactobacilli, which are the dominant bacteria present in the normal vagina. The pH increases from less than 4.5 to as high as 6. BV is not thought to be sexually transmitted (it can occur in virgins); however, sexual activity has been linked to development of the infection.

## Risk factors

- Sexual activity (BV is not thought to be directly sexually transmitted; however, it is identified more frequently in those who are sexually active).
- New sexual partner.
- Other sexually transmitted infections (STIs).
- Ethnicity (more common in women of Afro-Caribbean descent).
- Presence of a copper intrauterine contraceptive device (IUCD).
- Vaginal douching.
- Bubble baths.
- Receptive oral sex.
- Smoking.

## Protective factors

- Combined oral contraceptive pill (oestrogen encourages lactobacilli).
- Condoms.
- Circumcised partner.

## Epidemiology

- BV is the most common cause of pathological vaginal discharge in women of child-bearing age.<sup>[2]</sup>
- Reported prevalence rates vary widely. In the past, prevalence has been reported as 5% in a group of asymptomatic college students, 12% in pregnant women attending an antenatal clinic, 30% in women undergoing termination of pregnancy (TOP) and up to 50% in rural Uganda.<sup>[1]</sup>
- Prevalence is higher amongst sexually active women than amongst non-sexually active women, so that sometimes the term "sexually associated" rather than "sexually transmitted" is used.
- Prevalence has been reported as higher in lesbian women, although there may be confounding factors.<sup>[3]</sup>

## Presentation<sup>[1]</sup>

- Offensive, fishy-smelling vaginal discharge without soreness or irritation.
- Approximately half of all women infected are asymptomatic.
- On examination there is usually a thin layer of white discharge covering the vaginal wall.

## Differential diagnosis

- Other vaginal infections - eg, *candida*, *trichomoniasis*, *chlamydia*, *gonorrhoea*, *herpes simplex*.

- Other benign causes of vaginal discharge - eg, physiological discharge, chemical irritants, foreign body, pregnancy, cervical ectropion.
- Tumours of the vulva, vagina, cervix, or endometrium.
- Postmenopausal vaginal discharge due to **atrophic vaginitis**.
- Vaginal discharge after gynaecological surgery.

## Investigations<sup>[2]</sup> <sup>[4]</sup>

Diagnosis of BV in primary care can be logistically difficult. There are two ways to diagnose BV; both rely on microscopy and may be difficult to arrange in general practice.

- Amsel's criteria require at least three of the following for diagnosis:
  - Homogeneous discharge as above.
  - Microscopy showing vaginal epithelial cells coated with a large number of bacilli ("clue cells").
  - Vaginal pH >4.5.
  - Fishy odour on adding 10% potassium hydroxide to vaginal fluid.
- Microscopic appearance of a Gram-stained smear of vaginal discharge analysed using the Ison/Hay criteria:
  - Grade 1: normal. Lactobacilli predominate.
  - Grade 2: intermediate. Some lactobacilli, but other organisms present.
  - Grade 3: BV. Other organisms predominate. Few or absent lactobacilli.

The isolation of *G. vaginalis* as a diagnostic criterion cannot be used, as it is present in the normal flora of up to 40% of women. Pathology laboratories use varying methods for diagnosis of BV outside specialist clinics. Usually a swab of vaginal discharge placed on to a microscope slide is required. Sometimes the laboratory may prepare the slide from a swab.

Therefore, under certain circumstances it may be reasonable to make an empirical diagnosis. A woman can be treated empirically if the following apply:

- She has typical symptoms and signs (a malodorous discharge with no soreness or irritation).
- She is not at increased risk of STI (ie not aged under 25, no recent new sexual partner, not more than one sexual partner in the previous year, no past history of STI).
- She is not postnatal, post-miscarriage or recently had a TOP or gynaecological surgery.
- She is not pregnant.
- She has not recently had treatment for BV.
- There are no signs of alternative causes of vaginal discharge (fever, bleeding, pain, itch).
- Raised pH if pH paper is available to measure it (see below).

If empirical diagnosis/treatment is not appropriate, examine and swab as per local pathology laboratory protocol, or refer to the local genitourinary medicine (GUM) clinic for testing. If the woman is at risk of other STIs, swabs for other infections (chlamydia, gonorrhoea) should also be done.

### How to measure vaginal pH

- If pH paper is available, this can be done in primary care.
- Take a swab from the lateral vaginal wall.
- Take care not to swab the cervix, which has a higher pH. Blood or semen may also raise pH.
- Roll the swab over the pH paper. Compare the colour against the standard to obtain a measurement.
- Raised pH is suggestive of BV, but not specific. (It can be raised in other conditions such as trichomoniasis.)

## Management<sup>[2]</sup> <sup>[4]</sup>

- Advise avoidance of vaginal douching.<sup>[5]</sup>
- Advise against the use of shower gel, and use of bubble bath, antiseptic agents or shampoo in the bath.

- Asymptomatic women usually do not need treatment, unless they are pregnant. If they are having a TOP, treatment beforehand is appropriate to reduce risk of complications. If there are additional risks of preterm birth, asymptomatic pregnant women may need treatment. This should be discussed on an individual basis with their obstetrician.
- Treatment options are:
  - Oral metronidazole 400-500 mg bd for 5-7 days. Treatment of choice. This may be used in pregnant women.
  - Oral metronidazole 2 g stat. Avoid in pregnant women. [6]
  - Metronidazole vaginal gel 0.75% once daily for five days.
  - Clindamycin vaginal gel 2% once daily for seven days.
  - Oral tinidazole 2 g stat.
  - Oral clindamycin 300 mg bd for seven days.
- None of these treatment regimes is known to be superior.
- Women who are breast-feeding should usually be prescribed intravaginal rather than oral treatment.
- It is not necessary to have a further test to prove resolution if symptoms resolve (unless treatment is prescribed in pregnancy to reduce the risk of preterm birth, in which case a repeat test should be made after one month and further treatment offered if the BV has recurred).
- Note that vaginal creams and gels may weaken condoms.
- There is no need to screen partners.
- There is no established treatment of recurrent BV but (off-licence) regular use of metronidazole gel 0.75% as a suppressive therapy may be effective.
- There is no evidence currently that antiseptics or disinfectants are effective in the treatment of BV. [7]
- There is no evidence currently that probiotics are effective against BV. [8] [9]

## Complications<sup>[1]</sup>

- Endometritis and pelvic inflammatory disease after TOP.
- BV can increase the risk of acquiring and transmitting HIV and other STIs.
- In pregnancy, BV is associated with various complications including:
  - Late miscarriage.
  - Preterm delivery.
  - Premature rupture of membranes.
  - Low birth weight.
  - Postpartum endometritis.

There is, however, no evidence for screening for BV in pregnancy, as there is no evidence treating it reduces risks such as preterm birth.<sup>[10]</sup> Similarly, there is limited evidence that treating asymptomatic women in pregnancy prevents preterm birth; hence, each woman should be assessed on an individual basis.

## Prognosis

- It may resolve without treatment.
- Up to 70% of patients have a relapse within three months of successful treatment. [2]

## Further reading & references

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