Fast Facts: Sexually Transmitted Infections

Second edition

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Declaration of Independence
This book is as balanced and as practical as we can make it.
Ideas for improvement are always welcome:
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Glossary of abbreviations

**AIDS**: acquired immune deficiency syndrome  
**CPPS**: chronic pelvic pain syndrome  
**DGM**: dark ground microscopy  
**FTA-ABS**: fluorescent treponemal antibody-absorbed [test]  
**GUD**: genital ulcer disease  
**GUM**: genitourinary medicine  
**HAART**: Highly active antiretroviral treatment  
**HBeAg**: hepatitis B ‘e’ antigen  
**HBsAg**: hepatitis B surface ‘s’ antigen  
**HBV**: hepatitis B virus  
**HCV**: hepatitis C virus  
**HIV**: human immunodeficiency virus  
**HPV**: human papillomavirus  
**HSV**: herpes simplex virus  
**HTLV**: human T-cell lymphotropic virus  
**Ig**: immunoglobulin  
**LGV**: lymphogranuloma venereum  
**MSU**: midstream urine  
**NAAT**: nucleic acid amplification test  
**NSU**: non-specific urethritis  
**PCR**: polymerase chain reaction  
**PID**: pelvic inflammatory disease  
**PPV**: positive predictive value  
**RPR**: rapid plasma reagin  
**RT-PCR**: reverse transcriptase polymerase chain reaction  
**STI**: sexually transmitted infection  
**UTI**: urinary tract infection  
**VDRL**: venereal disease research laboratory
Sexually transmitted infections (STIs), particularly human immunodeficiency virus (HIV) infection, are an important cause of morbidity and mortality worldwide, and are responsible for the loss of many productive years. They have a disproportionate impact on adolescents and young adults.

In developed countries, the incidence of most viral and bacterial STIs is increasing. The World Health Organization estimated that in 1999 there were 340 million cases of selected curable STIs (gonorrhea, Chlamydia infection, syphilis, chancroid and trichomoniasis), 90% occurring in resource-poor countries. Among the sexually active population, the prevalence of herpes simplex type 2 infection and of sexually transmitted human papillomavirus infection is estimated to be 20–40% and 30–60%, respectively. These rates are higher in developing countries. Since 1998 there has been an upsurge of STIs in homosexual men, a trend that has profound implications for the epidemiology of STIs and HIV infection.

The annual cost of STIs is estimated at US$7.18 billion in the USA, and that of treating the short-term effects of STIs at £700 million in the UK. Two STIs – gonorrhea and chancroid – no longer respond reliably to readily available and inexpensive antimicrobials and, increasingly, expensive third-generation cephalosporins and fluoroquinolones are required to treat these two diseases, causing particular problems in resource-poor areas.

STIs are important cofactors in the sexual transmission of HIV. In addition, the treatment of a number of STIs has become more challenging in immunocompromised individuals with HIV infection. Every family physician now encounters patients with STIs. We hope that Fast Facts: Sexually Transmitted Infections will provide a useful summary of current thinking on the diagnosis and effective management of these wide-ranging infections.
Treatment guidelines

The treatment guidelines presented in each chapter are adapted from the UK guidelines for the management of STIs. The US recommendations (2006) have been added where these differ from the UK guidelines. Full details of the US recommendations can be found in the Centers for Disease Control and Prevention publication *Clinical prevention guidance. Sexually transmitted diseases treatment guidelines 2006* (MMWR Recomm Rep 2006;55:1–94; www.guideline.gov).

Each patient should be assessed individually for history of drug allergy, pregnancy risk and other medication that may result in interactions. All treatment is oral unless otherwise stated. All tetracycline-based antibiotics are contraindicated in pregnancy.
Epidemiology
It is well established that a number of pathogens are transmitted sexually (Table 1.1). Several other common syndromes cause genital tract symptoms, but sexual transmission is not established, or is less important; these include bacterial vaginosis (an ecological disturbance of vaginal flora) and genital candidiasis.

Diagnoses of most sexually transmitted infections (STIs) have increased in recent years. Figures 1.1 and 1.2 show annual incidences in the UK and the USA, respectively. In the USA, the Centers for Disease Control and Prevention estimate that over 15 million STIs are diagnosed each year. The impact of STIs and their associated complications (Table 1.2) on public health is considerable.

Treatment and control
Successful control of STIs depends on:
- early diagnosis – screening programs are often required as many STIs are asymptomatic
- effective treatment (for curable infections), with oral and single-dose regimens wherever possible, ideally free for the patient
- contact tracing – referral and treatment of sexual partners
- education – behavioral risk reduction and prevention of transmission
- counseling and voluntary testing for human immunodeficiency virus (HIV) – this should be an integral part of any STI control program, as HIV is mostly transmitted sexually, and other STIs facilitate HIV transmission (on both a biological and a behavioral basis).

STIs are frequently asymptomatic, particularly in women. People with asymptomatic infection may not perceive themselves to be at risk of infection and may not access healthcare services. When asymptomatic infection is detected by screening, identified infected individuals may be less likely to comply with treatment or partner referral recommendations.
### Table 1.1

**Sexually transmitted pathogens**

#### Viral pathogens
- Herpes simplex virus (genital herpes): HSV 1 and HSV 2
- Human immunodeficiency virus (HIV)
- Human papillomavirus (genital warts)
- Hepatitis B virus
- Human herpesvirus-8 (Kaposi’s sarcoma)
- Human T-cell lymphotropic viruses: types 1 and 2 (HTLV1 & 2)
- Cytomegalovirus
- Hepatitis C virus – sexual transmission occurs occasionally (< 5% cases)
- Molluscum contagiosum – caused by a member of the Poxviridae family

#### Bacterial pathogens
- *Chlamydia trachomatis*
- *Neisseria gonorrhoeae* (gonorrhea)
- *Treponema pallidum* (syphilis)
- Genital mycoplasmas (including *Mycoplasma genitalium*)
- *Haemophilus ducreyi* (chancroid)
- *Klebsiella granulomatis* (donovanosis)
- Overgrowth of predominantly anaerobic organisms (e.g. *Gardnerella vaginalis*, *Orevotella* spp., *Mycoplasma hominis*, *Mobiluncus* spp.) in the vagina is characteristic of bacterial vaginosis*

#### Ectoparasites
(transmission occurs through close contact, sexual intercourse is not required)
- *Phthirus pubis* (pubic lice)
- *Sarcoptes scabiei* (scabies)

#### Protozoa
- Intestinal protozoa (amebiasis, giardiasis)
- *Trichomonas vaginalis*

#### Fungi
- *Candida* spp. (may be passed from female to male partners)

* *Bacterial vaginosis is seen almost exclusively in women who have been sexually active but the relevance of sexual transmission is not clear.*
Vaginal discharge is common and is often not pathological. Normal discharge ranges in appearance from mucoid to opaque, and in quantity from minimal to copious, and the quality and quantity of discharge may vary over the menstrual cycle and over a woman’s lifetime.

Most women are aware of a change from their normal pattern; it is therefore not surprising that a spontaneous complaint of abnormal vaginal discharge has good positive predictive value for the detection of pathology. Leading questions and the investigation of asymptomatic discharge are less helpful and may result in asymptomatic women becoming concerned.

Associated vulvovaginal symptoms may provide clues to the etiology. For example, in some women an underlying vulval disorder may be relevant; a careful history and examination should distinguish this patient group (see Chapter 5).

Recent studies have confirmed that most infectious discharge is caused by vaginal pathogens (Table 4.1). Purely cervical infections (e.g. gonorrhea or chlamydial infection) are rarely responsible for vaginal discharge, which, in this setting, is usually due to concomitant vaginal infection, such as bacterial vaginosis (Figure 4.1) or Candida vulvovaginitis (Figure 4.2). Women may not appreciate this difference between vaginal and cervical infection, and the cause of discharge needs to be resolved by physical examination.

**Assessment and investigation**

A history and examination should be undertaken (see Chapter 2). The assessment should routinely include a drug history (with particular emphasis on antibiotic use), and any associated vulvovaginal symptoms should be noted (Table 4.2). Women with poorly controlled diabetes may present with troublesome vulvovaginal candidiasis. The vulval skin should be inspected carefully to exclude any underlying dermatoses (see Chapter 5). If vaginal discharge is observed during an examination, it is important to establish whether the discharge is usual for the
### TABLE 4.1

**Common causes of vaginal discharge**

<table>
<thead>
<tr>
<th>Epidemiology</th>
<th>Comments</th>
</tr>
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<tbody>
<tr>
<td><strong>Bacterial vaginosis</strong></td>
<td></td>
</tr>
<tr>
<td>• Most common cause of abnormal discharge in women of childbearing age</td>
<td>• Sexually associated but not an STI</td>
</tr>
<tr>
<td>• Prevalence increased:</td>
<td>• pH &lt; 4.5 almost always excludes the diagnosis</td>
</tr>
<tr>
<td>– in African/Afro-Caribbean women</td>
<td></td>
</tr>
<tr>
<td>– with intrauterine contraceptive devices</td>
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<tr>
<td>– with recent partner change</td>
<td></td>
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<tr>
<td>– in women with STIs (probably)</td>
<td></td>
</tr>
<tr>
<td><strong>Candida spp.</strong></td>
<td></td>
</tr>
<tr>
<td>• In 20% of women there is normal carriage</td>
<td>• Premenarche and postmenopausal women rarely have problems with Candida</td>
</tr>
<tr>
<td>• Increased colonization in pregnancy (30–40%)</td>
<td>• Routine cultures are unnecessary</td>
</tr>
<tr>
<td>• Uncontrolled diabetes</td>
<td>• Self-limiting vulvovaginal symptoms are common and are often not related to Candida (50% of women who self-treat probably do not have candidiasis)</td>
</tr>
<tr>
<td>• HIV infection</td>
<td>• Recurrent vaginal candidiasis is not a marker for HIV infection</td>
</tr>
<tr>
<td>• High-dose estrogens</td>
<td></td>
</tr>
<tr>
<td><strong>Trichomonas vaginalis</strong></td>
<td></td>
</tr>
<tr>
<td>• Common in resource-poor countries, but 5 million cases occur annually in the USA</td>
<td>• Increased risk of adverse pregnancy outcome</td>
</tr>
<tr>
<td>• This is an STI</td>
<td>• Cytology is not reliable for diagnosis, which should be confirmed with a microbiological test</td>
</tr>
<tr>
<td>• Asymptomatic in 10–50% of cases</td>
<td></td>
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HIV, human immunodeficiency virus.