

# Public health aspects of STIs including partner notification

Jackie Cassell

## Abstract

Sexually transmitted infections (STIs) can present in a wide variety of settings, where they can be unexpected and present a challenge for communication and effective care. In all cases of STI, consideration must be given to treatment of the sexual partner(s), through partner notification, which can be via the patient (patient referral) or anonymously via the sexual health clinic (provider referral). A number of infections that are not generally seen as sexually transmitted (e.g. gastrointestinal infections) can and do cause sexually transmitted outbreaks; these should be managed with the support of health protection units and sexual health clinics. STIs have a prolonged duration of infectivity, which should be taken into account in supporting partner notification. Evidence suggests that patients and the public find the offer of human immunodeficiency virus (HIV) and STI testing acceptable in healthcare settings. HIV testing should be routinely available in all clinical settings; advice should be sought on the correct way to test and process samples if an STI might be the underlying cause of a condition.

**Keywords** HIV; HIV test; partner notification; patient referral; provider referral; public health; sexually transmitted infection

## Sexually transmitted infections (STIs) as a public health problem

STIs present in many different ways and to almost all medical specialities – from chlamydial conjunctivitis, through pelvic inflammatory disease or epididymitis, to acute presentations of human immunodeficiency virus (HIV), syphilis and infectious hepatitis. Although clinicians are taught to focus on the patient in front of them, it is essential when encountering a patient with a suspected STI to consider who else needs testing and treatment. This requires a non-judgemental approach, sensitivity and liaison with sexual health and public health colleagues.

### STIs – where do they begin and end?

STIs were defined in the UK's Venereal Disease Act of 1917 as syphilis, gonorrhoea or 'soft chancre' at a time when microbiology was a rapidly advancing field, and virology in its infancy. Rapid advances in diagnostics and surveillance systems have added

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## Key points

- If an infection *might* be sexually transmitted, always consider this possibility
- A patient with a sexually transmitted infection (STI) has not been properly treated until provision has been made for their partner(s) to be notified, tested and treated
- Use the sexual health clinic and health protection unit for support in diagnosis and care for STI
- Evidence shows that patients do not mind being offered an HIV test, and often assume the clinician has done it

other organisms to the list of classic STIs that rely on sexual intercourse for their maintenance in human populations (Table 1).

The same scientific developments, along with the emergence of new epidemics from HIV through to Ebola and Zika viruses have, however, highlighted the complex relationship between these classic STIs and a broader group of *sexually transmissible infections* (those that are occasionally transmitted through sex but do not depend on sex for transmission in a population) (Table 2). This overlap – together with the many presentations of STIs – presents challenges and requires doctors of all specialities to be ready to work together to manage patients effectively and appropriately, remembering the risk to sexual partners.

## UK epidemiology

In the UK, in common with most developed countries, a high proportion of STIs are experienced by young people between the

## The major STIs

Name of STI	Pathogen
Syphilis	<i>Treponema pallidum</i>
HIV	Human immunodeficiency virus
Genital chlamydia	<i>Chlamydia trachomatis</i> (serotypes D–K)
Gonorrhoea	<i>Neisseria gonorrhoeae</i>
<i>Trichomonas</i>	<i>Trichomonas vaginalis</i>
Genital warts	Human papillomavirus (low-risk genitotropic variants)
Genital epithelial malignancies	Human papillomavirus (high-risk genitotropic variants)
<i>Mycoplasma</i>	<i>Mycoplasma genitalium</i>
Lymphogranuloma venereum	<i>Chlamydia trachomatis</i> (LGV serotypes)
Genital herpes	Herpes simplex virus (types 1 and 2)
Molluscum contagiosum	Molluscum contagiosum virus
Crabs	<i>Phthirus pubis</i>
Donovanosis <sup>a</sup>	<i>Klebsiella granulomatis</i>
Chancroid <sup>a</sup>	<i>Haemophilus ducreyi</i>

<sup>a</sup> Transmitted predominantly in developing world settings.

Table 1

## Sexually transmissible infections

### Some sexually transmissible infections

Hepatitis A<sup>a</sup>  
 Hepatitis B<sup>a</sup>  
 Hepatitis C<sup>a</sup>  
*Shigella*, *Salmonella*  
 and other gastrointestinal  
 infections  
 Mumps  
 Measles  
 Brucellosis<sup>b</sup>  
 Scabies

### Emergent sexually transmissible infections in outbreak situations

Ebola virus<sup>b</sup>  
 Zika virus<sup>b</sup>

<sup>a</sup> In the UK, viral hepatitis is included in the surveillance returns for sexual health clinics, but much is diagnosed in other settings where sexual transmission can be overlooked.

<sup>b</sup> Indicates transmission predominantly in developing world settings.

**Table 2**

ages of 15 and 24 years. By far the most prevalent are genital chlamydial infections and genital warts. There is evidence that the recent introduction of human papillomavirus (HPV) vaccination is reducing the burden of genital warts, but a lag in the impact on cervical cancer is expected.

Gonorrhoea and syphilis remain endemic in the UK, although at lower levels, and are increasingly concentrated in the population of men who have sex with men (MSM). MSM are a population at increased risk of HIV, hepatitis A, B and C, and also anogenital warts, which can lead to intraepithelial neoplasia. HPV vaccine is recommended. Lymphogranuloma venereum is rarely diagnosed beyond the MSM population, which is considered a 'key population' for STIs, for whom a greater frequency of testing is recommended.

Around half of all HIV transmission occurs in MSM, but there is recent evidence of a reducing incidence in this population that is likely to be related to the use of pre-exposure prophylaxis (the use of antiretroviral medication to prevent HIV infection).

### The global challenge of STIs

The UK epidemiology of STIs is typical of developed countries and comparable to much of Europe. Although there is much regional variation, developing countries, particularly in the global south, experience much higher burdens of gonorrhoea, *Trichomonas* and syphilis.<sup>1</sup> In many parts of the world, including sub-Saharan Africa and China, syphilis is a major contributor to stillbirth, and congenital syphilis remains a frequent occurrence.

Patterns and determinants of HIV transmission vary substantially. Intravenous drug use is a major route of HIV acquisition in Eastern Europe, Russia, South America and South-East Asia. Female sex workers experience high rates of STI including HIV in most parts of the developing world, by contrast with developed world settings such as the UK, where rates of infection are often no higher than among members of the general population in the same age group

Although MSM populations worldwide are known to be vulnerable to STIs, the lack of surveillance systems because of

stigma and commonly criminalization of same-sex sexual activity can make it difficult to estimate the burden of STI and provide effective care and prevention services.

### Why does the burden of STIs vary so much, and what does this mean for control?

Respiratory infections such as influenza and the common cold can overwhelm populations quickly, because of their ease of transmission. Every day we have far more 'sneezing contacts' than sexual contacts, and without modern sanitation gastrointestinal infections have similar potential for spread. So why, then, do STIs not die out?

Many acute infections (e.g. measles, influenza) have brief periods of infectivity, often followed by life-long or at least prolonged immunity. By contrast, STIs typically evade the host immune response to achieve prolonged infectivity, enabling transmission to successive and/or overlapping sexual partners over surprisingly prolonged periods of time and often without symptoms.

As Table 3 shows, the duration of infectivity varies considerably even in settings where there is good access to treatment services. Where services are accessible and effective through providing curative antibiotics, or viral suppression, the duration of infectivity is shortened. This is particularly the case for the STIs, which commonly cause symptoms that trigger a clinic visit. What this means is that as services achieve a greater reach, an increasing proportion of STIs become concentrated in 'key populations' who have a high average number of partners.

### Partner notification and its importance in STI control

#### Partner notification – what is it?

The prolonged infectivity of STIs, together with their potential for reinfection as a result of immune system evasion, make partner notification a cornerstone of treatment and care of STIs. Partner notification is the process whereby the sex partner(s) of a patient diagnosed with an STI are informed that they have been exposed to an STI, and are offered testing and treatment. Partner notification aims to break chains of STI transmission, and also to prevent reinfection in the index patient. There is a high probability that the sexual partner of a diagnosed patient has the same

### Estimated periods of infectivity of some sexually transmitted pathogens

Disease	Pathogen	Estimated mean duration of infectivity (developed world setting with services) (years)
Gonorrhoea	<i>Neisseria gonorrhoeae</i>	0.15
Genital chlamydia	<i>Chlamydia trachomatis</i>	1.25
Syphilis	<i>Treponema pallidum</i>	0.25 <sup>b</sup>
HIV <sup>a</sup>	HIV	10

<sup>a</sup> Untreated, not on antiretroviral therapy.

<sup>b</sup> In the absence of treatment, infectious for up to 2 years.

**Table 3**

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