

# Epidemiology of sexually transmitted infections: UK

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## Abstract

The epidemiology of sexually transmitted infections (STIs) in the UK has shown remarkable changes during the 20th and 21st centuries. Diagnoses of syphilis and gonorrhoea peaked with the return of the armed forces after World War II, then again during the 1960s and 1970s in response to more relaxed attitudes to sexual behaviour. STI diagnoses fell sharply in the mid-1980s, coinciding with extensive media coverage of AIDS and associated national public health campaigns. However, this trend reversed in the mid-1990s, suggesting behavioural changes in response to the HIV/AIDS epidemic were not sustained. Better service access and testing coverage, and improved testing technology, have also led to increased rates of STI diagnosis in the last decade.

**Keywords** Chlamydia; epidemiology; genital herpes; genital warts; gonorrhoea; lymphogranuloma venereum; sexually transmitted infections; syphilis; trends; UK

High rates of sexually transmitted infections (STIs) in the UK continue to be a cause for concern. Almost half a million STIs are diagnosed in the UK each year and about a fifth of women and men report attending a sexual health clinic in the past five years. There is considerable inequality in the distribution of STIs across the population, with men who have sex with men, young people aged under 25 years, and some ethnic minorities being disproportionately affected. STI diagnoses have risen steadily over the last 10 years. Much of this is likely to be due to better detection of infections by improving testing coverage and the use of more sensitive diagnostic tests. However, unsafe sexual behaviour is also likely to be contributing to increased transmission, especially in men who have sex with men.

## Public health importance

STIs are a major public health concern. They place a significant burden on healthcare resources both directly, through individuals seeking treatment and care, and indirectly, resulting from management of the complications of untreated disease (including pelvic inflammatory disease, infertility, ectopic pregnancy and cervical cancer). Their distribution in the population is highly uneven, as they disproportionately affect men who have sex with men, young people aged under 25 years, and some

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ethnic minorities.<sup>1</sup> The epidemiology of STIs in the UK has shown remarkable changes over the 20th and early 21st centuries, reflecting changes in sexual behaviour, new diagnostic techniques, changes in sexual health service delivery and the implementation of control programmes, in a context of social, economic and demographic shifts within society.<sup>2,3</sup> This article will discuss the epidemiology of the major STIs (other than HIV) in the UK.

## Factors influencing STI epidemiology

The epidemiology of STIs is driven by sexual activity. However, patterns of maintenance and spread of STIs within populations differ for each type of STI, as they are influenced by multiple factors including individual susceptibility to infection, transmission probability, pathogenicity and infection duration. Some bacterial infections such as gonorrhoea have a high probability of transmission at each sex act but a low duration of infectiousness (particularly when symptomatic and treated), and can persist in population groups only with more dense sexual networks and high rates of partner change, or where there is particularly poor access to treatment.<sup>4</sup> At the other end of the spectrum, genital herpes simplex virus has a low probability of transmission at each sex act; however, because it is incurable and its infectiousness life-long, it can be maintained in populations with lower rates of partner change by multiple sex acts with the same partner.<sup>4</sup> Consequently, the epidemiology of STIs is diverse.

## Surveillance

Surveillance plays an important role in monitoring trends in diagnosis and infection rates, understanding the determinants of STI transmission and informing STI prevention and control efforts. Public Health England, Public Health Wales, Health Protection Scotland, the Information Services Division of NHS Scotland and the Public Health Agency in Northern Ireland all collect data on numbers of STI diagnoses and associated epidemiological information, using a variety of systems. Specific systems vary across the UK but use common approaches (see Box 1).

### Key sources of STI surveillance data

- Case-based reports from GUM and other sexual health clinics (national)
- Laboratory reports of STI diagnoses and tests (national)
- Enhanced infection-specific surveillance integrating clinical, behavioural and microbiological data (sentinel or national)
- STI diagnoses and prescribing patterns in general practice (sentinel or national)
- Specific or general population-based prevalence surveys (sentinel)

### Box 1

Genitourinary medicine (GUM) clinics, which are open access clinics that offer free, confidential sexual health services, currently provide the most comprehensive source of data on the epidemiology of STIs in the UK, through submission of

mandatory statistical returns or voluntary surveillance schemes.<sup>5</sup> Many STIs are diagnosed outside GUM clinics. Some information on these diagnoses is obtained from laboratory reports or from general practice or prescribing databases.<sup>5–7</sup> Systems for comprehensive collection of clinical STI surveillance data outside the GUM setting are currently in development or being implemented across the UK.

Routine surveillance data are often supplemented with more detailed information from infection-specific surveillance systems or from specific or general population-based prevalence surveys. Such systems often integrate clinical, behavioural and microbiological data to help gain more in-depth understanding of the behavioural drivers and context associated with sexual networks and STI epidemics.

### Historical data

Data on syphilis and gonorrhoea have been collected for more than 80 years. Diagnoses of syphilis and gonorrhoea in England, Scotland and Wales peaked in 1946, coinciding with the return of the armed forces after World War II (Figure 1). There was a sharp

decline immediately thereafter, associated with the introduction of penicillin and the return to social stability.

More relaxed attitudes to sexual behaviour during the 1960s and 1970s heralded a steady increase in diagnoses of STIs. Syphilis diagnoses in males increased, whereas the number of cases in females remained constant, suggesting that sex between men became the major route of acquisition of syphilis during this period.<sup>3</sup> However, diagnoses of gonorrhoea, genital herpes and genital warts increased in both males and females, indicating that these infections were more commonly acquired through heterosexual sex. For some of these STIs, the increases may reflect greater public awareness and/or improved diagnostic sensitivity, in addition to increased incidence of infection.

The emergence of HIV and AIDS in the early 1980s is now believed to have had a significant impact on the incidence of other acute STIs. Diagnoses of syphilis and gonorrhoea declined sharply in the early to mid-1980s, coinciding with extensive media coverage of AIDS, national public health campaigns, and associated adoption of safer sex practices.<sup>3</sup> Similarly, the number of diagnoses of genital herpes and genital warts, both of which had increased steadily since 1972, stabilized (and in the case of herpes, decreased briefly) during the mid-1980s. These changes are likely to be associated with general population-level behavioural modification in response to the HIV/AIDS epidemic.

### Recent trends

The decline in STI diagnoses that occurred in the mid-1980s was maintained until the early 1990s. Thereafter, there was a resurgence in diagnoses of many STIs, and the annual number of reported diagnoses increased considerably from 1995. These changes suggest that the behavioural modifications adopted in response to the HIV/AIDS epidemic were not sustained.

In the last decade reported rates of many STIs have continued to increase. Almost half a million STIs are now diagnosed in the UK each year and about a fifth of women and men report attending a sexual health clinic in the past five years.<sup>5,8</sup> Although much of this rise is associated with improved diagnosis, unsafe sexual behaviour is likely to be contributing in certain population groups.

**Genital chlamydial infection** is the most commonly diagnosed bacterial STI in the UK and is geographically widespread. Prevalence peaks in young adults. The prevalence of infection in those aged under 25 years ranges from between 2% and 3% in the general population<sup>8,9</sup> to between 9% and 10% in those attending healthcare settings for chlamydia screening.<sup>10,11</sup> Although a relatively common STI, the risk of infection is associated with multiple sexual partnerships and non-use of condoms.<sup>11</sup> Most infections are asymptomatic. Untreated infections can have serious health implications, including pelvic inflammatory disease (PID), infertility and ectopic pregnancy. A recent evidence appraisal suggested around 16% of untreated cases may lead to clinical PID, which is lower than reported in earlier studies.<sup>12</sup>

In England, the National Chlamydia Screening Programme (NCSP) was established with the aim of reducing the prevalence of asymptomatic, undiagnosed chlamydial infection and associated infection sequelae. Phased local implementation of the

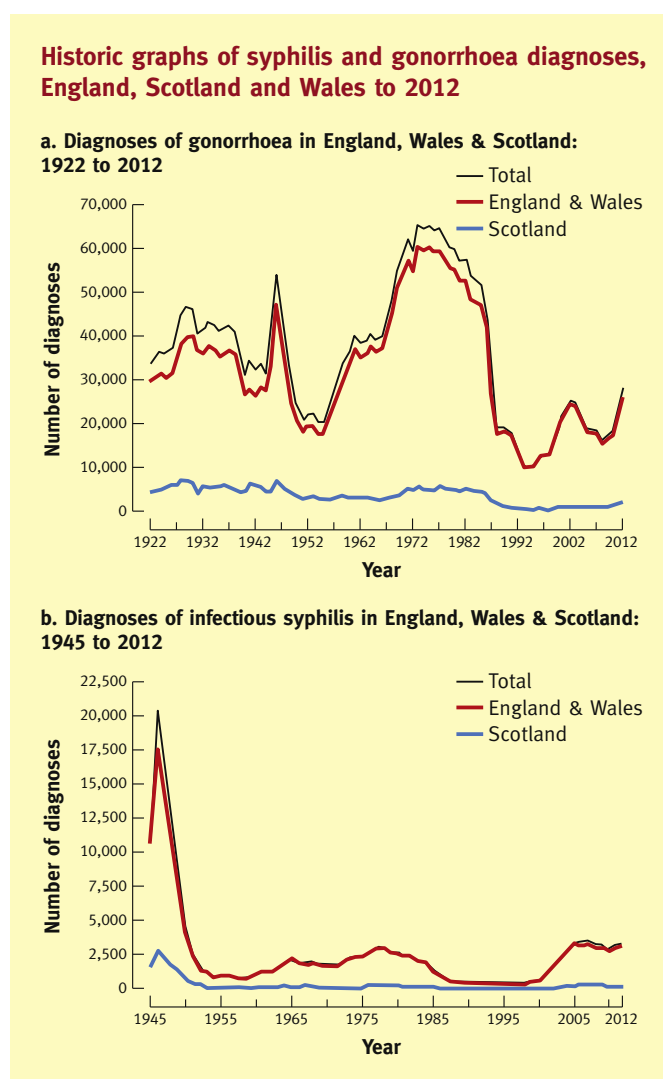


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