

CHAPTER 1

Sexually Transmitted Infections:
Why are they Important?

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OVERVIEW

- There are more than 30 different sexually transmissible bacteria, viruses and parasites
- A million people acquire HIV or another STI every day
- There are 33.4 million people with HIV worldwide, with 2.7 million new HIV infections and 2 million HIV-related deaths annually (1998 data)
- STIs (excluding HIV) are the second most common cause of healthy life lost in 15- to 44-year-old women
- STIs cost \$16 billion annually to the health care system
- Preventing a single HIV transmission would save £0.5–1 million in health benefits and costs

What are sexually transmitted infections?

Sexually transmitted infections (STIs) are infections that are spread primarily through person-to-person sexual contact. There are more than 30 different sexually transmissible bacteria, viruses, and parasites (Table 1.1). Several, in particular HIV and syphilis, can also be transmitted from mother to child during pregnancy and childbirth, and through blood products and tissue transfer.

In general, the viral STIs (including sexually transmitted HIV and hepatitis A, B, and C) are more prevalent, often causing lifelong infections, frequently asymptomatic in their early phases, and may result in serious long-term sequelae including chronic morbidity or even mortality. In contrast, the bacterial and protozoal STIs are generally curable, and often asymptomatic. The causative organisms may cause a spectrum of genitourinary symptoms, including urethral discharge, genital ulceration, and vaginal discharge with or without vulval irritation.

STIs are among the most commonly diagnosed infectious diseases in many parts of the world. More than a million people acquire HIV or another STI every day, and there are 450 million new cases of curable STIs occurring in adults each year. There is marked variation in the prevalence and incidence of infections throughout the world, and even within countries (Figure 1.1 and Table 1.2).

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Why are STIs important?

Being diagnosed with an STI can have a tremendous physical, emotional, and psychological toll on individuals. Symptoms are unpleasant and may cause considerable pain, and have systemic complications. HIV and hepatitis B and C may have an aggressive course leading to lifelong morbidity and death. Some human papillomavirus (HPV) types are a cause of cervical, penile, anal, and oropharyngeal cancer (Table 1.3). Chlamydia and gonorrhoea are both the most serious, and also most preventable, threats to women’s fertility worldwide. The World Bank estimated that STIs (excluding HIV) were the second most common cause of healthy life lost after maternal morbidity in 15- to 44-year-old women (Figure 1.2).

Effects on pregnancy, neonates, and children

STIs can lead to miscarriage, intrauterine growth retardation, and *in utero* death. They can also cause neonatal illness and death, and long-term sequelae. The consequences of congenital herpes and HIV are well recognised in developed nations. However, the magnitude of the congenital syphilis burden, globally, rivals that of HIV infection in neonates yet receives little attention. Congenital syphilis results in serious adverse outcomes in up to 80% of cases and is estimated to affect over 1 million pregnancies annually.

Effects on partners

STIs are also important to sexual partners, who may have asymptomatic infection. Partner notification is a key strategy for identifying and treating sexual partners for most STIs (see Chapter 2). The diagnosis of an acute STI may indicate that a partnership is non-monogamous, with negative impacts on relationships. For some couples who are discordant for infections such as HIV or herpes, there are long-term implications such as whether to have unprotected sex and psychological issues.

Stigma

The stigma and fear of STIs cannot be over-emphasised. There is significant psychological morbidity associated with being diagnosed with an STI which ranges from mild distress to severe anxiety and depression. Stigma can result in people living with HIV and other STIs being rejected, shunned, and discriminated against by partners,

Table 1.1 Main sexually transmitted pathogens and the diseases they cause.

Pathogen	Clinical manifestations and other associated diseases
Bacterial infections	
<i>Neisseria gonorrhoea</i>	GONORRHOEA <i>Men</i> : urethral discharge (urethritis), epididymitis, orchitis, infertility. <i>Women</i> : cervicitis, endometritis, salpingitis, pelvic inflammatory disease, infertility, preterm rupture of membranes, peri-hepatitis. <i>Both sexes</i> : proctitis, pharyngitis, disseminated gonococcal infection. <i>Neonates</i> : conjunctivitis, corneal scarring and blindness
<i>Chlamydia trachomatis</i>	CHLAMYDIAL INFECTION <i>Men</i> : urethral discharge (urethritis), epididymitis, orchitis, infertility. <i>Women</i> : cervicitis, endometritis, salpingitis, pelvic inflammatory disease, infertility, preterm rupture of membranes, peri-hepatitis; commonly asymptomatic. <i>Both sexes</i> : proctitis, pharyngitis, Reiter’s syndrome. <i>Neonates</i> : conjunctivitis, pneumonia
<i>Chlamydia trachomatis</i> (strains L1–L3)	LYMPHOGRANULOMA VENEREUM <i>Both sexes</i> : ulcer, inguinal swelling (bubo), proctitis
<i>Treponema pallidum</i>	SYPHILIS <i>Both sexes</i> : primary ulcer (chancre) with local adenopathy, skin rashes, condylomata lata; bone, cardiovascular, and neurological damage. <i>Women</i> : pregnancy wastage (abortion, stillbirth), premature delivery. <i>Neonates</i> : stillbirth, congenital syphilis
<i>Haemophilus ducreyi</i>	CHANCROID <i>Both sexes</i> : painful genital ulcers; may be accompanied by bubo
<i>Klebsiella (Calymmatobacterium) granulomatis</i>	GRANULOMA INGUINALE (DONOVANOSIS) <i>Both sexes</i> : nodular swellings and ulcerative lesions of the inguinal and anogenital areas
<i>Mycoplasma genitalium</i>	<i>Men</i> : urethral discharge (nongonococcal urethritis). <i>Women</i> : bacterial vaginosis, probably pelvic inflammatory disease
<i>Ureaplasma urealyticum</i>	<i>Men</i> : urethral discharge (nongonococcal urethritis). <i>Women</i> : bacterial vaginosis, probably pelvic inflammatory disease
Viral infections	
Human immunodeficiency virus	ACQUIRED IMMUNODEFICIENCY SYNDROME (AIDS) <i>Both sexes</i> : HIV-related disease, AIDS
Herpes simplex virus type 2 Herpes simplex virus type 1 (less commonly)	GENITAL HERPES <i>Both sexes</i> : anogenital vesicular lesions and ulcerations. <i>Neonates</i> : neonatal herpes (often fatal)
Human papillomavirus	GENITAL WARTS <i>Men</i> : penile and anal warts; carcinoma of the penis. <i>Women</i> : vulval, anal and cervical warts, cervical carcinoma, vulval carcinoma, anal carcinoma. <i>Neonates</i> : laryngeal papilloma
Hepatitis B virus	VIRAL HEPATITIS <i>Both sexes</i> : acute hepatitis, liver cirrhosis, liver cancer
Cytomegalovirus	CYTOMEGALOVIRUS INFECTION <i>Both sexes</i> : subclinical or nonspecific fever, diffuse lymph node swelling, liver disease, etc.
Molluscum contagiosum virus	MOLLUSCUM CONTAGIOSUM <i>Both sexes</i> : genital or generalized umbilicated, firm skin nodules
Kaposi’s sarcoma associated herpes virus (human herpes virus type 8)	KAPOSI’S SARCOMA <i>Both sexes</i> : aggressive type of cancer in immunosuppressed persons
Protozoal infections	
<i>Trichomonas vaginalis</i>	TRICHOMONIASIS <i>Men</i> : urethral discharge (nongonococcal urethritis); often asymptomatic. <i>Women</i> : vaginosis with profuse, frothy vaginal discharge; preterm birth, low birth weight babies. <i>Neonates</i> : low birth weight
Fungal infections	
<i>Candida albicans</i>	CANDIDIASIS <i>Men</i> : superficial infection of the glans penis. <i>Women</i> : vulvo-vaginitis with thick curd-like vaginal discharge, vulval itching or burning
Parasitic infections	
<i>Phthirus pubis</i>	PUBIC LICE INFESTATION
<i>Sarcoptes scabiei</i>	SCABIES

Source: World Health Organization, 2007.

family, and community, and being victims of physical violence. Stigma not only makes it more difficult for people trying to come to terms with and manage their illness, but it also interferes with attempts to fight the disease more generally. On a national level, stigma can deter governments from taking fast, effective action against STI epidemics.

Economic burden

STIs can have significant economic impacts on the individual and community. Even where treatment for STIs is free or low cost,

individuals may pay for care in the private sector, or access traditional healers, because of stigma. Additionally, there are opportunity costs incurred through missing work, travelling to the clinic, or purchasing treatment and returning for follow-up.

The global economic impact of STIs is staggering. However, treatment costs for STIs vary tremendously between countries and are influenced a range of factors. Reproductive ill-health (death and disability related to pregnancy, childbirth, STIs, HIV, and reproductive cancers) is thought to account for 5–15% of global disease burden. In developing countries they account for 17%

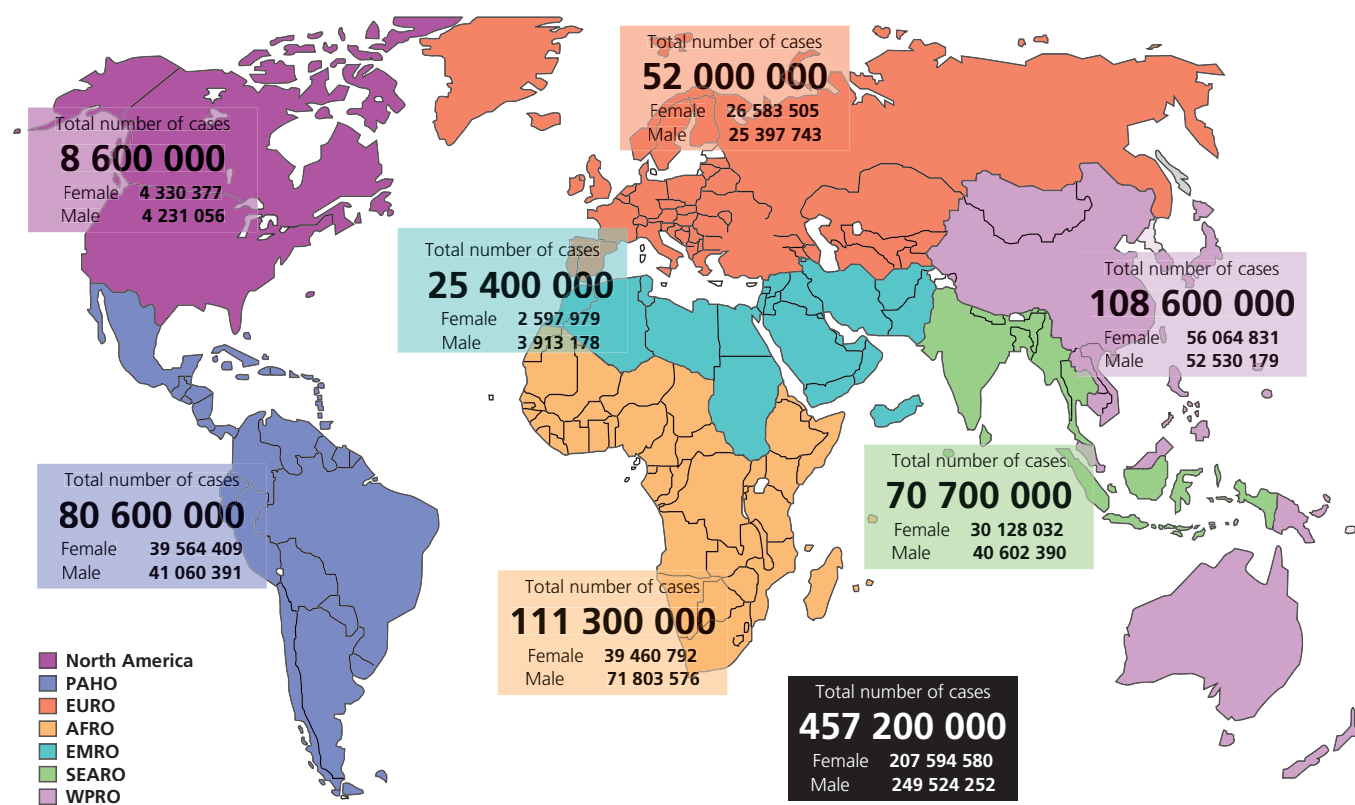


Figure 1.1 Global incidence of selected STIs, 2005. Source: World Health Organization, 2009.

of economic losses caused by ill-health and rank among the top 10 reasons for health care visits. In the United States, STIs cost \$16 billion annually to the health care system (Tables 1.4 and 1.5). Care for the complications of STIs accounts for a large proportion of tertiary health care in terms of screening and treatment of cervical cancer, management of liver disease, investigation of infertility, care for perinatal morbidity, childhood blindness, and chronic pelvic pain. Preventing a single HIV transmission would save £0.5–1 million in health benefits and costs.

The economic impact in resource poor settings is even greater where the majority of curable STIs and HIV occur, particularly South and South-East Asia and sub-Saharan Africa (Box 1.1). Delays in the diagnosis and treatment increase complications and mortality with a substantial economic impact. In countries with high HIV prevalence, morbidity and mortality from HIV has led to important changes in average household composition and population structure.

Table 1.2 Estimated prevalence and annual incidence of curable STI by region.

Region	Adult population (millions)	Infected adults (millions)	Infected adults per 1000 population	New infections in 1999 (millions)
North America	156	3	19	14
Western Europe	203	4	20	17
North Africa & Middle East	165	3.5	21	10
Eastern Europe & Central Europe	205	6	29	22
Sub-Saharan Africa	269	32	119	69
South & Southeast Asia	955	48	50	151
East Asia & Pacific	815	6	7	18
Australia & New Zealand	11	0.3	27	1
Latin America & Caribbean	260	18.5	71	38
Total	3040	116.5	–	340

Source: World Health Organization, 2001.

Box 1.1 Factors influencing costs and cost effectiveness of STI treatment and care

- Health system characteristics, service delivery by public or private sector
- Economies of scale, economies of scope
- Prevalence and incidence, epidemic phase
- Transmission efficiency
- Population composition and concentration
- Resource combinations and input prices
- Incentives to providers for high quality and quantity of service delivery
- Willingness to pay for treatment as a function of price, income, and distance
- Stigmatization
- Disutility of condom use

Source: adapted from Bertozzi & Opuni (2008).

Table 1.3 Major sequelae of STIs.

	Women	Men	Infants
Cancers	Cervical cancer	Penile cancer	
	Vulval cancer	Anal cancer	
	Vaginal cancer	Liver cancer	
	Anal cancer	T cell leukaemia	
	Liver cancer	Kaposi’s sarcoma	
	T cell leukaemia		
	Kaposi’s sarcoma		
Reproductive health problems	Pelvic inflammatory disease	Epididymitis	
	Infertility	Prostatitis	
	Ectopic pregnancy	Infertility	
	Spontaneous abortion		
Pregnancy related problems	Preterm delivery		Stillbirth
	Premature rupture of membranes		Low birth weight
	Puerperal sepsis		Pneumonia
	Postpartum infection		Neonatal sepsis
			Acute hepatitis
Neurological problems	Neurosyphilis	Neurosyphilis	Cytomegalovirus
			Herpes simplex virus
			Syphilis associated neurological problems
Other common health consequences	Chronic liver disease	Chronic liver disease	Chronic liver disease
	Cirrhosis	Cirrhosis	Cirrhosis

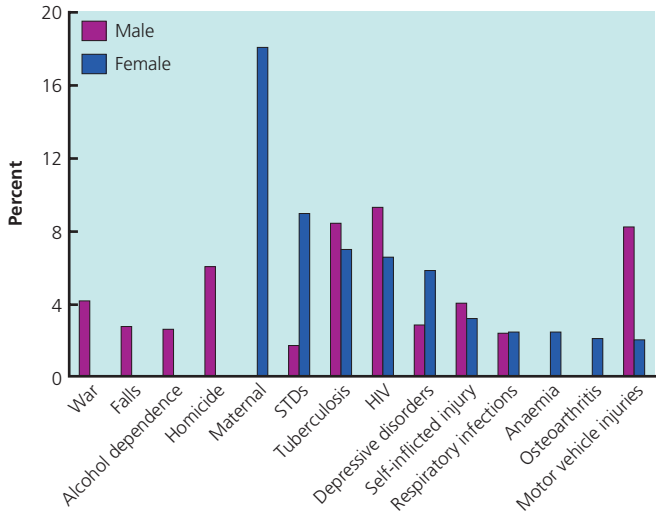


Figure 1.2 Top 10 causes of healthy life lost in young adults aged 15–44 years.

Table 1.4 Average (standard deviation) of estimated cost per unit output, by disease or syndrome and by type of output, 2001 US\$.

Disease or syndrome	Treatment	Cure	Total
Syphilis	36.04 (5.91)	Not applicable	36.04 (5.91)
Urethral discharge	14.29 (20.68)	89.07 (0)	29.25 (37.94)
Genital ulcer	23.16 (21.73)	100.6 (83.74)	48.97 (59.56)
Venereal disease	25.47 (18.56)	82.65 (111.55)	31.83 (37.12)
Pelvic inflammatory disease	7.12 (3.09)	Not applicable	7.12 (3.09)
Vaginal discharge	48.23 (0)	102.92 (89.63)	81.04 (70.1)
Total	24.05 (19.04)	96.1 (73.44)	39.49 (47.23)

Source: Aral et al. (2005).

Table 1.5 Estimated annual burden and cost of STI in the United States.

STI	Estimated annual cases	Estimated annual direct cost (millions) US dollars
Chlamydia	2.8 million	\$624
Gonorrhoea	718,000	\$173
Syphilis	70,000	\$22
Hepatitis B	82,000	\$42
Genital herpes	1.6 million	\$985
Trichomoniasis	7.4 million	\$179
HPV	6.2 million	\$5,200
HIV	56,300	\$81,000
Total	18.9 million	\$15.3 billion

Source: Centers for Disease Control and Prevention.

Size of the problem

In 2008 there were an estimated 33.4 million people living with HIV worldwide, 2.7 million new HIV infections, and 2 million HIV-related deaths (Figures 1.3 and 1.4; Table 1.6). Sub-Saharan Africa remains the region most heavily affected by HIV, accounting for 67% of all people living with HIV and for 70% of AIDS deaths in 2008. However, some of the most worrying increases in new infections are now occurring in populous countries in other regions, such as Indonesia, the Russian Federation, and various high-income countries. The rate of new HIV infections has fallen in several countries, including 14 of 17 African countries, where the percentage of young pregnant women (15–24 years) living with HIV has declined since 2000. As treatment access has increased over the last 10 years, the annual number of AIDS deaths has fallen. Globally, the percentage of women among people living with HIV has remained stable (at 50%) for several years, although women’s share of infections is increasing in several countries.

Table 1.6 Prevalence of STIs among 14- to 19-year-old US females, NHANES, 2003–2004.

	All		Sexually experienced	
	Number	Prevalence (%)	Number	Prevalence (%)
HPV (HR6,11)	652	18.3	357	29.5
Chlamydia	793	3.9	396	7.1
Trichomonas	695	2.5	371	3.6
HSV-2	729	1.9	370	3.4
‘Any STI’	612	25.7	347	39.5

Source: adapted from Forhan SE, Gottlieb SL, Sternberg MR, Xu F, Datta SD, McQuillan GM, et al. Prevalence of sexually transmitted infections among female adolescents aged 14 to 19 in the United States. *Pediatrics* 2009;**124**(6):1505–12.

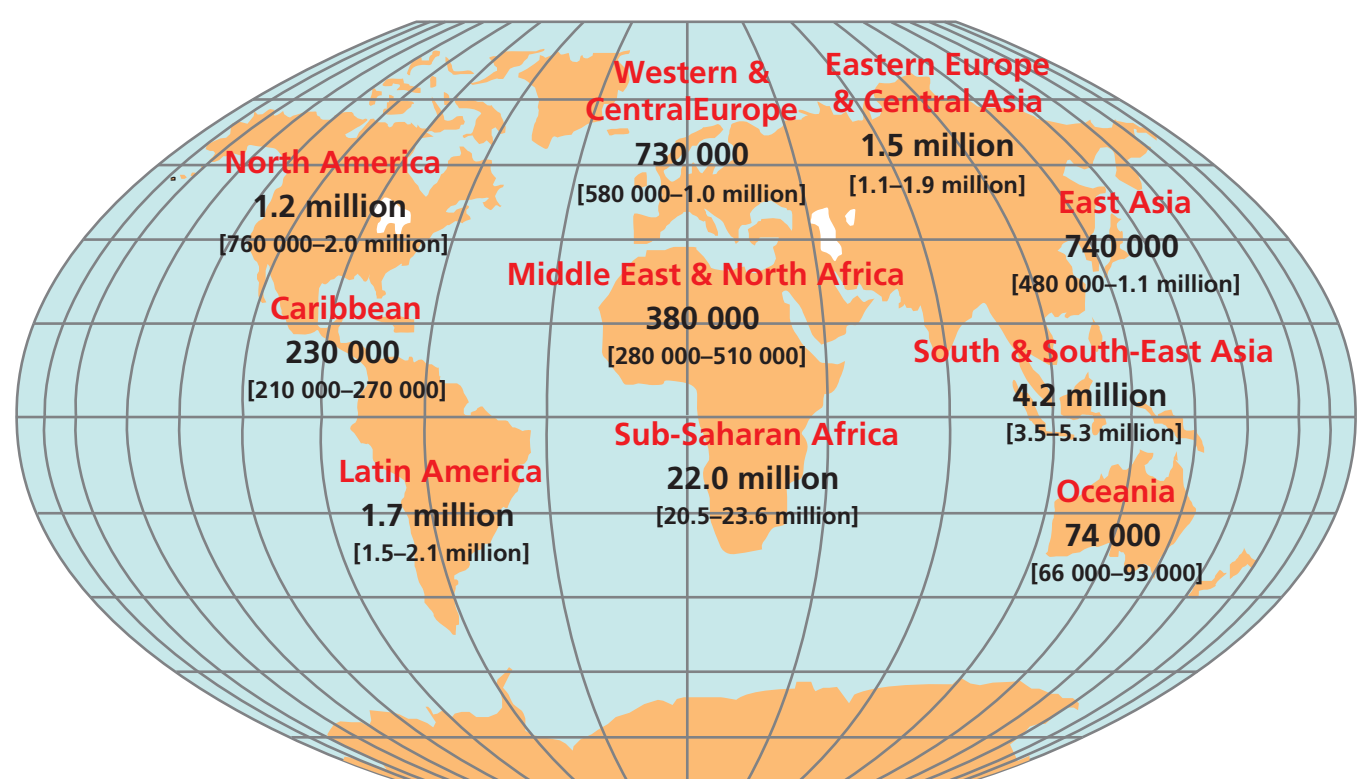


Figure 1.3 Adults and children estimated to be living with HIV, 2008. Source: UNAIDS, 2009.

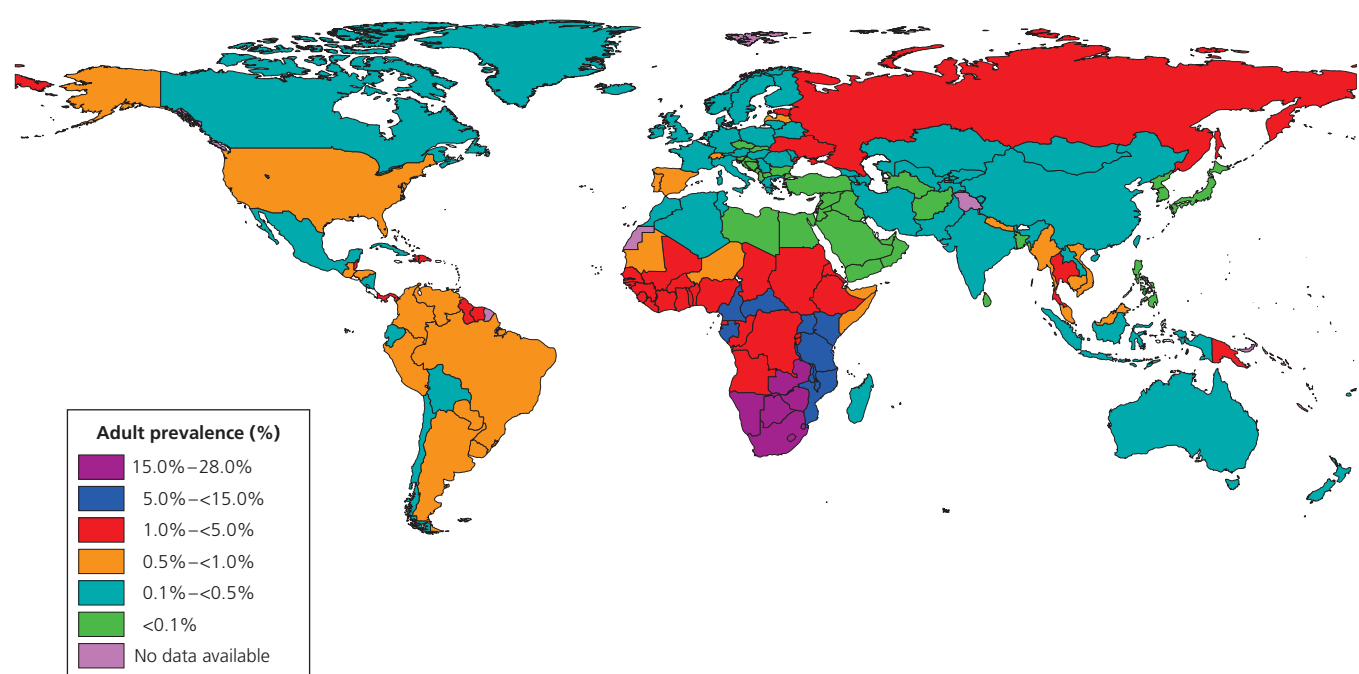


Figure 1.4 Global prevalence of Adult HIV prevalence, 2008. Source: UNAIDS, 2009.

Table 1.7 Number of new infections in 2005 (millions) in adult males and females between the ages of 15 and 49 (see also Figure 1.1).

WHO Region	Chlamydia	Gonorrhoea	Syphilis	Trichomoniasis	Total
AFRO	10.0	17.5	3.4	78.8	109.7
AMRO	22.4	9.5	2.4	54.9	89.2
EMRO	5.7	6.5	0.6	12.6	25.4
EURO	15.2	4.6	0.3	24.5	44.6
SEARO	6.6	22.7	2.9	38.6	70.8
WPRO	41.6	26.9	1.1	39.1	108.7
Total	101.5	87.7	10.6	248.5	448.3

Gonorrhoea and Chlamydia

There is tremendous global geographic variation in the rates of the more common bacterial STI (Table 1.7). Gonorrhoea rates fell in westernised counties in the 1980s as a result of the AIDS epidemic leading to safer sexual practices (Figures 1.5 and 1.6). There was a subsequent increase in recent years in many European countries, but in the United Kingdom this has now stabilised and is starting to fall (Figures 1.7 and 1.8). Chlamydia rates have increased steadily in Europe and North America since 1996, with prevalence rates of 10% in young people. Because of the development of more sensitive tests, and screening programmes, it is not possible to determine whether this is a true increase in number of cases or not.

Genital herpes and genital warts

The total number of people aged 15–49 years who were living with herpes simplex virus 2 (HSV-2) infection worldwide in 2003 was

Table 1.8 Regional estimates of the prevalence of the herpes simplex virus type 2 infection among females, in 2003.

Region	Regional prevalence in millions, by age							Total
	15–19 years	20–24 years	25–29 years	30–34 years	35–39 years	40–44 years	45–49 years	
North America	0.9	1.5	2.0	2.6	3.2	3.8	3.9	17.9
Latin America and the Caribbean	2.6	4.5	5.8	6.4	6.7	6.6	6.0	38.6
North Africa and the Middle East	1.0	1.5	1.6	1.5	1.4	1.3	1.1	9.6
Sub-Saharan Africa	9.0	13.1	13.6	12.5	11.2	10.0	8.8	78.2
Western Europe	0.7	1.3	1.8	2.2	2.6	2.6	2.5	13.7
Eastern Europe and Central Asia	2.7	3.9	4.3	4.3	4.3	4.7	4.7	28.9
Eastern Asia	2.6	4.4	7.1	11.1	12.8	11.9	12.0	61.8
Japan	0.4	0.6	0.7	0.7	0.6	0.6	0.6	4.1
Pacific	0.03	0.04	0.05	0.06	0.06	0.06	0.05	0.3
South Asia	4.1	5.4	5.5	5.4	4.9	4.3	3.7	33.2
South-East Asia	1.7	3.1	4.0	4.6	4.9	4.8	4.4	27.6
Australia and New Zealand	0.03	0.06	0.09	0.1	0.2	0.2	0.2	0.9
Total	25.8	39.4	46.5	51.5	52.9	50.8	47.9	314.8

Source: Looker KJ, Garnett GP, Schmid GP. An estimate of the global prevalence and incidence of herpes simplex virus type 2 infection. Bull World Health Organ. 2008;**86**(10):805–12, A.

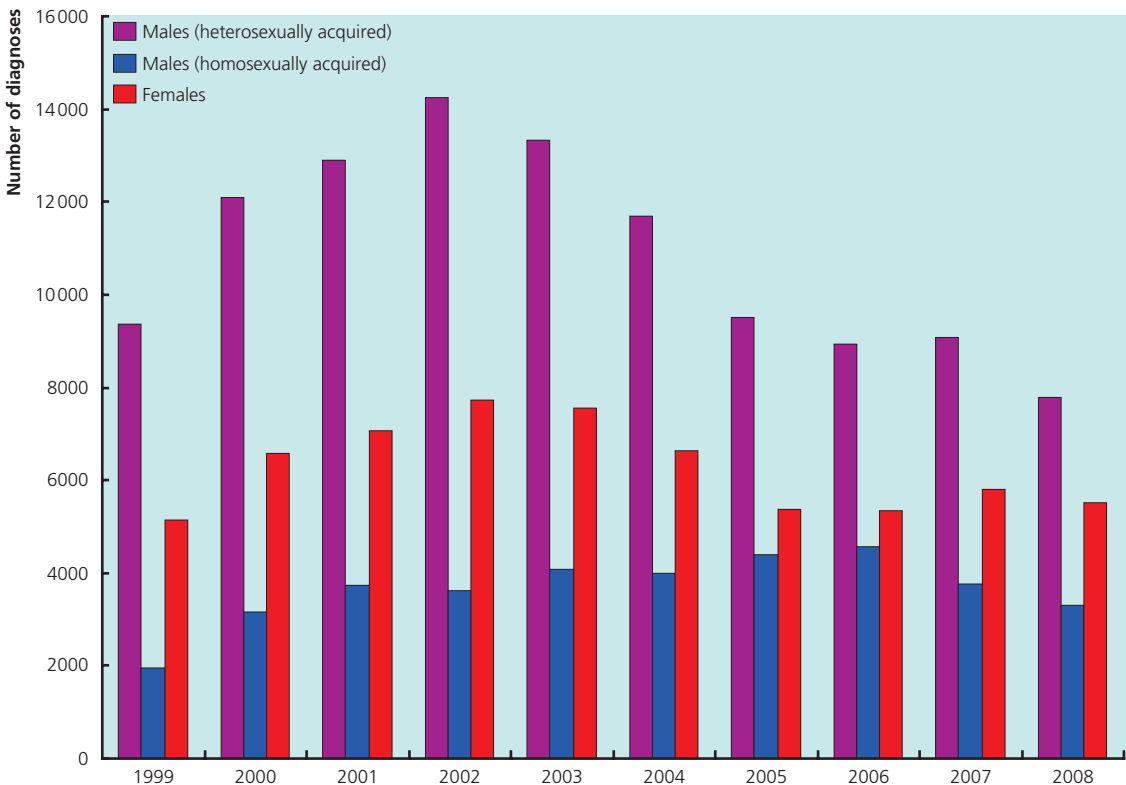


Figure 1.5 Cases of uncomplicated gonorrhoea seen in genitourinary medicine clinics by sex and male sexual orientation in England, Wales, and Northern Ireland, 1998–2008. Source: adapted from Health Protection Agency (www.hpa.org.uk), Communicable Disease Surveillance Centre. Data from KC60 statutory returns.

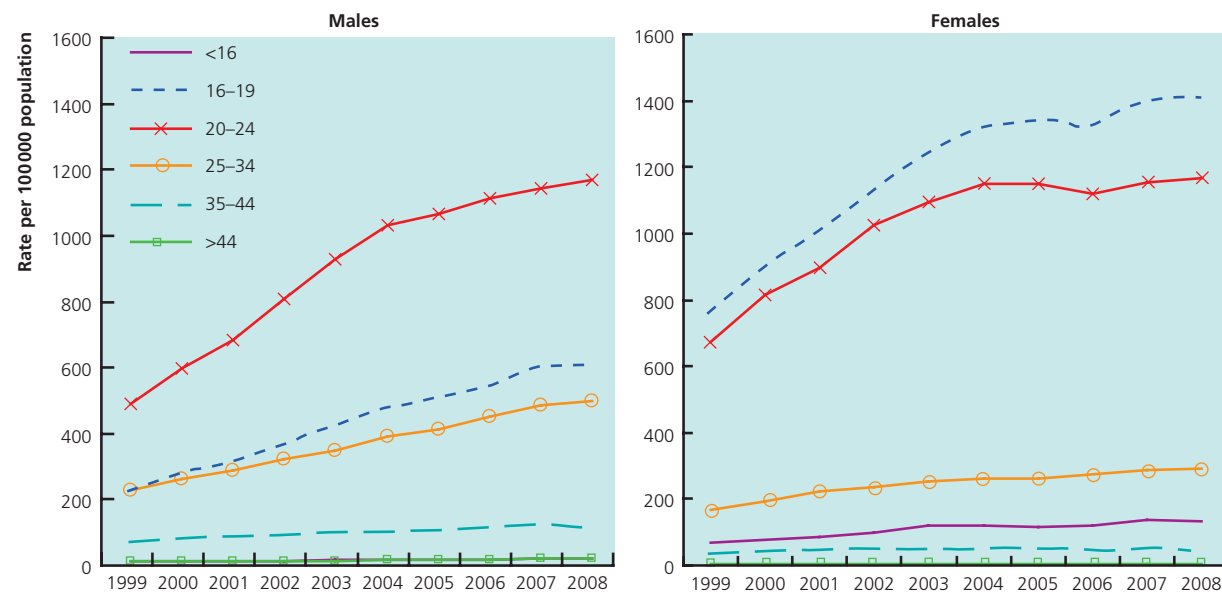


Figure 1.6 Diagnoses of uncomplicated genital chlamydial infection in genitourinary medicine clinics by sex and age group in the United Kingdom, 1999–2008. Source: adapted from Health Protection Agency (www.hpa.org.uk), Communicable Disease Surveillance Centre. Data from KC60 statutory returns and ISD(D)5 data.

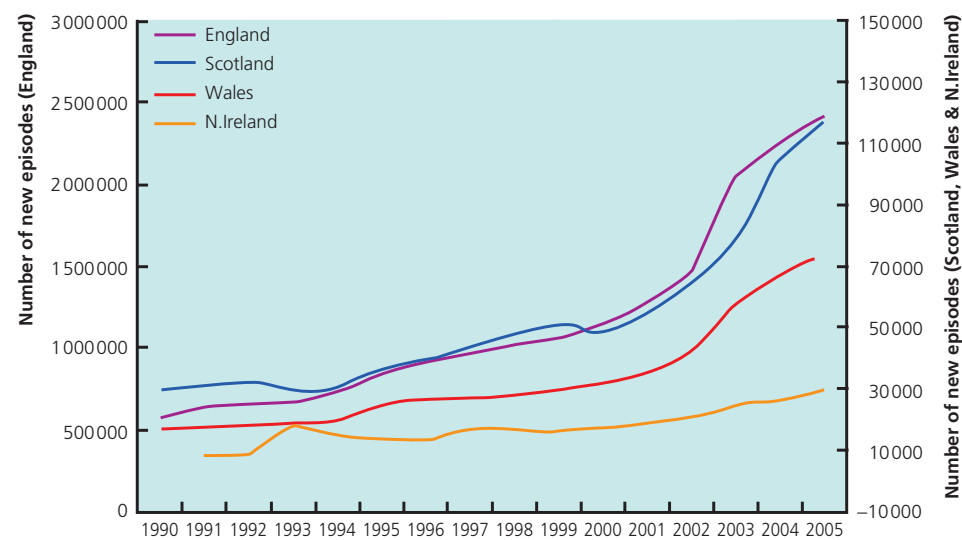


Figure 1.7 All diagnoses and workload at genitourinary medicine clinics by country, 1990–2005. Source: adapted from Health Protection Agency (www.hpa.org.uk), Communicable Disease Surveillance Centre. Data from KC60 statutory returns and ISD(D)5 data (http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947357259).

estimated to be 536 million, with the total number of people who were newly infected with HSV-2 in 2003 estimated to be 23.6 million. HSV-2 prevalence is highest in Africa and the Americas, and lowest in Asia. HSV-2 and -1 prevalence, overall and by age, varies markedly by country, regions within countries, and population subgroup (Table 1.8). Age-specific HSV-2 prevalence is usually higher in women than men and in populations with higher risk sexual behaviour. The number infected increases with age. Genital warts remain a major problem, but dramatic declines have been shown in parts of Australia following the introduction of the quadrivalent HPV vaccine in that country.

Syphilis and lymphogranuloma venereum

Despite the existence of simple tests, effective prevention measures, and cheap treatment options, syphilis remains a major global problem, with an estimated 10.6 million people becoming infected every year (Figure 1.9). Although syphilis remains relatively rare in developed countries, there has been a recent resurgence in rates of disease, particularly among men who have sex with men (MSM), and more recently among heterosexuals. Lymphogranuloma venereum (LGV), until recently considered a tropical STI, is now a significant problem in MSM in the United Kingdom and other westernised countries, and has a strong association with HIV.

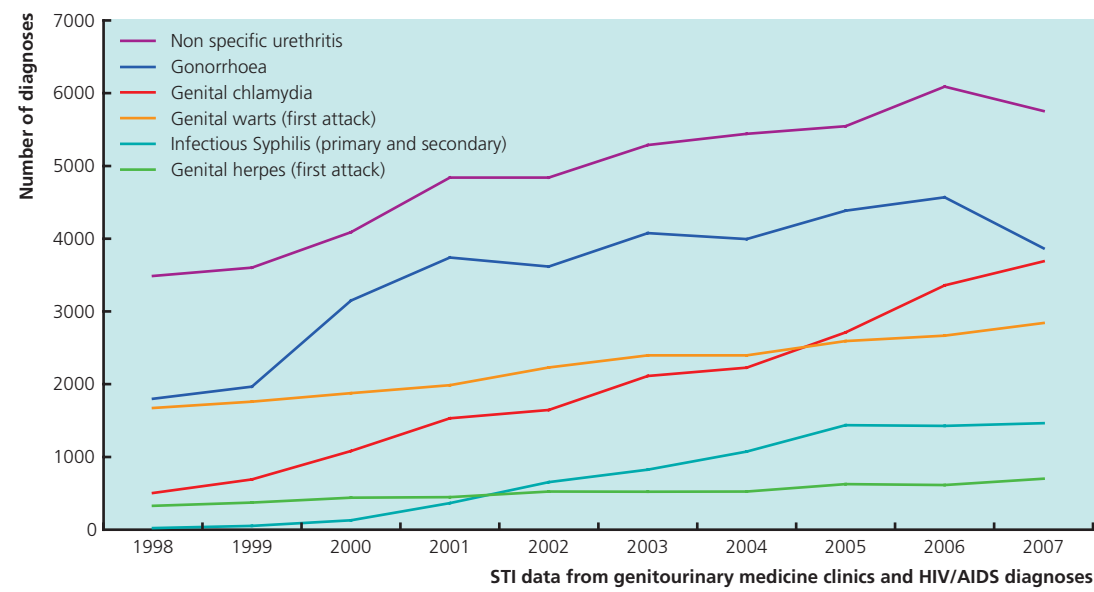


Figure 1.8 New diagnoses of selected STIs in men who have sex with men, England and Wales, 1998–2007. *Source:* adapted from Health Protection Agency (www.hpa.org.uk), Communicable Disease Surveillance Centre (http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947357259).

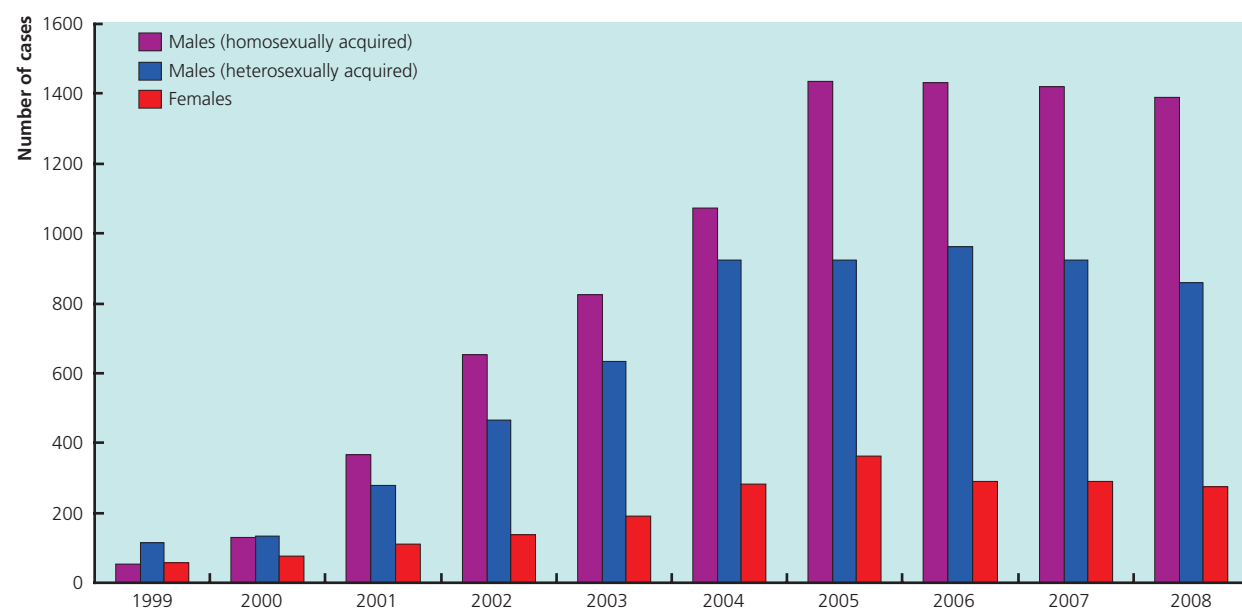


Figure 1.9 Cases of infectious syphilis (primary and secondary) seen in genitourinary medicine clinics by sex and male sexual orientation in England, Wales, and Northern Ireland, 1999–2008. *Source:* adapted from Health Protection Agency (www.hpa.org.uk), Communicable Disease Surveillance Centre.

Who gets STIs and why?

Globally, the highest rates of STIs occur among 20- to 24-year-olds, followed by 15- to 19-year-olds (Figure 1.10). One in 20 young people is believed to contract a bacterial STI in any given year. In the United States, up to 1 in 4 adolescent females have an STI. In the United Kingdom, 16- to 24-year-olds are the age group most at risk of being diagnosed with an STI, accounting for 65% of all chlamydial infections, 55% of genital warts, and 52% of gonorrhoea. MSM represent the majority of primary and secondary syphilis cases and racial and ethnic minorities bear a

disproportionate burden of bacterial STIs including chlamydia and gonorrhoea.

At the individual level, biological and behavioural factors influence the risk of acquiring or transmitting an STI, including age, presence of other STIs, circumcision status, engaging in unprotected sex, riskier sex practices, and number of partners (Figure 1.11). Synergy between STIs and HIV affect risk. STIs are associated with increased risk of HIV transmission, at a population and individual level, and STIs increase the risk of both acquiring and transmitting HIV (Box 1.2). The British National Survey of Sexual Attitudes and Lifestyles shows an increase in many risk factors including number

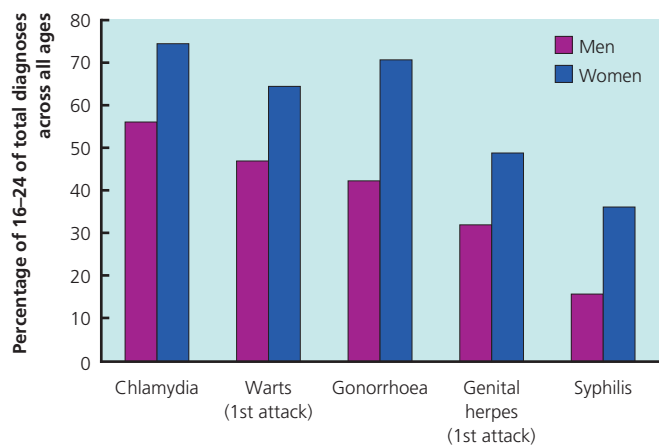


Figure 1.10 Percentage of STIs diagnosed among young people (16–24 years), United Kingdom, 2008.

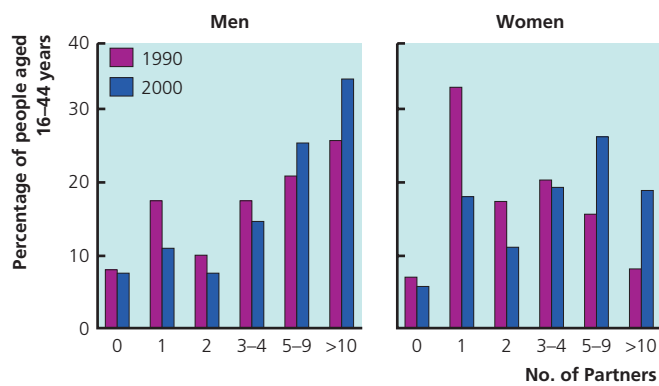


Figure 1.11 Percentage distribution of heterosexual partners in lifetime by sex, 1990 and 2000. Source: adapted from National Survey of Sexual Attitudes and Lifestyles, 2000.

of partners, concurrency rates, same sex partnerships, and anal sex (Figures 1.12 and 1.13). Additionally, the age of first sex has decreased in the UK, with 25% of teenagers sexually active by their sixteenth birthday. These behavioral changes may explain some of the increasing STIs seen in the UK over the past two decades.

Box 1.2 Role of STIs in the acquisition of HIV

- HIV acquisition increases by two- to fivefold in the presence of other STIs
- Ulcers disrupt mucosal integrity and increase the presence or activation, or both, of HIV susceptible cells (e.g. CD4 lymphocytes)
- Non-ulcerative STIs (such as gonorrhoea, chlamydia, *Trichomonas vaginalis*, and bacterial vaginosis) increase the presence or activation, or both, of HIV-susceptible cells

There is a strong association with number of lifetime and recent sexual partners, the rate of new sex partner acquisition, and partner concurrency (having overlapping sexual partnerships). Other factors include the type of partnership, the gender power dynamics within it, intimate partner violence, and cultural pressures.

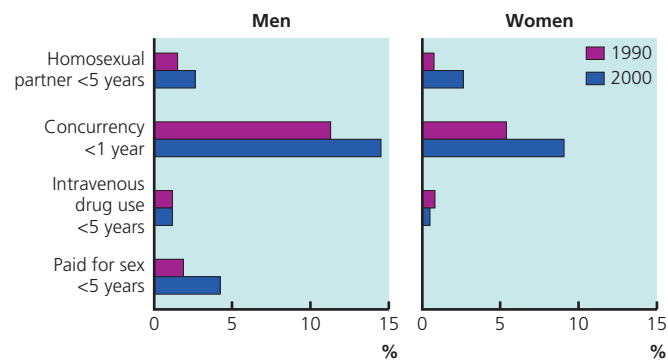
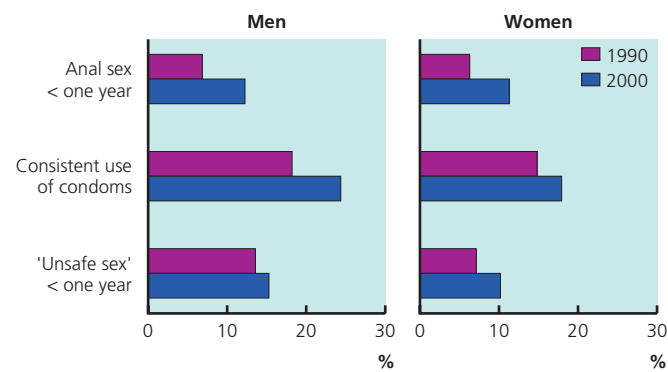


Figure 1.12 Changes in behaviour over time. Source: adapted from National Survey of Sexual Attitudes and Lifestyles, 2000.



'Unsafe sex' means ≥ 2 partners last year and inconsistent use of condoms in last 4 weeks

Figure 1.13 Changes in behaviour over time. Source: adapted from National Survey of Sexual Attitudes and Lifestyles, 2000.

Sexual networks

Sexual networks are groups of individuals who are directly or indirectly sexually connected to each other. The patterns of linkages between individuals in the network influence the paths through which STIs may be transmitted. Sexual networks can be affected by community norms about sexual behaviour, social upheaval, travel, and migratory patterns. The location of individuals within a network can be more important than their personal sexual behaviour, because it can increase the prevalence of infection in those to whom they are directly sexually connected. The existence of sexual bridges also influences the distribution of STIs in a population. The importance of networks is shown with the rapid spread of HIV in the early 1980s, outbreaks of LGV and syphilis among HIV-positive MSM in many western European countries, and the hyperendemic levels of bacterial STIs within racial and ethnic groups in developed country settings. In the latter, assortative sexual mixing by race/ethnicity combined with failure to break transmission chains within networks are key drivers for the persistent racial/ethnic health disparities in the United States and United Kingdom.

Societal burden and impact

Political conflict, economic and social disruption, and migration lead to the breakdown of existing social structures and the formation

of new ones. In fast-growing cities, factors including high incarceration rates, the higher numbers of men than women, the lack of employment for women, and the social disruption resulting from large streams of migration are associated with increases in sex work.

Other population-level factors relevant to STI transmission include the availability and cost of prevention services (e.g. sex education, condoms, or treatment clinics), legislation regarding commercial sex workers, and educational and occupational opportunities for women. National HIV/STI prevention policies driven by religious or conservative social mores, can negatively impact on prevention programmes such as provision of free condoms.

Prevention

There are many actions individuals can take to protect themselves from STIs and their consequences: abstain from sex; be in a long-term, mutually monogamous relationship with an uninfected partner; consistent and correct use of the male condom; getting tested and treated for STIs; and receiving hepatitis B and HPV immunizations. For individuals with chronic viral conditions such as HIV, HSV, or hepatitis B and C, early diagnosis, counselling, and referral for treatment can reduce the risk of onward transmission to sexual partners.

Conclusions

Sexually transmitted infections are a major individual, societal, and public health concern. Their social, health, and economic costs are substantial and affect the lives and well-being of individuals,

relationships, communities, and societies with disproportionate impacts among the young, socioeconomically deprived, or those with high levels of risk behaviours and their partners. Understanding the nature and determinants of this burden are the first steps in articulating their importance to the public and policy makers, and justifying scarce health resources for their management.

Further reading

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