

SYPHILIS AND GONORRHOEA IN MEN WHO HAVE SEX WITH MEN: A EUROPEAN OVERVIEW

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This paper describes recent trends in the epidemiology of syphilis and gonorrhoea infections in Europe among men who have sex with men (MSM). Routine surveillance data submitted to the European Surveillance of Sexually Transmitted Infections (ESSTI) network from 24 European countries for the period 1998-2007 were analysed. Data on whether syphilis and gonorrhoea infections were in MSM were available for 12 and 10 countries respectively. The number of syphilis cases reported to be MSM increased considerably in all Western European countries. While in some Central and Eastern European countries the male to female ratio remained relatively stable at around 1:1, in Slovenia and the Czech Republic the proportion of male cases increased and so did the percentage of cases reported to be MSM. More cases of gonorrhoea were seen in men than women, but the percentage of male cases reported to be MSM was lower than for syphilis. The findings suggest MSM are at high risk of STI in Western Europe and appear to be an increasingly important risk group in Central Europe. Despite this, data on infections among MSM are not collected routinely in many countries. The introduction of standardised data collection including data on diagnoses in MSM should be prioritised for monitoring STI in this population.

Introduction

Sexually transmitted infections (STI) are a major public health problem in Europe. During the 1980s a reduction in the incidence of STI was seen in many countries likely due to behavioural change occurring in response to the emergence of HIV/AIDS [1]. In recent years an increase in the number of STI in men who have sex with men (MSM) has been reported in a number of industrialised countries [2,3] and has coincided with several reported outbreaks of syphilis and lymphogranuloma venererum (LGV) infection among the MSM population [4-10].

The collection of European surveillance data on HIV and AIDS through EuroHIV has been in place since 1984 with standardised definitions for "route of transmission" data including whether the infection was acquired through homosexual or heterosexual sex. The European Surveillance of Sexually Transmitted Infections (ESSTI) network was first established in 2001 and is a collaboration of STI epidemiologists and microbiologists from 24 European countries (<http://www.essti.org/>). One of the key objectives of ESSTI is to collate and analyse surveillance data on acute STI in order to inform public health policy and control of STI. While surveillance data on STI had been collected at the European level for some time

by both the World Health Organization (WHO) and, more recently, the European Centre for Disease Prevention and Control (ECDC), until recently data on diagnoses in MSM had not been routinely collected. ESSTI has prioritised the development of minimum standards for collecting and disseminating STI surveillance data [11]. New and historic data on diagnoses in MSM have been collected by the network since 2006.

In this paper we analysed ESSTI data to provide an insight into the recent epidemiology of syphilis and gonorrhoea among MSM across Europe and to discuss its public health implications. We also reviewed the potential difficulties of collecting this kind of information at the European level.

Methods

Twenty-three ESSTI participating countries and the Czech Republic were asked to provide, where possible, aggregated data on syphilis and gonorrhoea diagnoses by gender between 1998 and 2007. Data on sexual orientation, whether the infection was homosexually acquired, gender of partner, and probable route of transmission were used to determine infections in MSM, according to the reporting system of each country (Table 1). As some countries either could not provide data specifically for MSM or had only recently started collecting this information, trends in gender ratios were also investigated as a proxy marker for changes in the epidemiology in MSM. Male to female ratios were calculated for all countries that provided gender data.

Data were collected on the stage of syphilis infection and, wherever possible, the analyses presented here used diagnoses of infectious syphilis (definitions in footnote of Table 2). Data on site of infection and diagnostic methods used were not routinely available from all countries and were not collected although the majority of countries in the ESSTI network are known to carry out culture for gonorrhoea [12].

Countries reported data on diagnoses collected through 'universal' or 'sentinel' surveillance systems. Universal systems collect data from all laboratories or the relevant clinical services whereas sentinel systems collect data from only a sample of these (although often with more detailed risk factor information). Countries which had more than one surveillance system in place for a particular infection provided data from their universal systems. From countries that had made significant changes to their

surveillance systems during the study period, data were collected only from the most recent system.

For the purposes of all ESSTI analyses Cyprus, the Czech Republic, Slovakia, Slovenia and Turkey were classified as Central European countries. Estonia and Latvia were classified as Eastern European and all other participating countries as Western European.

Results

Twenty-four countries submitted surveillance data on syphilis and/or gonorrhoea to ESSTI. These data, available in full in the annual report produced by ESSTI [13], were used to describe

the overall trends in syphilis and gonorrhoea infection in Europe. Ten and 12 countries were able to provide data on gonorrhoea and syphilis infections in MSM, respectively (Table 1). The type of surveillance system i.e. universal or sentinel, the availability of syphilis stage of infection and the period for which data were available, varied between countries (Table 1).

Syphilis

Western Europe

The overall number of reported syphilis cases increased substantially in most Western European (WE) countries between 1998 and 2007, mostly among men, although there was a slight

TABLE 1

Characteristics of gonorrhoea and syphilis surveillance data available in Europe for 1998-2007

Country	Surveillance system	Variables collected				Note
		Total numbers	Gender	Data on men who have sex with men (MSM)	Year from which MSM data available	
Western Europe						
Austria	Universal	✓	-	-		
Belgium	Sentinel	✓	✓	SO	2005	
Denmark	Universal	✓	✓	SO	1998	
Finland	Universal	✓	✓	-		
France	Sentinel	✓	✓	SO	2000	SO data only available for syphilis
Germany	Universal	✓	✓	SO	2001	Syphilis only
Greece	Universal ^a	✓	✓	SO	2000	Gonorrhoea only
Iceland	Universal	✓	✓	-		
Ireland	Universal ^b	✓	✓	SO	1998	SO data only available for syphilis
Italy	Universal	✓	✓	-		
Malta	Universal	✓	✓	-		
Netherlands	Sentinel	✓	✓	SO	2003	
Norway	Universal	✓	✓	SO	1998	
Portugal	Universal	✓	✓	-		
Spain	Universal	✓	-	-		
Sweden	Universal	✓	✓	PRT	1998	
United Kingdom	Universal ^a	✓	✓	HOMO	1998	
Central Europe						
Cyprus	Universal	✓	✓	PRT	2005	
Czech Republic	Universal	✓	✓	SO	1998	
Slovakia	Universal	✓	✓	-		
Slovenia	Universal	✓	✓	GP	2001	
Turkey	Universal	✓	✓	-		
Eastern Europe						
Estonia	Universal	✓	✓	-		
Latvia	Universal	✓	✓	-		

^aData from genitourinary medicine clinics (GUM)

^bEnhanced surveillance system for syphilis

✓ Collected variable; - Variable not collected

SO = Sexual orientation

GP = Gender of partner

PRT = Probable route of transmission

HOMO = Homosexually acquired

TABLE 2

Male to female ratio of reported syphilis* and gonorrhoea cases, and the percentage of male cases in men who have sex with men (MSM), in Europe 1998-2007**

Country	Syphilis						Gonorrhoea					
	1998		2003		2007		1998		2003		2007	
	Gender ratio	% MSM	Gender ratio	% MSM	Gender ratio	% MSM	Gender ratio	% MSM	Gender ratio	% MSM	Gender ratio	% MSM
Western Europe												
Belgium	-	-	9.7	-	7.3	87	2.5	-	4.3	-	2.9	65
Denmark	10.0	30	20.0	85	14.0	87	10.6	61	8.3	42	4.7	44
Finland	1.2	-	1.1	-	1.9	-	3.0	-	5.5	-	4.5	-
France	-	-	23.9	86	19.4	87	-	-	7.1	-	5.5	-
Germany	-	-	14.3	75	16.6	75	-	-	-	-	-	-
Greece	-	-	-	-	-	-	23.4	14	28.8	31	66.0	19
Iceland****	-	-	1.0	-	1.0	-	2.0	-	na***	-	2.1	-
Ireland****	-	-	5.2	74	60.0	80	3.2	-	3.8	-	7.9	-
Italy	3.0	-	5.3	-	3.7	-	11.6	-	20.9	-	12.4	-
Malta	-	-	-	-	2.0	-	-	-	-	-	4.3	-
Netherlands	-	-	11.9	87	12.3	90	-	-	4.4	61	3.3	69
Norway	4.5	29	5.4	65	60.0	90	5.9	30	5.9	35	6.9	37
Portugal	1.0	-	1.6	-	2.2	-	9.0	-	4.9	-	7.2	-
Sweden	1.6	19	7.4	62	4.8	57	4.7	26	4.1	46	4.1	38
UK	1.8	26	7.6	57	8.4	61	2.1	20	2.3	23	2.2	30
Central Europe												
Cyprus	3.1	-	2.0	-	2.3	0	7.4	-	8.3	-	4.0	0
Czech Republic	1.0	2	0.9	5	1.5	32	1.4	5	2.0	13	2.4	26
Slovakia	1.1	-	0.9	-	1.0	-	3.7	-	3.9	-	3.4	-
Slovenia	1.6	-	0.0	0	4.6	39	7.7	-	6.0	19	8.8	69
Turkey	-	-	1.3	-	1.1	-	0.0	-	0.0	-	0.2	-
Eastern Europe												
Estonia	1.0	-	0.4	-	0.5	-	1.4	-	1.1	-	0.6	-
Latvia	1.0	-	1.1	-	1.0	-	2.5	-	3.3	-	3.6	-

* Infectious syphilis data available as follows: primary and secondary syphilis: Italy, UK; primary, secondary and early latent: Belgium, Czech Republic, Denmark, France, Germany, Greece, Iceland, Ireland, Portugal, Slovenia; primary, secondary and latent: Cyprus, Malta, Netherlands, Norway, Sweden. All other countries only collected data on all stages combined.

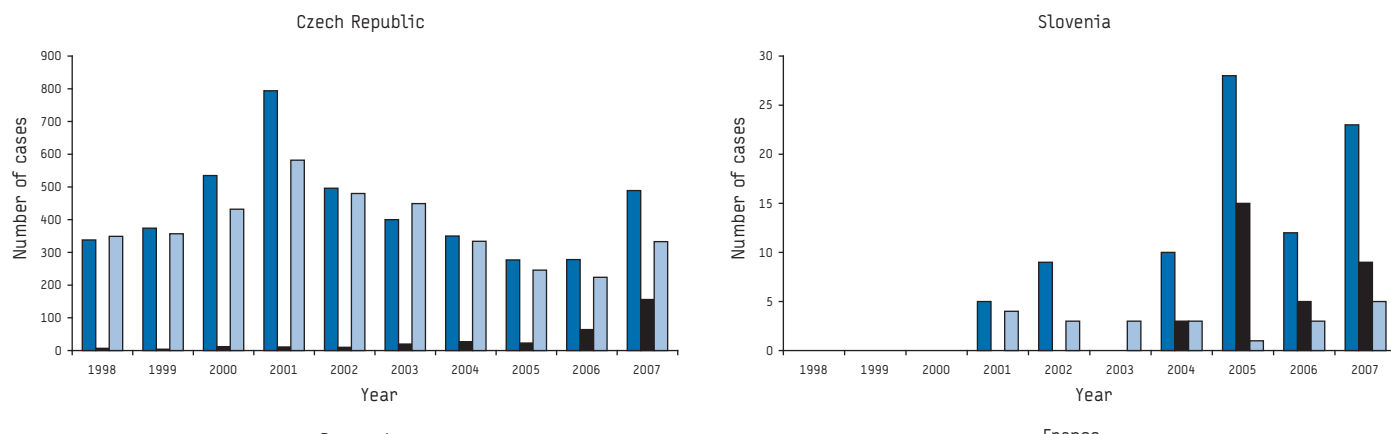
**Austria and Spain excluded from table as gender is not collected

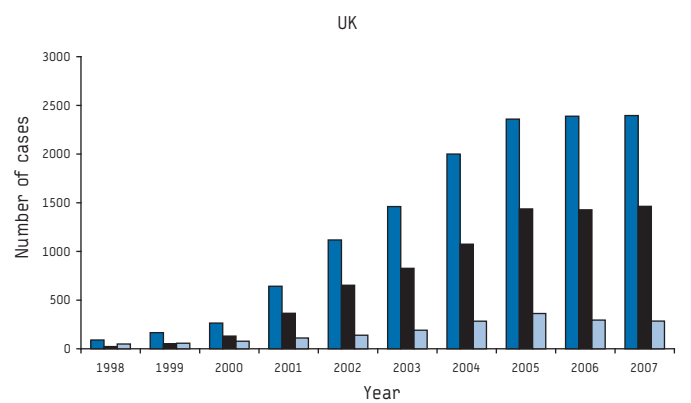
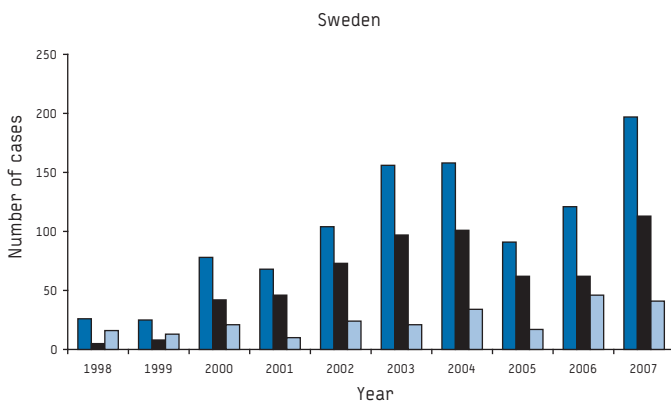
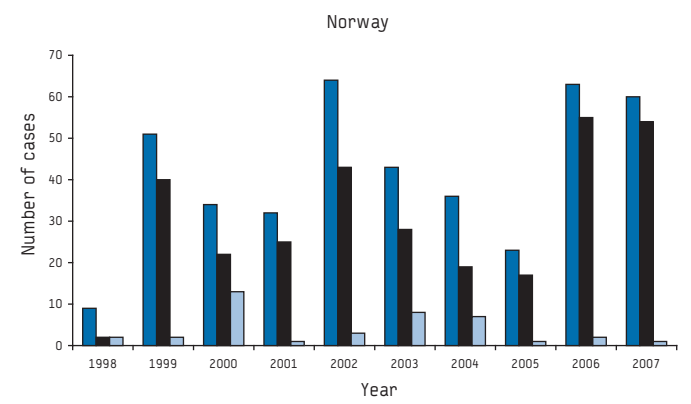
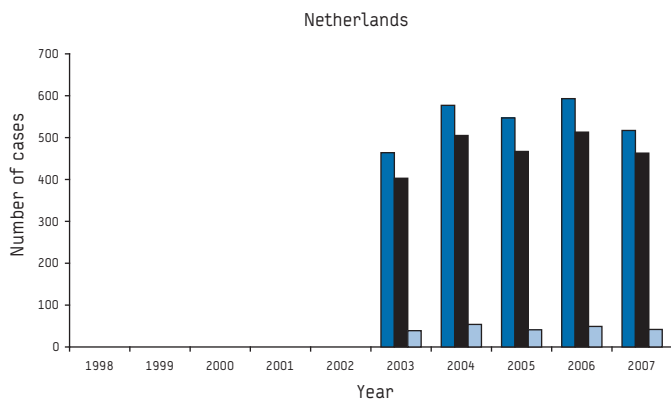
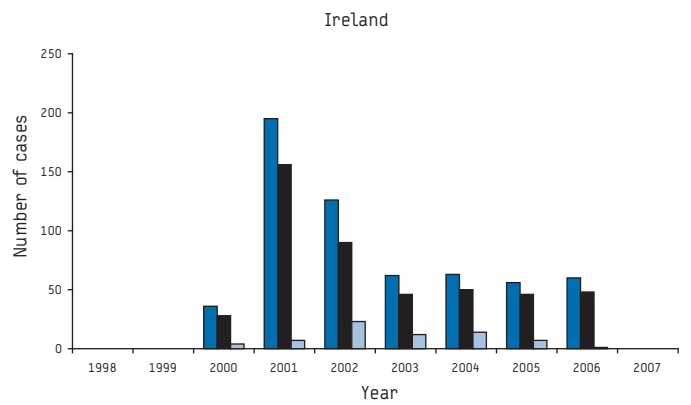
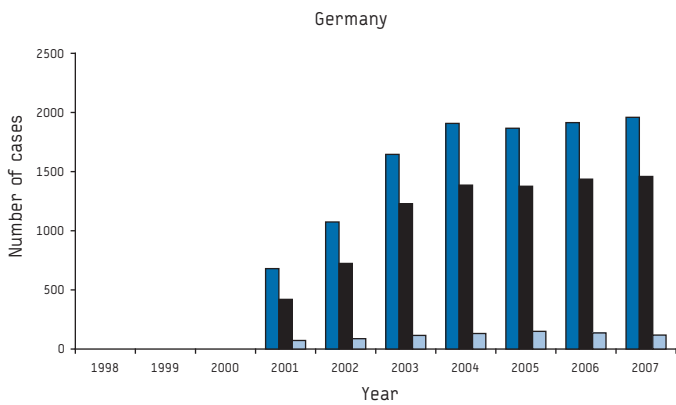
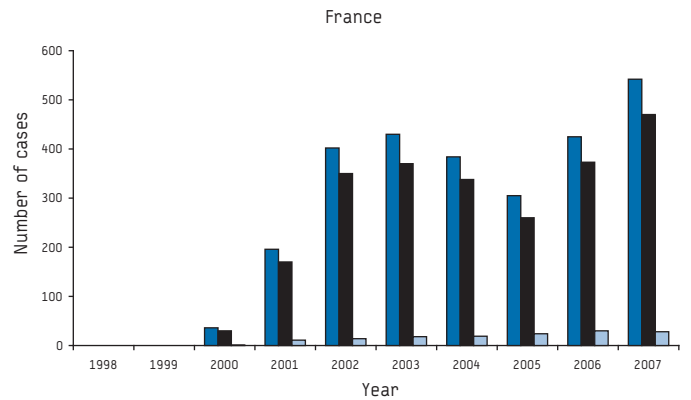
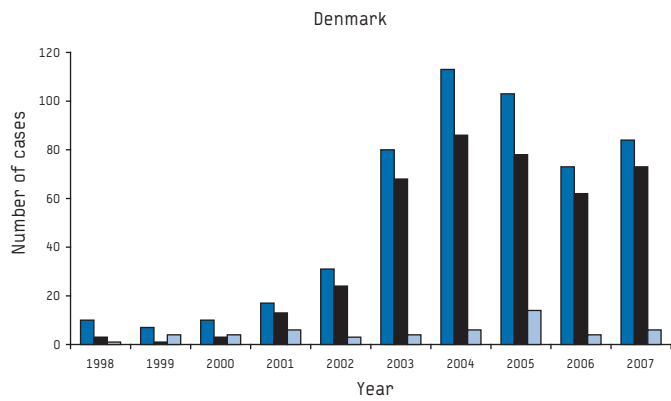
***All male

****2006 data

FIGURE 1

Number of syphilis cases reported from various Central and Western European countries, in all men, men who have sex with men (MSM), and women, 1998-2007*



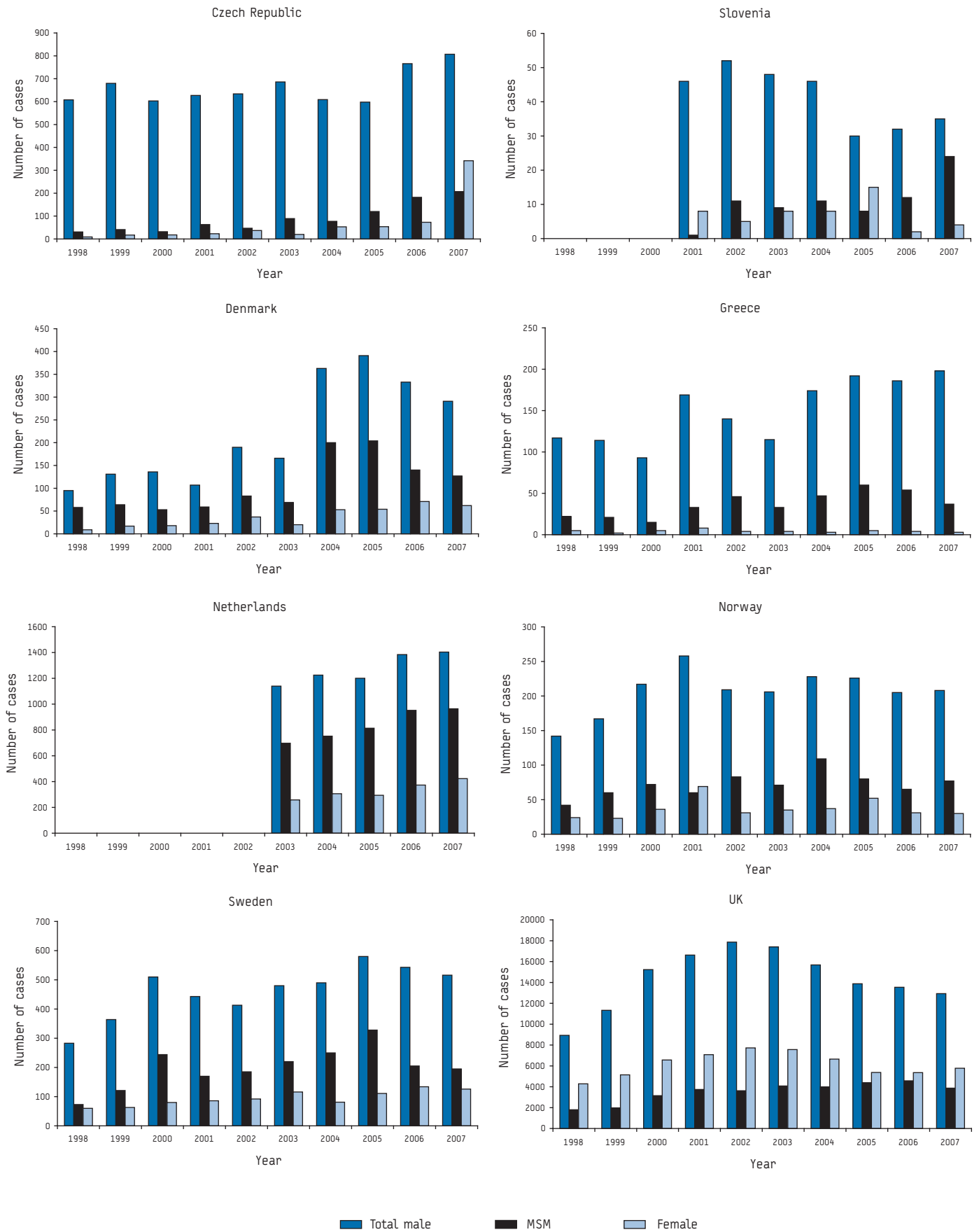


■ Total male ■ MSM ■ Female

*Includes only countries with complete data from 2003 onwards
Note different scales

FIGURE 2

Number of gonorrhoea cases reported from various Central and Western European countries, in all men, men who have sex with men (MSM), and women, 1998-2007*



*Includes only countries with complete data from 2003 onwards
Note different scales

downturn in overall numbers in many countries from the early to mid-2000s (Figure 1) [13]. In 1998, in four out of seven WE countries reporting these data, the male to female ratio was below 2:1. By 2007, with the exception of Finland and Iceland, in all WE countries reporting these data the male:female ratio was above 2:1, with half of WE countries reporting a male:female ratio of 5:1 or greater (Table 2).

Consistent historic data for MSM dating back to 1998 were only available for four WE countries: Denmark, Norway, Sweden and the United Kingdom (UK). All four countries reported an increase in the number of syphilis cases reported among MSM since the late 1990s (Figure 1). Between 1998 and 2007, the number of male cases reported to be MSM rose 64-fold from 23 to 1,463 in the UK, from 3 to 73 in Denmark, and from 5 to 113 in Sweden. Over the same period, the percentage of male cases reported to be MSM also rose, from 30% to 87% in Denmark, from 19% to 57% in Sweden, from 26% to 61% in the UK and from 29% to 90% in Norway (Table 2). The countries with only more recent data available also showed similar increases in the number and proportion of cases among MSM (Figure 1).

Central and Eastern Europe

In contrast to WE countries, in Central and Eastern Europe between 1998 and 2007 there was a general decline in the number of reported syphilis cases. During the same period the sex ratio was relatively stable at around 1:1, with the exception of Slovenia where the male:female ratio rose to almost 5:1 in 2007. Only the Czech Republic among Central and Eastern European countries has collected data on diagnoses in MSM since 1998. In the Czech Republic the percentage of male cases reported to be MSM varied between 1% and 8% until 2005 but rose to 32% in 2007 (Figure 1; Table 2). In Slovenia in 2007, 39% of male cases were reported to be MSM (Figure 1; Table 2).

Gonorrhoea

Western Europe

The number of reported gonorrhoea cases in most WE countries rose between 1998 and 2007 with only Italy experiencing an overall decline [13]. In 2007, the male:female ratio of reported gonorrhoea cases ranged between 2:1 in Iceland and 66:1 in Greece (Table 2). Trends in the gender ratio over time were much more variable than for syphilis. Between 1998 and 2003, the male:female ratio rose in six WE countries (Belgium, Finland, Greece, Iceland, Italy and UK), fell in three (Denmark, Portugal and Sweden) and remained stable in Norway (Table 2). Between 2003 and 2007, the male:female ratio rose in four WE countries (Greece, Ireland, Norway and Portugal), fell in seven (Belgium, Denmark, Finland, France, Italy, the Netherlands, and UK) and remained stable in Sweden (Table 2). The percentage of male cases reported to be MSM rose slightly in four of the five WE countries with these data available from 1998: Greece, Norway, Sweden and UK, but fell in Denmark. However, over the same period the number of male cases reported to be MSM more than doubled in Denmark (58 to 127), Sweden (73 to 195) and in the UK (1799 to 3868) and also increased in Norway (42 to 77) (Figure 2). In 2007, the highest proportion of male cases reported to be MSM (69%) was in the Netherlands (Figure 2; Table 2).

Central and Eastern Europe

Between 1998 and 2007, the number of reported gonorrhoea cases in Central Europe remained fairly steady, while in Eastern Europe the rate fell considerably (by 89% and 46% in Estonia and Latvia respectively). There has been no clear pattern in the

male:female ratio in Central and Eastern European countries since 1998, and in 2007 it ranged from 0.2:1 in Turkey to 9:1 in Slovenia. The percentage of male cases reported to be MSM rose from 5% to 26% in the Czech Republic between 1998 and 2007 and from 19% to 69% in Slovenia between 2003 and 2007 (Figure 2; Table 2). No cases of gonorrhoea in MSM were reported from Cyprus, and the overall number of gonorrhoea cases reported from Cyprus was small.

Discussion

Data from the ESSTI network indicate that MSM bear a disproportionate burden of syphilis and gonococcal infection across Western Europe and, in the case of syphilis, there is clear evidence that this has increased considerably. Patterns of diagnoses of these infections in Central and Eastern Europe are consistent with predominantly heterosexual transmission, although sex between men is becoming an increasingly important route of transmission in Slovenia and the Czech Republic.

In the early 1990s rates of syphilis infection in Western Europe were at historically low levels [14] but since then a large number of outbreaks affecting major urban centres in Europe have been reported [4,5,7,9,15-20]. The proportion of male cases reported to be MSM in these outbreaks ranged from 45% in Sweden [16] to 94% in Brighton, UK [18]. Reports of syphilis outbreaks have waned since 2003, possibly due to public health control measures [21]. However, syphilis remains a public health concern. While still rare, the number of cases seen annually in many countries is higher than before the outbreaks, suggesting syphilis is now endemic in the MSM population in parts of Western Europe.

Central and Eastern Europe experienced heterosexually acquired syphilis epidemics in the 1990s and total numbers of cases have been in decline since then [22]. However, although the overall numbers are low, ESSTI data indicate that syphilis transmission in MSM in Central and Eastern Europe is an emerging problem. Around a third of cases among men in the Czech Republic and two-fifths in Slovenia in 2007 were reported to be MSM.

Across Europe, more cases of gonorrhoea are seen in men than women. However, trends in numbers of diagnoses and the male:female ratio of reported cases may be poor markers of changes in infection burden among MSM over time. In some settings, gonococcal infections in women may be under-diagnosed because they tend to have fewer symptoms and due to the use of sub-optimal diagnostic methods which favour the definitive diagnosis of male gonococcal urethritis [23,24]. Similarly, screening for rectal and pharyngeal infections, which are often asymptomatic [25,26], is unlikely to be routine in many European countries, leading to under-diagnosis in MSM in particular. On the other hand, increasing use of highly sensitive nucleic acid amplification tests may have led to rising numbers of diagnoses being reported by many European countries. Despite these concerns, data from the ESSTI network suggest that, in 2007, MSM bore a disproportionate burden of gonococcal infection in many Western European and some Central and Eastern European countries.

The advent of HIV and AIDS in the 1980s heralded a change in sexual behaviour which was associated with subsequent falls in the number of STI diagnosed in the early 1990s [27,28]. The resurgence of syphilis and gonorrhoea among MSM in Western Europe coincided with the introduction of highly active antiretroviral therapies (HAART) and the resultant decrease in HIV-associated mortality [29]. The availability of HAART may have resulted in the

re-emergence of unsafe sexual behaviour among MSM [30,31], particularly among the core group which can maintain high levels of syphilis transmission. Increased transmission through oral sex, considered safer sex with respect to HIV risk, may also have contributed to rising diagnoses of these STI [4,5]. Furthermore, increasing use of the internet to select sexual partners with the same HIV status (serosorting) has likely led to more unprotected sex among HIV-positive men, contributing to high levels of STI and also HIV and STI co-infection [32]. In Western Europe, about 42% of syphilis cases in MSM were co-infected with HIV [33]. HIV co-infection has also been a feature of the ongoing lymphogranuloma venereum (LGV) epidemic in MSM [10].

Interpretation of trends in incident STI diagnoses across Europe has been hindered by the heterogeneity of surveillance systems, the lack of standardised case definitions, as well as different approaches to screening, testing and data collection [11].

Improvements in the reporting of homosexual behaviour over time, especially in Western Europe, may have contributed to rising diagnoses of STI among MSM presented here. At the same time underreporting of homosexual behaviour has also probably led to some underestimation of STI burden in MSM overall, particularly in Central and Eastern European countries where non-disclosure of sexual identity may be an issue [34].

The introduction of the new European Surveillance System (TESSy) at the European Centre for Disease Prevention and Control (ECDC) should help standardise and harmonise future data collection across Europe. The inclusion of data on diagnoses in MSM as part of this new standard may present challenges in some countries but will be crucial for informing STI control measures. The continuing transmission of STI in MSM is a major public health challenge facing Europe. Targeted control measures and improved monitoring of STI in this population need to be prioritised.

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