Surveillance report

Syphilis in Scotland 2017: update

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NHS National Services Scotland

Key points

- In 2017, 397 diagnoses of infectious syphilis were reported to HPS, a 12% increase on that reported in 2016 (356 cases) and the highest annual total recorded since this surveillance system was established in 2002/2003.
- The majority of diagnoses (84%) were recorded among men who have sex with men (MSM) which included 31 bisexual males.
- Syphilis continues to be acquired heterosexually (15%) with some diagnoses being made via routine screening programmes such as antenatal and blood donor testing.

In this report, the 2017 data from the National Enhanced Surveillance of Infectious Syphilis Scotland (NESISS) are presented. This enhanced surveillance system was established in December 2002 and collates laboratory and clinical information on infectious syphilis.[1] Data are returned from two sources:

- sexual health clinics – clinicians and sexual health advisors across Scotland provide demographic and behavioural information on individuals presenting at clinics via a paper form;
- diagnostic laboratories – microbiology staff provide details of test results directly to HPS or via the Electronic Communication of Surveillance in Scotland System (ECOSS).[2]

Details from both sources are matched at Health Protection Scotland (HPS) and entered into the NESISS database.

To maintain patient confidentiality and prevent deductive disclosure, numbers less than five have been suppressed and are indicated with an asterisk (*).To prevent back-calculation of suppressed numbers from totals, it may also be necessary to suppress some numbers greater than five (secondary suppression).

Infectious syphilis in Scotland: 2017

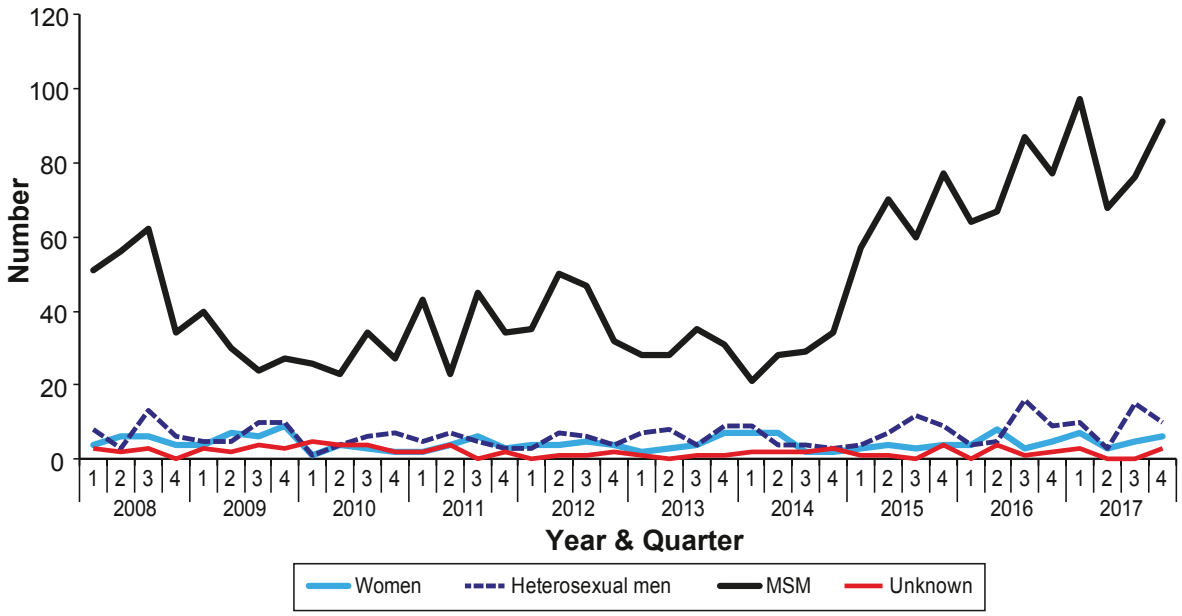
A total of 397 diagnoses of infectious syphilis were reported during 2017; a 12% increase on that reported in 2016 (356) and the highest number recorded since the implementation of the system in 2002/2003. Prior to 2017, the previous peak annual total of 260 was recorded in 2008. The number of diagnoses subsequently decreased until the end of 2014 before doubling during 2015 and then continuing to rise during 2016. This increase has been sustained in 2017 (Table 1 and Figure 1), predominantly due to an increase among men, especially men who have sex with men (MSM). Of the 397 diagnoses recorded, the majority (94%, 375) were male and

the remaining 6% (22) were female. Of the males, 332 (89%) were MSM (31 of whom identified themselves as bisexual), 38 (10%) were heterosexual, and for six (1%) no sexual orientation data were available (Figure 1). The median age of those diagnosed in 2017 was 34 years: this compares with a median age of 32 years in 2016.

Table 1: Number of infectious syphilis diagnoses in Scotland and sexual orientation, 2008-2017

Gender & Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Women	20	26	10	14	17	17	18	14	20	21
Heterosexual men	30	30	18	19	21	28	20	32	34	38
MSM	202	122	111	145	164	120	112	264	295	332
of whom bisexual	*18*	*18*	*15*	*11*	*16*	*15*	*11*	*37*	*35*	*31*
Unknown	8	12	16	8	4	4	9	6	7	6
Total	260	190	155	186	206	171	159	316	356	397

Figure 1: Number of infectious syphilis diagnoses in Scotland by gender and sexual orientation and quarter year, 2008-2017.



In 2017, almost half of individuals were diagnosed at sexual health clinics in NHS Greater Glasgow & Clyde (190/397, 48%) and a further 31% (124/397) in NHS Lothian. The remaining individuals (83/397, 21%) were diagnosed in the other nine mainland NHS boards (Figure 2a). The overall increase in diagnoses is mainly due to an increase in diagnoses in NHS Greater Glasgow & Clyde. Based on first part postcode data which were available for 388 individuals, syphilis infection was diagnosed among individuals living in all eleven mainland NHS boards. Of the 190 individuals diagnosed in NHS Greater Glasgow & Clyde, 138 (73%) were residents of that NHS board area and the remainder were residents of five other NHS boards. Among the 124 individuals diagnosed in NHS Lothian, 108 (87%) were residents of that NHS board area and the remaining 16 individuals diagnosed were resident in eight other NHS board areas (Figure 2b).

Figure 2: Number of infectious syphilis diagnoses in Scotland in 2017 by NHS board.

Figure 2a: By NHS board of diagnosis and treatment.

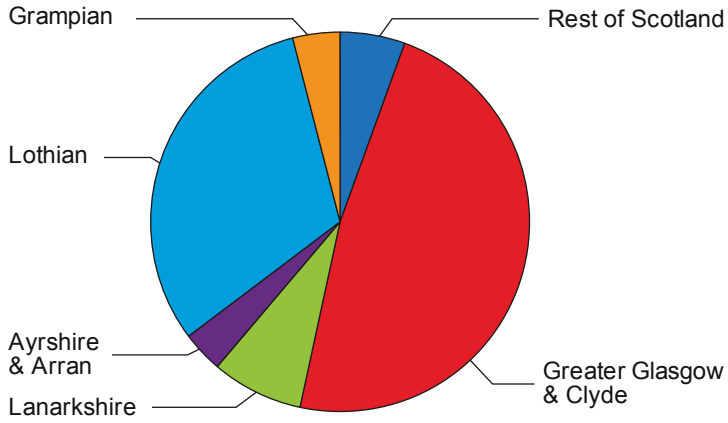
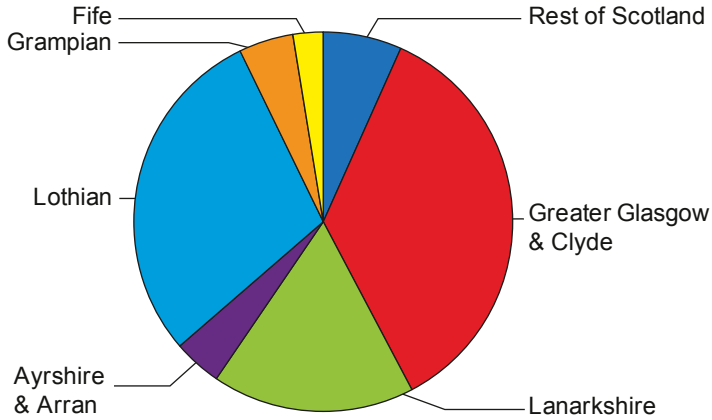


Figure 2b: By NHS board of residence.



In 2017, the majority of infections (279/397, 70%) were presumed to have been acquired through contacts in Scotland (Table 2); this is a similar proportion to the annual average of 70% recorded over the previous five years (2012-2016). Of 19 individuals who reported multiple possible exposure locations, over two thirds (13) included a Scottish location.

Table 2: Number of infectious syphilis diagnoses in Scotland in 2017 by presumed location of infection acquisition and sexual orientation.

Presumed location of infection	Women	Heterosexual men	MSM (Bisexual)	Unknown	Total
Scotland	17	24	233 (24)	5	279
UK (not Scotland)	0	*	15 (*)	*	19
Europe (not UK)	0	*	18 (*)	*	22
World (not Europe)	0	*	11 (*)	*	12
Multiple locations	*	*	17	0	19
Unknown	*	*	38 (*)	0	46
Total	**21**	**38**	**332 (31)**	**6**	**397**

The stage of infection was identified in 381 of the 397 (96%) infections (Table 3). Of these 381 diagnoses, over half (214, 56%) were primary infection, 84 (22%) were secondary infection and 83 (22%) were early latent infections. This is the highest proportion of primary diagnoses observed during the past five years, exceeding the previous highest number and proportion (177/343, 52%) recorded in 2016.

Table 3: Number of infectious syphilis diagnoses reported in Scotland in 2017 by stage of infection and sexual orientation.

Stage	Women	Heterosexual men	MSM*	Unknown	Total
Primary	8	23	180	3	214
Secondary	5	6	71	2	84
Early latent	5	6	71	1	83
Unknown	3	3	10	0	16
Total	**21**	**38**	**332**	**6**	**397**

* includes 31 bisexual males.

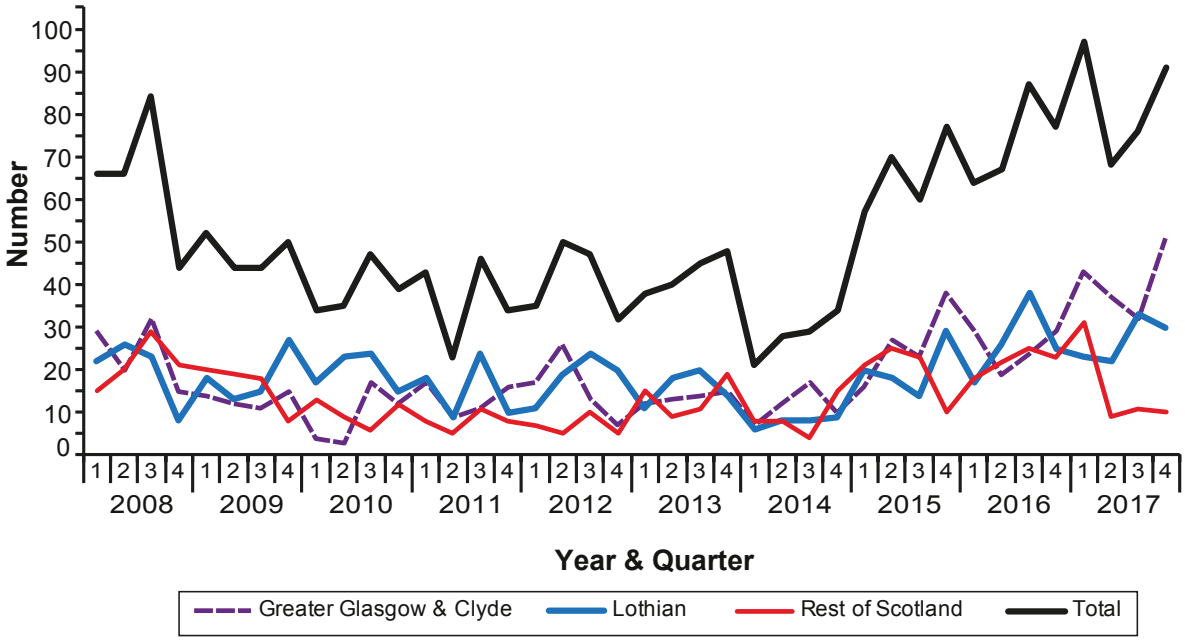
Of the 397 diagnoses, 62 (16%) were HIV positive, 305 (77%) were HIV negative and, for 30 (8%), HIV status was unknown. This is similar to the proportion recorded in 2016 (17%) and is a reduction on that recorded in 2015 (25%). Where ethnicity was recorded, the majority of diagnoses (83%, 308/372) were White-British. This is similar to the ethnic pattern of diagnoses for the past five years (ranging from 81% to 87% between 2012 and 2016).

Infectious syphilis among MSM: 2017

In 2017, 332 (84%) diagnoses of infectious syphilis were made in MSM; this is an increase on that reported in 2016 (295) and almost three fold higher than that reported in 2014 (112). This is the highest number recorded since the previous peak in 2008 (260) (Table 1, Figure 3). Quarterly totals for 2017 are consistently higher when compared with 2016 (Figure 3). The number of primary infections among this group has also increased over the last few years (from 52 in 2014 to 125 in 2015 to 151 in 2016 to 180 in 2017). Comparison of primary infection data for the first and second halves of 2017 indicate a difference in the number of diagnoses recorded (81 versus 99). These data are important for the monitoring of syphilis incidence following the introduction of NHS-funded HIV pre-exposure prophylaxis (PrEP) in Scotland in July 2017; however, it is still too early to comment on whether this apparent increase is due to an increase in incidence, as testing has likely increased during this time, and whether it will be sustained.

A total of 31 men (9%) reported their sexual orientation as bisexual. Overall, MSM were aged between 17 and 65, with a median age of 33 years, while the subgroup of 31 bisexual men had a median age of 44 (with an age range from 17 to 63 years).

Figure 3: Number of infectious syphilis diagnoses among MSM in Scotland by NHS board of diagnosis and treatment and quarter year, 2008-2017.



Note: total includes four cases in 2007 and one in 2010 which were diagnosed in non-GUM clinic settings.

In 2017, the majority of the diagnoses in MSM (271/332, 82%) were made in Greater Glasgow & Clyde and Lothian NHS board areas (Figure 3). Place of residence information (postcode sector) is available for 325 diagnoses, indicating that syphilis infection was diagnosed in patients living in eleven of the fourteen NHS boards. Of the 156 men diagnosed in NHS Greater Glasgow & Clyde, 116 were residents of Greater Glasgow & Clyde and the remainder were residents of five other NHS boards. Of the 108 diagnosed in NHS Lothian, 96 were residents of Lothian and the remainder were residents of seven other NHS boards.

Disease stage was recorded for 322 diagnosed individuals: 180 (56%) had primary, 71 (22 %) secondary and 71 (22%) early latent syphilis (Table 3). From the information available, at least 49 MSM in 2017 are known to have had at least one previous episode of syphilis during the past twelve years of monitoring.

HIV status was known for 306 MSM at the time of their syphilis diagnosis: around one fifth reported being HIV positive (58, 19%); this is approximately the same proportion as recorded in 2016, but represents a 10% decrease compared to that reported in 2015 (30%).

Oral sex is often considered as a ‘safe’ alternative to penetrative sex; however, syphilis infection is readily transmitted by this route. For the MSM who provided information about whether oral sex was the most likely route of transmission, 27% (52/195) said yes. This is a decrease compared to observations during the previous two years (35% in 2016 and 31% in 2015). Among men co-infected with HIV who answered this question, 11 of 33 (33%) also indicated that oral sex was the most likely route of transmission (Table 4); this is similar to the proportion of HIV positive MSM reported in 2015 (36%).

Table 4: Number of infectious syphilis diagnoses among MSM* reported to HPS in 2017 by HIV status and whether oral sex was the likely route of acquisition of infection.

HIV status	Oral sex only - YES	Oral sex only - NO	Unknown	Total
Positive	11	22	25	58
Negative	37	113	98	248
Unknown	4	8	14	26
Total	**52**	**143**	**137**	**332**

* includes 31 bisexual men.

Place where infection was acquired was recorded for 294 men; of these men, 233 (79%) reported that the likely place of acquisition was a location in Scotland, a further 15 (5%) were presumed to have acquired their infection from contacts elsewhere in the UK, and another 18 (6%) reported acquiring their infection from contacts elsewhere in Europe (Table 2). The remainder of the men reported likely acquisition in other regions of the world or multiple possible locations for acquisition. The majority (71%, 12/17) of those who reported multiple possible exposure locations also mentioned a Scottish location.

An indication of the social venues and networks used to meet partners is described in Table 5. Data are available from 87 MSM who acquired or possibly acquired their infection in Scotland; as in recent years the internet and phone apps are the most popular methods of meeting partners. By comparison, the proportion of men reporting meeting partners in bars/clubs and saunas has been declining over the past few years (from 17% in 2015 to 7% and 8% in 2016 and 2017, respectively).

Table 5: Means of meeting partners in Scotland, described by 87 MSM with presumed infection acquisiton in Scotland in 2017.

Means of meeting partners	Number reporting use
Internet (including phone apps)	51
Regular partner/casual partner/friend	9
Multiple methods	8
Sauna	7
Bars and/or Clubs	7
Other*	5

*Other includes chemsex/slamming parties, public sex environment and commercial sex worker

In 2017, of 332 infectious syphilis diagnoses among MSM, 299 provided an estimate of the number of sexual partners in the three months prior to diagnosis. A total of 1276 sexual contacts were reported, varying between one and more than 20 contacts during the three-month period (Table 6), with the majority (229/299, 77%) reporting fewer than five partners. Similar to previous years, as the number of reported contacts increased, the proportion traceable decreased. In 2017, among those men who reported fewer than five contacts, 55% of these contacts were traceable compared with 33% (271/826) among those reporting more than five contacts. It should be noted that a larger proportion of the men who reported having had five or more contacts had met their partners through potentially anonymous routes such as

the internet, sex parties, and public sex environments compared to those who reported fewer than five contacts (93% versus 78%).

Table 6: Number of contacts for diagnoses of infectious syphilis among MSM* reported to HPS in 2017.

Number of contacts per case	Number of cases	Total contacts	Total contacts traced	Proportion of contacts traced
1	103	103	81	79%
2	58	116	80	69%
3	41	123	31	25%
4	27	108	56	52%
5-9	34	200	119	60%
10-20	27	313	68	22%
>20	9	313	84	27%
Total	**299**	**1276**	**519**	**41%**

* includes 31 bisexual males.

Heterosexually acquired infectious syphilis: 2017

In 2017, there were 59 diagnoses of infectious syphilis in those who acquired the infection through heterosexual intercourse; 21 were female and 38 were male (Table 1 and Figure 1). The median age was 29 years and 36 years for female and male diagnoses, respectively. The number of diagnoses among heterosexuals has also increased year on year from 38 in 2014 to 59 in 2017.

In 2017, the majority of those who have acquired syphilis via heterosexual contact were born in the UK (45/59, 76%); this proportion has remained stable over the past five years. Of those heterosexuals diagnosed in 2017, 71% (42/59) acquired their infection in Scotland (Table 2); this is a higher proportion than those recorded in 2015 (56%) and 2016 (52%). Diagnoses were made in seven NHS board areas with the highest number (24/59, 41%) of diagnoses made in NHS Greater Glasgow & Clyde, followed by 14 in NHS Lothian and 11 in NHS Lanarkshire. Five or fewer individuals were diagnosed in each of NHS Ayrshire and Arran, NHS Dumfries and Galloway, NHS Fife and NHS Tayside.

Information about stage of infection was available for 53 of 59 heterosexuals (90%) in 2017 (Table 3). Of these, over half (58%, 31) had a primary infection; 11 (21%) had a secondary infection; and 11 (21%) had an early latent infection. This is only the second year that primary infection has accounted for more than half of diagnoses (59% (24/41) in 2008). There is little evidence of HIV infection in this group.

From the data available on source of referral or reason for testing, less than half (24/59, 41%) of those diagnosed presented with symptoms. A further eighteen (31%) were referred for testing because they were contacts of diagnosed individuals. At least seven individuals were referred to a sexual health clinic for testing and management from one of the routine screening programmes (either through blood donation screening or the antenatal testing programme).

Of the 59 heterosexual diagnoses recorded, information about the number of contacts was available for 48; these 48 heterosexuals reported a total of 73 contacts in the three months prior to their diagnosis, with all reporting five or fewer partners. Of these 73 contacts, over two thirds (68%, 50/73) could be traced; over the past five years, this proportion has fluctuated between 47% and 79%).

Comment

During 2017, the overall incidence of infectious syphilis in Scotland was at its highest level since the implementation of the current surveillance system in 2002/2003, exceeding the previous highest level recorded in 2016. Using data recorded in clinics during the past almost one hundred years, this is the highest total recorded in men since the early 1950s. Between 2014 and 2015, the number of diagnoses doubled (159 to 316 diagnoses) and then continued to rise in 2016 and 2017 (365 and 397 diagnoses, respectively). The increase observed in 2017 is a result of an increase in diagnoses among both MSM and those acquiring infection heterosexually. This mirrors the overall epidemiological picture observed in England where a 20% increase in syphilis diagnoses was reported between 2016 and 2017, representing the largest number of diagnoses recorded since 1949.[4] Similar to the situation in Scotland, this increase has been attributed primarily to a rise in the number of diagnoses among the MSM community.

In July 2017, Scotland became the first of the UK nations to make PrEP (an antiviral combination drug) available via the NHS to those who are eligible and at highest risk of HIV exposure.[3] This addition to the HIV prevention toolkit is an important development and trial data indicate its efficacy in reducing the incidence of HIV.[5,6] There are reports and public health concerns, however, that the incidence of STIs may increase if condom use decreases in the era of PrEP. Interim first year data on PrEP uptake indicate that the majority (96%) being prescribed PrEP are MSM.[7] While it is still too early for a full evaluation of the impact of the first year of the PrEP programme, infection data indicate that infectious syphilis diagnoses among MSM have been increasing since 2014 and preliminary data for 2018 indicate continuing high levels of infectious syphilis among MSM. Of particular concern is the increase in the proportion of primary infections. As yet, it is unclear whether this reflects a true increase in incidence as STI testing has likely increased following the implementation of PrEP.

Co-infection with HIV continues to be apparent among a proportion of MSM diagnosed with syphilis. In 2017, approximately one fifth of men diagnosed with syphilis were co-infected. It is unknown whether these were recent acquisitions of HIV infection; however, as part of the implementation of the PrEP programme, the focus is on monitoring new (including recent) HIV infections and measuring HIV and STI incidence.

In recent years, there have been several other sexual health concerns among the MSM population; these include sexually transmitted enteric infections (STEI), particularly if sexual practices involve faecal-oral contamination, such as *Shigella* species and hepatitis A virus. The transmission of several different *Shigella* species has occurred in various cities with large MSM communities in England over the past few years.[8,9] The association of transmission of this STEI with high numbers of sexual partners, high rates of HIV co-infection and links to chemsex has been a concern.[10] Continued detection of clusters among MSM, assisted by the use of whole genome sequencing, indicates the importance of education, testing and treatment among this group. An outbreak of hepatitis A, largely affecting MSM, occurred throughout Europe in

2016/2017 with 3,813 confirmed diagnoses recorded in the latest ECDC report as at December 2017.[11,12] While there were large numbers of MSM diagnosed in England, there were less than 30 diagnoses in men resident in Scotland who reported MSM exposure or were infected with one of the MSM outbreak strains during 2017. In Scotland, increases in other rectal STIs, such as *Lymphogranuloma venereum* (LGV) and rectal gonorrhoea, have also been recorded and are discussed in a separate report (here).

While the major burden of infectious syphilis occurs in the MSM population, 15% of syphilis diagnoses were among those who acquired the infection via heterosexual intercourse. The majority of heterosexual diagnoses were of White-British ethnicity and were presumed to have acquired their infection in Scotland.

In 2017, infectious syphilis was detected in seven women via antenatal and blood donation screening programmes. Antenatal screening, with appropriate treatment and management, remains important to prevent re-emergence of congenital syphilis particularly in the context of previous outbreaks in the heterosexual population.[13] A review of the incidence of congenital syphilis in the UK between 2011 and 2015, indicates an incidence of <0.5 per 1000 live births – below the WHO threshold for elimination, but continual monitoring is required.[14]

In Scotland, infectious syphilis remains a serious public health problem, particularly among MSM. The increase in diagnoses, observed in 2017, underlines the importance of a concerted public health response. There is evidence of high-risk behaviour among a proportion of MSM in Scotland through various behavioural studies. The most recent of these, the second Social Media, Men Who Have Sex With Men, Sexual and Holistic Health Survey (SMMASH2), reported that over half of the 1500 MSM surveyed had condomless anal intercourse (CAI) in the previous 12 months and one fifth had engaged in CAI in the previous three months. [13] Furthermore, the survey uncovered that one fifth of participants had never had an HIV test. Behavioural studies from abroad, notably the Melbourne and Sydney Gay Community Periodic Survey, also identify high-risk behaviour; consistent condom use among the gay and bisexual men surveyed decreased from 46% (1360/2692) in 2013 to 31% (1229/4018) in 2017.[16] Both behavioural and infection data underline the importance of ongoing activities for the prevention and control of syphilis infection which focus on: i) testing and diagnosing; ii) effective partner management; iii) health promotion; and, iv) education and awareness-raising via national campaigns and local initiatives. Similarly, the provision of MSM-specific services are key while syphilis and other STI testing opportunities, along with other sexual health services, have become more accessible in community venues. Without sufficient understanding and knowledge of the early symptoms, infectious syphilis diagnosis is sometimes missed. As a consequence, routine sexual health check-ups are essential for those at highest risk. Given that partner management continues to present a challenge for the control of infection due to the large number of multiple anonymous contacts among MSM, the ongoing promotion of good sexual health among this community is imperative.

Acknowledgements

We gratefully acknowledge the collaboration and support of Genitourinary Medicine and Sexual Health clinical staff, health advisors, consultant microbiologists and laboratory staff across Scotland in collecting data for NESISS. We would also like to thank Danny Nicholson at HPS for his efforts in maintaining the database.

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NHS board abbreviations

AA	Ayrshire & Arran	BR	Borders	DG	Dumfries & Galloway	GGC	Greater Glasgow & Clyde
FF	Fife	FV	Forth Valley	GR	Grampian	HG	Highland
LO	Lothian	LN	Lanarkshire	OR	Orkney	SH	Shetland
TY	Tayside	WI	Western Isles				

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Published by: Health Protection Scotland

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