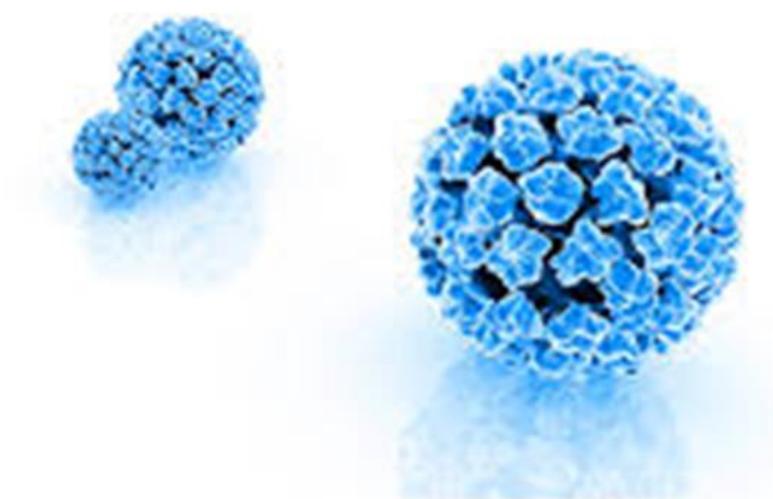


# Sexually Transmitted Infection surveillance in Northern Ireland 2018

An analysis of data for the calendar year 2017



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This report aims to provide an overview of STI epidemiology in Northern Ireland by collating and analysing information from a number of sources. Although it reflects epidemiological trends over time, its main focus will be on data collected in 2017.

In order to prevent possible disclosure, where the number of any category of episodes in any one year is between one and four, this is reported either within a cumulative figure, or as an asterix. In addition, where the anonymised figure can be deduced from the totals, the next smallest figure will also be anonymised.

# Summary points

## In Northern Ireland Genito-Urinary Medicine (GUM) clinics in 2017

- New diagnoses of chlamydia increased by 2%; 1,684 diagnoses in 2017 compared with 1,648 in 2016.
- New diagnoses of gonorrhoea increased by 15%; 679 in 2017 compared with 592 in 2016.
- New diagnoses of genital herpes simplex (first episode) increased by 3%; 463 in 2017 compared with 448 in 2016.
- New diagnoses of genital warts (first episode) decreased by 10%; 1,600 in 2017 compared with 1,786 in 2016.
- New diagnoses of infectious syphilis decreased by 11%; 50 in 2017 compared with 56 in 2016.

# Surveillance arrangements and sources of data

## GUMCAD

GUM clinics in Northern Ireland have upgraded their reporting software used for recording attendances to GUMCAD v2. GUMCAD collects anonymised patient-level data on all STI tests and diagnoses in Northern Ireland.

GUMCAD data reflect only those diagnoses made in GUM clinics. It follows that accessibility of those services to the public, as measured by service capacity and geographic location of services, may influence the diagnostic rate of STIs. Thus, direct comparison of different regions, or indeed different time periods within the same region if service access should change, must be interpreted with caution.

Given that the majority of new diagnoses originate from the GUM clinic at the Royal Victoria Hospital (the clinic that provides greatest access), the clinic location is not a useful proxy for patient residence.

As a result of the changes gonorrhoea and chlamydia are no longer categorised as complicated and uncomplicated. Therefore the way gonorrhoea and chlamydia are presented within the report has been amended and some figures are not directly comparable to data from previous years as annotated in the relevant figures.

## Laboratory reporting

Laboratory data represent an important complementary source to clinician-initiated surveillance arrangements. Laboratory reporting of *Chlamydia trachomatis* in Northern Ireland is provided for 2006–2017. Antibiotic susceptibility information for *Neisseria gonorrhoeae* isolates is provided for 2017.

## Enhanced syphilis surveillance

Enhanced surveillance arrangements for infectious syphilis in Northern Ireland have been in place since syphilis first re-emerged in September 2001. Based on anonymised, confidential reporting by GUM clinicians to the Public Health Agency (PHA), a range of demographic, clinical and risk factor data are collected on cases of primary, secondary and early latent stage syphilis.

# 1: Diagnoses provided in Northern Ireland GUM clinics in 2017

During 2017:

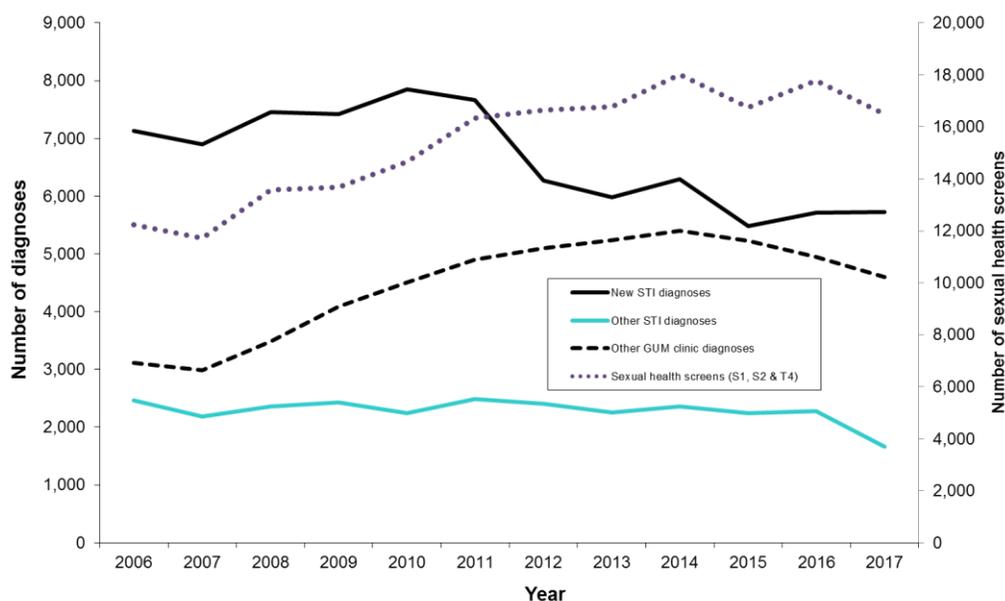
- 5,726 new STI diagnoses were made, an increase of less than 1% compared with 2016 (5,719);
- 64% (3,659/5,726) of new STI diagnoses were in males;
- three types of infection accounted for 72% of **new STI diagnoses** – chlamydia (29%), genital warts (first infections) (28%) and non-specific genital infection (15%);
- 1,663 **other STI diagnoses** were made;
- 4,600 **other diagnoses made at GUM clinics**.

## Trends: 2006–2017

Between 2006 and 2011 the number of **new STI diagnoses** remained relatively stable. However, between 2011 and 2017, the numbers have decreased by 25% (Figure 1.1). The decrease in new STI diagnoses from 2011 must be interpreted with caution. This largely reflects a steep decline in new diagnoses of complicated and uncomplicated non-specific genital infection (NSGI) (Figure 1.2). This decrease is likely to be due to the change in test technology within GUM clinics, whereby the more sensitive dual platform PCR test for gonorrhoea and chlamydia has largely replaced the invasive urethral culture in asymptomatic patients<sup>1</sup>. This has resulted in more detections of organisms with proven pathogenicity, particularly gonorrhoea and thus NSGI diagnoses have fallen (Figure 1.2).

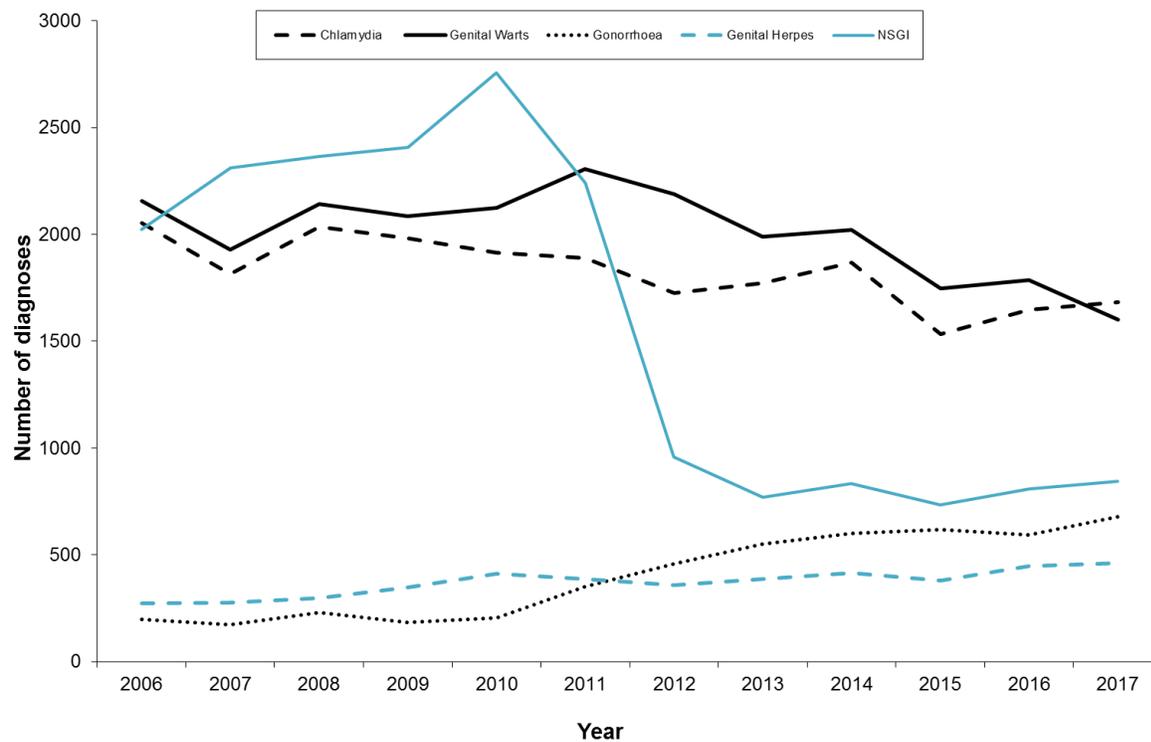
There has been an increased trend in annual **other GUM clinic diagnoses** between 2007 and 2014 with a decrease year on year from 2015. The number of **other STI diagnoses** has remained largely stable since 2006. An explanation of STI categories is provided in Appendix 1. The number of sexual health screens performed annually has shown an increased trend from 2007 with stabilisation since 2014, likely reflecting a capacity ceiling within GUM clinics.

**Figure 1.1: Trends in diagnoses and sexual health screens made in Northern Ireland GUM clinics, 2006–2017**



During 2006–2017, chlamydia infection, non-specific genital infection (NSGI) and genital warts (first infections) accounted for the highest proportion of new STI diagnoses (72%) made in Northern Ireland GUM clinics (Figure 1.2). Specific disease trends will be examined in chapters 2 to 6.

**Figure 1.2: Trends in new diagnoses of STIs in Northern Ireland GUM clinics, 2006–2017**



## 2: Chlamydia

Genital chlamydia is a bacterial infection caused by *Chlamydia trachomatis*. The infection is asymptomatic in at least 50% of men and 70% of women. In women, untreated infection can cause chronic pelvic pain and lead to pelvic inflammatory disease (PID), ectopic pregnancy and infertility. An infected pregnant woman may also pass the infection to her baby during delivery. Complications in men include urethritis, epididymitis and Reiter's Syndrome.

Consistent with elsewhere in the UK, chlamydia is the most common bacterial STI diagnosed in Northern Ireland GUM clinics.

Although there is no organised regional chlamydia testing programme in Northern Ireland, symptomatic and asymptomatic testing of those at risk is undertaken within primary care and sexual health services.

### Diagnoses made in GUM clinics during 2017

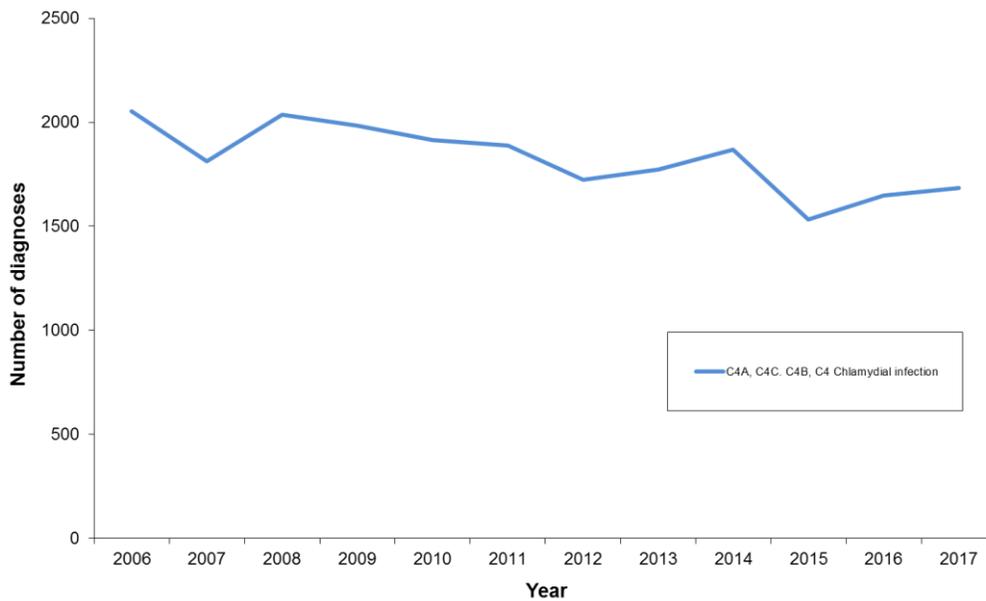
Chlamydial infection accounted for 29% (1,684/5,726) of all new STI diagnoses made in Northern Ireland GUM clinics during 2017.

- There were 1,684 new episodes of chlamydial infection diagnosed in Northern Ireland GUM clinics in 2017, compared with 1,648 in 2016.
- 1,025 (61%) of these were diagnosed in males.
- The highest rates of infection in both males and females were in the 20–24 years age group, accounting for 34% of male and 46% of female diagnoses.
- The rate of diagnoses in the 16–19 years age group is more than one and half times higher in females as in males.
- 24% (246/1,025) of the total male diagnoses occurred in men who have sex with men (MSM).

### Trends: 2006–2017

Between 2006 and 2017, diagnoses of chlamydial infection decreased by 18%, from 2,053 diagnoses in 2006 to 1,684 in 2017 (Figure 2.1).

**Figure 2.1: Diagnoses of chlamydia in Northern Ireland, 2006–2017**



### Age and gender trends: chlamydia

From 2012–2017, diagnostic rates in females were consistently highest in the 16–24 years age group, peaking between 20 and 24 years (Figure 2.2). In males, the highest rates were in the 20–34 years age group, again peaking between 20 and 24 years.

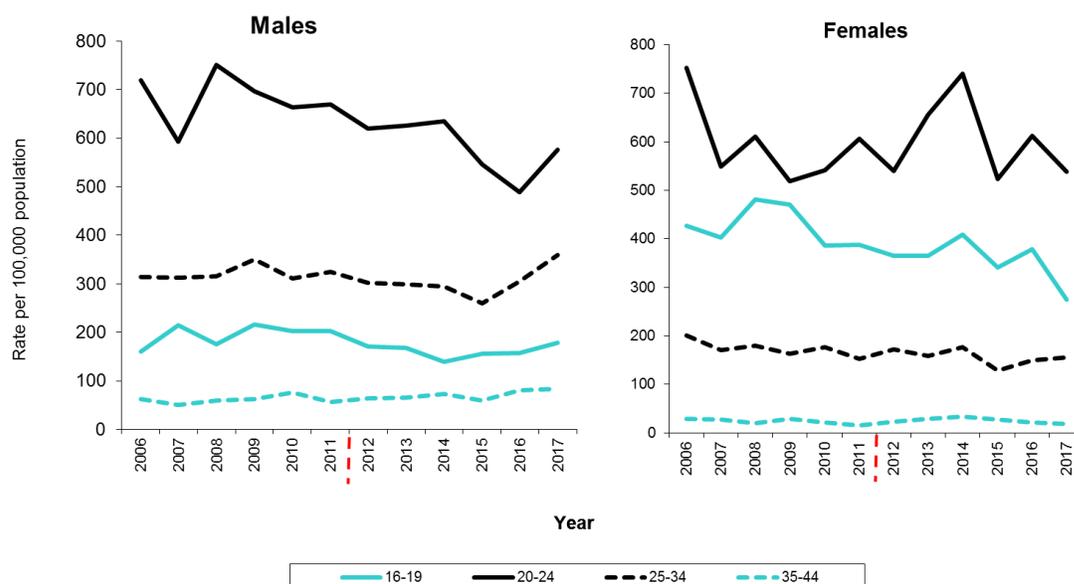
Diagnostic rates in those under 25 years of age were consistently higher in females, with rates in those aged 25 years and over consistently higher in males. Diagnostic rates in females aged over 24 years decrease due to changes in sexual behaviour, as well as decreased susceptibility.

Diagnoses in those under 16 years of age accounted less than 1% (30/10,226) of all diagnoses made during the period 2012–2017.

Diagnoses in the 45+ years' age group accounted for 3% (327/10,226) of all diagnoses made during the period 2012–2017.

The proportion of male chlamydia diagnoses attributed to MSM has ranged from 6% in 2006 to 24% in 2017.

**Figure 2.2: Rates of chlamydial infection in Northern Ireland, by gender and age group, 2006–2017**



Footnote: Rates have been re-calculated from 2012 to include KC60 code C4B – Complicated chlamydia

### Genital chlamydia trachomatis laboratory reporting, 2006–2017

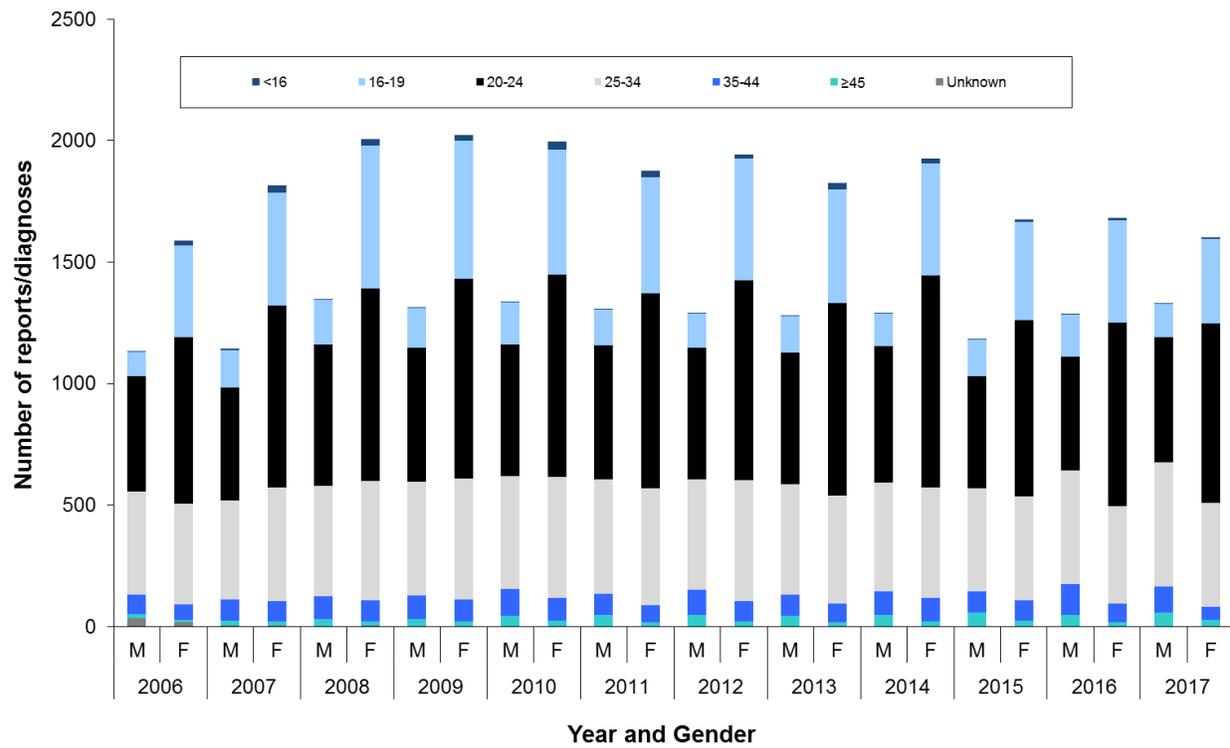
During 2017, 2,936 laboratory confirmed cases of genital chlamydia trachomatis were reported, a decrease of 1% compared with 2016. GP specimens accounted for 33% (982/2,936) of cases reported during 2017 (Table 2.1). Between 2006 and 2017, confirmations from GP specimens increased by 36%.

**Table 2.1: Referral source of genital *Chlamydia trachomatis* specimens, 2006–2017**

Referral Source	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	TOTAL
GP Number (%)	720 (26.1)	894 (29.7)	979 (29.0)	1025 (30.3)	1124 (33.5)	1096 (34.3)	1207 (37.1)	1102 (35.2)	1093 (33.9)	1028 (35.8)	977 (32.8)	982 (33.4)	12,227
Other	2,036	2,121	2,396	2,353	2,231	2,104	2,044	2,023	2,130	1,836	1,998	1,954	25,226
<b>Total</b>	<b>2,756</b>	<b>3,015</b>	<b>3,375</b>	<b>3,378</b>	<b>3,355</b>	<b>3,200</b>	<b>3,251</b>	<b>3,125</b>	<b>3,223</b>	<b>2,864</b>	<b>2,975</b>	<b>2,936</b>	<b>37,453</b>

Higher numbers of diagnoses are consistently reported in females, accounting for 55% (1,602/2,936) of all cases reported by laboratories during 2017. The majority (68%; 14,986/21,955) of female cases reported in the period 2006–2017 were aged between 16 and 24 years. Between 2006 and 2017 females accounted for 79% of the diagnoses made by a GP. Males accounted for between 38% and 45% of cases reported annually since 2006. The majority of male cases reported since 2006 were in the 20–34 years age group (Figure 2.3). Information on gender was missing for 1% of cases reported during the period 2006–2017.

**Figure 2.3: Laboratory reports of genital *Chlamydia trachomatis*, by age and gender, 2006–2017**



## 3: Gonorrhoea

Gonorrhoea is a bacterial STI caused by *Neisseria gonorrhoeae*. Untreated, gonorrhoea can enter the bloodstream or spread to the joints, and in women it can cause pelvic inflammatory disease, ectopic pregnancy and infertility. An infected pregnant woman may pass the infection to her baby during delivery.

### Diagnoses made in GUM clinics during 2017

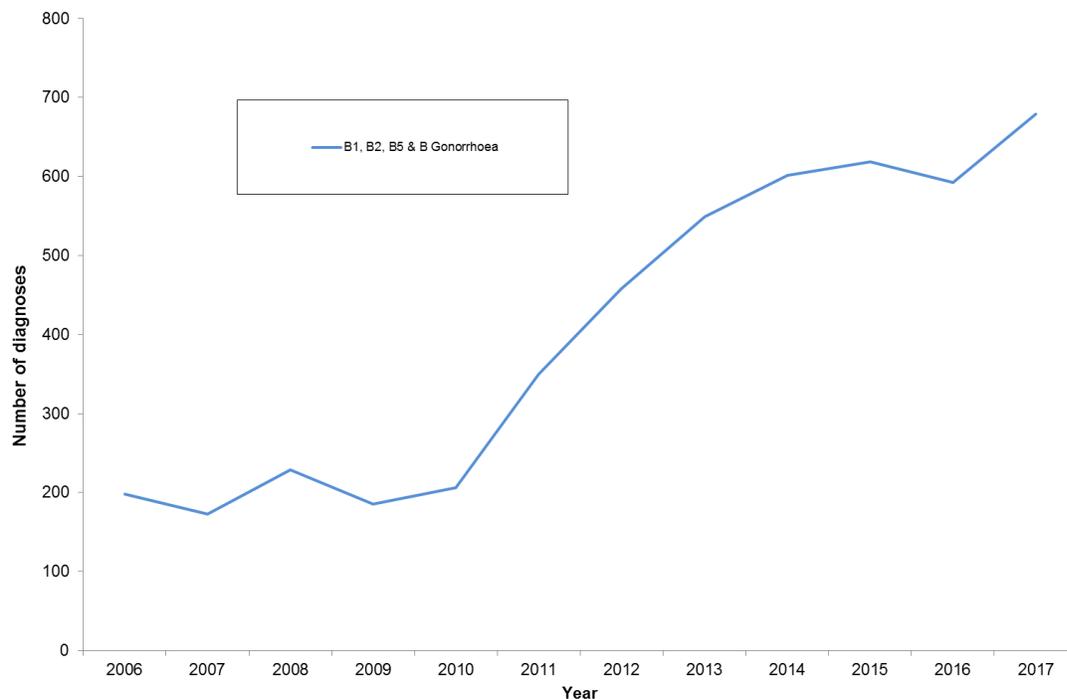
Gonorrhoea accounted for 12% (679/5,726) of all new STI diagnoses made in Northern Ireland GUM clinics during 2017.

- There were 679 new episodes of gonorrhoea diagnosed in Northern Ireland GUM clinics in 2017, compared with 592 in 2016, an increase of 15%.
- 529 (78%) of these were diagnosed in males.
- The highest diagnostic rates in both men and women were in the 20–24 years age group.
- 72% of female diagnoses were in the 16–24 years age group and 23% were in the 25–34 years age group.
- 39% of male diagnoses were in the 16–24 years age group and 35% were in the 25–34 years age group.
- 64% (340/529) of male diagnoses were attributed to MSM.

### Trends: 2006–2017

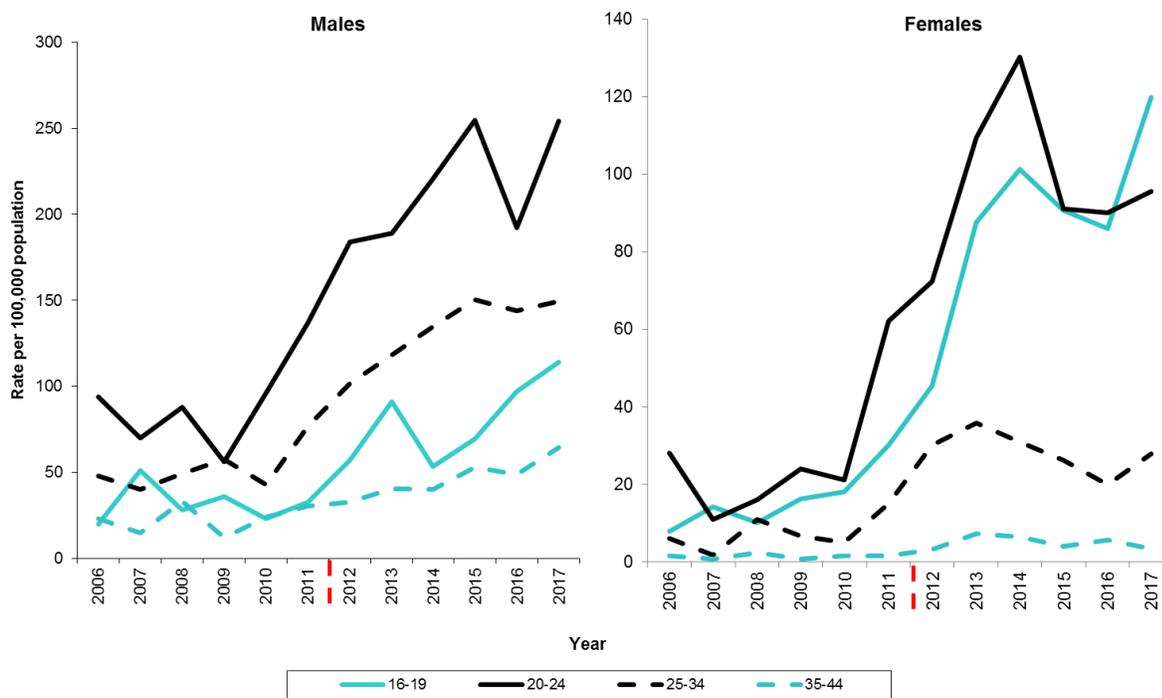
The annual number of diagnoses of gonorrhoea has shown very little change between 2006 - 2010. However diagnoses rose dramatically between 2010 and 2015 with a 200% increase; 619 diagnoses in 2015 compared with 206 in 2010 (Figure 3.1). The number of diagnoses in 2017 (679) is the highest ever recorded in Northern Ireland. The proportion of male diagnoses attributed to MSM ranged from 24% in 2006 to 65% in 2016, with 64% in 2017.

**Figure 3.1: Diagnoses of gonorrhoea in Northern Ireland, 2006–2017**



**Age, gender and sexual orientation trends: gonorrhoea**

**Figure 3.2: Rates of gonorrhoea in Northern Ireland, by age group, 2006–2017**

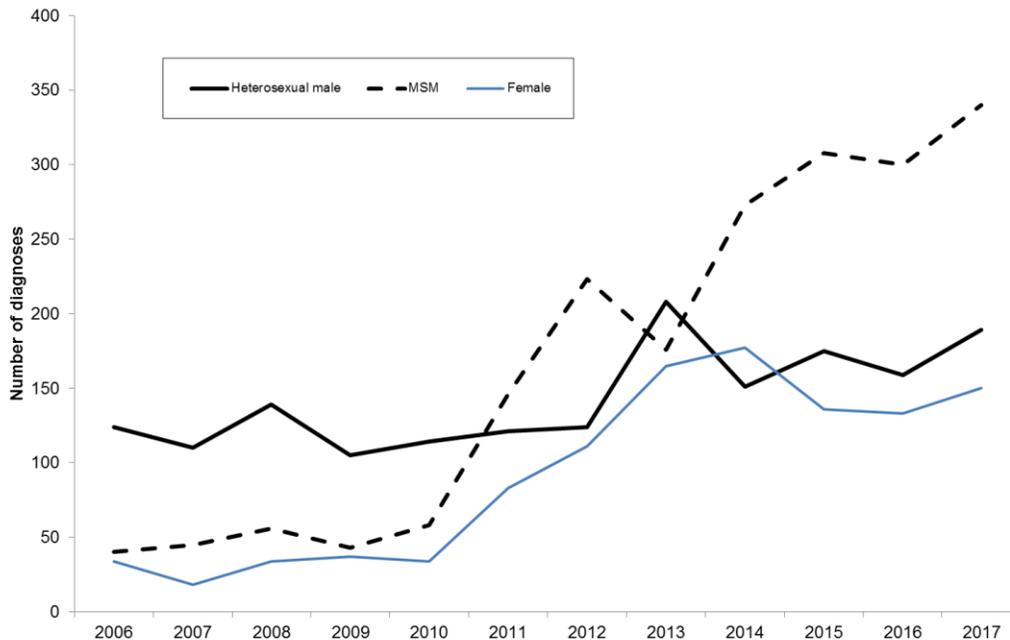


Footnote: Rates have been re-calculated from 2012 to include KC60 code B5 Complicated gonorrhoea

In males, all age groups have seen an increase in diagnostic rates since 2011. The largest increases and highest diagnostic rates have consistently been in the 20–24 years age groups, followed by the 25–34 years age group (Figure 3.2). From 2012–2017, fewer than 10 diagnoses were made annually in males aged under 16 years. Males aged 45 years and over accounted for 11% (282/2,626) of all male diagnoses during the period 2012–2017.

In females, the increases since 2011 have clearly mostly affected the 16-19, and 20-24 age groups (Figure 3.2). In 2017, episodes in females aged 16-19 years have increased by 40% when compared to 2016.

**Figure 3.3: Number of diagnoses of gonorrhoea by sexual orientation in Northern Ireland, 2006-2017**



The increase in diagnoses since 2010 has largely affected MSM and females. The number of MSM diagnoses continue to increase with 340 diagnosis made in 2017, the highest number recorded in Northern Ireland to date. There has been a much smaller though still generally upward trend in heterosexual males.

Interpretation of the increase in diagnoses is made difficult by the introduction across Northern Ireland of combined chlamydia and gonorrhoea PCR testing in both GUM and community settings since 2010. The increase in numbers of people tested, and the increased sensitivity of the test compared with traditional culture methods, particularly at extra genital sites, may at least partly explain the increase seen in both the heterosexual and MSM populations. This is unlikely, however, to account for the continued increases being seen.

### **Neisseria gonorrhoeae antimicrobial susceptibility reporting 2017**

Gonorrhoea is also of particular concern due to its ability to develop resistance to successive antimicrobial agents. Current treatment guidelines recommend the use of a combination of oral azithromycin and intra-muscular ceftriaxone, and that treatment should be followed by a test of cure. By combining antibiotics in this way it is hoped to slow the development of resistance to each component.

However, there is now evidence of emerging resistance to both these antibiotics. Resistance to azithromycin at minimum inhibitory concentration (MIC) levels >0.5 mg/l is reported throughout Europe. High-level azithromycin resistant (HL-AZiR) *Neisseria gonorrhoeae* (minimum inhibitory concentration (MIC) >256 mg/l) is now also detected more widely. There have also been a small number of reports of ceftriaxone resistance, mostly related to acquisition in Asia. The first global report of HLAZiR *Neisseria gonorrhoeae* which is also resistant to ceftriaxone was reported in England in 2018. The isolate was confirmed with a ceftriaxone MIC of 0.5 mg/L and an azithromycin MIC of >256 mg/L (high-level azithromycin resistant, HLAZiR). On wider antimicrobial susceptibility testing, the strain was susceptible only to spectinomycin.

*Neisseria gonorrhoeae* antimicrobial susceptibility in Northern Ireland is monitored through a combination of routine diagnostic laboratory surveillance and, since 2015, participation in the European Gonococcal Surveillance Project (Euro-GASP). This sentinel programme tests a small number of isolates using PHE reference lab methodology, and allows comparison (as part of an overall UK sample) with countries elsewhere in Europe.

During 2017, laboratories reported antibiotic susceptibility data for 273 isolates as part of routine surveillance. Ninety seven percent of isolates were tested against azithromycin and 99.6% tested against ceftriaxone. 7% (19) were identified as resistant to azithromycin and all were susceptible to ceftriaxone (Table 3.1).

From 2016 to the end of 2017, the reference lab confirmed less than 10 HL-AZiR cases in Northern Ireland, affecting mostly young heterosexuals. While to date there is no evidence of widespread transmission, enhanced surveillance will continue.

During 2017, 20 isolates were tested within the EUROGASP programme and showed similar resistance pattern to UK overall with 5% resistant to azithromycin and 0% to ceftriaxone<sup>2</sup>.

**Table 3.1: *Neisseria gonorrhoeae* antibiotic susceptibility reported activity for antibiotics - 2017**

Antibiotics	Susceptible		Resistant		Intermediate		Total specimens Reported	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Azithromycin	216	81.2	19	7.1	31	11.7	266	100
Cefotaxime	2	100	0	0	0	0	2	100
Ceftriaxone	272	100	0	0	0	0	272	100
Ciprofloxacin	194	78.5	51	20.6	2	0.8	247	100
Doxycycline	122	68.9	44	24.9	11	6.2	177	100
Penicillin	32	15.7	78	38.2	94	46.1	204	100

Key recommendations to reduce the spread of antimicrobial-resistant *Neisseria gonorrhoeae* are:

- all primary diagnostic laboratories should test gonococcal isolates for susceptibility to first line antimicrobials and refer azithromycin and/or ceftriaxone resistant isolates to the PHE reference laboratory for confirmation;
- all cases of gonorrhoea should be treated and managed within GUM services;
- GUM services should ensure all patients with gonorrhoea are treated and managed according to national guidelines and be alert to changes in antimicrobials recommended for front line use;
- anyone having sex with new or casual sexual partners should be advised to use condoms consistently and correctly and test regularly for sexually transmitted infections.

## 4: Genital herpes

Genital herpes is caused by the herpes simplex virus (HSV), of which there are two distinct subtypes. HSV2 is almost exclusively associated with genital infection. Historically, HSV1 has mainly been associated with oral infection, but the proportion of genital herpes attributed to HSV1 in the UK is increasing. Genital herpes infection may facilitate HIV transmission, can cause severe systemic disease in those with impaired immunity, and can be potentially fatal to neonates.

### Diagnoses made in GUM clinics during 2017

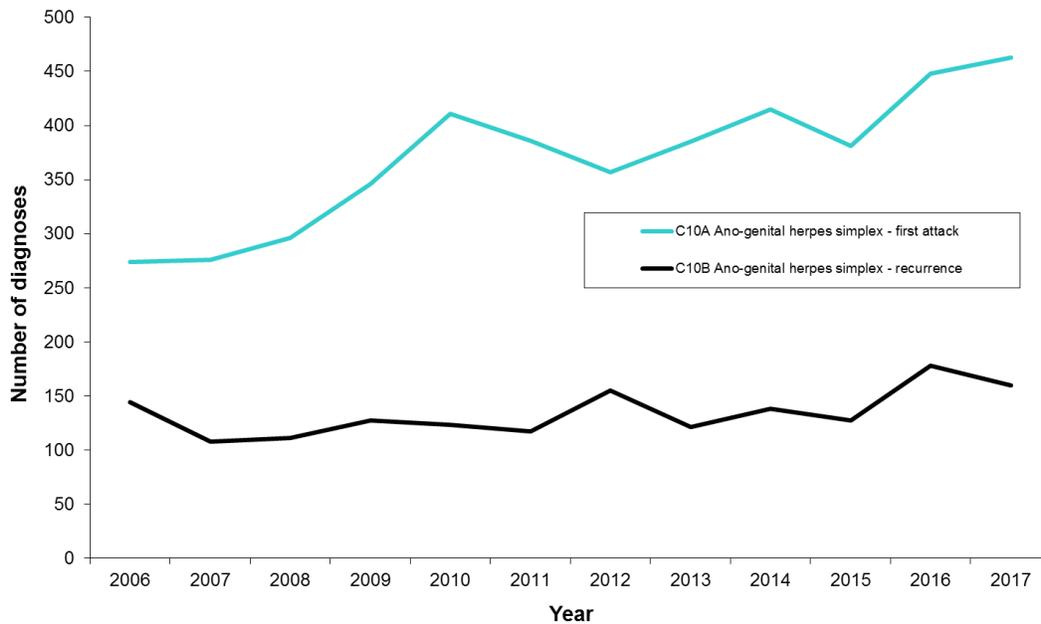
Genital herpes (first episodes) accounted for 8% (463/5,726) of all new STI diagnoses made in Northern Ireland GUM clinics during 2017.

- There were 623 episodes (first infections and recurrent infections) of genital herpes diagnosed in Northern Ireland GUM clinics in 2017.
- 400 (64%) of these were diagnosed in females.
- 463 (74%) of the total attendances for herpes in 2017 were for treatment of first infection and 160 (26%) were for treatment of recurrent infection.
- 26% of male diagnoses (58/223) and 26% (102/400) of female diagnoses were recurrent infections.
- The highest diagnostic rates of first infection in men were in the 20-34 years age group and in women were in the 16-24 years age group.
- Diagnostic rates of first infection in most age groups were higher in females, but most particularly in the 16-19 age group.
- 16% (27/165) of male first diagnoses occurred in MSM.

### Trends: 2006–2017

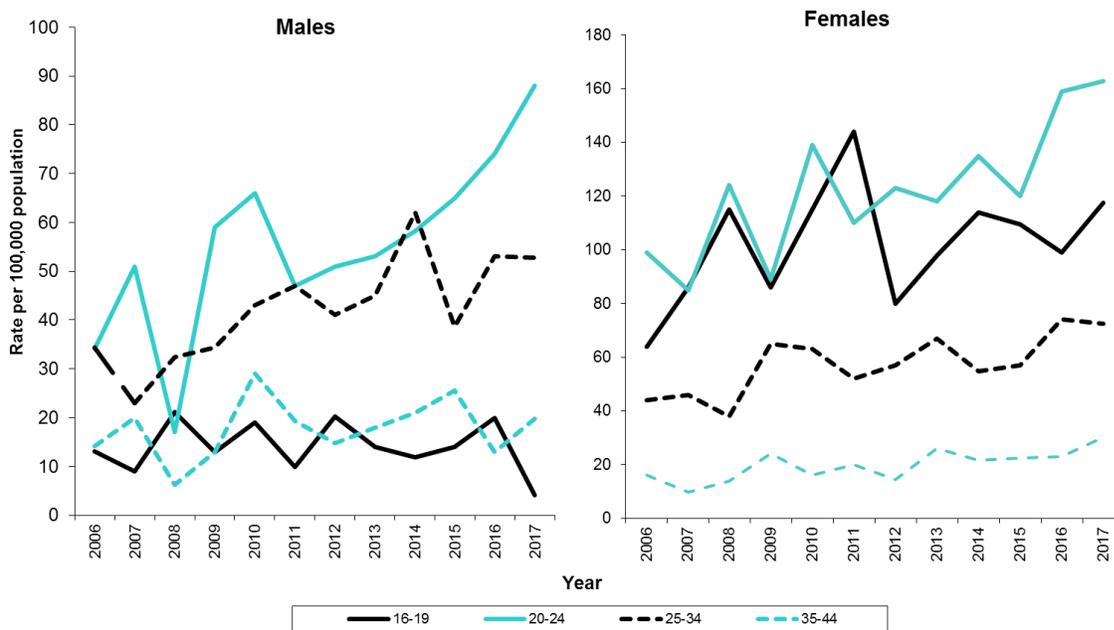
Annual numbers of first diagnoses of genital herpes increased each year from 2008-2010 with numbers remaining similar from 2011 to 2015. However, figures have increased by 22% in 2017 (463) when compare with 2015 (381). (Figure 4.1)

**Figure 4.1: Diagnoses of genital herpes in Northern Ireland, 2006–2017**



**Age and gender trends: genital herpes (first episode)**

**Figure 4.2: Rates of diagnosis of genital herpes (first episode) in Northern Ireland, by age and gender, 2006–2017**



Diagnostic rates in females were consistently highest in the 16–24 years age group. In males, the highest diagnostic rates were in the 20–34 years age group (Figure 4.2). The figures in the 20-24 age band in males have almost doubled since 2011.

Males under 20 years of age accounted for 6% (87/1,552) of all male diagnoses of genital herpes (first episode) made during the period 2006–2017, with diagnoses in the 45+ years age group accounting for 12% (181/1,552).

Females under 16 years of age accounted for 1% (36/2,886) of all female diagnoses made during the period 2006–2017, with diagnoses in the 45+ years age group accounting for 7% (208/2,886).

## 5: Genital warts

Genital warts are caused by human papillomavirus (HPV). There are approximately 100 types of HPV, of which about 40 infect the genital tract. HPV types 6 and 11 cause the majority of genital warts. Persistent HPV infections can also lead to cancers – anal, throat and penile cancers in men, and vaginal, vulval and cervical cancers in women. The majority of HPV related cancers are associated with types 16 and 18.

HPV vaccine for girls was introduced as a school based programme in Northern Ireland in 2008/09. Until September 2012 the vaccine used protected against the oncogenic types 16 and 18, but not those types causing genital warts.<sup>3</sup> From September 2012 onwards, the vaccine used also contains additional protection against types 6 and 11 which account for 90% of genital warts. In September 2014 the HPV immunisation programme changed from a three dose to a two dose schedule for those starting the course under the age of 15, in line with national recommendations.

From October 2016, the same quadrivalent HPV vaccine was introduced for MSM aged up to 45 years attending GUM clinics. Evidence suggests MSM attending GUM, sexual health and HIV treatment services bear a significantly increased burden of HPV related disease and adverse outcomes compared to heterosexual men. HPV type 16-associated anal cancers in particular are more common in MSM compared to heterosexual men. This is even more marked in those with HIV infection.

### Diagnoses made in GUM clinics during 2017

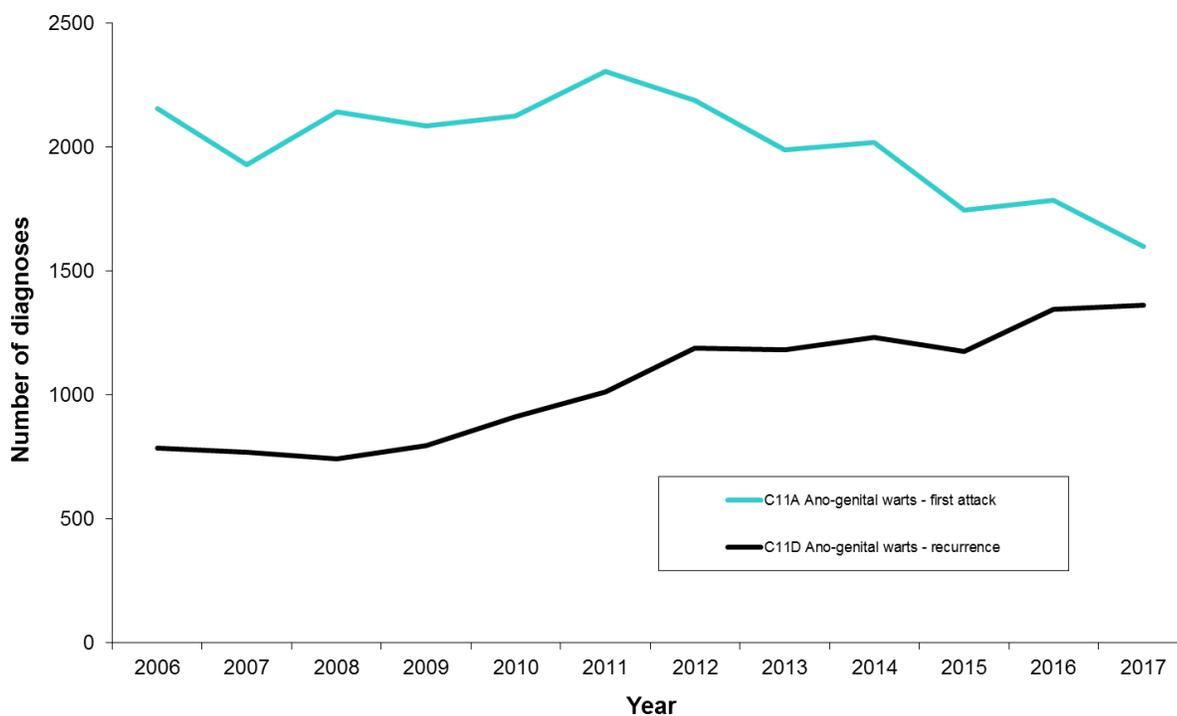
Genital warts (first episodes) accounted for 28% (1,600/5,726) of all new STI diagnoses made in Northern Ireland GUM clinics during 2017.

- There were 2,961 episodes (first infections and recurrent infections) of genital warts diagnosed in Northern Ireland GUM clinics in 2017.
- 1,861 (63%) of these were diagnosed in males.
- 1,600 (54%) of the total attendances for genital warts in 2017 were for treatment of first infection and 1,361 (46%) were for treatment of recurrent infection.
- 50% of male diagnoses (926/1,861) were recurrent infections, compared with 40% (435/1,100) of female diagnoses.
- The highest diagnostic rates of first infection in both men and women were in the 20–24 years age group.
- 31% of male diagnoses and 39% of female diagnoses of first infection were in the 20–24 years age group.
- The diagnostic rate in females aged 16–19 years (186/100,000) is higher than that of males the same age (112/100,000). However, diagnostic rates in those aged over 19 years were higher in males.
- 9% (82/935) of male first diagnoses occurred in MSM.

## Trends: 2006–2017

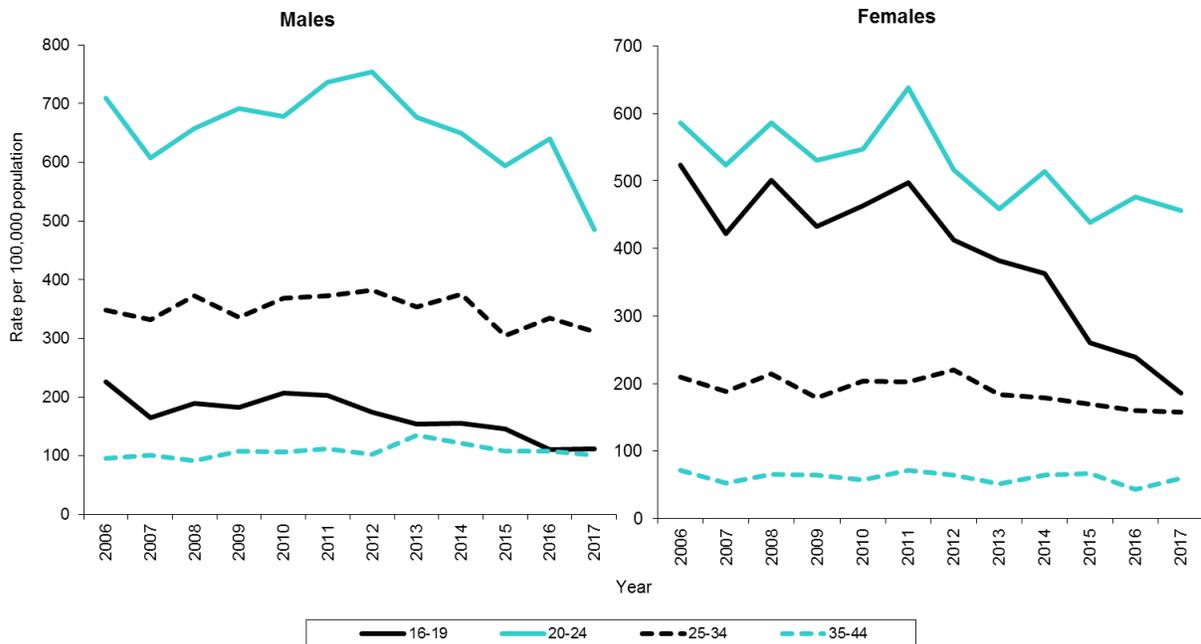
The number of annual diagnoses of first infections of genital warts has shown little variation between 2006 and 2011. There has been a 31% decrease in first episodes of infection since 2011 (Figure 5.1).

**Figure 5.1: Diagnoses of genital warts in Northern Ireland, 2006–2017**



## Age and gender trends: genital warts (first episode)

**Figure 5.2: Rates of diagnosis of genital warts (first episode) in Northern Ireland, by age and gender, 2006–2017**



Between 2006 and 2017, diagnostic rates have been consistently highest in 20-24 year old males and females, followed by 16-19 year old females and 25-34 year old males. Individuals under 16 year old accounted for 0.4% (90/24,076) of diagnoses (first episode) made during 2006-2017, while the 45+ year age group accounted for 6% (1,540/24,076).

During 2006-2017, the proportion of male diagnoses attributed to MSM ranged from 2% in 2006 to 10% in 2012, with 9% in 2017.

The decline in diagnostic rates from 2011 has been greatest in females aged 16-19 years (63%) and in males in the same age group (45%). It is like that this pattern in females is explained by an unexpected direct protective effect from the bivalent vaccine introduced in 2009, and the expected effect from the switch to the quadrivalent vaccine in 2012 with smaller indirect effects being seen in males.

## 6: Syphilis

Syphilis is a bacterial infection caused by the spirochete *Treponema pallidum*. Its importance lies in its ability to promote both the acquisition and transmission of HIV, and in the potential for serious or even fatal consequences if left untreated. Late syphilis can cause complications of the cardiovascular, central nervous and mucocutaneous systems. Infectious syphilis in pregnant women can cause miscarriage, stillbirth or congenital infection.

Northern Ireland has, in common with elsewhere in the UK and Europe, experienced a marked increase in infectious syphilis since 2000. In the decade prior to 2000, on average only one case of infectious syphilis per year was reported.

### Diagnoses made in GUM clinics 2017

During 2017:

- 35 new episodes of primary and secondary syphilis were reported;
- 15 additional episodes of early latent syphilis were also reported;
- 64% (32/50) were diagnosed in MSM;

### Enhanced surveillance 2017

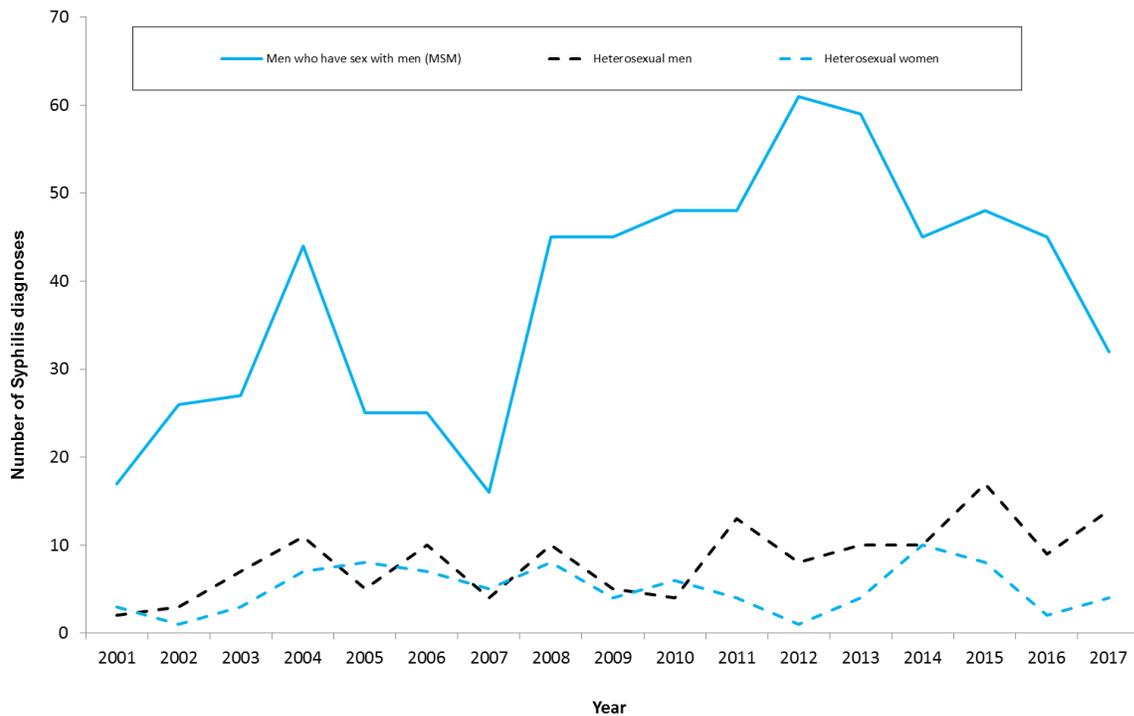
Information from enhanced surveillance arrangements is available for 43 cases:

- 43 episodes occurred in Northern Ireland residents and, in 28 episodes, syphilis was likely to have been acquired through exposure within Northern Ireland;
- 21% (9/43) also reported as being HIV positive;
- diagnosed co-infections also included chlamydia and gonorrhoea;
- 21% (9/43) reported having had two sexual partners in the three months preceding diagnosis.

### Trend information

Infectious syphilis is now endemic within Northern Ireland. Annual numbers of new diagnostic episodes have been consistently highest in MSM (Figure 6.1). Following an annual decrease from 2004 to 2007, numbers had increased from 2008 to 2015. However, 2016 saw a 24% decrease when compared to 2015; 56 in 2016 and 74 in 2015 there has been a further 11% decrease in 2017 (50). Numbers in females have remained relatively constant, while there is an upward trend in heterosexual males.

**Figure 6.1: Number of infectious syphilis diagnoses in Northern Ireland, by gender and sexual orientation, 2001-2017**

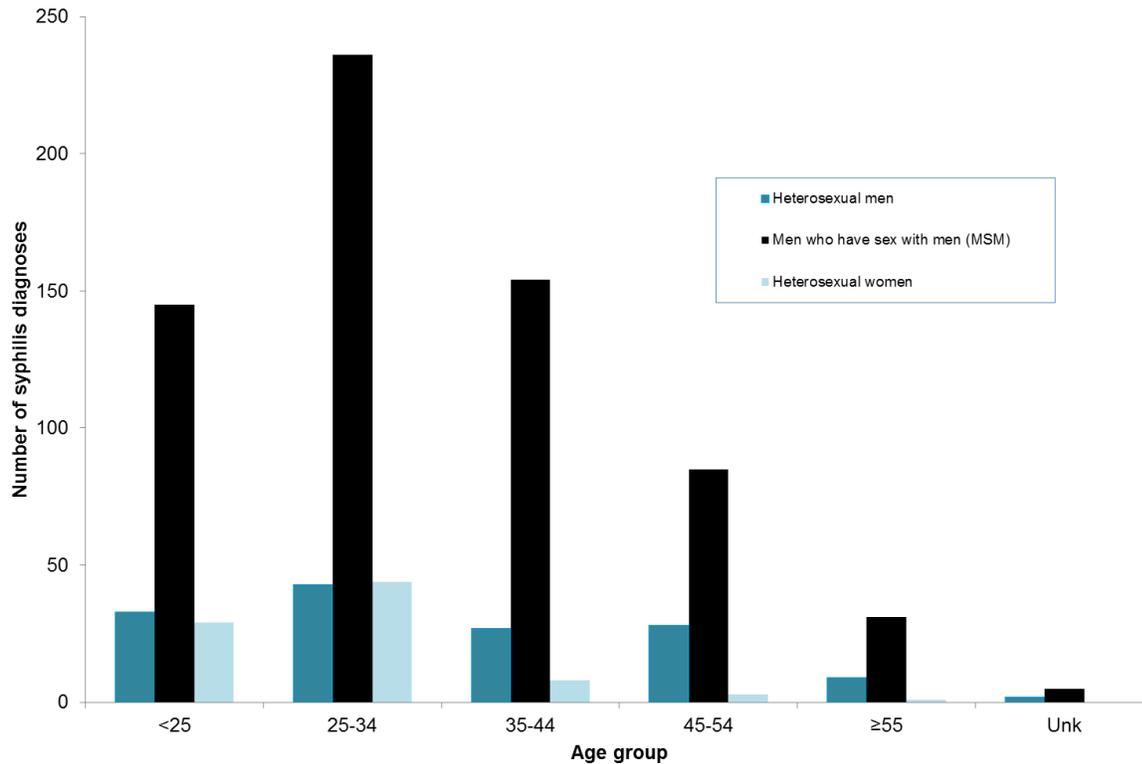


**Note:** Data derived from enhanced syphilis arrangements from 2001-2010 and from GUMCAD for 2011- 2017

### Age and sexual orientation

Analysis of cumulative data by age and sexual orientation shows the highest number of episodes in heterosexual females was in the 25–34 years age group (52%; 44/85). In MSM, the highest number of episodes was in the 25–44 years age group (59%; 390/656). In heterosexual males, diagnoses were more evenly spread across the age bands, with those aged 25+ years accounting for 75% (107/142) of diagnoses. Information on age was missing for seven episodes (Figure 6.2).

**Figure 6.2: Age distribution of syphilis diagnoses in Northern Ireland, by gender and sexual orientation, 2001–2017**

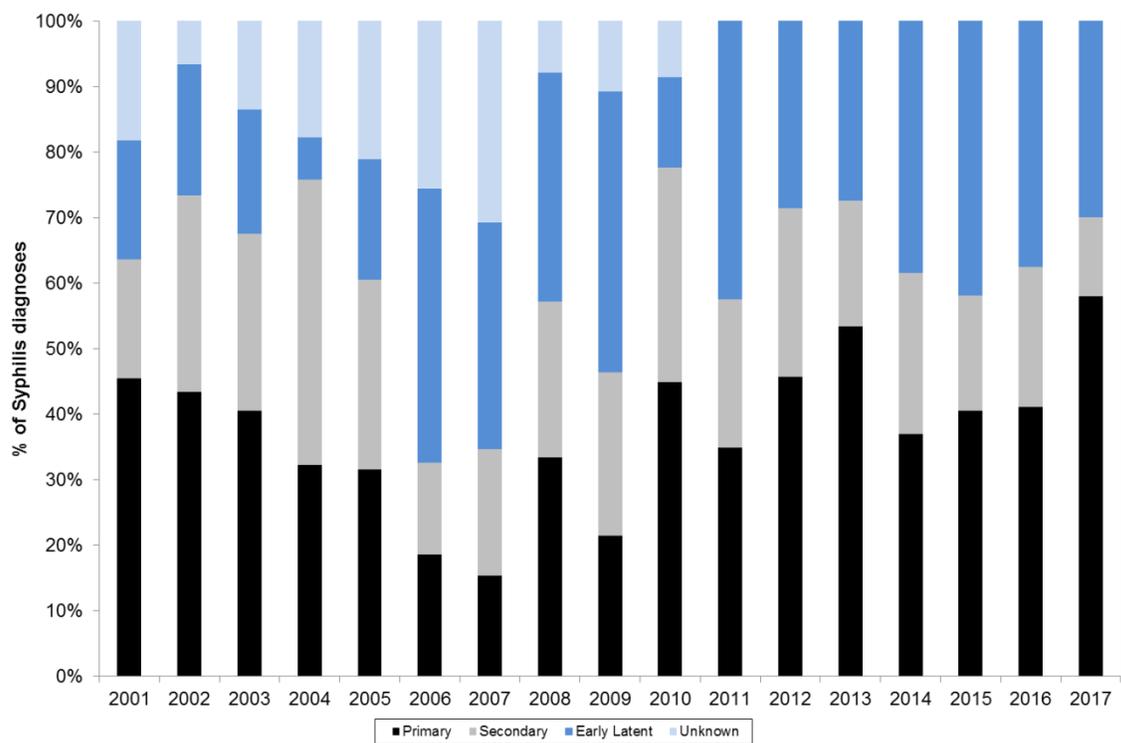


Note: Data derived from enhanced syphilis arrangements from 2001-2010 and from GUMCAD for 2011 -2017

### Stage of disease

Since 2001 the majority of diagnoses have been made at the primary or secondary stage of disease, although there has been some significant year to year variation. Interpretation of data prior to 2011 is difficult due to variation in the extent to which stage is unknown. Over the past 5 years the percentage of diagnoses made during the (symptomatic) primary stage of syphilis has ranged from 37% to 58%. This suggests there is still a significant lack of awareness of the signs and symptoms of infectious syphilis in the affected population.

**Figure 6.3: Stage of disease, by year of diagnosis**



**Note:** Data derived from enhanced syphilis arrangements from 2001-2010 and from GUMCAD for 2011-2017

## 7: Summary and conclusions

Compared with 2016, 2017 saw a small increase of 1% in annual numbers of new STI diagnoses made in Northern Ireland GUM clinics. Gonorrhoea increased by 15%, Genital Herpes by 3% and Chlamydia increased by 2%.

The highest diagnostic rates of the common STIs occur in 16-24 year old females and 20-34 year old males. People aged 16-34 year old account for 82% of new STIs.

MSM are at disproportionate risk of contracting some STIs accounting for 61% of male infectious syphilis, 64% of male gonorrhoea, 16% of male herpes and 24% of male chlamydia infections.

2017 has seen a 15% increase in the number of diagnoses of gonorrhoea made in GUM clinics. There were 679 diagnoses made, which is the highest number reported in Northern Ireland to date. Analysis of antimicrobial sensitivity patterns has shown a significant level of resistance to azithromycin, including the emergence of high-level azithromycin resistance disease. This highlights the importance of culturing specimens for antibiotic susceptibility, adhering to current treatment guidelines, and performing a test of cure for all cases of gonorrhoea. All cases of gonorrhoea should be managed within the GUM service.

Analysis suggests that a sustained decline in first episodes of genital warts is now occurring in young females, due to the impact of the human papilloma vaccine, first introduced (as a bivalent vaccine) in 2009, and (as a quadrivalent vaccine) in 2012. A smaller effect due to herd immunity is seen in similar aged males.

### Recommendations

Safer sex messages should continue to be promoted to the general population, young people and MSM. The risks to health of unprotected casual sex, both within and outside Northern Ireland, need to be reinforced.

Individuals can reduce their risk of acquiring or transmitting an STI by:

- Always using a condom when having sex with casual and new partners;
- Getting tested if at risk, as these infections are frequently asymptomatic;
- MSM having unprotected sex with casual or new partners should have an HIV/STI screen at least annually, and every three months if changing partners regularly;
- Reducing the number of sexual partners and avoiding overlapping sexual relationships.

# References

1. British Association for Sexual Health and HIV. UK National guideline for the management of gonorrhoea in adults 2011. Available at: [www.bashh.org/guidelines](http://www.bashh.org/guidelines)
2. Public Health England. The Gonococcal Resistance to Antimicrobials Surveillance Programme (GRASP). Available at: <https://www.gov.uk/government/publications/gonococcal-resistance-to-antimicrobials-surveillance-programme-grasp-report>.
3. Howell Jones R et al (2013). Declining genital warts in young women in England associated with HPV 16/18 vaccination: an ecological study. *J Infect Dis.* 1;208(9): 1397-403

## Appendix 1: STI groupings

<b>New STI diagnoses</b>
Chlamydial infection (uncomplicated and complicated)
Gonorrhoea (uncomplicated and complicated)
Infectious and early latent syphilis
Genital herpes simplex (first episode)
Genital warts (first episode)
New HIV diagnosis
Non-specific genital infection (uncomplicated and complicated)
Chancroid/lymphogranuloma venereum (LGV)/donovanosis
Molluscum contagiosum
Trichomoniasis
Scabies
Pediculus pubis
<b>Other STI diagnoses</b>
Congenital and other acquired syphilis
Recurrent genital herpes simplex
Recurrent and re-registered genital warts
Subsequent HIV presentations (including AIDS)
Ophthalmia neonatorum (chlamydial or gonococcal)
Epidemiological treatment of suspected STIs (syphilis, chlamydia, gonorrhoea, non-specific genital infection)
<b>Other diagnoses made at GUM clinics</b>
Viral hepatitis B and C
Vaginosis and balanitis (including epidemiological treatment)
Anogenital candidiasis (including epidemiological treatment)
Urinary tract infection
Cervical abnormalities
Other conditions requiring treatment at a GUM clinic

## Appendix 2: Number of new episodes of selected diagnoses by gender and age group, Northern Ireland, 2006-2017

	2006			2007			2008			2009			2010			2011			2012			2013			2014			2015			2016			2017			
	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total				
Chlamydia	<16																																				
	16-19	87	220	307	115	206	321	93	243	336	113	236	349	105	192	297	104	191	295	87	177	264	85	175	260	70	194	264	78	162	240	78	176	254	86	124	210
	20-24	445	458	903	375	342	717	477	385	862	447	327	774	423	338	761	424	374	798	390	329	719	387	396	783	391	443	834	336	309	645	298	354	652	346	304	650
	25-34	362	239	601	365	205	570	371	220	591	416	201	617	373	220	593	390	191	581	396	217	613	362	200	562	359	223	582	318	162	480	374	187	561	441	195	636
	35-44	80	39	119	65	36	101	76	27	103	81	39	120	96	28	124	71	20	91	77	29	106	78	35	113	85	42	127	70	34	104	94	27	121	97	22	119
	45+	*	*	27	*	*	23	*	*	41	33	5	38	*	*	46	47	9	56	39	*	*	11	45	9	54	*	*	7	*	*	*	*	*	*	*	
Total	993	986	1,979	938	805	1,743	1,050	896	1,946	1,090	816	1,906	1,036	796	1,832	1,036	794	1,830	959	764	1,723	946	824	1,770	950	917	1,867	856	678	1,534	891	757	1,648	1,025	659	1,684	
% in MSM	6%			4%			4%			11%			14%			15%			10%			12%			17%			14%			21%			24%			
Gonorrhoea*	<16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	16-19	*	*	15	27	7	34	15	5	20	19	8	27	12	9	21	17	15	32	22	*	46	42	88	*	48	*	35	43	78	48	40	88	55	54	109	
	20-24	58	17	75	44	7	51	56	10	66	36	15	51	61	13	74	87	38	125	116	44	160	117	66	183	136	78	214	157	54	211	117	52	169	153	54	207
	25-34	55	7	62	*	*	49	58	13	71	69	8	77	51	6	57	93	19	112	123	38	161	143	45	188	164	39	203	183	33	216	176	25	201	184	35	219
	35-44	*	*	32	*	*	21	*	*	45	*	*	16	30	*	*	*	40	*	*	44	48	9	57	47	8	55	62	5	67	57	*	*	*	*	79	
	45+	*	*	11	17	0	17	*	*	24	*	*	9	18	*	*	*	*	39	*	*	47	*	*	61	*	*	61	7	68	*	*	*	*	65		
Total	163	32	195	155	17	172	194	32	226	148	32	180	172	32	204	259	77	336	347	111	458	384	165	549	424	177	601	483	136	619	459	133	592	529	150	679	
% in MSM	24%			29%			29%			34%			34%			50%			65%			46%			64%			64%			65%			64%			
Syphilis	<16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	16-19	0	*	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	20-24	*	*	13	5	0	5	*	*	10	*	*	*	*	12	5	0	5	15	0	15	11	*	*	11	*	*	8	0	8	*	*	9	6	0	6	
	25-34	10	0	10	*	*	9	*	*	10	*	*	11	18	0	18	11	0	11	18	0	18	17	*	*	12	*	*	14	*	*	14	*	*	16	*	
	35-44	*	0	*	*	0	*	*	0	*	9	0	9	6	0	6	*	*	*	8	0	8	8	0	8	8	0	8	*	*	*	*	*	7	0	7	
	45+	*	0	*	*	0	*	8	0	8	6	0	6	*	10	10	0	10	0	10	0	10	10	0	10	5	0	5	9	0	9	7	0	7	*	6	
Total	*	*	30	*	*	22	*	*	33	*	*	29	*	*	46	*	*	38	50	0	50	48	*	*	34	7	41	40	5	45	33	2	35	*	*	35	
% in MSM	52%			52%			45%			78%			75%			78%			90%			83%			76%			75%			88%			61%			
Herpes	<16	0	*	*	0	*	*	0	*	*	0	*	0	*	0	6	6	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	16-19	7	33	40	5	44	49	11	58	69	7	43	50	10	57	67	5	71	76	10	39	49	7	47	54	6	54	60	7	52	59	10	46	56	*	*	55
	20-24	21	60	81	32	53	85	11	78	89	38	56	94	42	87	129	30	68	98	32	75	107	33	71	104	36	81	117	40	71	111	45	92	137	53	92	145
	25-34	39	52	91	27	55	82	38	47	85	41	80	121	52	79	131	56	65	121	50	72	122	55	85	140	76	69	145	47	71	118	65	93	158	65	91	156
	35-44	18	21	39	26	13	39	8	19	27	17	32	49	36	21	57	24	26	50	18	18	36	21	32	53	24	27	51	30	28	58	15	28	43	23	37	60
	45+	6	*	*	13	*	*	10	*	*	18	*	*	13	*	*	14	21	35	17	21	38	14	20	34	14	*	*	17	*	*	23	24	47	22	23	*
Total	91	183	274	103	173	276	78	218	296	121	225	346	153	258	411	129	257	386	127	230	357	130	255	385	156	259	415	141	240	381	158	290	448	165	298	463	
% in MSM	2%			4%			6%			7%			12%			11%			10%			16%			14%			14%			14%			16%			
Warts	<16	*	*	11	*	*	5	*	*	10	*	18	*	11	*	*	*	0	10	10	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	
	16-19	122	270	392	88	216	304	100	253	353	95	217	312	107	230	337	104	245	349	88	200	288	78	183	261	78	172	250	*	123	196	*	166	*	*	*	
	20-24	440	356	796	384	326	710	419	369	788	444	334	778	432	342	774	467	394	861	475	314	788	419	276	695	401	308	709	365	259	624	390	275	665	292	258	550
	25-34	401	249	650	387	227	614	439	262	701	400	221	621	442	255	697	448	254	702	462	278	739	427	232	659	456	226	682	371	214	585	409	200	609	384	198	582
	35-44	123	95	218	131	70	201	119	88	207	138	86	224	135	74	209	138	91	229	124	62	206	160	64	224	142	81	223	126	83	209	126	53	179	117	73	190
	45+	*	*	89	*	*	95	*	*	84	*	*	133	*	*	98	*	*	154	99	68	157	89	55	144	100	*	*	89	104	*	*	87	52	139		
Total	1,142	1,014	2,156	1,050	879	1,929	1,132	1,011	2,143	1,160	926	2,086	1,179	947	2,126	1,237	1,068	2,305	1,248	942	2,188	1,173	816	1,989	1,177	843	2,020	1,016	730	1,746	1,085	701	1,786	935	666	1,600	
% in MSM	2%			3%			2%			6%			8%			8%			10%			9%			9%			8%			9%			9%			
Total diagnoses	6,292	5,718	12,010	6,211	5,110	11,321	6,546	5,787	12,333	6,966	5,356	12,322	7,304	5,222	12,526	7,046	5,729	12,775	6,117	5,000	11,117	5,728	4,752	10,480	5,953	4,937	10,890	5,481	4,186	9,667	5,692	4,375	10,067	5,341	3,888	9,229	
Total workload	8,871	7,104	15,975	8,480	6,488	14,968	8,897	8,321	18,218	11,903	9,698	21,601	13,242																								

### Appendix 3: Rates of new episodes of selected diagnoses by gender and age group, Northern Ireland, 2006-2017

	2006			2007			2008			2009			2010			2011			2012			2013			2014			2015			2016			2017			
	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total				
Chlamydia	<16	*	*	28.8	*	14.6	*	*	17.4	0.0	22.1	10.8	*	*	14.9	0.0	25.0	12.2	0.0	*	*	*	20.1	0.0	17.7	8.6	*	11.8	*	*	*	*	*	*			
	16-19	161.1	427.1	291.9	215.4	402.8	309.8	176.1	481.1	325.9	216.4	471.1	341.1	203.0	386.2	292.8	203.1	387.7	293.6	167.6	366.1	299.9	196	364.5	257.7	135.0	383.7	255.8	154.9	341.5	245.4	155.8	371.8	260.8	178.1	275.2	225
	20-24	718.5	753.3	735.7	593.0	548.5	570.9	749.5	610.9	680.6	697.1	519.2	609.0	663.5	540.7	622.7	669.5	606.0	638.2	614.3	517.5	566.7	622.1	605.2	613.8	624.5	698	655.9	645	516.0	530.7	484.7	599.4	540.9	575.3	537.9	557.2
	25-34	314.2	201.1	256.8	313.3	169.8	240.3	314.5	179.6	245.8	349.5	162.5	254.2	311.0	176.3	242.3	324.6	152.1	236.4	297.4	166.5	230.6	293.3	151.3	220.8	290	163.4	225.6	261.3	128.5	193.7	306.0	148.7	226.3	358.4	155.6	256.1
	35-44	62.1	29.3	45.4	50.2	27.0	38.4	58.8	20.2	39.2	63.4	29.4	46.1	76.2	21.4	48.3	57.3	15.5	36.0	60.0	22.1	40.7	61.4	22.4	41.5	71.6	30.7	50.6	59.7	27.5	43.1	80.4	21.9	50.3	83.5	17.9	49.8
	45+	*	*	4.2	*	3.5	*	*	6.1	10.3	1.4	5.6	*	*	6.6	14.0	2.4	7.9	10.2	*	*	*	2.1	*	12.1	1.8	6.7	*	1.8	*	*	*	*	*	*	*	
<b>Total</b>	<b>116.4</b>	<b>110.8</b>	<b>113.5</b>	<b>108.8</b>	<b>89.5</b>	<b>98.9</b>	<b>120.6</b>	<b>98.7</b>	<b>109.4</b>	<b>124.1</b>	<b>89.2</b>	<b>106.3</b>	<b>117.1</b>	<b>86.5</b>	<b>101.5</b>	<b>116.5</b>	<b>85.8</b>	<b>100.9</b>	<b>105.1</b>	<b>79.2</b>	<b>91.9</b>	<b>103.7</b>	<b>82.5</b>	<b>92.9</b>	<b>103.4</b>	<b>90.7</b>	<b>96.9</b>	<b>94.8</b>	<b>72.3</b>	<b>83.3</b>	<b>98.0</b>	<b>80.3</b>	<b>89.0</b>	<b>111.4</b>	<b>69.3</b>	<b>90.0</b>	
Gonorrhoea	<16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	16-19	*	*	14.2	50.6	13.7	32.5	28.4	9.9	19.4	36.4	16.0	26.4	23.2	18.1	20.7	33.2	30.4	31.9	*	45.3	*	90.9	87.6	89.3	*	101.2	*	69.5	90.6	79.8	95.8	84.5	90.3	113.9	119.9	116.8
	20-24	93.6	28.0	61.1	69.6	11.2	40.6	88.0	15.9	52.1	56.1	23.8	40.1	95.7	20.8	58.6	137.4	61.6	100.0	184.1	70.6	128.4	187.4	104.5	146.5	219	121.9	171.1	254.6	90.2	173.6	190.3	88.1	140.2	254.4	95.5	177.4
	25-34	47.7	5.9	26.5	*	20.7	49.2	10.6	29.5	58.0	6.5	31.7	42.5	4.8	23.3	77.4	15.1	45.6	100.8	27.7	63.5	116.5	34.1	74.4	133.9	23.8	77.9	150.4	26.2	87.2	144	19.9	81.1	149.5	27.9	88.2	
	35-44	*	*	12.2	*	8.0	*	17.1	*	6.1	23.8	*	12.5	*	15.8	*	15.8	*	15.8	*	17.7	40.4	5.6	22.6	39.2	4.8	21.6	52.9	4.0	27.8	48.7	*	*	*	*	33	
	45+	*	*	1.7	5.6	0.0	2.6	*	3.6	*	1.3	5.5	*	2.7	*	2.7	*	2.7	*	11.1	*	13.2	*	13.2	*	13.2	*	16.9	1.8	8.9	*	*	*	*	8.3		
<b>Total</b>	<b>19.1</b>	<b>3.6</b>	<b>11.2</b>	<b>18.0</b>	<b>1.9</b>	<b>9.8</b>	<b>22.3</b>	<b>3.5</b>	<b>12.7</b>	<b>16.8</b>	<b>3.5</b>	<b>10.0</b>	<b>19.4</b>	<b>3.5</b>	<b>11.3</b>	<b>29.1</b>	<b>8.3</b>	<b>18.5</b>	<b>38.5</b>	<b>11.5</b>	<b>24.7</b>	<b>42.4</b>	<b>16.8</b>	<b>29.3</b>	<b>46.6</b>	<b>17.2</b>	<b>31.6</b>	<b>53.5</b>	<b>14.5</b>	<b>33.6</b>	<b>50.5</b>	<b>14.1</b>	<b>32.0</b>	<b>57.5</b>	<b>15.8</b>	<b>36.3</b>	
Syphilis	<16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	16-19	0.0	*	10.6	7.9	0.0	4.0	*	1.6	7.9	*	*	*	9.5	7.9	0.0	4.0	23.8	0.0	12.1	17.8	*	*	17.8	*	*	13.0	0.0	6.6	*	*	14.6	10	0.0	5.1		
	20-24	8.7	0.0	4.3	*	3.8	*	2.4	4.2	*	4.5	15.0	0.0	7.4	9.2	0.0	4.5	14.9	0.0	7.3	14.0	*	*	9.9	*	*	11.5	*	6.5	*	*	11.5	*	6.4			
	25-34	*	0.0	*	*	0.0	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	35-44	*	0.0	*	*	0.0	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	45+	*	0.0	*	*	0.0	*	2.6	0.0	1.2	1.9	0.0	0.9	*	1.4	3.0	0.0	1.4	6.6	0.0	3.2	2.9	0.0	1.4	1.4	0.0	0.7	2.5	0.0	1.2	1.9	0.0	1.9	*	*	2.9	
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>1.7</b>	<b>0.0</b>	<b>0.0</b>	<b>1.2</b>	<b>0.0</b>	<b>0.0</b>	<b>1.9</b>	<b>0.0</b>	<b>0.0</b>	<b>1.6</b>	<b>0.0</b>	<b>0.0</b>	<b>2.5</b>	<b>0.0</b>	<b>2.1</b>	<b>5.6</b>	<b>0.0</b>	<b>2.7</b>	<b>5.4</b>	<b>0.0</b>	<b>2.8</b>	<b>3.8</b>	<b>0.7</b>	<b>2.2</b>	<b>4.4</b>	<b>0.5</b>	<b>2.4</b>	<b>3.6</b>	<b>0.2</b>	<b>3.8</b>	<b>3.6</b>	<b>0.2</b>	<b>1.9</b>		
Herpes	<16	0.0	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.7	8.1	0.0	13.9	6.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	16-19	13.0	64.1	37.9	9.4	86.0	46.9	20.8	114.8	66.8	13.4	85.8	48.9	10.3	114.7	66.1	9.8	144.1	75.6	19.7	80.3	49.4	13.8	96.0	54.8	11.9	113.8	61.3	13.9	109.6	60.3	20.0	97.2	57.5	*	58.9	
	20-24	33.9	98.7	66.0	50.6	85.0	67.7	17.3	123.8	70.3	59.3	88.9	74.0	65.9	139.2	102.2	47.4	110.2	78.4	50.8	123.2	86.4	53.3	117.7	85.1	58.4	135.3	96.3	64.9	118.6	91.3	73.2	155.8	113.7	88.1	162.8	124.3
	25-34	33.8	43.8	38.9	23.2	45.5	34.6	32.2	38.4	35.3	34.4	64.7	49.8	43.4	63.3	53.5	46.6	51.8	49.2	41.3	57.1	49.4	45.4	67.3	56.6	62.4	54.7	58.5	38.6	56.3	47.6	53.2	74.0	63.7	52.8	72.6	62.8
	35-44	14.0	15.8	14.9	20.1	9.7	14.8	6.2	14.2	10.3	13.3	24.1	18.8	28.6	16.1	22.2	19.4	20.2	19.8	14.8	14.2	14.5	17.7	25.6	21.8	20.5	21.8	21.2	25.6	22.6	24.1	12.8	22.7	17.9	19.8	30.1	25.1
	45+	2.0	*	4.2	*	3.2	*	5.6	*	4.0	*	4.0	*	4.2	5.6	4.9	5.0	5.5	5.3	4.0	5.2	4.6	3.9	*	4.8	*	4.8	*	6.4	6.0	6.2	5.9	5.6	5.7			
<b>Total</b>	<b>10.7</b>	<b>20.6</b>	<b>15.7</b>	<b>11.9</b>	<b>19.2</b>	<b>15.7</b>	<b>9.0</b>	<b>24.0</b>	<b>16.6</b>	<b>13.8</b>	<b>24.6</b>	<b>19.3</b>	<b>17.3</b>	<b>28.0</b>	<b>22.8</b>	<b>14.5</b>	<b>27.8</b>	<b>21.3</b>	<b>14.2</b>	<b>24.8</b>	<b>19.6</b>	<b>14.5</b>	<b>27.3</b>	<b>21.0</b>	<b>17.3</b>	<b>27.6</b>	<b>22.5</b>	<b>15.6</b>	<b>25.6</b>	<b>20.7</b>	<b>17.4</b>	<b>30.8</b>	<b>24.2</b>	<b>17.9</b>	<b>31.3</b>	<b>24.7</b>	
Warts	<16	*	*	14.4	*	6.6	*	13.4	*	24.2	*	14.9	*	14.9	*	0.0	27.9	13.6	0.0	17.2	8.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	16-19	226.0	524.2	371.6	164.8	422.1	290.7	189.4	500.9	341.7	182.0	433.2	305.0	206.9	462.7	323.3	203.1	497.3	347.4	173.6	411.7	290.1	154.1	381.7	264.8	154.9	362.6	255.6	*	259.3	259.3	*	170.4	*	147.8		
	20-24	710.4	585.5	648.6	607.2	522.8	565.3	658.4	585.5	622.1	692.4	530.4	612.1	677.6	547.1	613.0	737.4	638.4	688.5	754.0	515.8	637	677.0	457.6	568.8	650.4	514.3	583.4	592.0	432.5	432.5	634.3	465.7	551.7	485.5	456.5	471.5
	25-34	348.0	209.6	277.7	332.2	188.0	258.8	372.1	213.9	291.5	336.0	178.6	255.8	368.6	204.3	284.8	372.8	202.3	285.7	381.7	220.4	299.4	352.8	183.8	266.5	374.7	179.2	275.2	304.8	169.7	169.7	334.7	159.0	245.6	312.1	158.0	234.3
	35-44	95.4	71.4	83.2	101.2	52.5	76.5	92.1	65.9	78.8	108.0	64.9	86.0	107.1	56.6	81.4	111.4	70.6	90.6	102.0	64.7	83	134.6	51.3	91												



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