

Sex Worker Health Surveillance: a Report to the New South Wales Ministry of Health

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This report contains data from the following health services including outreach initiatives:

- Albury Sexual Health Service
- Bega Community Health Service
- Blue Mountains Sexual Health Clinic
- Bourke Sexual Health Service
- Broken Hill Sexual Health Clinic
- Campbelltown Sexual Health Clinic
- Coffs Harbour Sexual Health Clinic (Clinic 916)
- Dubbo Sexual Health
- Forster Community Health Service
- Goulburn Community Health Centre
- Grafton Sexual Health Clinic (Clinic 229)
- Griffith Community Health Centre
- Illawarra Sexual Health Clinic
- Lightning Ridge Health Service
- Lismore Sexual Health Service
- Liverpool Sexual Health Clinic
- Mt Druitt Community Health Centre
- Narooma Community Health Centre
- Nepean Sexual Health Clinic
- Newcastle Sexual Health Service
- Nowra Sexual Health Clinic
- Orange Sexual Health Clinic
- Queanbeyan Community Health Centre
- RPA Sexual Health Clinic
- Sydney Sexual Health Centre
- Tamworth Sexual Health Centre (Clinic 468)
- Taree Manning Clinic
- Tweed Valley Sexual Health Service (Clinic 145)
- Wagga Wagga Sexual Health Service
- WAYS Youth Clinic Bondi Junction
- Wentworth/Balranald Sexual Health Service
- Western Sydney Sexual Health Centre

EXECUTIVE SUMMARY

This report collates data on the sexual health of sex workers attending 32 sexual health clinics in New South Wales (NSW) from 2007 to 2015. Key findings include:

- Male and female sex workers attending sexual health clinics tended to be slightly older than non-sex workers and were more likely to live in an urban area. Female sex workers were less likely to be of Aboriginal or Torres Strait Islander background and more likely than non-sex workers to be born overseas (**Table 1**)
- In 2015, one third of female sex workers attending NSW sexual health clinics were born in Australia or New Zealand while over half were born in Asian countries (**Figure 1**)
- Sex workers attending sexual health clinics reported high rates of consistent condom use with commercial partners (**Table 2**)
- Over time, the proportion of male and female sex workers reporting injecting drug use in the year prior to consultation decreased (**Table 2**), but remained higher than in other men and women attending sexual health clinics
- Uptake and frequency of sexual health screening was high among both male and female sex workers, with frequency of full screen (i.e., test for chlamydia, gonorrhoea, infectious syphilis, and, among HIV negative patients, HIV) increasing over time (**Figure 4**)
- The incidence of chlamydia, gonorrhoea, infectious syphilis, and HIV infections were calculated, which is an indicator of new infections. It is different from positivity, which cannot assess when an infection was acquired and is therefore susceptible to delays between infection and diagnosis
- Overall, incidence of infection among sex workers was similar to incidence among non-sex workers
- The incidence of HIV was similar among sex worker and non-sex worker gay and bisexual men and stable over time (**Figure 6**)
- The incidence of anogenital chlamydia increased among female sex workers from 2007 to 2015 (**Figure 8**)
- The incidence of anogenital chlamydia also increased among male sex workers but was similar to the general clinic population of gay and bisexual men not reporting sex work (**Figure 8**)
- Anogenital gonorrhoea incidence increased among both male and female sex workers, rising threefold among male sex workers (7.1 per 100PY in 2007 to 27.0 per 100PY in 2015) (**Figure 10**) and reflecting a similar increase among non-sex worker gay and bisexual men
- New diagnoses of infectious syphilis were uncommon among female sex workers with incidence at zero or near zero each year (**Figures 12**)
- The incidence of infectious syphilis among male sex workers increased over time, but was lower overall than incidence of chlamydia and gonorrhoea (**Figure 12**)

INTRODUCTION

People who sell sex ('sex workers') are considered a priority population in the *NSW HIV Strategy 2016-2010* and the *NSW Sexually Transmissible Infections Strategy 2016-2020*. While previous Australian research has found generally high rates of condom use among men and women who sell sex [1-3] coupled with low rates of infection [4, 5], monitoring the sexual health of sex workers is a key strategy in evaluating and maintaining these successes. Because sex work can involve a large and diverse number of sexual partners, sex workers have unique health needs and concerns. Further, the social stigma that many sex workers experience may affect their health-seeking behaviours, which has particular implications for sexual health testing and treatment [6]. From 2007 to 2015, this report collates data on testing and diagnoses of *Chlamydia trachomatis* ('chlamydia'), *Neisseria gonorrhoeae* ('gonorrhoea'), *Treponema pallidum* ('syphilis'), and *human immunodeficiency virus* ('HIV') among sex workers attending publicly-funded sexual health clinics in NSW.

METHODS

The *Australian Collaboration for Coordinated Enhanced Sentinel Surveillance of Sexually Transmissible Infections and Blood borne Viruses – ACCESS* – is a national sexual health surveillance network. Established in 2007, ACCESS's initial focus was on chlamydia but expanded in 2013 to include other STIs and blood borne viruses. Currently, the ACCESS network comprises over 120 sites across every Australian jurisdiction.

This report includes data from 32 sexual health clinics in NSW. From each clinic, de-identified data on clinical encounters, testing, and treatment were electronically extracted. Patients were identified as a 'sex worker' if they reported any sex work in the 12 months prior to the consultation. For comparative purposes, a patient reporting no sex work in the 12 months prior to consultation was categorised as a 'non-sex worker'. While information on sex work is collected by all sexual health clinics in the state, the method of collection and level of detail can vary between services. While some services collect sex work information as a part of *pro forma* paper or electronic intake forms, others collect such information less routinely. Regardless of the method of collection, identifying of sex workers relies ultimately on individuals choosing to disclose this information to clinical staff, which for some may be a barrier given the associated stigma. Conversely, specialised clinics and tailored services for sex workers offered by some clinics may encourage those involved with sex work to disclose that information to clinic staff.

Chi-squared tests were used to compare the demographic and behavioural characteristics of patients reporting sex work with those who did not. Testing uptake (defined as the proportion of attending patients tested at least one in each calendar year) was calculated for chlamydia, gonorrhoea, syphilis and HIV. The following indicators were also calculated to assess infection status:

- Positivity: proportion of individuals tested at their *first visit* to a service during the reporting period who had a positive result or recorded diagnosis, and
- Incidence: among people with at least two tests, the number of new infections (negative to positive test) divided by the time at risk ('person years') as determined by the time between the two tests for each patient. The date of infection was assigned based on the midpoint between the last negative and positive test.

Analyses also incorporated duplex nucleic acid application tests (NAATs) for chlamydia and gonorrhoea [7]. Pathology laboratories were surveyed for the date that duplex NAAT testing was introduced, after which time a test for chlamydia was also considered a test for gonorrhoea and *vice versa*. For some indicators, pharyngeal test results were excluded, as collection of routine throat swabs were only introduced in recent years and would, therefore, have challenged time trend interpretation. For syphilis, recorded clinical diagnoses were used to identify infectious syphilis, defined as primary, secondary or early latent (less than 2 years). Wilcoxon rank-sum tests for trend were used to assess changes over time, and analyses of variance (ANOVAs) were used to assess changes to mean values at a significance value of $p < 0.05$.

SEX WORKER DEMOGRAPHICS

In 2015, 2,202 female patients (20%) attending sexual health clinics in NSW were identified as sex workers, up from 1,596 (13%) in 2007, a 38% increase (p<0.001). In 2015, 340 male patients (1%) were identified as sex workers, up from 148 (1%) in 2007 (130% increase, p<0.001).

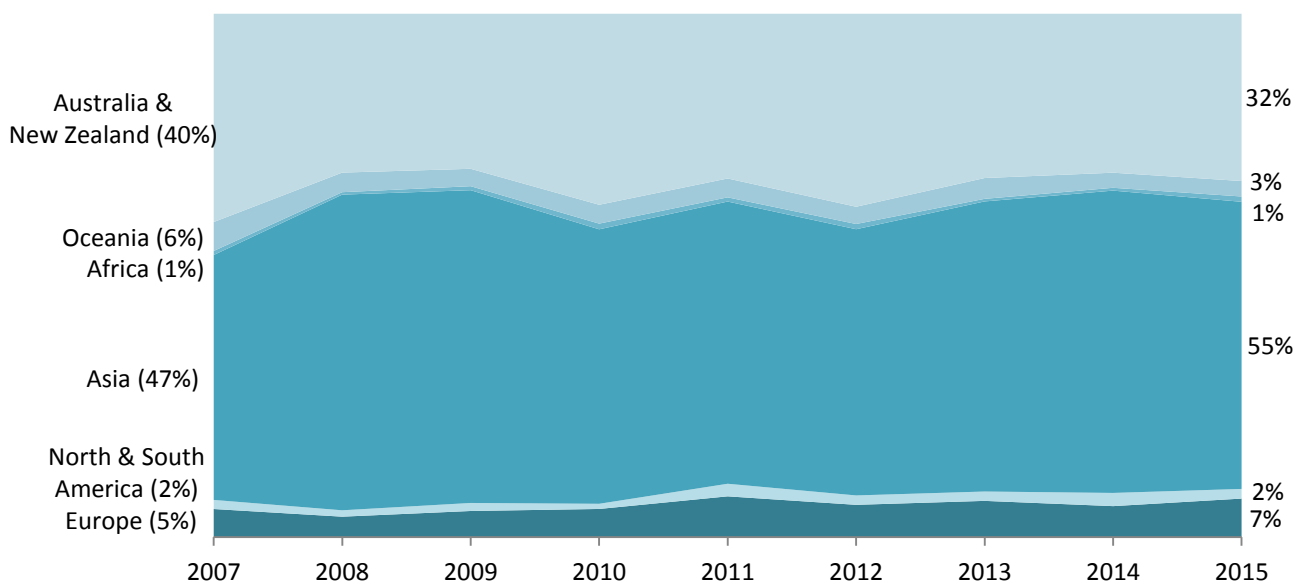
Table 1. Demographic characteristics at first visit among patients attending sexual health clinics in NSW, by sex and sex worker status

	Females			Males		
	Sex workers	Others	p-value	Sex workers	Others	p-value
Age (mean) in years	32.2	28.6	<0.001	33.6	32.9	0.03
Live in urban areas (postcode)	8,552 (91%)	38,241 (68%)	<0.001	1,013 (84%)	72,806 (79%)	<0.001
Aboriginal or Torres Strait Islander	239 (3%)	4,683 (8%)	<0.001	46 (4%)	4,267 (5%)	0.2
Australia/New Zealand born	3,122 (32%)	37,416 (65%)	<0.001	732 (60%)	58,656 (62%)	0.07

Table 1 compares the demographics of sex workers and other patients attending the clinics. Both male and female sex workers attending sexual health clinics in NSW tended to be slightly older than non-sex workers and while the mean age of female sex workers remained stable over time (~33.5 years, p=0.7) it decreased slightly among male sex workers from 35.4 years in 2007 to 32.6 years in 2015 (p=0.001). Sex workers of both genders were more likely than non-sex workers to live in urban areas.

Among women, sex workers were less likely than non-sex workers to be of Aboriginal or Torres Strait Islander background or born in Australia or New Zealand (Table 1). From 2007, the majority of female sex workers attending sexual health clinics in NSW were born overseas with the proportion born in Asian countries increasing from 47% in 2007 to 60% in 2008 (p<0.001) and remaining stable around 55% thereafter (Figure 1).

Figure 1. Region of birth* of female sex workers attending NSW sexual health clinics for the first time, by year, 2007-2015



*Excludes patients for whom country of birth was not recorded

DRUG USE AND SEXUAL BEHAVIOUR

Table 2 details the proportion of sex workers reporting three primary factors associated with infection risk: condom use with commercial partners ('clients'), the number of clients per week, and the use of injecting drugs. Over time, male and female sex workers reported high rates of consistent condom use with clients (i.e., condom use 100% of the time) and a median number of partners per week between 12-16 for women and 4-15 for men. It is worth noting that although a proportion of sex workers each year reported less than 100% condom use with clients, condom use was still quite high: 97% of female sex workers reported 90% of greater condom use in 2015, as did 80% of male sex workers. There were no trends in condom use or client numbers over time (Table 2).

The proportion of male sex workers reporting injecting drug use fell from 18% in 2007 to 7% in 2015 ($p < 0.001$) and from 6% to 4% among female sex workers ($p < 0.001$; Table 2). In 2015, after controlling for demographic factors male patients reporting sex work were 3.5 times more likely than their non-sex worker peers to report injecting drug use ($p < 0.001$), and female sex workers were 2.1 times more likely than their non-sex worker peers ($p < 0.001$).

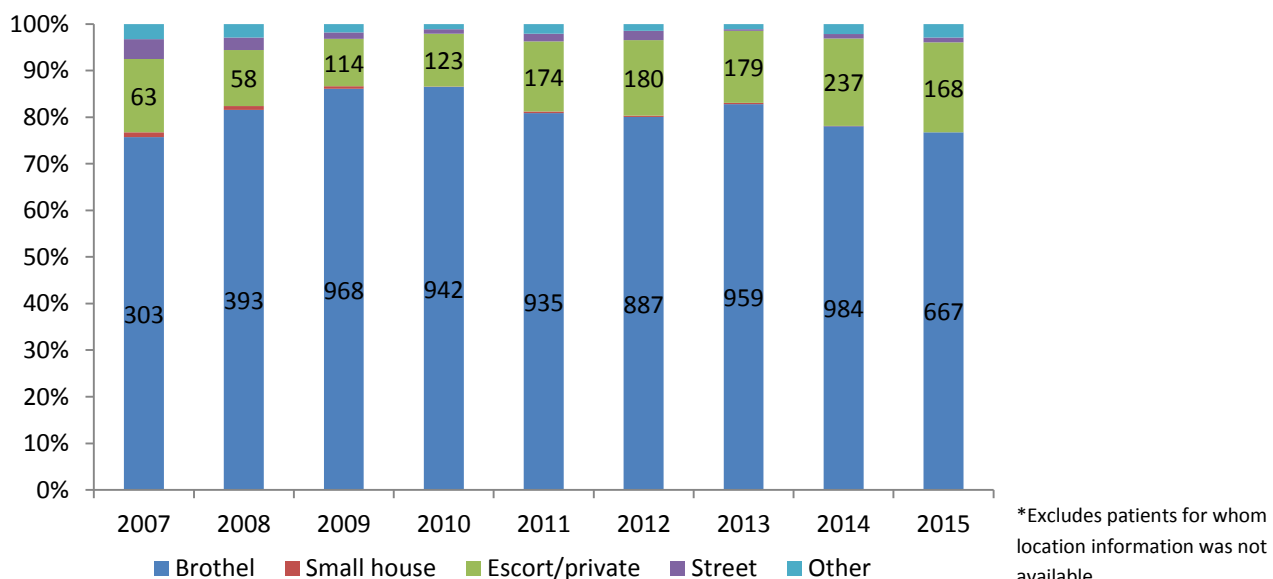
Table 2. Risk practices prior to consultation among sex workers attending sexual health clinics in NSW, by sex and year, 2007-2015

	2007	2008	2009	2010	2011	2012	2013	2014	2015	p-trend
Consistent* condom use with clients (previous 3 months)										
Female sex workers	90%	88%	92%	95%	90%	96%	90%	90%	88%	0.8
Male sex workers	100%	89%	78%	88%	100%	92%	88%	89%	82%	0.6
Sex worker clients per week (median)										
Female sex workers	12	12	14	16	15	16	16	15	12	0.6
Male sex workers	12	7	4	12	4	2	15	9	4	0.9
Injecting drug use (previous 12 months)										
Female sex workers	6%	4%	5%	5%	3%	3%	3%	3%	4%	<0.001
Male sex workers	18%	10%	22%	11%	6%	14%	9%	7%	7%	<0.001

*Consistent condom use is defined as condom use 100% of the time

Some sex workers also reported the location of their sex work, which is important given that experiences and practices can vary widely on the basis of where the work is conducted [8]. While the majority of sex workers attending participating services reported working in brothels, those working privately as escorts rose from 16% in 2007 to 19% in 2015 ($p < 0.001$; Figure 2). Notably, this distribution speaks to the place of work for patients of participating services only and does not necessarily reflect broader trends in sex work locality.

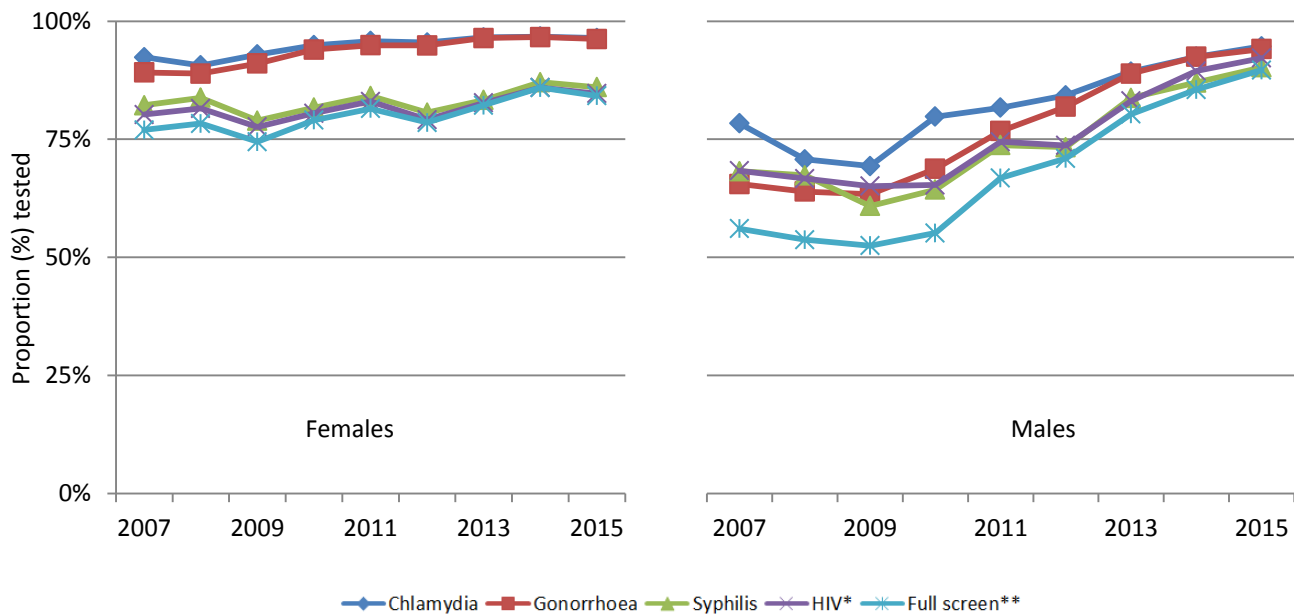
Figure 2. Sex work location (number and proportion) among sex workers attending sexual health clinics in NSW, by location* and year, 2007-2015



HIV & STI TESTING

Testing uptake (defined as the proportion of attending patients who received a test) was high among sex workers attending sexual health clinics and it increased over time. In 2015, 96% of attending female sex workers were tested at least once for chlamydia and gonorrhoea, 86% for syphilis, and 85% for HIV. Further, 84% received a 'full screen' (i.e., a test for chlamydia, gonorrhoea, syphilis, and, among HIV negative patients, HIV) in the year period, an increase from 77% in 2007 ($p < 0.001$). Among men reporting sex work, 95% were tested for chlamydia and gonorrhoea in 2015, 90% for syphilis, and 92% for HIV. In 2007, 56% of attending male sex workers received a full sexual health screen, which increased significantly to 90% in 2015 ($p < 0.001$; Figure 3).

Figure 3. Proportion of sex worker patients attending sexual health clinics in NSW tested for HIV or STIs, by sex, test, and year, 2007-2015



*Proportions exclude HIV positive patients; ** 'Full screen' includes a test for chlamydia, gonorrhoea, syphilis, and, among HIV negative patients, HIV

Sex workers at sexual health clinics also demonstrated high levels of testing frequency. Among female sex workers, the mean number of annual full screens rose from 1.0 in 2007 to 1.2 in 2014 ($p < 0.001$) and was consistently much higher than non-sex worker females. Among male sex workers there was also an increase in full screen frequency (0.7-1.5, $p < 0.001$), which was similar to changes in test frequency among non-sex worker gay and bisexual men (Figure 4).

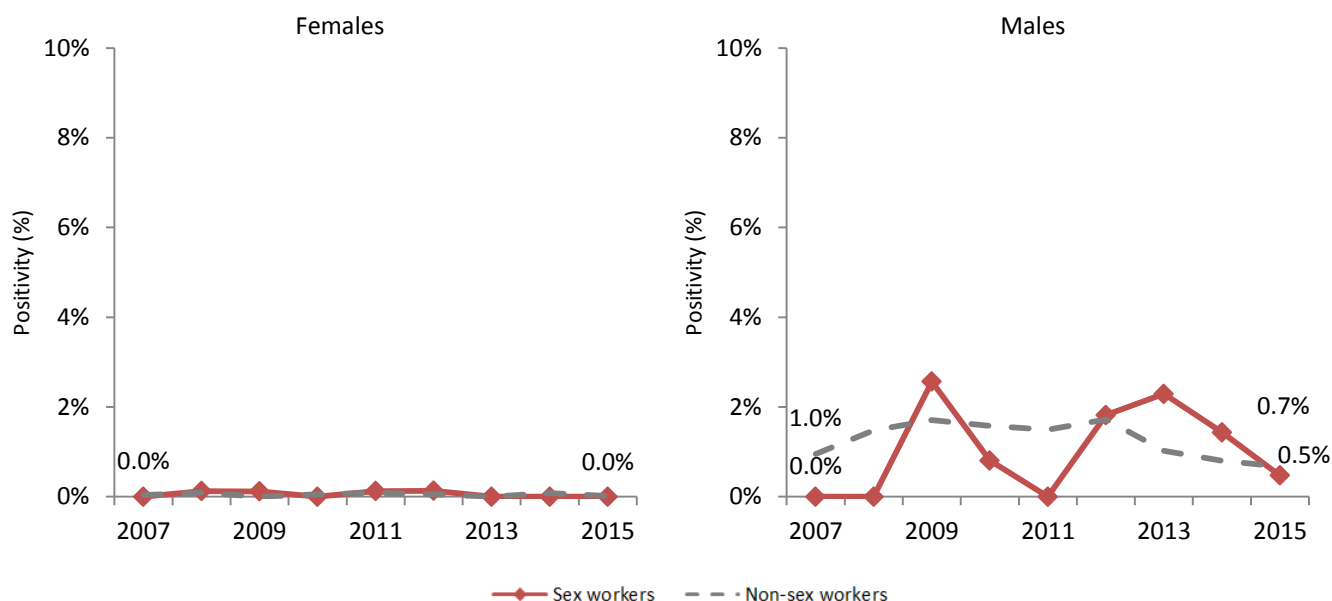
Figure 4. Mean number of 'full screens' annually among sex worker patients attending sexual health clinics in NSW, by sex and year, 2007-2015



HIV

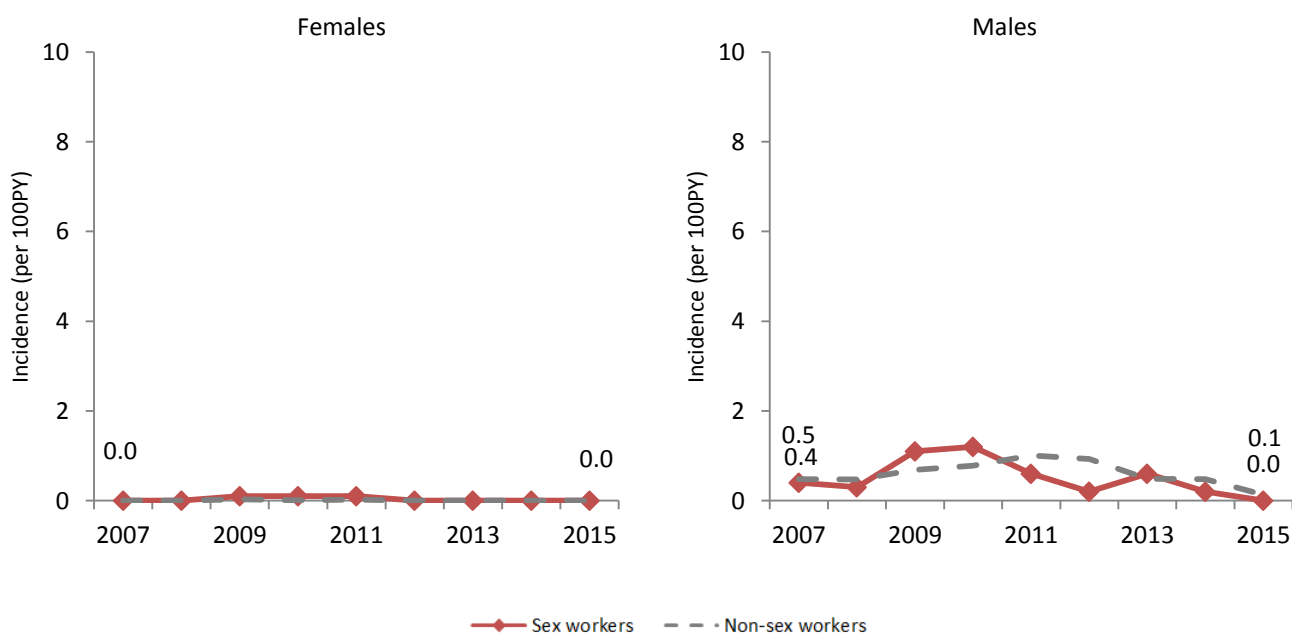
HIV positivity at first visit was generally low among female sex workers (<0.1% annually) and similar to non-sex worker females. While positivity at first visit was slightly higher among male than female sex workers (0-2.5% annually), it was similar overall to male patients not reporting sex work (Figure 5).

Figure 5. HIV positivity among patients attending NSW sexual health clinics, by sex, sex work status, and year, 2007-2015



HIV incidence was very low (zero or near zero) among female sex workers and fluctuated between 0.2 and 1.2 per 100PY among male sex workers. Compared to non-sex workers, HIV incidence among sex workers attending sexual health clinics was very similar with no trends identified over time (Figure 6; Appendix Table IX).

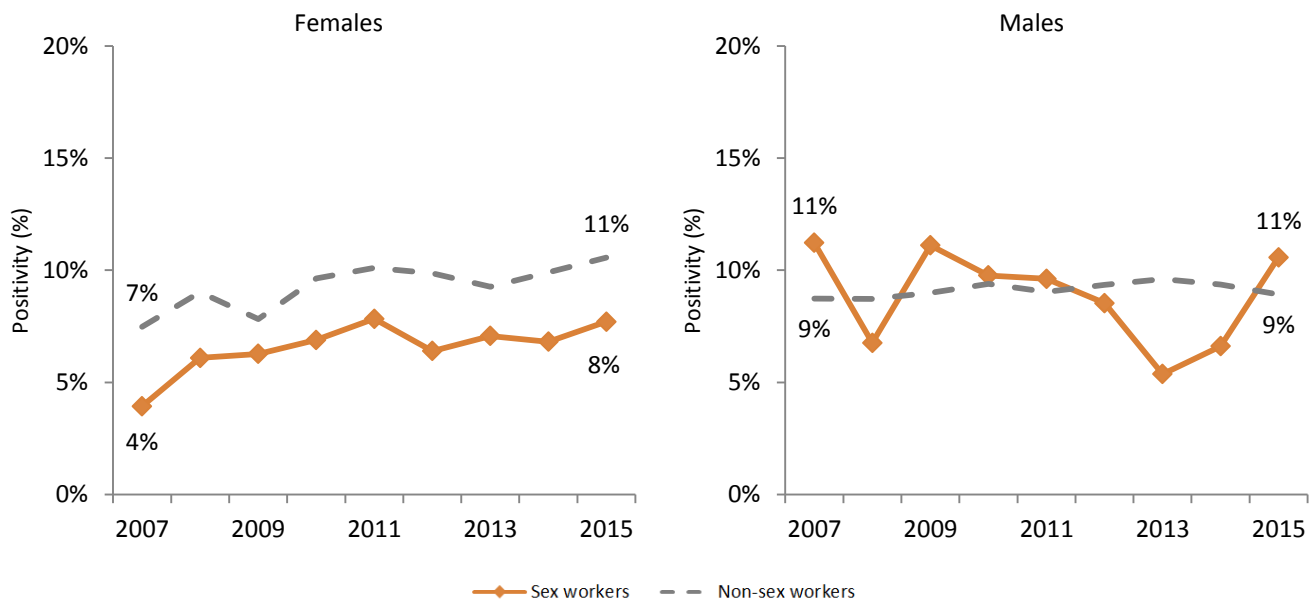
Figure 6. HIV incidence among patients attending NSW sexual health clinics, by sex, sex work status, and year, 2007-2015



CHLAMYDIA

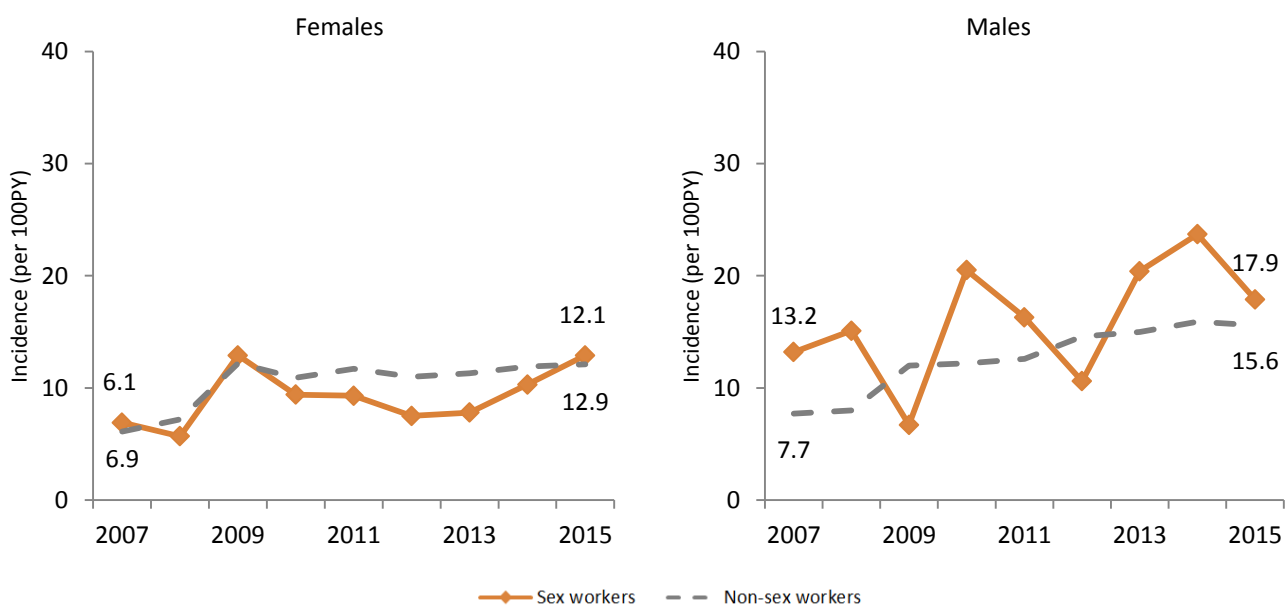
Excluding pharyngeal chlamydia, positivity (the proportion of individuals tested at their first visit who were diagnosed with chlamydia) increased among female sex workers from 4% in 2007 to 8% in 2015 ($p < 0.001$) but was stable among male sex workers ($p = 0.7$; Figure 7). While positivity at first visit was similar between sex worker and non-sex worker males, it was consistently lower among female sex workers than non-sex workers even after controlling for differences in age.

Figure 7. Chlamydia positivity (excluding pharyngeal) at first visit among patients attending NSW sexual health clinics, by sex, sex worker status, and year, 2007-2015



During this same period, incidence (new infections over time at risk) increased from 6.9 to 12.9 per 100 person years (PY) among female sex workers ($p < 0.001$) with no significant change observed among male sex workers ($p = 0.09$; Figure 8). Among female sex workers, there were no differences in chlamydia incidence by region of birth, while incidence was highest overall among female sex workers aged 16-30 years compared with those 40 years and older. There was no discernible difference in incidence among patients on the basis of sex work (Appendix Table IV).

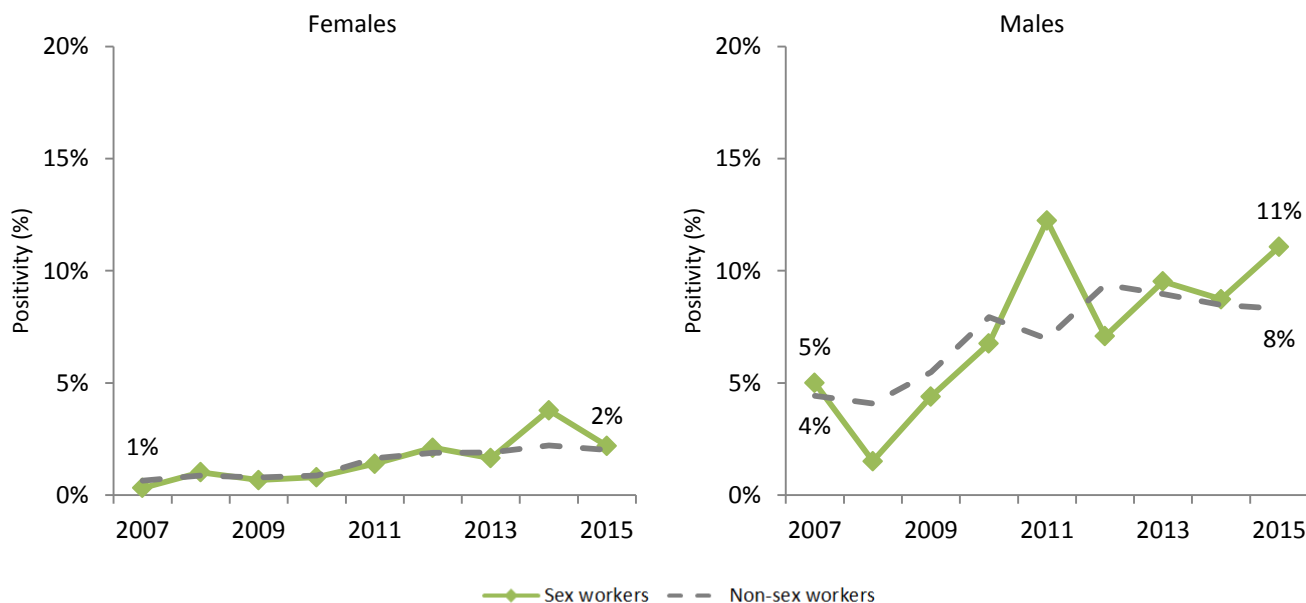
Figure 8. Chlamydia incidence (excluding pharyngeal) among patients attending NSW sexual health clinics, by sex, sex worker status, and year, 2007-2015



GONORRHOEA

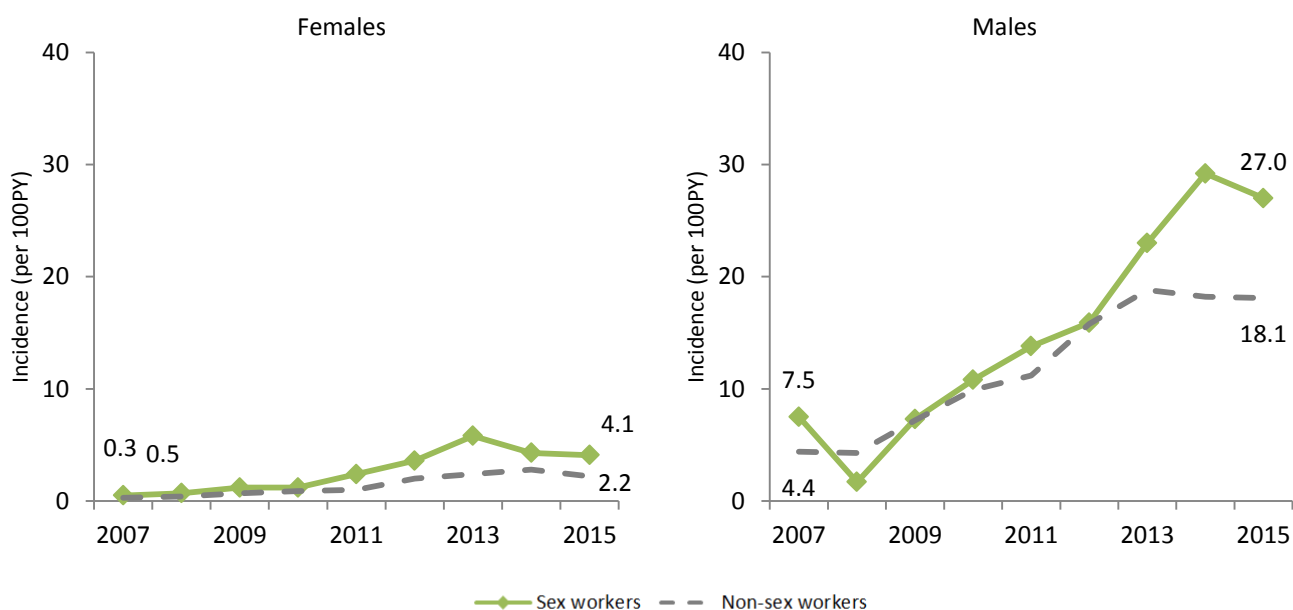
Gonorrhoea positivity at first visit increased significantly among sex workers between 2007 and 2015, climbing from <1% to 2% among females and from 5% to 11% among males ($p < 0.001$). In both cases, positivity was similar to clinic attendees not identified as sex workers.

Figure 9. Gonorrhoea positivity (excluding pharyngeal for females) among patients attending NSW sexual health clinics, by sex, sex work status, and year, 2007-2015



Although gonorrhoea incidence remained low among female sex workers, from 2007 to 2015 for cases of non-pharyngeal gonorrhoea it increased from 0.5 to 4.1 per 100PY ($p < 0.001$; Figure 10). Among male sex workers, gonorrhoea incidence increased three-fold between 2007 and 2015 (7.5 to 27.0 per 100PY, $p < 0.001$). There were no differences in incidence on the basis of sex worker status (Appendix Table VI).

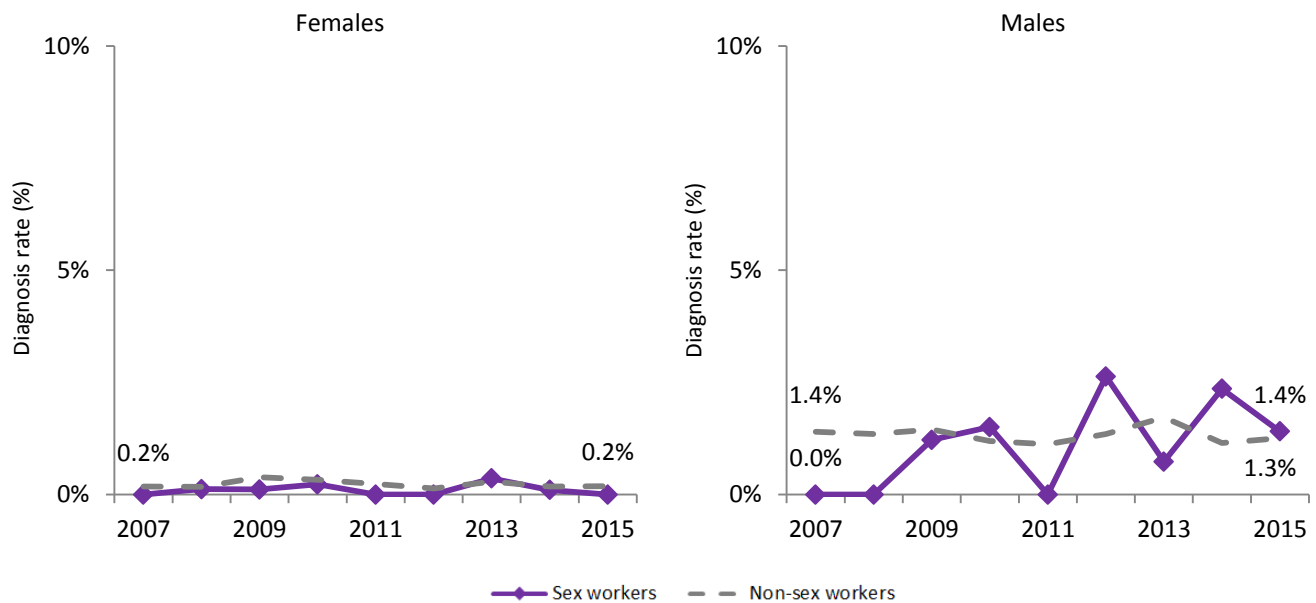
Figure 10. Gonorrhoea incidence (excluding pharyngeal for females) among patients attending NSW sexual health clinics, by sex, sex work status, and year, 2007-2015



INFECTIOUS SYPHILIS

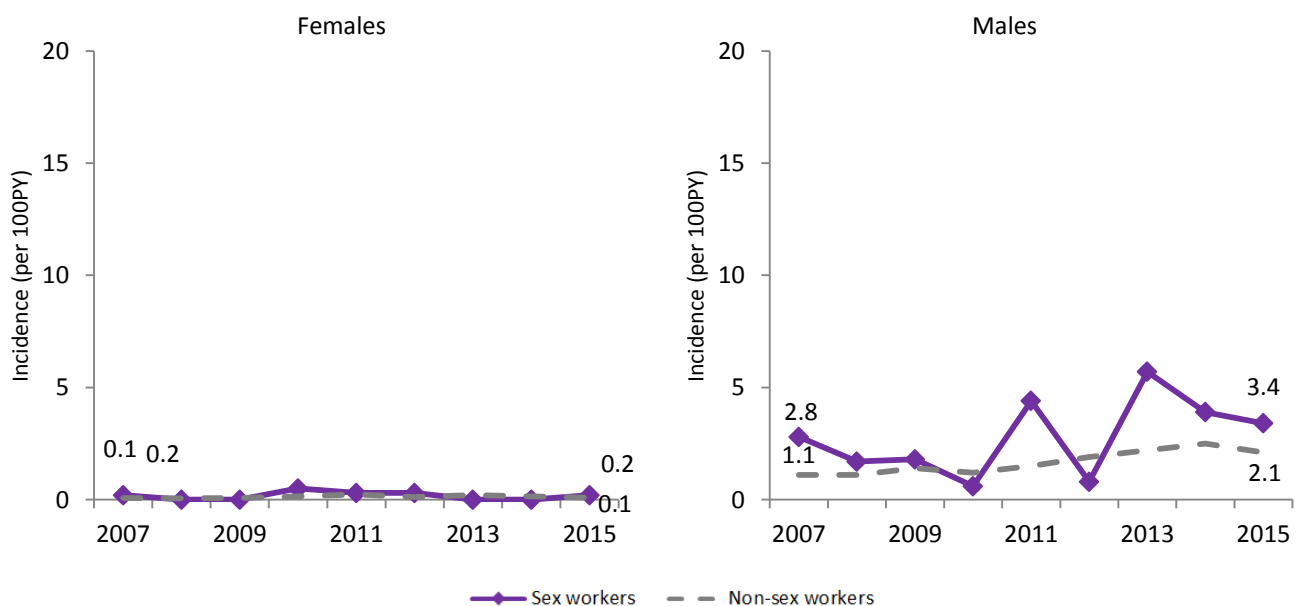
At first visit, less than 0.4% of female sex workers annually tested for syphilis were diagnosed with infectious syphilis. Diagnoses were more common among male sex workers (1.4% of those who attended first in 2015) but still represented only between zero and five diagnoses per year. There were no trends in syphilis diagnoses over time, and diagnoses rates were similar between male and female sex worker and non-sex worker patients (Figure 11).

Figure 11. Infectious syphilis diagnosis rate among patients attending NSW sexual health clinics, by sex, sex work status, and year, 2007-2015



The incidence of infectious syphilis was also very low among female sex workers: less than 0.05 per 100PY annually. The incidence of infectious syphilis was higher among male sex workers (3.4 per 100PY in 2015), had increased over time ($p=0.023$), and was similar to male patients not reporting sex work (Figure 12; Appendix Table VIII).

Figure 12. Infectious syphilis incidence among patients attending NSW sexual health clinics, by sex, sex work status, and year, 2007-2015



CONCLUSIONS

Sex workers who attend sexual health clinics in NSW have high rates of sexual health testing uptake and test frequently for chlamydia, gonorrhoea, infectious syphilis, and HIV. Both men and women who sell sex report high and stable rates of condom use with commercial partners, stable numbers of commercial partners, and declining rates of injecting drug use. Nevertheless, our finding that sex work appears to be independently associated with injecting drug use among both male and female clinic attendees highlights the need to continue to provide targeted education and needle and syringe programs in sexual health clinics.

In spite of the high rates of condom use reported by female sex workers attending sexual health clinics, from 2007 through to 2015 there was an increase in incident chlamydia and gonorrhoea infections. In both cases, however, the increase in incidence and first test positivity over time both reflect the broader epidemiology of these infections among women in NSW. It is also worth noting that previous research has found that the incidence of chlamydia among female sex workers correlated most strongly with non-commercial sex partners [4]. Promisingly, the incidence of infectious syphilis and HIV remained very low among female sex workers, reflecting the long history of successful health promotion and the control of these infections in the general population [9].

Male sex workers also saw changing trends in infection for chlamydia, increasing steadily from 2009 essentially in-line with non-sex worker gay and bisexual men. Far more dramatic was the increase in gonorrhoea infections, with the incidence more than tripling between 2007 and 2015. These changes come at a time when more men are engaging with forms of HIV prevention other than condoms (i.e., pre-exposure prophylaxis, treatment-as-prevention, serosorting), which pose a significant risk to increasing rates of infection with STIs other than HIV. If condoms become less prevalent in commercial and non-commercial sex encounters, it is quite possible that rates of chlamydia, gonorrhoea and infectious syphilis will continue to rise.

The *NSW HIV Strategy 2012-2015* sought to improve accessibility and promote HIV testing among gay and bisexual men generally and while not specifically targeting male sex workers, it may nonetheless have had an impact on HIV testing in this group. Additionally, NSW Health provided sexual health services, including STI testing, health promotion and outreach, specifically for sex workers across the NSW sex industry through publicly-funded sexual health clinics and the Sex Worker Outreach Project NSW (SWOP). Indeed, testing for HIV was quite high among both male and female sex workers, with 92% and 85% respectively tested at least once in 2015. Although testing frequency among men in particular is already quite high at an average of 1.5 tests per year in 2015, further initiatives may be necessary to encourage even more frequent testing among this group. Encouragingly, the incidence of HIV among sex workers declined over recent years and the incidence of infectious syphilis remained low.

This report details increasing incidence of gonorrhoea, and to a lesser extent chlamydia in both male and female sex workers. In male sex workers, infectious syphilis has also increased. These increases are similar to the incidence seen in other men and women attending sexual health clinics, while incidence of HIV has remained very low overall. In considering these changes, it is important to remember that infections among sex workers are not necessarily linked to commercial sex encounters, during which high rates of condom use remains the norm. They do reveal, however, a changing epidemiology of HIV and STIs that is relevant both to sex worker and non-sex worker populations [9]. While these changes seem to mainly reflect shifting patterns in infection more broadly, efforts to encourage frequent testing and condom use among sex workers must be sustained and wherever possible they should be tailored to the needs of sex workers.

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APPENDIX: TABLES
Table I. Attendance at sexual health clinics in NSW, by sex, sex work status, and year, 2007-2015

	2007	2008	2009	2010	2011	2012	2013	2014	2015	p-trend
Female attendees	11,840	11,540	11,418	11,405	11,629	11,108	11,100	11,362	10,966	
Female sex workers	1,596	1,700	2,048	2,119	2,094	2,058	2,031	2,158	2,202	
Female sex workers (%)	13%	15%	18%	19%	18%	19%	18%	19%	20%	<0.001
Male attendees	14,831	14,755	15,504	16,591	17,657	18,040	19,533	22,913	23,675	
Male sex workers	148	147	204	276	208	216	237	339	340	
Male sex workers (%)	1.00%	1.00%	1.32%	1.66%	1.18%	1.20%	1.21%	1.48%	1.44%	<0.001

Table II. Region of birth among female sex workers attending sexual health clinics in NSW, by region and year, 2007-2015

	2007	2008	2009	2010	2011	2012	2013	2014	2015
Europe	84	42	59	60	78	62	70	66	80
North/South America	27	13	18	11	24	18	18	28	20
Asia	728	644	702	582	538	509	558	641	594
Africa	12	5	9	12	8	10	5	6	11
Oceania	86	40	39	40	36	33	40	32	32
Australia/New Zealand	619	324	348	405	314	369	316	337	346
Unknown/unrecorded	9	1	2	1	2	2	1	2	6

Table III. Chlamydia testing and diagnoses (excluding pharyngeal) at first visit by sex workers to sexual health clinics in NSW, by sex and year, 2007-2015

	2007	2008	2009	2010	2011	2012	2013	2014	2015	p-trend
Female sex workers:										
Tested	1,295	903	1,068	1,016	945	953	976	1,086	1,051	
Diagnosed	51	55	67	70	74	61	69	74	81	
Positivity	4%	6%	6%	7%	8%	6%	7%	7%	8%	0.008
Male sex workers:										
Tested	98	74	99	174	104	129	149	229	227	
Diagnosed	11	5	11	17	10	11	8	22	24	
Positivity	4%	6%	6%	7%	8%	6%	7%	7%	8%	0.7

Table IV. Chlamydia incidence (excluding pharyngeal) among sex workers attending sexual health clinics in NSW, by sex, region of birth, age, and year, 2007-2015

	2007	2008	2009	2010	2011	2012	2013	2014	2015	p-trend
Female sex workers	6.9	5.7	12.9	9.4	9.3	7.5	7.8	10.3	12.9	<0.001
95% CI	5.5-8.6	4.5-7.2	11.2-15.0	8.0-11.1	7.9-10.9	6.3-9.1	6.5-9.4	8.7-12.1	11.4-14.5	
Region of birth										
Australia/New Zealand	7.5	4.4	16.8	7.6	8.7	6.9	6.1	9.8	12.1	--
95% CI	5.4-10.2	2.9-6.7	13.7-21.4	5.7-10.5	6.8-12.1	4.8-9.6	4.0-8.3	7.3-12.9	9.8-15.2	
Asia	6.5	6.6	11.6	10.9	10.2	8.0	9.4	11.5	14.2	--
95% CI	4.6-9.1	4.9-9.0	9.5-14.2	8.9-13.4	8.3-12.6	6.3-10.2	7.5-11.8	9.4-14.1	12.1-16.5	
Other	6.8	5.6	9.9	7.6	6.4	6.1	5.6	5.3	8.7	--
95% CI	3.2-14.2	2.9-14.2	2.5-12.4	3.8-13.9	1.9-9.5	3.1-11.5	3.6-12.6	2.1-9.3	4.7-12.5	
Age										
16-29 years	11.3	8.5	14.9	15.3	11.2	11.6	12.2	12.9	11.3	--
95% CI	8.4-15.2	6.1-11.9	11.9-18.6	12.4-18.9	8.8-14.4	9.0-14.9	9.5-15.7	10.1-16.4	14.8-21.1	
30-39 years	5.0	4.7	11.9	5.1	10.1	4.9	6.5	8.7	5.0	--
95% CI	3.3-7.5	3.1-7.1	9.2-15.3	3.6-7.4	7.8-13.1	3.4-7.1	4.6-9.1	6.6-11.6	9.2-14.0	
≥40 years	4.1	3.3	11.6	7.0	5.6	5.9	4.4	9.0	4.1	--
95% CI	2.3-7.2	1.8-6.2	8.6-15.7	4.7-10.3	3.8-8.4	3.9-8.9	2.8-6.9	6.5-12.6	6.0-11.2	
Male sex workers	13.2	15.1	6.7	20.5	16.3	10.6	20.4	23.7	17.9	0.09
95% CI	7.8-22.3	9.5-24.0	3.7-12.2	14.8-28.5	11.1-24.0	6.3-17.9	14.4-28.8	17.8-31.4	13.7-23.5	--
Region of birth										
Australia/New Zealand	14.9	13.6	8.1	20.7	17.8	12.0	19.2	27.3	22.3	--
95% CI	8.5-26.2	7.7-24.0	4.4-15.0	14.3-29.9	11.6-27.3	6.4-22.2	12.2-30.0	19.2-38.8	16.0-31.0	
Asia	7.1	31.7	4.7	25.4	21.4	4.5	19.6	23.2	12.1	--
95% CI	1.0-50.3	11.9-84.3	0.7-32.9	10.6-61.0	6.9-66.4	0.6-31.7	8.8-43.6	13.1-40.8	6.5-22.6	
Other	9.1	11.2	0.0	15.0	7.7	11.4	25.9	13.5	14.1	--
95% CI	1.3-64.2	2.8-44.7	-	4.8-46.5	1.9-30.8	3.7-35.4	12.3-54.2	5.6-32.4	6.7-29.6	
Age										
16-29 years	23.8	23.7	11.9	27.2	18.9	7.5	19.2	37.4	23.6	--
95% CI	12.4-45.8	13.1-42.8	5.7-24.9	17.7-41.7	11.0-32.6	2.8-20.1	11.2-33.1	26.6-52.6	16.9-32.8	
30-39 years	10.5	11.8	3.4	26.0	17.6	17.0	21.9	11.8	9.5	--
95% CI	3.4-32.4	4.4-31.4	0.9-14.3	15.1-44.8	8.8-35.2	7.6-37.9	11.4-42.0	5.3-26.3	4.5-19.8	
≥40 years	5.1	7.8	4.1	4.2	11.1	9.1	20.8	14.2	14.9	--
95% CI	1.3-20.3	2.5-24.1	1.0-16.5	1.0-16.7	4.6-26.7	3.4-24.3	11.2-38.6	7.4-27.2	8.0-27.7	

Table V. Gonorrhoea testing and diagnoses (excluding pharyngeal among females) at first visit by sex workers to sexual health clinics in NSW, by sex and year, 2007-2015

	2007	2008	2009	2010	2011	2012	2013	2014	2015	p-trend
Female sex workers:										
Tested	1,248	885	1,041	1,002	929	947	972	1,084	1,046	
Diagnosed	4	9	7	8	13	20	16	41	23	
Positivity	0%	1%	1%	1%	1%	2%	2%	4%	2%	<0.001
Male sex workers:										
Tested	80	66	91	148	98	127	147	229	226	
Diagnosed	4	1	4	10	12	9	14	20	25	
Positivity	5%	2%	4%	7%	12%	7%	10%	9%	11%	<0.001

Table VI. Gonorrhoea incidence (excluding pharyngeal among females) among sex workers attending sexual health clinics in NSW, by sex, region of birth, age, and year, 2007-2015

	2007	2008	2009	2010	2011	2012	2013	2014	2015	p-trend
Female sex workers	0.5	0.7	1.2	1.2	2.4	3.6	5.8	4.3	4.1	<0.001
95% CI	0.2-1.2	0.3-1.4	0.7-1.9	0.8-1.9	1.7-3.3	2.8-4.7	4.7-7.2	3.3-5.5	3.3-5.1	
Region of birth										
Australia/New Zealand	0.4	0.9	1.7	1.7	3.2	4.1	5.7	5.7	5.9	--
95% CI	0.3-2.0	0.3-2.2	0.9-3.5	1.0-3.5	1.9-5.1	2.8-6.6	4.5-9.0	3.6-7.9	4.1-7.9	
Asia	0.4	0.7	1.0	0.7	2.0	3.7	4.4	3.5	3.3	--
95% CI	0.1-1.6	0.3-1.8	0.5-2.0	0.3-1.6	1.3-3.2	2.7-5.4	3.2-6.1	2.4-5.0	2.4-4.5	
Other	0.0	0.0	0.0	1.6	2.2	0.7	11.5	5.1	3.4	--
95% CI	-	-	-	0.4-6.4	0.7-6.6	0.1-4.7	7.1-18.5	2.5-10.1	1.6-7.0	
Age										
16-29 years	0.5	1.0	1.2	1.2	2.5	3.1	6.7	4.5	4.1	--
95% CI	0.1-2.1	0.4-2.6	0.5-2.6	0.6-2.6	1.5-4.1	1.9-5.0	4.8-9.4	2.7-6.7	2.9-5.9	
30-39 years	0.4	0.2	0.8	0.9	2.3	2.4	3.1	2.0	2.3	--
95% CI	0.1-1.7	0.03-1.5	0.3-2.1	0.4-2.1	1.4-4.0	1.4-4.1	1.9-5.0	1.1-5.6	1.4-3.6	
≥40 years	0.7	1.0	1.7	1.7	2.4	6.2	8.2	7.2	6.9	--
95% CI	0.2-2.7	0.3-3.1	0.7-3.7	0.8-3.7	1.3-4.4	4.1-9.2	5.9-11.5	5.0-10.5	4.9-9.7	
Male sex workers	7.5	1.7	7.3	10.8	13.8	15.9	23.0	29.2	27.0	<0.001
95% CI	3.8-15.1	0.4-6.7	4.2-12.9	6.9-17.0	9.1-21.0	10.4-24.4	16.6-31.9	22.6-37.7	21.6-33.7	--
Region of birth										
Australia/New Zealand	9.9	1.1	8.1	10.3	14.4	16.8	21.2	30.8	29.9	--
95% CI	5.0-19.8	0.2-8.1	4.4-15.0	6.1-17.4	9.0-23.2	10.0-28.4	13.8-32.6	22.1-42.9	22.5-39.8	
Asia	0.0	0.0	9.2	20.3	28.6	13.4	19.7	27.2	18.3	--
95% CI	-	-	2.3-36.8	7.6-54.1	10.7-76.2	4.3-41.5	8.9-43.9	16.1-45.9	11.0-30.3	
Other	0.0	5.6	0.0	4.9	3.8	15.2	33.5	27.1	30.4	--
95% CI	-	0.8-39.7	-	0.7-35.4	0.5-27.3	5.7-40.5	17.4-64.4	14.6-50.5	18.3-50.4	
Age										
16-29 years	10.5	0.0	10.1	19.4	13.1	24.5	25.3	35.3	35.1	--
95% CI	3.9-27.9	-	4.6-22.5	11.7-32.2	6.8-25.2	14.2-42.2	15.7-40.6	24.8-50.1	26.7-46.0	
30-39 years	14.0	0.0	5.4	4.0	11.0	5.7	29.3	33.6	14.0	--
95% CI	5.2-37.2	-	1.7-16.6	1.0-15.9	4.6-26.5	1.4-22.7	16.6-51.5	20.9-54.1	13.3-35.5	
≥40 years	0.0	5.2	6.2	4.2	17.8	13.7	14.6	17.3	0.0	--
95% CI	-	1.3-20.6	2.0-19.2	1.0-16.6	8.9-35.5	6.2-30.5	7.0-30.6	9.6-31.3	8.0-27.8	

Table VII. Syphilis testing and diagnoses of infectious syphilis at first visit by sex workers to sexual health clinics in NSW, by sex and year, 2007-2015

	2007	2008	2009	2010	2011	2012	2013	2014	2015	p-trend
Female sex workers:										
Tested	1,067	820	879	873	809	761	829	959	907	
Diagnosed	0	1	1	2	0	0	3	1	0	
Diagnosis rate	0.0%	0.1%	0.1%	0.2%	0.0%	0.0%	0.4%	0.1%	0.0%	0.2
Male sex workers:										
Tested	79	61	82	133	88	114	136	212	213	
Diagnosed	0	0	1	2	0	3	1	5	3	
Diagnosis rate	0.0%	0.0%	1.2%	1.5%	0.0%	2.6%	0.7%	2.4%	1.4%	0.6

Table VIII. Infectious syphilis incidence among sex workers attending sexual health clinics in NSW, by sex and year, 2007-2015

	2007	2008	2009	2010	2011	2012	2013	2014	2015	p-trend
Female sex workers	0.2	0.0	0.0	0.5	0.3	0.3	0.0	0.0	0.2	0.8
95% CI	0.1-0.7	-	-	0.2-1.0	0.1-0.8	0.1-0.7	-	-	0.1-0.5	
Male sex workers	2.8	1.7	1.8	0.6	4.4	0.8	5.7	3.9	3.4	0.023
95% CI	0.9-8.8	0.4-6.7	0.6-5.7	0.1-4.0	2.1-9.2	0.1-5.4	3.0-11.0	2.0-7.8	1.9-6.4	

Table IX. HIV testing and diagnoses at first visit by sex workers to sexual health clinics in NSW, by sex and year, 2007-2015

	2007	2008	2009	2010	2011	2012	2013	2014	2015	p-trend
Female sex workers										
Tested	1,026	794	863	866	791	751	811	946	892	
Diagnosed	0	1	1	0	1	1	0	0	0	
Positivity	0.0%	0.1%	0.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.2
Male sex workers										
Tested	79	56	78	124	83	110	131	209	211	
Diagnosed	0	0	2	1	0	2	3	3	1	
Positivity	0.0%	0.0%	2.6%	0.8%	0.0%	1.8%	2.3%	1.4%	0.5%	0.5

Table X. HIV incidence among sex workers attending sexual health clinics in NSW, by sex and year, 2007-2015

	2007	2008	2009	2010	2011	2012	2013	2014	2015	p-trend
Female sex workers	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.6
95% CI	-	-	0.02-0.4	0.01-0.3	0.02-0.4	-	-	-	-	
Male sex workers	0.4	0.3	1.1	1.2	0.6	0.2	0.6	0.2	0.0	0.4
95% CI	0.1-2.8	0.1-2.3	0.5-2.6	0.6-2.8	0.2-1.9	0.03-1.5	0.2-1.9	0.03-1.4	-	