

# GAPSS/GOSS

# Research Brief

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Jun 2015 | HIV Testing among gay and bisexual men

## Introduction

Testing for HIV is a cornerstone of HIV control efforts. Early detection of HIV infection enables treatment to be offered in a timely way, improving prognosis and wellbeing. Effective viral suppression through sustained treatment also dramatically reduces transmissibility of HIV to others, and learning about one's HIV positive status can reduce onward spread as individuals change their behaviours.



The prevalence of HIV testing at the population level and how this varies between groups of people also helps us interpret the pattern of HIV diagnoses in a community. Gay, bisexual and other men who have sex with men (GBM) are the group most at risk of HIV in New Zealand, with an estimated 1.3% having undiagnosed HIV infection, being 1 in 5 of those living with HIV.[1] In 2014 the annual number of new HIV diagnoses among GBM was the highest recorded since enhanced surveillance began in 1996.[2] Information on HIV testing uptake across and between gay and bisexual men can therefore help target HIV testing efforts, and information on where GBM are testing can help improve health services.

The aim of this analysis is to investigate the prevalence, place and predictors of HIV testing among GBM participating in HIV behavioural surveillance in 2014.

## Methods

Respondents were invited into the survey at the Big Gay Out fair day, gay bars and sex-on-site venues in Auckland (GAPSS) or from Internet dating sites nationwide (GOSS) in early 2014. Eligibility criteria were being male, having had sex with a man in the previous five years and being at least 16 years old. Participation was voluntary and anonymous and the questionnaires were self-completed. Detailed methods are published elsewhere. [3]

Respondents were asked whether they had ever tested for HIV antibodies, if so what the last test result was, and how long ago their last test happened. Respondents were asked where they went for their last HIV test, and what they believed their HIV status was at the time of survey. The questionnaire also contained socio-demographic items and items about sexual partnering, condom use, social marketing and attitudes to HIV and condoms.

In this research brief we describe how common HIV testing was and where this last occurred. The analysis then compares the characteristics of respondents who had tested recently (in the last 12 months), more than 12 months ago, and also those who had never tested for HIV. We then identified factors that were independently associated with recent HIV testing.

## Results

### *How many have tested for HIV and where was their last test?*

Of the 3140 respondents providing information on testing in 2014, 75.4% had ever tested for HIV.

Of these, 1319 (42.0% of all respondents) had done so in the previous 12 months, 993 (31.6%) more than 12 months ago and 54 (1.7%) did not state when (Fig 1).

GAPSS respondents recruited offline in Auckland were more likely to have tested for HIV ever (82.5%) and in the previous 12 months (46.7%) compared to GOSS respondents recruited from Internet dating sites nationwide (69.9% and 39.8% respectively,  $p < 0.001$ ).

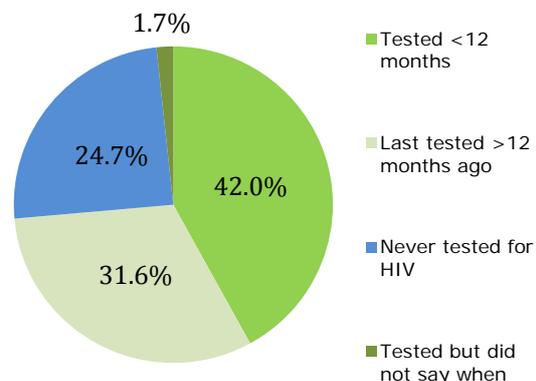


Figure 1. Proportion HIV tested

Overall 155 respondents had tested HIV positive, being 6.7% of those who had tested or 5% of all respondents. Among non-previously diagnosed respondents who had tested for HIV in the past 12 months, 19 (1.4%) had received a positive result.

Confidence in one's current HIV negative status was greater among GBM who had recently tested (72.2% believed they were "definitely negative" at the time of survey and 25.4% believed they were "probably negative") compared to those who had last tested negative more than 12 months ago (62.7% believed they were "definitely negative" at the time of survey and 34.0% believed they were "probably negative",  $p < 0.001$ ).

A sexual health clinic was the most common place to have had their last HIV test (42.4%) among those who had tested recently, with 36.8% having last done so at a GP and 12.7% at an NZAF clinic (Fig. 2).

Among those testing more than a year ago, a general practice had been the most common place (43.3%), meaning that GBM's preferences for testing have shifted over time.

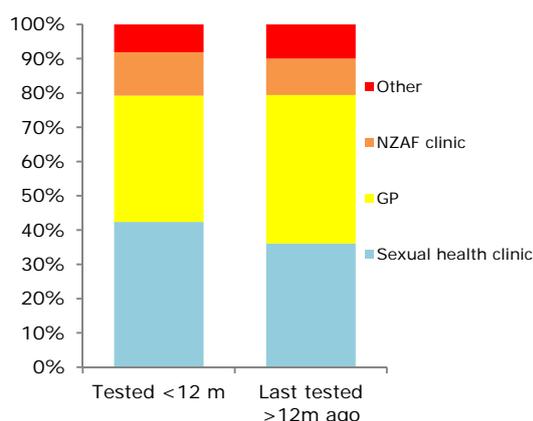


Figure 2. Place last tested for HIV by timing of last test

### Prevalence of testing for HIV by respondent characteristics

HIV testing was significantly associated with all participant socio-demographic traits (Table 1). Those least likely to have ever tested for HIV include respondents recruited from Internet dating sites (30.5% had never tested), those aged under 30 (40.1% had never tested), Pacific respondents (41.3%), respondents spending less of their free time with gay men, and bisexual identifying respondents (43.4%).

Table 1. Prevalence of testing for HIV recently, more than 12 months ago, and never testing by socio-demographic characteristics

	Total	Proportion tested <12m		Proportion tested >12m ago		Proportion never tested		Chi squared test of proportions	
		n	n %	n	%	n	%		
Total	3140	1319	42.0	993	31.6	774	24.7		
<b>Recruitment site</b>									
Offline - community event	1026	472	46.0	363	35.4	191	18.6	<0.001	
Offline- bars	115	59	51.3	40	34.8	16	13.9		
Offline – sex-on-site venue	189	90	47.6	68	36.0	31	16.4		
Online dating site	1756	698	39.8	522	29.7	536	30.5		
<b>Age group</b>									
16-29	1330	572	43.0	225	16.9	533	40.1	<0.001	
30-44	902	432	47.9	365	40.5	105	11.6		
45+	810	303	37.4	392	48.4	115	14.2		
<b>Ethnicity</b>									
European	2180	923	42.3	746	34.2	511	23.4	<0.001	
Maori	300	124	41.3	76	25.3	100	33.3		
Pacific	109	37	33.9	27	24.8	45	41.3		
Asian	345	159	46.1	98	28.4	88	25.5		
Other	124	66	53.2	36	29.0	22	17.7		
<b>Highest education qualification</b>									
Less than tertiary degree	1649	633	38.4	503	30.5	513	31.1	<0.001	
Tertiary degree or higher	1394	665	47.7	478	34.3	251	18.0		
<b>Free time spent with other gay men</b>									
None	160	37	23.1	41	25.6	82	51.3	<0.001	
A little	1053	400	38.0	319	30.3	334	31.7		
Some	923	434	47.0	276	29.9	213	23.1		
A lot	871	416	47.8	324	37.2	131	15.0		
<b>Sexual identity</b>									
Gay or homosexual	2451	1103	45.0	847	34.6	501	20.4	<0.001	
Bisexual or other	624	210	33.7	143	22.9	271	43.4		

HIV testing was also associated with sexual partnering and behaviours (Table 2). Recent HIV testing (within the last 12 months) increased with higher numbers of recent sexual partners, and was higher among respondents engaging in anal intercourse with casual or regular sexual partners in the last 6 months. Among respondents with a regular sexual partner at the time of survey, recent testing was proportionately higher among those who were sexually non-exclusive (50.9%) compared to those who were sexually exclusive in the last 6 months (42.9%).

Table 2. Prevalence of testing for HIV by sexual behaviours

	Total	Proportion tested <12m		Proportion tested >12m ago		Proportion never tested		Chi squared test of proportions
		n	n	%	n	%	n	
Total	3140	1319	42.0	993	31.6	774	24.7	
<b>Number of male partners &lt;6m</b>								
None	204	40	19.6	62	30.4	102	50.0	<0.001
One	672	207	30.8	272	40.5	193	28.7	
2-5	1119	460	41.1	345	30.8	314	28.1	
6-10	489	266	54.4	132	27.0	91	18.6	
11-20	285	156	54.7	94	33.0	35	12.3	
21-50	202	127	62.9	54	26.7	21	10.4	
>50	55	31	56.4	15	27.3	9	16.4	
<b>Sex with casual male partners &lt;6m</b>								
No casual partners	762	221	29.0	301	39.5	240	31.5	<0.001
No anal intercourse	387	116	30.0	153	39.5	118	30.5	
Always used a condom	924	450	48.7	264	28.6	210	22.7	
Any unprotected anal sex	926	482	52.1	254	27.4	190	20.5	
<b>Sex with current regular boyfriend-type male partner &lt;6m</b>								
No current boyfriend	2149	900	41.9	603	28.1	646	30.1	<0.001
No anal intercourse	132	41	31.1	66	50.0	25	18.9	
Always used a condom	156	67	43.0	64	41.0	25	16.0	
Any unprotected anal sex	568	270	47.5	233	41.0	65	11.4	
<b>Sex with current regular fuckbuddy-type male partner &lt;6m</b>								
No current fuckbuddy	2507	1024	40.9	826	33.0	657	26.2	<0.001
No anal intercourse	68	31	45.6	18	26.5	19	27.9	
Always used a condom	189	100	52.9	51	27.0	38	20.1	
Any unprotected anal sex	246	129	52.4	71	28.9	46	18.7	
<b>Concurrent regular sexual partnering</b>								
No current regular partner	1619	627	38.7	455	28.1	537	33.2	<0.001
Exclusive <6m or undetermined <sup>a</sup>	641	275	42.9	238	37.1	128	20.0	
Sexually concurrent <6m	742	378	50.9	271	36.5	93	12.5	

Proportions are calculated from non-missing sample. <sup>a</sup> "Undetermined" are respondents who had been in their current regular sexual relationship for less than 6 months.

Recent HIV testing was associated with recent exposure to condom social marketing (Table 3). For example, recent HIV testing was higher among those who had seen condoms being promoted very frequently (49.2%) than among those who had seen them promoted rarely (27.7%) or never (31.5%) in the last 12 months. Similarly, respondents who could recall seeing condoms promoted in multiple settings were more likely to have tested for HIV recently compared to those who had only seen condoms promoted in a small range of settings (Table 3).

On the other hand, attitudes to HIV did not appear to be associated with recent HIV testing (Table 3). Recent HIV testing was proportionally the same regardless of respondents' attitudes to the statements "HIV/AIDS is a less serious threat than it used to be because of new treatments" and "a man who knows he has HIV would tell me he was positive before we had sex".

Table 3. Prevalence of testing for HIV recently, more than 12 months ago, and never testing by social marketing exposure and attitudes to HIV

	Total	Proportion tested <12m		Proportion tested >12m ago		Proportion never tested		Chi squared test of proportions	
		n	n %	n	%	n	%		
Total	3140	1319	42.0	993	31.6	774	24.7		
<b>Frequency of seeing condom promotion in last 12 months</b>									
Very frequently	1311	645	49.2	384	29.3	282	21.5	<0.001 <sup>b</sup>	
Often	828	361	43.6	276	33.3	191	23.1		
Occasionally	570	194	34.0	204	35.8	172	30.2		
Rarely	270	85	31.5	95	35.2	90	33.3		
Never	83	23	27.7	26	31.3	34	41.0		
<b>Number of places recall seen condoms promoted in last 12 months<sup>a</sup></b>									
None	212	64	30.2	73	34.4	75	35.4	<0.001 <sup>b</sup>	
1	808	300	37.1	283	35.0	225	27.9		
2	427	155	36.3	138	32.3	134	31.4		
3	524	218	41.6	172	32.8	134	25.6		
4	453	225	49.7	131	28.9	97	21.4		
5	443	231	52.1	140	31.6	72	16.3		
6	219	126	57.5	56	25.6	37	16.9		
<b>"HIV/AIDS is a less serious threat than it used to be because of new treatments"</b>									
Agree/strongly agree	1023	451	44.1	306	29.9	266	26.0	NS	
Disagree/strongly disagree	2041	859	42.1	679	33.3	503	24.6		
<b>"A man who knows he has HIV would tell me he was positive before we had sex"</b>									
Agree/strongly agree	1234	528	42.8	307	24.9	399	32.3	<0.001	
Disagree/strongly disagree	1791	766	42.8	664	37.1	361	20.2		

<sup>a</sup> Options included "promos at gay events", "billboards or bus-stop adverts", "condom packs", "promos online or on a mobile app", "posters", "material at saunas or cruise clubs". <sup>b</sup> p value for trend. Proportions are calculated from non-missing sample.

### *Factors independently associated with recent HIV testing*

We examined whether socio-demographic (recruitment site, age, ethnicity, education, sexual identity), behavioural (number of recent male partners, sex and condom use with casual and regular partners), social marketing and attitude variables were associated with testing for HIV in the past 12 months after controlling for the effect of other variables (Table 4). For this analysis we included respondents who had tested positive for HIV in the previous 12 months but not those who had tested positive more than 12 months ago.

Table 4. Predictors of recent HIV testing

Socio-demographic, behavioural, social marketing and attitudinal factors independently associated with infrequent condom use	Adjusted odds ratio (95% CI)	p-value for variable
<b>Recruitment site</b>		<b>0.0022</b>
Offline – fair day (ref)	1	
Offline – bars and sex-on-site venues	1.2 (0.8-1.6)	
Online dating site	<b>0.8 (0.6-0.9)</b>	
<b>Age group</b>		<b>0.0098</b>
16-29 (ref)	1	
30-44	1.2 (0.99-1.5)	
45+	0.8 (0.7-1.1)	
<b>Ethnic group</b>		0.1658
European (ref)	1	
Maori	0.9 (0.7-1.2)	
Pacific	0.7 (0.5-1.2)	
Asian	0.98 (0.8-1.3)	
Other	<b>1.5 (1.01-2.3)</b>	
<b>Highest education</b>		<b>0.049</b>
Up to tertiary degree (ref)	1	
Tertiary degree or higher	<b>1.3 (1.1-1.5)</b>	
<b>Sexual identity</b>		<b>0.001</b>
Gay or homosexual (ref)	1	
Bisexual or other	<b>0.7 (0.6-0.9)</b>	
<b>Number of male partners past 6 months</b>		
Up to 20 (ref)	1	<0.001
>20	<b>1.8 (1.3-2.5)</b>	
<b>Sex with casual partner/s past 6 months</b>		<0.001
No casual partner	<b>0.4 (0.3-0.5)</b>	
No anal intercourse	<b>0.5 (0.4-0.7)</b>	
Always used a condom (ref)	1	
Any unprotected anal intercourse	<b>1.3 (1.1-1.6)</b>	
<b>Sex with current regular partner<sup>a</sup></b>		<b>0.006</b>
No current regular partner	0.8 (0.6-1.03)	
No anal intercourse	0.7 (0.5-1.1)	
Always used a condom (ref)	1	
Any unprotected anal intercourse	1.1 (0.8-1.5)	
<b>Frequency of seeing condom promotion in last 12 months</b>		<0.001 <sup>b</sup>
For each increase in frequency seeing condom promotion	<b>1.2 (1.1-1.3)</b>	
<b>Number of places recall seen condoms promoted in last 12 months</b>		<b>0.002<sup>b</sup></b>
For each increase in number of places seen condoms promoted	<b>1.1 (1.03-1.2)</b>	
<b>“HIV/AIDS is a less serious threat than it used to be because of new treatments”</b>		0.106
Agree/strongly agree (ref)	1	
Disagree/strongly disagree	0.9 (0.7-1.03)	
<b>“A man who knows he has HIV would tell me he was positive before we had sex”</b>		0.934
Agree/strongly agree (ref)	1	
Disagree/strongly disagree	1.01 (0.8-1.2)	

<sup>a</sup> Combined boyfriend and fuckbuddy-type regular partners. <sup>b</sup> P-value is for variable entered as ordinal categories. Bold denotes statistically significant. Ref = referent category.

As Table 4 shows, factors that were independently associated with increased rates of recent HIV testing included having a tertiary degree, having more than 20 recent male partners, engaging in any unprotected anal intercourse with a casual sex partner, seeing condom social marketing more frequently and seeing condoms promoted in multiple settings. In contrast, being recruited from an internet dating site, identifying as bisexual or as “other”, and not having had anal intercourse with a casual partner recently was independently associated with not testing for HIV in the past 12 months.

## Summary

Three quarters of GBM surveyed in 2014 had ever tested for HIV of whom 6.7% were HIV positive; 5% of all respondents. Lower lifetime testing rates were found among those recruited from Internet dating sites, those aged under 30, Pacific respondents and bisexual identifying respondents. Under half of participants (42.0%) had tested in the 12 months prior to survey, with sexual health clinics being the most common testing site, and 1.4% of recent testers received a positive diagnosis. Recent HIV testing was predicted by higher education, more recent sexual partners, unprotected anal intercourse with casual partner and greater exposure to condom social marketing, whereas GBM recruited from internet dating sites, who identified as bisexual or had not engaged in casual anal intercourse recently were less likely to test after controlling for other variables.

Strengths of this study include the broad non-clinic based sampling approach, the anonymous and self-completed participation that minimises reporting bias about sensitive behaviours, and the ability to link questions on HIV testing with questions on HIV risk practices. Limitations include the non-random sampling, meaning the findings may not be generalisable to all GBM. We did not ask about the frequency of HIV testing, nor the reasons for testing due to limited space in the questionnaire. We also cannot identify the sequence of testing in relation to risk behaviours for all participants.

The prevalence of lifetime and recent HIV testing is consistent with trends from previous GAPSS and GOSS surveys, and a growing proportion of participants overall have diagnosed HIV. The latter is expected given low mortality following treatment but ongoing HIV incidence in GBM communities. The proportion testing recently falls under the recommended guidelines for annual testing of all GBM by the NZ Sexual Health Society and needs to be improved, both by increasing access to and the offer of testing but also by focussing on those with greater underlying risk. A high proportion of new HIV diagnoses among GBM reported in epidemiological surveillance in New Zealand continue to be late diagnoses, indicating delayed testing of many GBM, and demonstrating a clear need for higher uptake. Universal screening of GBM would reduce the prevalence of undiagnosed HIV and reduce onward transmission, as models in the UK predict 63% of new infections among GBM are attributable to this group.[4] Early diagnosis and treatment offers optimal long term wellbeing for people living with HIV with no increased risk of serious adverse consequences,[5] and ultimately reduces healthcare costs associated with HIV care.

Sexual health centres have become the preferred site for HIV testing by GBM, overtaking general practice. It is unclear whether this is due to increased promotion of sexual health clinics, increased HIV screening of clients by sexual health clinics, or worsening access to or screening for HIV in GP settings. A concern therefore is the current proposal to reduce sexual health services in the Auckland region by 30%, and by more (50%) in Auckland Central which is where GBM disproportionately live.[6] Easy availability of timely HIV screening for most-at-risk groups such as GBM is a fundamental pillar of HIV control. Introducing further barriers to seeking testing

such as reduced clinic hours would be a serious obstacle to achieving the recommended annual screening targets in New Zealand.

The 1.4% of non-previously diagnosed GBM testing recently who received a positive diagnosis in the last 12 months does not give an indication of incidence in this population. This is because it contains both GBM who acquired HIV recently, but also those who may have acquired it a long time ago but had not tested for some years. Many GBM testing recently may also be doing so because they exhibit higher risk behaviours, and are therefore not representative of all GBM. This is confirmed in our findings where recent testing was higher in participants reporting more sexual partners and more unprotected casual anal intercourse.

These findings suggest that many GBM understand that their level of HIV testing needs to be proportional to their risk of exposure. This was also seen in the finding that men who were not sexually exclusive with their current regular partner had higher rates of testing than men who were sexually exclusive. Further information on the frequency of testing would however demonstrate whether this was commensurate with their risk taking behaviour. For example, although respondents having anal intercourse with a current regular partner had higher testing than those not engaging in anal intercourse, testing rates for those having unprotected or protected anal intercourse were no different. Furthermore, although recent testing was higher among those reporting potential exposure, it was far from universal, meaning many GBM may be transmitting HIV unknowingly and not accessing timely HIV treatment if infected.

After controlling for risk behaviours, respondents recruited from Internet dating sites, and bisexual identifying respondents had lower recent HIV testing rates. These have different implications, as our research has found higher risk taking among internet daters but lower risk among bisexual respondents.[7] HIV testing services need to be promoted better and be more accessible to both these groups, as well as being targeted at highly sexually active GBM and those who have engaged in any unprotected anal intercourse.

Unlike condom use,[7] in our study testing for HIV was unrelated to attitudes about the epidemic. This may be because we did not ask more fine grained questions about the perceived benefits of HIV treatments or concerns about receiving a positive diagnosis, such as fear of discrimination. Exposure to condom social marketing was however related to testing. Although such marketing does not directly promote testing, being reminded of condom use frequently may instil an awareness of the need to test should condoms not be used. This year the NZAF instigated an annual HIV testing month, in May, and it will be important to monitor whether this has increased the proportion with a recent test and/or the number and rate of HIV positivity in this population.

Further research should examine trends in recent testing among higher risk sub groups of GBM, such as those with higher partner numbers and those engaging in unprotected sex. Analyses could also compare the socio-demographic and behavioural profiles of GBM attending different settings for HIV screening. Future behavioural surveys should consider including a measure of the frequency of HIV

testing, and whether HIV testing was offered to the person when accessing health care settings. Finally, since the last analysis of HIV positive respondents in 2011, the environment surrounding HIV treatments, transmissibility, and sexually transmitted infections has changed considerably, and an updated analysis of sexual partnering, sero-sorting and sexual practices among GBM living with HIV is warranted.

## References

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The Gay Auckland Periodic Sex Survey (GAPSS) and Gay men's Online Sex Survey (GOSS) were a collaboration between the Gay Men's Sexual Health research group at the University of Auckland, the AIDS Epidemiology Group at the University of Otago, and the New Zealand AIDS Foundation. The studies received ethics approval from the University of Auckland Human Participant Ethics Committee and were funded by the Ministry of Health.

Suggested citation: Saxton P, Dickson N, Hughes A, Ludlam A. *GAPSS/GOSS Research Brief: HIV testing among gay and bisexual men*. Auckland: The University of Auckland, 2015.