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ORIGINAL PAPER

Understanding the Targeting and Uptake of HIV Testing Among Gay and Bisexual Men Attending Sexual Health Clinics

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Abstract
We assessed trends in HIV testing outcomes during a period of clinic-based initiatives introduced to increase HIV testing among gay and bisexual men (GBM) attending sexual health clinics (SHCs) in New South Wales (NSW). A cohort of 25,487 HIV-negative GBM attending 32 SHCs in NSW (2009–2015) was classified into six sub-groups each year based on client-type (new/existing), risk-status (low/high-risk), and any recent HIV testing. Poisson regression methods were used to assess HIV testing outcomes in sub-groups of GBM. HIV testing outcomes and the sub-groups with greatest statistically significant annual increases were: individuals attending (26% in high-risk existing clients with recent testing); testing uptake (4% in low-risk existing clients with no recent testing); testing frequency (6% in low-risk existing clients with no recent testing and 5% in high-risk existing clients with recent testing); and total tests (31% in high-risk existing clients with recent testing). High-risk existing clients with recent testing had a 13% annual increase in the proportional contribution to total tests. Our findings show improved targeting of testing to high-risk GBM at NSW SHCs. The clinic-based initiatives should be considered for translation to other similar settings.

Keywords MSM · Gay men · High-risk · HIV · Testing · Sexual health clinics

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Introduction

Regular testing of people at higher risk of HIV acquisition is recommended in national and international guidelines [1–4]. It allows for early detection and initiation of antiretroviral therapy for those with infection, leading to reductions in risky sexual practices [5], improved health outcomes [6], and undetectable viral load prevents transmission to sexual partners [7–9]. Those uninfected but at higher risk of infection can also be offered combination HIV prevention choices including access to pre-exposure prophylaxis (PrEP) [10].

In Australia, gay and bisexual men (GBM) account for over 70% of all HIV diagnoses annually and more than 80% of notified newly acquired (evidence of HIV acquisition within 12 months prior to the diagnosis) HIV infections [11]. Clinical guidelines in Australia [2] and other countries [3, 4] recommend annual HIV testing for all sexually active GBM, while those who engage in higher risk sexual practices (condomless anal sex, higher number of partners, group sex and use of recreational drugs during sex) should test every 3–6 months [2]. Modelling studies suggest that both annual testing of all GBM [12] as well as quarterly testing of GBM compared to annual testing [13] are cost-effective. Moreover, reducing the time between infection and diagnosis and early initiation of antiretroviral therapy could substantially reduce population incidence [14]. However, the uptake of HIV testing among GBM in Australia [15] and elsewhere [16, 17] is sub-optimal. Only 15% of high-risk GBM attending primary care clinics in Australia re-test for HIV within 6 months in accordance with the guidelines [18].

The World Health Organization focuses on increasing access to testing through community-based models [19] and HIV self-testing [20]. However, improving efficiencies at existing clinical services is also important [21]. In New South Wales (NSW), since around 2009, there have been concerted efforts to promote HIV testing with an accelerated momentum under the most recent and current HIV strategies, which aim to virtually eliminate HIV transmission by 2020 [22, 23]. There has been a particular focus on priority populations at higher risk of HIV, and the publicly-funded sexual health clinics (SHCs) are being monitored against a range of key performance indicators including HIV testing.

A number of initiatives have been implemented at NSW SHCs to increase HIV testing, including: express clinical model ('Xpress'), a fast-track service offered to asymptomatic GBM which involves self-registration via computer-assisted self-interview (CASI), self-collection of specimens for sexually transmitted infection (STI) testing, and rapid HIV testing by a nurse [24]; and 3–6 monthly SMS reminders to high-risk GBM for HIV testing [25]. Independent evaluations showed that Xpress model and electronic self-registration improved clinic efficiency and capacity to conduct more testing [24, 26], and Xpress model, rapid testing, and SMS reminders increased re-testing in high-risk GBM [25, 27, 28]. These initiatives were accompanied by ongoing health promotion and social marketing activities through online and social media, gay and mainstream print media, outdoor advertising, community forums and event promotion. The social and marketing campaigns had been very successful with a prompted recall rate of up to 82% [29]. During the period these initiatives were implemented, routine surveillance reports showed a marked increase in HIV testing among GBM at NSW SHCs [30]. To gain an understanding of the nature of this increase, and specifically whether it represented an increase in testing in high-risk versus low-risk men or new clients attending versus more repeat testing in existing clients, and which GBM sub-groups contributed to increase in testing, we assessed temporal trends in HIV testing outcomes in six sub-groups of gay and bisexual men attending sexual health clinics in New South Wales.

Methods

Data Sources

We utilised data from publicly-funded SHCs participating in a national HIV/STI surveillance network, the Australian Collaboration for Coordinated Enhanced Sentinel Surveillance (ACCESS) [31]. We constructed a cohort of HIV-negative GBM attending 32 SHCs in NSW (12 urban, 18 regional, 2 remote) that participated in the ACCESS network and provided complete data for the study period, defined as January 1, 2009 to December 31, 2015. This represents 82% (32 of 39) of all SHCs in NSW included in the analysis. For each client visit during the study period, we obtained routinely recorded data on demographic characteristics, self-reported sexual and injecting behaviour, and clinical data including HIV/STI testing and diagnoses. Analyses were restricted to HIV-negative GBM, defined as male clinic clients aged 16 years and older who self-reported sex with another man. Men who met this definition at any point in the study period were considered GBM throughout the study period. Records for the same individual were linked by a patient identifier within clinics, but not across clinics. We excluded visits within 14 days of a previous visit as these were considered follow-up visits rather than a new episode of care, but we retained HIV tests from such visits if there was no HIV test recorded at the index visit. Men who seroconverted during the study period contributed data to the date of their HIV diagnosis.

Variable Categorisation

At first visit in the study period, GBM were classified as 'new clients' if clinic records showed it was their first ever visit at that clinic, and 'existing clients' if clinic records showed they had any previous visits. If this information was not available from clinic records at first visit during the study period, GBM were considered new clients if there was no visit recorded in the past 2 years. At any subsequent visits after the first visit during the study period GBM were considered existing clients. We differentiated new and existing clients as monitoring trends in new clients separately provides an indication of the effect of health promotion activities.

At each visit GBM were classified as 'high-risk' if their clinic record indicated > 5 male partners in the past 3 months or > 20 male partners in the past 12 months consistent with Australian testing guidelines [2]. Additionally, GBM whose clinic records indicated a diagnosis of rectal chlamydia or gonorrhoea in the past 12 months at that clinic were classified as high-risk as this is associated with increased risk of HIV acquisition [32]. All other GBM and those with no relevant information in their clinic record were considered low-risk for the purpose of this analysis. We conducted a sensitivity analysis to assess differences in testing uptake between GBM with no risk information and those whose clinic records explicitly allowed them to be classified as low-risk.

We further categorised existing clients as either having had recent testing or not depending on their adherence to testing guidelines [2] at that clinic (recent testing = HIV test in the past 12 months in clinic records for low-risk GBM and HIV test in the past 6 months for high-risk GBM).

Finally, using client type (new or existing), risk status (low or high-risk) and recent testing (yes or no), we assigned all GBM into the following six'sub-groups' in each year: (i) low-risk, new client; (ii) high-risk, new client; (iii) low-risk, existing client, no recent testing; (iv) low-risk, existing client, recent testing; (v) high-risk, existing client, no recent testing; and (vi) high-risk, existing client, recent testing. GBM who were high-risk at any visit in a year were considered high-risk for that year. GBM could fall into both new and existing client categories in the same year if they were new clients in that year and had subsequent visits at which they were considered existing clients, and could be assigned to different subgroups in different years depending on their characteristics. As new clients could not have previously had a test at that clinic, there were a total of six sub-groups instead of eight possible combinations.

Definition of Study Outcomes

We defined HIV testing outcomes for each calendar year as follows: (i) the number of unique GBM attending in the year; (ii) uptake of HIV testing defined as the proportion of unique GBM who attended in the year and were tested at least once; (iii) frequency of testing defined as the mean number of HIV tests per unique GBM in the year (this outcome was not reported for new client sub-groups because they could only have had one test as new clients and their remaining tests in the year were considered as existing clients); (iv) the total number of HIV tests conducted in the year; and (v) the proportional contribution to total tests defined as proportion of total tests contributed by each sub-group in the year.

Statistical Analysis

A descriptive analysis of socio-demographic characteristics and sexual behaviour by risk status was conducted, restricted to first visit in the study period for each GBM. For trend analyses of HIV testing outcomes, we used repeated measures Poisson regression models with generalised estimating equations methodology to account for within and between clinic variability and assuming exchangeable variance structure for clinic specific subgroups. We included interaction between sub-groups and year to allow for differing time trends in outcomes. We also assessed the annual change in the numbers of unique GBM, heterosexual male, female and 'other' clients attending participating clinics using Spearman's rank correlation with Bonferroni adjustment for multiple statistical tests.

Data were presented as annual rates of change i.e., incidence rate ratio (IRR) and 95% confidence intervals (CI) and fitted trends plotted against observed data. All analyses were performed in Stata v14 (StataCorp LLC, College Station, TX, USA) and $p < 0.05$ was considered statistically significant.

Ethics Approval

Ethical approval for ACCESS study was granted by the Human Research Ethics Committees of St. Vincent's Hospital, Sydney as well as by relevant ethics committees of participating SHCs. The requirement to obtain informed consents from individual patients was waived by the ethics committees given the de-identified nature of the data collected.

Results

Participant Characteristics

Between January 1, 2009 and December 31, 2015, 25,487 unique GBM attended participating SHCs. At first visit,

the median age of GBM was 30 years [inter-quartile range (IQR): 25–40 years], 73.7% were new clients and 20.0% were high-risk. Over half (59.5%) of GBM were born in Australia, 88.2% lived in urban areas, and 2.2% reported injecting drugs in the past 12 months. Among new clients, GBM reported a median of two male partners in the past 3 months (IQR: 1–5) and five male partners in the past 12 months (IQR: 2–10). Of new clients, just over half (53.1%) self-reported having previously had an HIV test, and less than half of high-risk GBM (46%) had two or more HIV tests in a year during the study period. High-risk GBM were significantly more likely to be born outside Australia, live in inner metropolitan areas, report injecting drug use, previously been tested for HIV, and having two or more HIV tests per year (Table 1).

Trends in the Annual Number of Unique GBM Attending Participating Clinics

Overall, the number of unique GBM attending participating clinics annually increased from 4708 in 2009 to 8843 in 2015 (88% increase). The highest number of unique GBM in 2015 was in the low-risk new client sub-group (n = 2615) followed by low-risk existing clients with no recent testing (n = 2323) and low-risk existing clients with recent testing (n = 2118). The number of unique GBM increased significantly in all sub-groups over time with the greatest annual increase in high-risk existing clients with recent testing (26% annual increase, 95% CI 19–35%, $p < 0.001$) followed by high-risk existing clients with no recent testing (20% annual increase, 95% CI 9–33%, $p < 0.001$) (Fig. 1a, Table 2). The increase in the number of GBM attending did not result in a decrease in the number of female and heterosexual male clients attending participating clinics over time (Fig. 2).

Trends in the Annual Uptake of HIV Testing

The uptake of HIV testing (proportion of unique GBM who were tested at least once in a year) increased significantly over time in low-risk sub-groups but not in high-risk sub-groups, however high-risk existing clients had the highest uptake at baseline (95% in recent testing sub-group and 87% in no recent testing sub-group). The greatest annual increase in the uptake of testing was observed in low-risk existing clients: the recent testing sub-group had a 2% annual increase (95% CI 1–3%, $p < 0.001$); and the no recent testing sub-group had a 4% annual increase (95% CI 3–5%, $p < 0.001$) (Fig. 1b, Table 2). The sensitivity analysis showed that HIV testing uptake was slightly lower in GBM with no risk information compared with low-risk GBM (IRR: 0.89, 95% CI 0.87–0.91; no further data shown).

Trends in the Annual Frequency of HIV Testing

The highest frequency of HIV testing in 2015 was in high-risk existing clients with recent testing (2.4 tests per GBM) followed by high-risk existing clients with no recent testing (1.5 tests per GBM per year) and low-risk existing clients with recent testing (1.4 tests per GBM per year). The frequency of HIV testing increased significantly in all sub-groups (new clients were not included in this analysis) with the greatest annual increase in low-risk existing clients with no recent testing (6% annual increase, 95% CI 5–7%, $p < 0.001$) followed by high-risk existing clients with recent testing (5% annual increase, 95% CI 4–6%, $p < 0.001$) (Fig. 1c, Table 2).

Trends in the Annual Total Number of HIV Tests

Overall, 58,337 tests were performed, increasing from 4779 in 2009 to 12,173 in 2015 (155% increase). In 2015, the highest number of tests were performed in low-risk existing clients with recent testing (n = 3004) followed by high-risk existing clients with recent testing (n = 2452) and low-risk existing clients with no recent testing (n = 2174). There was a significant increase in the number of tests over time in all sub-groups with the greatest annual increase in high-risk existing clients: the high-risk recent testing sub-group had a 31% annual increase (95% CI 24–39%, $p < 0.001$); and the high-risk no recent testing sub-group had a 23% annual increase (95% CI 9–39%, $p = 0.001$) (Fig. 1d, Table 2).

Trends in the Proportional Contribution of Subgroups to Total HIV Tests

The proportional contribution to total HIV tests by different sub-groups changed over time. High-risk existing clients with recent testing had an increasingly larger proportional contribution to total tests (10.4% in 2009 to 20.2% in 2015; 13% annual increase, 95% CI 8–18%, $p < 0.001$). There were no changes in contribution by the other two high-risk sub-groups. There was a corresponding annual decline in contribution to total tests by low-risk new clients (24.6% in 2009 to 17.8% in 2015; 5% annual decline, 95% CI 2–7%, $p < 0.001$), and low-risk existing clients with no recent testing (24.9% in 2009 to 17.9% in 2015; 6% annual decline, 95% CI 5–7%, $p < 0.001$) (Fig. 3, Table 2).

Discussion

This study presents a detailed analysis of HIV testing trends in GBM attending 32 public SHCs in NSW during a period where a range of initiatives and health promotion activities were introduced with the goal of increasing testing,

Table 1 Demographic and behavioural characteristics of gay and bisexual men attending sexual health clinics in New South Wales at first visit during the study period, 2009–15

	Low-risk[a] n (%)	High-risk[a] n (%)	Total n (%)	p value
Total	20,393 (80.0)	5094 (20.0)	25,487 (100)	0.270
Median age (IQR)	30 (25–40)	30 (25–39)	30 (25–40)	
Client type[b]				0.806
New	15,022 (73.7)	3761 (73.8)	18,783 (73.7)	
Existing	5371 (26.3)	1333 (26.2)	6704 (26.3)	
Year of first visit				<0.001
2009	3913 (19.2)	795 (15.6)	4708 (18.5)	
2010	2711 (13.3)	599 (11.8)	3310 (13.0)	
2011	2368 (11.6)	508 (10.0)	2876 (11.3)	
2012	2458 (12.1)	691 (13.6)	3149 (12.4)	
2013	2740 (13.4)	777 (15.3)	3517 (13.8)	
2014	3121 (15.3)	836 (16.4)	3957 (15.5)	
2015	3082 (15.1)	888 (17.4)	3970 (15.6)	
Country/region of birth				<0.001
Australia	12,468 (61.1)	2705 (53.1)	15,173 (59.5)	
Asia	3227 (15.8)	814 (16.0)	4041 (15.9)	
Europe	2696 (13.2)	934 (18.3)	3630 (14.2)	
South America	584 (2.9)	188 (3.7)	772 (3.0)	
North America	528 (2.6)	182 (3.6)	710 (2.8)	
Africa	280 (1.4)	75 (1.5)	355 (1.4)	
Oceania[c]	592 (2.9)	193 (3.8)	785 (3.1)	
Missing	18 (0.1)	3 (0.1)	21 (0.1)	
Area of residence				<0.001
Urban/metropolitan	17,717 (86.9)	4765 (93.5)	22,482 (88.2)	
Other	2237 (11.0)	179 (3.5)	2416 (9.5)	
Missing	439 (2.1)	150 (2.9)	589 (2.3)	
Injecting drug use past 12 months				<0.001
Yes	430 (2.1)	132 (2.6)	562 (2.2)	
No	19,200 (94.2)	4873 (95.7)	24,073 (94.5)	
Missing	763 (3.7)	89 (1.8)	852 (3.3)	
Median number of male partners past 3 months[d,e] (IQR)	2 (1–3)	9 (6–12)	2 (1–5)	<0.001
Median number of male partners past 12 months[d,e] (IQR)	4 (2–7)	20 (10–40)	5 (2–10)	<0.001
Ever tested for HIV[d]				<0.001
Yes	7171 (47.7)	2795 (74.3)	9966 (53.1)	
No/unsure	2411 (16.1)	401 (10.7)	2812 (15.0)	
Missing	5440 (36.2)	565 (15.0)	6005 (32.0)	
HIV tests per year[f]				<0.001
0	6069 (17.7)	922 (8.0)	7061 (15.1)	
1	21,630 (63.0)	5699 (45.9)	27,239 (58.5)	
≥ 2	6611 (19.3)	5728 (46.1)	12,339 (26.4)	

IQR inter-quartile range

[a]High-risk =>5 partners in the past 3 months or > 20 partners in the past 12 months or rectal chlamydia/gonorrhoea diagnosis in the past 12 months

[b]new client = first ever visit to the clinic. Existing client = previously attended the clinic

[c]excluding Australia

[d]Self-reported and among new clients only

[e]Those with missing partner numbers excluded

[f]HIV tests per year during study period based on unique GBM clients per year

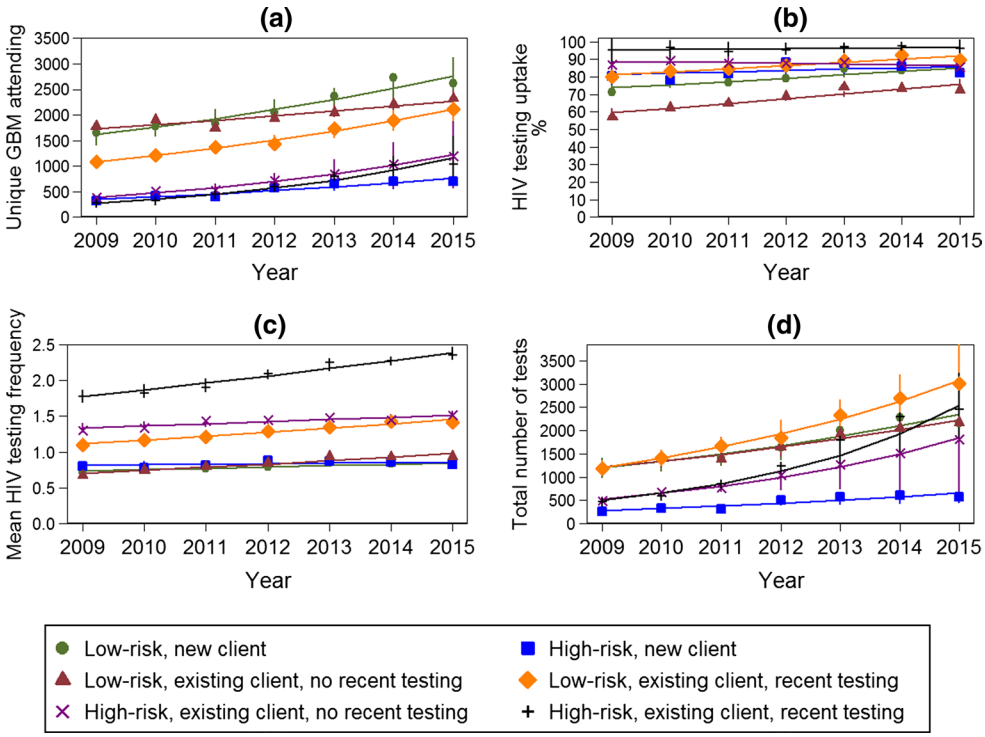

Fig. 1 Trends in annual HIV testing outcomes in gay and bisexual men by sub-group, 2009–2015: **a** number of unique men attending; **b** uptake of HIV testing; **c** frequency of HIV testing; **d** total number of HIV tests

Table 2 Trend analysis (annual change) in HIV testing outcomes in gay and bisexual men by sub-group, 2009–15

Sub-group[a]	Number of unique GBM attending IRR (95% CI), p value	Test uptake (proportion of unique GBM tested) IRR (95% CI), p value	Test frequency (mean HIV tests per GBM) IRR (95% CI), p value	Total number of HIV tests IRR (95% CI), p value	Proportional contribution to total HIV tests IRR (95% CI), p value
Low-risk, new clients	1.09 (1.06–1.13), < 0.001	1.02 (1.02–1.03), < 0.001	–	1.12 (1.06–1.18), < 0.001	0.95 (0.93–0.98), < 0.001
High-risk, new clients	1.14 (1.08–1.21), < 0.001	1.01 (0.99–1.03), 0.346	–	1.15 (1.07–1.24), < 0.001	0.98 (0.93–1.03), 0.356
Low-risk, existing clients					
No recent testing	1.05 (1.03–1.07), < 0.001	1.04 (1.03–1.05), < 0.001	1.06 (1.05–1.07), < 0.001	1.11 (1.08–1.14), < 0.001	0.94 (0.93–0.95), < 0.001
Recent testing	1.12 (1.09–1.15), < 0.001	1.02 (1.01–1.03), < 0.001	1.04 (1.04–1.05), < 0.001	1.17 (1.12–1.22), < 0.001	0.99 (0.94–1.05), 0.838
High-risk, existing clients					
No recent testing	1.20 (1.09–1.33), < 0.001	1.00 (0.98–1.01), 0.594	1.02 (1.01–1.03), < 0.001	1.23 (1.09–1.39), 0.001	1.05 (0.94–1.16), 0.389
Recent testing	1.26 (1.18–1.35), < 0.001	1.00 (0.99–1.02), 0.738	1.05 (1.04–1.06), < 0.001	1.31 (1.24–1.39), < 0.001	1.13 (1.08–1.18), < 0.001

CI confidence interval, *IRR* incidence rate ratio

[a]High-risk =>5 partners in the past 3 months or > 20 partners in the past 12 months or rectal chlamydia/gonorrhoea diagnosis in the past 12 months. New client = first ever visit to the clinic. Existing client = previously attended the clinic. Recent testing = HIV test in the past 6 months for high-risk men and past 12 months in the past 12 months

particularly in GBM at higher risk of HIV. In the period of analysis (2009–2015), the number of unique GBM attending the participating clinics each year, frequency of testing, and the total number of tests conducted increased significantly in all GBM sub-groups, but the greatest annual increases in unique GBM attending and number of tests were observed in subgroups of high-risk GBM. High-risk existing clients with recent HIV testing also had an increasingly larger proportional contribution to total HIV tests annually. The increases in the number of GBM attending clinics did not

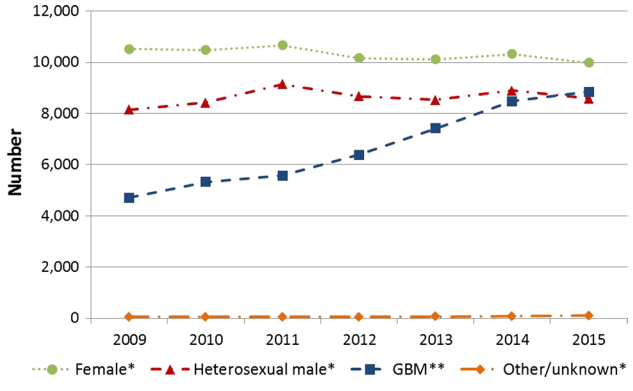

Fig. 2 Number of unique clients attending sexual health clinics over time by client type, 2009–2015. Trend test = Spearman's rank correlation with Bonferroni adjustment. *p value for trend test > 0.05; **p value for trend test < 0.05

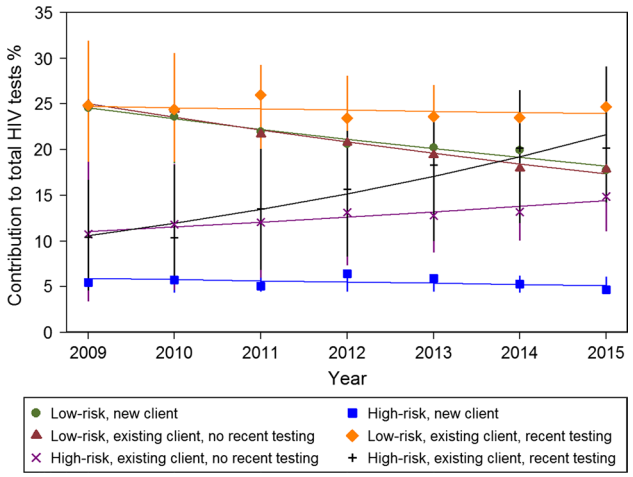

Fig. 3 Proportional contribution to the total number of HIV tests by gay and bisexual men sub-groups, 2009–2015

reduce access for other client groups including females and heterosexual males.

To our knowledge this is the first study to undertake a comprehensive examination of HIV testing trends and contribution to total tests by different subgroups of GBM. The analysis was strengthened by inclusion of the majority of all SHCs in NSW (32 of 39) from diverse geographic areas (urban, regional and remote) enabling construction of a cohort of more than 25,000 unique GBM over a period of 7 years. Our examination of five testing outcomes stratified by six subgroups of GBM based on client type, risk status, and recent testing provided insight to different impacts of the testing promotion strategies.

There are a few limitations that need to be considered when interpreting these data. First, some men may have attended other services for testing such as private general practices [11] which were not included in this analysis. Routine reports show the uptake and frequency of HIV testing among GBM attending general practices is lower compared to SHCs but the trends are similar [30], therefore exclusion of general practices is unlikely to have a major impact on trends in our analysis. Second, we did not adopt condomless anal sex as a criterion for high-risk classification because condom use data were incomplete and appeared to be unreliable. Therefore, we used greater number of partners or past rectal chlamydia or gonorrhoea diagnosis at that clinic, which is associated with increased risk of HIV acquisition [32], as our criteria for high-risk classification. Finally, it is possible other factors, such as mass media and PrEP access, may have played a role in the changes in testing observed. However, we think this is very unlikely, as the initiatives such as Xpress clinics [27] and SMS reminders [25] have been shown independently to be associated with increased testing. Also, PrEP only became available to high-risk GBM in NSW in 2015 through a demonstration project (PRELUDE) that recruited 300 men from SHCs who were required to test for HIV quarterly [33]. The influence of PrEP access on HIV testing in our study is likely to be small, if any, as the number of participants in PRELUDE was equivalent to only 1% of our overall sample.

A key finding of our study is that although HIV testing increased in all GBM sub-groups, the testing increases were greater in high-risk existing clients and particularly among high-risk recent testers. This latter sub-group (high-risk, existing clients with recent testing) also had a 13% annual increase in the proportion of total tests contributed. The findings suggest that each year, in line with the NSW HIV Strategies [22, 23], SHCs were able to reach an increasing number of GBM at higher risk of infection for HIV testing, and that higher-risk men accounted for an increasing proportion of total tests. Our study was not designed to explicitly investigate the direct impact of clinic-based initiatives and health promotion on HIV testing but the influence of these initiatives collectively on different testing outcomes and subgroups of GBM. Further, about 40% of our sample consisted of non-Australian-born GBM [34], in whom HIV diagnoses rates are increasing at a greater rate than Australian-born GBM [11], suggesting they may have a different risk profile or testing history. We did not stratify study sub-groups according to the country of birth as this would add significant complexity to the analysis.

In our study, existing clients, rather than new clients, were the major contributors to the overall 155% increase in HIV testing. This is in contrast to a study in two primary care clinics and two SHCs in Victoria (collectively these clinics account for 50% of all HIV diagnoses in Victoria) where new GBM clients were the main drivers for a 110% increase in the total tests from 2007 to 2013 [35]. However, in Victoria during this period the clinics did not have

express clinical models in place which have been associated with increased re-testing [27]. The frequency of HIV testing increased significantly in all sub-groups during the study period, and high-risk existing clients with recent testing had the highest average annual testing frequency throughout the study period, increasing from 1.8 per GBM in 2009 to 2.4 in 2015. Despite these improvements, over half of high-risk GBM in our study (54%) did not meet the minimum recommended testing level of at least two HIV tests per year [2], similar to findings from Victoria [35–37]. To increase the frequency of testing further, there is an opportunity to expand initiatives adopted by some SHCs in the ACCESS network to all clinics, such as express clinical models and the associated components of self-registration (CASI), self-collection, nurse-led testing [24, 26], and SMS reminders for testing to high-risk men [25].

To provide GBM with greater choice on where to test as well as to reach high-risk GBM who do not access public services for HIV testing, other strategies may be necessary to remove barriers to testing [16, 38] such as peer-led community-based rapid testing facilities [39], dried blood spot home collection [40], and self-testing [41]. In NSW, since 2013, four community-based rapid testing facilities have been introduced [30], with early evaluations showing they are reaching a higher proportion of men who have never tested for HIV and men who report greater number of partners compared with Xpress clinic clients [39]. A dried blood spot home collection program has also commenced in NSW in 2016, with evaluations planned in the future [40].

Conclusions

Regular testing of GBM at higher risk of HIV is essential to reach the goals of NSW HIV strategies. During a period where a range of clinic-based initiatives and ongoing health promotion activities were implemented to increase HIV testing, SHCs in NSW successfully increased HIV testing in GBM. High-risk existing clients with recent testing had greater increases in the number of GBM attending and number of tests conducted, and also had a greater proportional contribution to total tests over time. The initiatives should be adopted by all SHCs in Australia and translated to other similar settings. Strategies such as self-collection and self-testing may also be needed to improve access to testing even further, particularly for those GBM who do not access public services.

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Compliance with Ethical Standards

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. For this type of study formal consent is not required.

Conflicts of interest The authors declare that they have no conflicts of interest.

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