

Social and Behavioural Correlates of HIV Testing Among Australian Gay and Bisexual Men in Regular Relationships

Evelyn Lee¹ · Dean Murphy^{1,3} · Limin Mao¹ · John de Wit¹ · Garrett Prestage² · Iryna Zablotska² · Martin Holt¹

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Abstract In this study we sought to identify the social and behavioural characteristics of Australian gay and bisexual men who had and had not tested for HIV during their current relationship. The results were based on 2012 and 2013 data collected from ongoing cross-sectional and community-based surveys held in six Australian states and territories. One thousand five hundred and sixty-one non-HIV-positive men reported that they were in a primary relationship. The majority of gay and bisexual men in primary relationships had tested for HIV during the relationship (73.4 %). Among men who had not tested during the relationship, almost half of these men had never tested for HIV. As untested men within relationships are potentially at risk of acquiring and transmitting HIV to their partners unknowingly, it is important to promote HIV testing to these men.

Keywords Australian · Gay and bisexual men · HIV testing · Regular relationship · HIV

Introduction

Human immunodeficiency virus (HIV) transmission between primary, regular or stable male partners has been identified as a particular issue in countries with disproportionately high

HIV infection rates among gay and bisexual men [1–3]. Relationships can be a particular ‘risk context’ for gay and bisexual men because primary partners may have sex relatively frequently with each other, and sex without condoms is more likely to occur within an ongoing relationship [3–9]. In the United States (US) for example, more than two thirds of recent HIV cases arose from men having condomless anal intercourse with their HIV-infected regular male partners [2]. In Australia, sex between casual male partners is believed to be a much stronger contributor to HIV transmission between gay and bisexual men than sex between regular male partners. It has been found that only about one in ten (11.4 %) Australian gay men who have recently seroconverted attributes the source of their infection to their regular male partner [9]. This apparent divergence in rates of infection among men in primary relationships could be due a result of the different historical approaches that these countries have taken to HIV prevention for gay men in relationships [7].

In Australia, gay men in relationships have been actively encouraged to test for HIV together (at the same time) since the early 1990s, particularly if they are considering having anal sex without condoms or negotiating an agreement for either partner to have sex outside the relationship [8, 10]. Other countries, including the US, were much more cautious about endorsing these kinds of agreements in the 1990s [6]. However, in recent years the US has become much more focused on encouraging HIV testing among at-risk populations and within relationships in particular (given the high rates of transmission between partners in relationships) [11]. In addition, the World Health Organisation (WHO) has recognised and endorsed couples-based HIV voluntary counselling and testing (CVCT) as a viable prevention strategy for people in relationships [12], although CVCT may need some adaptation for gay and bisexual male couples [13].

✉ Evelyn Lee
evelyn.lee@unsw.edu.au

¹ Centre for Social Research in Health, UNSW, Sydney, NSW 2052, Australia

² The Kirby Institute, Wallace Wurth Building, UNSW, Kensington, NSW 2033, Australia

³ National Drug Research Institute, Curtin University, Melbourne 3065, Australia

HIV testing may be difficult for partners in a relationship if it is perceived as conflicting with other priorities, such as maintaining intimacy or trust, or if it is perceived as unnecessary because the partners have agreed (or have assumed) that they are in a monogamous relationship. During the early stages of a relationship, partners may not discuss their HIV statuses or testing history with each other, and in long-term relationships raising the issue of HIV testing may violate norms of trust and intimacy between partners, particularly for men who have not established an agreement about regular testing or who believe that they are in a monogamous relationship. Conversely, men who have negotiated explicit agreements about sex in and outside the relationship may be more motivated to test for HIV and see regular testing as a sign of commitment [8, 14, 15].

Testing rates for HIV among gay and bisexual men in Australia have increased over the last decade, with up to 65 % of gay and bisexual men reporting an HIV test in the previous year [16]. Current testing guidelines for HIV and other sexually transmissible infections (STIs) recommend that all sexually active gay men, including those in monogamous relationships, be screened for HIV and STIs at least once a year [17]. However, to our knowledge, there is currently no research which has specifically analysed the level of HIV testing among Australian gay and bisexual men while they are in an ongoing relationship. Although the majority (over 60 %) of men newly diagnosed with HIV in Australia attribute the source of their infection to casual sex partners it may be difficult to reliably determine the source of infection particularly when men report multiple sex partners in the period before their diagnosis, if they are in a recently formed relationship, or if attributing the source of infection to a regular partner might threaten the relationship [5, 18]. The rates of infection within regular relationships therefore could be underestimated.

The present study seeks to examine the issue of HIV testing within relationships by identifying the social and behavioural characteristics of Australian gay and bisexual men who have and have not tested for HIV during their current relationship. Identifying these factors will contribute to better targeted HIV interventions and campaigns to promote HIV testing for Australian gay and bisexual men in relationships.

Method

Details of the Gay Community Periodic Surveys (GCPS) procedures have been published elsewhere [19]. Briefly, the GCPS are cross-sectional, community-based, English language surveys that occur at least every 2 years in six states and territories (jurisdictions) in Australia.

Recruitment is carried out by trained staff at the same gay venues, events and clinics, wherever possible, each time the survey is conducted. The recruitment period in each jurisdiction is timed to coincide with large gay community events such as Sydney's Gay and Lesbian Mardi Gras and Adelaide's Feast Festival. Eligible participants are male, 18 years or older, have had sex with another man in the previous 5 years and define themselves as a regular participant within the local gay community. Participants complete a short, anonymous questionnaire about their demographics, sexual practices, HIV testing and status, sexual health testing and drug use. The GCPS have ethics approval from the Human Research Ethics Committee of the University of New South Wales and the ethics committees of the community organisations ACON and the Victorian AIDS Council.

Measures

In this analysis, our primary outcome measure (dependent variable) was whether non-HIV-positive men who reported being in a relationship with a man at the time of the survey had undergone HIV testing during that relationship. This measure was constructed from two questions, one on length of the relationship (*If you are in a regular relationship with a man, for how long has it been?* Less than 6 months, 6–11 months, 1–2 years, More than 2 years) and one on HIV testing (*When were you last tested for HIV antibodies?* with eight response categories ranging from "Never tested" to "Less than a week ago").

To accurately identify men who had or had not tested for HIV during their current primary relationship, we limited the sample to men who had been in relationships of 2 years duration or less. Men were then classified as having had an HIV test while in the relationship if they reported being in a primary relationship for up to 2 years duration and that their last HIV test was within the length of the relationship i.e. if their relationship had lasted 6 months, the participant had to have been tested within the last 6 months to be classified as 'tested during the relationship'. If the participant's last HIV test appeared to be before their current relationship (or they had never tested for HIV), they were classified as not having been tested for HIV during their relationship.

The independent variables used in this analysis have been described in detail elsewhere [19]. The main variables we used were demographic indicators (e.g. age, ethnicity, education level), sexual practices in the 6 months prior to survey (e.g. number of male partners, condom use with casual and regular male partners), drug use in the previous 6 months and variables that described the primary/regular relationship (e.g. agreements about sex in and outside the

relationship, reported HIV status of the regular partner). All the variables used in this analysis (except age) were categorical variables. The GCPS do not include items about barriers and incentives to HIV testing nor do they include items about when regular male partners were last tested for HIV.

Analysis

We utilised data from GCPS survey rounds conducted in 2012 and 2013 so that all participating jurisdictions were included in the analysis at least once (recruitment only occurs in some jurisdictions every 2 years). Bivariate analyses were conducted using logistic regression and t-tests for age (a continuous variable) to compare men who had not been tested for HIV during their relationship with men who had been tested. All variables that were significant at the $P < 0.05$ level in the bivariate analyses were considered for inclusion in the multivariate analysis (using logistic regression) to determine which variables had an independent association with testing during the relationship. Data were analysed using STATA version 11.2 (StataCorp LP).

Results

A total of 7257 gay and bisexual men were recruited from six jurisdictions in 2012 and 2013. The majority lived in the eastern states of Australia: New South Wales (32.8 %), Victoria (30.1 %) and Queensland (14.2 %) with smaller proportions from Western Australia (10.5 %), South Australia (10.2 %) and the Australian Capital Territory (2.2 %). Slightly more than half of the 7257 gay and bisexual participants reported that they were in a relationship with a regular male partner at the time of the survey ($n = 3976$; 54.8 %) and two in five were in a relationship of 2 years duration or less ($n = 1561$; 39.2 %).

Most of the 1561 gay and bisexual men in a relationship of up to 2 years duration said they had been tested for HIV during the relationship ($n = 1146$; 73.4 %). Of those tested, 1040 (90.7 %) reported that they were HIV-negative and 31 men (2.7 %) did not know their status. A minority of men said they were HIV-positive (6.6 %). Of those who had not been tested during the relationship, 202 (48.6 %) reported that they were HIV-negative, 185 men (44.6 %) were untested or of unknown status and a minority said that they were HIV-positive (6.8 %). Because HIV-positive men are highly unlikely to continue testing for HIV once diagnosed, we excluded them from further analyses of testing within relationships. This left a sample of 1458

HIV-negative, unknown HIV status and untested participants who had been in relationships of 2 years duration or less.

Of these 1458 HIV-negative, untested or unknown status men in relationships (hereafter referred to as ‘non-HIV-positive men’), 65.4 % said they were in a monogamous relationship and 34.6 % in an open or non-exclusive relationship, 75.6 % had a spoken agreement about sex within the relationship and 27.9 % had an agreement about sex outside the relationship (see Table 1). Most men (66.5 %) were in what they perceived to be a HIV-negative seroconcordant relationship, but a substantial minority (29.7 %) were in a serononconcordant relationship where either or both partners were untested for HIV. Only a small proportion (3.8 %) was in a known serodiscordant relationship (with a HIV-positive partner). Around half of the HIV-negative, unknown status or untested participants (55.7 %) reported anal sex without condoms with their regular partner, and a minority (17.0 %) reported anal sex without condoms with casual male partners.

Results of the analyses comparing non-HIV-positive gay and bisexual men who had been tested for HIV during their relationship and those who had not (hereafter ‘tested’ and ‘untested’ men) are presented in Table 1.

There was no difference between the tested and untested men in terms of age, ethnicity, sexual identity, employment status, education level and residential location. Men who had and had not tested during their relationship were similarly likely to have engaged in any anal intercourse without condoms with casual male partners. There were similar proportions of tested and untested men who reported being in monogamous relationships. Compared with men who had not tested for HIV during their relationship, men who had been tested tended to be more socially engaged with gay men, had more than one sex partner during the previous 6 months, were more likely to have engaged in group sex, taken any illicit drugs or used party drugs for sex, engaged in anal sex without condoms with their regular partner, were more likely to have disclosed their HIV status to casual male partners, reported spoken agreements with their regular partner about sex within and outside the relationship and to be in a HIV-negative seroconcordant or known serodiscordant relationship. Men who reported being in a serononconcordant relationship were less likely to have received a HIV test during the relationship.

In the multivariate analysis, only the following characteristics were independently associated with testing during the relationship: men who had engaged in anal sex without condoms with their regular partner or taken any illicit drugs in the previous 6 months were more likely to have tested for HIV during the relationship. Men who were in a HIV serononconcordant relationship were less likely to have

Table 1 Univariate and multivariate logistic regression analysis comparing non HIV positive men who have and have not tested for HIV during their current primary relationship

Category	Not tested during relationship N (%)	Tested during relationship N (%)	OR	95 %CI	P value	AOR	95 % CI	P value
Total number of men, N	415	1146	–	–	–	–	–	–
Self-reported HIV status								
HIV negative men	202 (52.2)	1040 (97.2)	–	–	–	–	–	–
Unknown status or untested	185 (47.8)	31 (2.8)	–	–	–	–	–	–
Age in years								
Mean \pm SD (range)	30.4 \pm 0.5 (29.3–31.4)	31.3 \pm 0.3 (30.6–31.8)	–	–	ns	–	–	–
Less than 29 years old	225 (59.4)	562 (53.0)	–	–	–	–	–	–
Between 30 and 39 years old	93 (24.5)	320 (30.2)	–	–	–	–	–	–
Between 40 and 49 years old	36 (9.5)	117 (11.0)	–	–	–	–	–	–
50 years and above	25 (6.6)	62 (5.8)	–	–	–	–	–	–
Ethnicity								
Other ethnicity	133 (34.4)	357 (33.3)	1.00					
Anglo-Australian	254 (65.6)	714 (66.7)	1.05	0.81–1.33	P = 0.7	–	–	–
Sexual identity								
Bisexual	27 (7.0)	58 (5.4)	1.00					
Gay/homosexual	360 (93.0)	1013 (94.6)	1.31	0.82–2.10	P = 0.3	–	–	–
Employment								
No employment	89 (23.0)	222 (20.7)	1.00					
Any employment	298 (77.0)	849 (79.3)	1.14	0.96–1.51	P = 0.3	–	–	–
Education								
Non Tertiary educated	215 (55.6)	557 (52.0)	1.00					
Tertiary educated	172 (44.4)	514 (48.0)	1.15	0.91–1.45	P = 0.2	–	–	–
Residential location								
Regional area	109 (28.2)	253 (23.6)	1.00					
Major cities/metropolitan area	278 (71.8)	818 (76.4)	1.26	0.97–1.64	P = 0.07	–	–	–
Socially engaged with gay men								
No	115 (29.7)	258 (24.1)	1.00					
Yes	272 (70.3)	813 (75.9)	1.33	1.03–1.72	P = 0.03	1.16	0.86–1.56	P = 0.34
No. of male partners in the last 6 months								
One man	314 (81.1)	771 (72.0)	1.00					
Two to 5 men	37 (9.6)	143 (15.3)	1.57	1.07–2.31	P = 0.02	1.59	0.99–2.55	P = 0.05
More than 5 men	36 (9.3)	157 (14.7)	1.78	1.20–2.61	P = 0.003	1.60	0.97–2.63	P = 0.06
Types of relationship								
Monogamous	253 (65.34)	700 (65.4)	1.00					
Open/non-exclusive relationship	134 (34.6)	371 (34.6)	1.00	0.78–1.27	P = 0.99			
Agreement about sex within relationship								
No	119 (30.8)	236 (22.0)	1.00					
Yes	268 (69.2)	835 (78.0)	1.57	1.21–2.03	P = 0.001	1.19	0.86–1.65	P = 0.27
Agreement about sex outside relationship								
No	297 (76.7)	754 (70.4)	1.00					

Table 1 continued

Category	Not tested during relationship N (%)	Tested during relationship N (%)	OR	95 %CI	P value	AOR	95 % CI	P value
Yes	90 (23.3)	317 (29.6)	1.38	1.06–1.81	P = 0.01	0.78	0.53–1.15	P = 0.22
Engaged in UAI with casual partner in last 6 months								
No	332 (85.8)	878 (82.0)	1.00					
Yes	55 (14.2)	193 (18.0)	1.33	0.95–1.83	P = 0.08	–	–	–
Engaged in UAI with regular partner								
No	231 (59.7)	415 (38.8)	1.00					
Yes	156 (40.3)	656 (61.3)	2.34	1.84–3.00	P < 0.001	1.59	1.21–2.09	P = 0.001
Had used party drug for sex in last 6 months								
No	344 (88.9)	844 (78.8)	1.00					
Yes	43 (11.1)	227 (21.2)	2.15	1.52–3.05	P < 0.001	1.38	0.91–2.10	P = 0.13
Had used drugs in last 6 months								
No	217 (56.1)	393 (36.7)	1.00					
Yes	170 (43.9)	678 (63.3)	2.20	1.73–2.78	P < 0.001	1.57	1.18–2.10	P = 0.002
Had group sex with at least 2 other men in last 6 months								
No	306 (79.1)	761 (71.1)	1.00					
Yes	81 (20.9)	310 (28.9)	1.53	1.16–2.03	P = 0.002	1.11	0.76–1.61	P = 0.57
Any disclosure of HIV status to casual partners in last 6 months								
No	306 (79.1)	726 (67.8)	1.00					
Yes	81 (20.9)	345 (32.2)	1.80	1.36–2.36	P < 0.001	1.32	0.91–1.93	P = 0.13
Had STI test in last 12 months								
No	259 (66.9)	192 (17.9)	1.00					
Yes	128 (33.1)	879 (82.1)	9.26	7.12–12.05	P < 0.001			
Match of HIV status between regular partners								
HIV negative seroconcordant ^a	136 (35.14)	834 (77.87)	1.00			1.00		
HIV serodiscordant ^b	6 (1.55)	48 (4.48)	1.30	0.54–3.10	P = 0.55	–	–	–
HIV serononconcordant ^c	245 (63.31)	189 (17.65)	0.12	0.09–0.16	P < 0.001	0.21	0.14–0.33	<0.01

^a A relationship in which both participant and regular partner are known to be HIV negative

^b A relationship in which participant and partner are known to have different HIV statuses e.g. HIV-negative and HIV-positive

^c A relationship in which the HIV status of at least one partner is not known e.g. HIV negative and untested

tested for HIV during the relationship. Among the 245 men who had not tested for HIV during the relationship and were in a serononconcordant relationship, 49 (20 %) reported that they had not tested for HIV (but their partner's HIV status was known), 60 (24 %) reported that their partner was untested (but the participant had previously tested for HIV before the relationship) and 136 (55 %) reported that both they and their partner were untested for HIV.

Discussion

To our knowledge, this is the first study in Australia to assess HIV testing patterns among gay and bisexual men in primary relationships with men. Our study found that

nearly three-quarters of non-HIV-positive men in relationships of 2 years duration or less had tested for HIV during the relationship and a quarter had not.

The rate of HIV testing that we found among non-HIV-positive men in relationships is encouraging, suggesting that the history of promoting testing to Australian gay men in relationships has born dividends and appears to have been sustained over time. More importantly, we found that men who engaged in practices that may elevate the risk of HIV transmission (taking illicit drugs or having anal intercourse without condoms with their regular partner) were significantly more likely to have had an HIV test while in a relationship. These findings are consistent with previous research that has found that HIV testing is more likely by men who engage in riskier practices [20, 21] and suggests that the majority of men in relationships are aware

of HIV and other health risks and test for HIV at the frequency recommended in Australian guidelines [17].

However, our finding that one in four men had not received an HIV test during their current relationship is of some concern. In particular, almost half of these men had never tested for HIV, which suggests that these men, regardless of their current relationship status, have not established a testing routine, do not perceive value in HIV testing or think that testing may adversely affect their relationship (by, for example, affecting the perception of trust between partners [22]). Untested men within relationships are potentially at risk of acquiring and transmitting HIV to their partners unknowingly [23]. A recent US study, for example, found that men who were unaware of their HIV-positive serostatus were 3–5 times more likely to transmit HIV than those who were aware of their HIV status [23]. Therefore, it is important to promote HIV testing to these untested men.

Recent research suggests that such promotion should focus on the value and importance of HIV testing and explain how regular testing for HIV can be a sign of trust in a relationship [14, 20, 22].

Several aspects of our study warrant consideration when interpreting the results. The cross-sectional design meant that we could only assess associations rather than causal relationships. Secondly, we could not ascertain the testing patterns for the regular partners of participants so the data about testing within relationships could not be triangulated and validated by responses from the participant's regular partner. Thirdly, we did not assess barriers and incentives to HIV testing in our survey data. Previous research has found that men are more likely to be tested when they perceive themselves to be at risk of infection while men who are fearful of a positive test result and HIV stigma or who find testing inconvenient are less likely to seek testing [24, 25]. Men in relationships may consider themselves to be at low risk (particularly if they assume that they are seroconcordant and monogamous) and, as previously noted, suggesting HIV testing to a regular partner may violate norms of trust and intimacy for some men [15]. In the 1990s, Australian gay men in relationships appeared to adopt a culture of mutual HIV testing and disclosure to facilitate condomless sex within relationships [8, 14], which was subsequently encouraged by community organisations [6]. Our results suggest this culture has been maintained.

In conclusion, our study found high rates of HIV testing among Australian gay and bisexual men in relationships of up to 2 years duration. However, around a quarter of men in relationships had not tested for HIV, and often the regular male partners of these untested men did not know their HIV status either. Therefore, we suggest that gay men should continue to be encouraged to test for HIV when they embark on in a relationship, as is recommended in national

testing guidelines [17], particularly if either partner has never tested before. This will sustain norms of mutual HIV testing and relationship agreements among Australian gay men and limit the possibility of increased HIV transmission between men in relationships.

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