



# Gay men's attitudes to biomedical HIV prevention: Key findings from the PrEPARE Project 2015

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Centre for Social Research in Health

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AND STRATEGIC EVALUATION



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## Acronyms

<b>GBM</b>	gay and bisexual men
<b>HIV</b>	human immunodeficiency syndrome
<b>M</b>	mean (statistical average)
<b>NSW</b>	New South Wales
<b>QLD</b>	Queensland
<b>PEP</b>	post-exposure prophylaxis
<b>PrEP</b>	pre-exposure prophylaxis
<b>SD</b>	standard deviation
<b>US</b>	United States
<b>TasP</b>	treatment as prevention
<b>VIC</b>	Victoria

# Introduction and Key Findings

## Introduction

The PrEPARE Project is a repeated, cross-sectional study of gay and bisexual men's (GBM) attitudes to biomedical HIV prevention, particularly pre-exposure prophylaxis (PrEP) and HIV treatment as prevention (TasP). The study was first conducted in 2011 and repeated every two years. The main method of data collection is a national, online survey of gay and bisexual men, primarily advertised through the social networking website Facebook. The study website can be seen at <http://prepareproject.csrh.org>

This report focuses on the 2015 survey results, but also includes analyses of change over time in key measures (such as willingness to use PrEP and belief that HIV treatment prevents transmission).

## Key findings

- Very few Australian gay and bisexual men reported ever having taken PrEP to prevent HIV, although this increased slightly between 2013 and 2015 (to 3%).
- Three-quarters of GBM (77%) had heard of PrEP in the 2015 survey; over a quarter of men (29%) knew someone who had taken PrEP.
- Participants had relatively poor knowledge about where PrEP is available, who would most benefit from it and how it should be taken.
- Willingness to use PrEP has increased among HIV-negative and untested men (to 32% in 2015) and concern about using it has fallen (to 41%).
- Over half of participants (55%) supported gay and bisexual men using PrEP and over a third of participants (39%) were willing to have sex with someone using PrEP.
- Belief that HIV treatment prevents transmission increased between 2013 and 2015 (from 3% to 13%); the increase was most noticeable among HIV-positive men.
- Agreement that early HIV treatment is necessary increased between 2013 and 2015, from 72% to 75% of all men; this increase was concentrated among HIV-positive men.

# Method

## Recruitment and procedures

For the 2015 survey round, data were collected in April to May using NETQ online survey software. Data collection occurred at a similar time of year in 2011 and 2013. As in previous rounds, the 2015 survey was promoted on Facebook using paid advertisements targeting gay and bisexual men, and the Facebook pages and Twitter feeds of community-based HIV organisations. In addition, participants from the 2013 PrEPARE survey who consented to being contacted about future research were invited to participate via email.

Potential participants were directed to the survey website, <http://prepareproject.csrh.org>, which explained the objectives of the study and provided access to the online questionnaire. Participants were eligible to participate in the survey if they were aged at least 18 years of age, identified as male, identified as gay, bisexual or other homosexually active men, and lived in Australia. There was no remuneration or other incentive offered to participants. The study design and procedures were approved by the Human Research Ethics Committee of UNSW Australia.

## Measures

Reliable scales that were used in previous survey rounds were included in the 2015 survey. These included:

- *Willingness to use PrEP* (7 items); asked of HIV-negative and untested/unknown status participants who were not currently receiving PrEP.
- *Concern about using PrEP* (2 items); asked of HIV-negative and untested/unknown status participants who were not currently receiving PrEP.
- *Likelihood of decreased condom use if using PrEP* (2 items); asked of HIV-negative and untested/unknown status participants who were not currently receiving PrEP and who were willing to use it.
- *Personal experience in using condoms* (9 items); asked of all participants.
- *Confidence in discussing condoms with partners* (2 items); asked of all participants.

Scales scores were calculated from the mean of the items in the scale (ranging from 1 to 5) with a score of  $\geq 4$  indicating positive agreement with the scale. For example, participants who scored  $\geq 4$  on the *Willingness to use PrEP Scale* were categorised as willing to use PrEP. For more information on the development of these scales, including scale items and reliability analyses, please see Holt et al., 2012.

In the 2015 survey round, 13 new items examining attitudes to other men taking PrEP were included. In addition, 4 items that were previously only asked of HIV-positive participants in the 2013 survey round were presented to all participants in 2015. All items were rated from 'strongly disagree' (1) to 'strongly agree' (5).



Principal components factor analysis on these 17 items found three reliable scales:

- *Support for gay and bisexual men taking PrEP* (7 items; Cronbach's  $\alpha = .88$ ). Items included "Gay and bisexual men taking PrEP are being responsible", "Gay and bisexual men taking PrEP are protecting themselves", and "Gay and bisexual men taking PrEP are being reckless" (reverse scored). A scale score was created from the mean of these 7 items (from 1 = not supportive to 5 = very supportive). Participants who scored  $\geq 4$  on the scale were regarded as being supportive of gay and bisexual men taking PrEP.
- *Willingness to have sex with men taking PrEP* (3 items;  $\alpha = .60$ ). Items included "I would have sex with someone on PrEP", "I would have sex without condoms with someone on PrEP" and "I would refuse to have sex with someone on PrEP" (reverse coded). A scale score was created from the mean of these 3 items (from 1 = very unwilling to 5 = very willing). Participants who scored  $\geq 4$  on the scale were regarded as willing to have sex with someone who was taking PrEP.
- *Expecting sex partners to take PrEP* (2 items;  $\alpha = .82$ ). Items were "I would expect my sex partners to use PrEP before every occasion of anal sex" and "I expect my sex partners to use PrEP as soon as it becomes available". A scale score was created from the mean of these 2 items (from 1 = no expectation to 5 = very high expectation). Participants who scored  $\geq 4$  on the scale were regarded as expecting that their male sex partners would take PrEP.

## Statistical analyses

Aggregated national data are presented for all the findings. Because the funding for the 2015 survey round was provided by the New South Wales (NSW) Ministry of Health, statistical comparisons between NSW and the other states and territories were performed for all findings. NSW data are only reported in the text when there were statistically significant differences between NSW and other states and territories, although all relevant state/territory comparisons are shown in the Appendix (which includes state comparisons for NSW, Victoria and Queensland).

Chi-square tests were used to examine differences between two categorical variables. Independent samples t-tests and one-way analyses of variance (ANOVA) were used to examine differences between categorical independent variables and continuous dependent variables. Change over time for scales with 2011 and/or 2013 data were assessed with logistic regression, controlling for demographic and behavioural variables that changed over time. Statistical significance was set at  $p < .05$ . All analyses were conducted using Stata Version 13.0.

# Results

## Sample characteristics

The 2015 survey was started by 1,795 participants who met the eligibility criteria and provided informed consent. It was completed by 1,251 men (a 69.7% completion rate). Of the 1,251 men who completed the survey, a third resided in NSW, a quarter in Victoria and a fifth in Queensland (see Table 1). Two-thirds of participants lived in the capital city of their state or territory.

**Table 1. Residential location of participants**

	n	%
<b>State or territory</b>		
Australian Capital Territory	42	3.4
New South Wales	421	33.7
Northern Territory	13	1.0
Queensland	241	19.3
South Australia	91	7.3
Tasmania	22	1.8
Victoria	307	24.5
Western Australia	114	9.1
<b>Residential location</b>		
Capital city	860	68.7
Other city	159	12.7
Regional centre/town	155	12.4
Rural or remote area	77	6.2

The mean age of the sample was 34 years. The majority of participants identified as cisgender men ( $n = 1247$ ; 'cisgender' refers to people whose gender identity corresponds with the gender they were assigned at birth). Four participants identified as transgender men. The majority of participants identified as gay, were born in Australia, had completed some tertiary education, and were employed full-time (see Table 2). Three per cent of men identified as Aboriginal or Torres Strait Islander. This is higher than might be expected in the general population, but lower than that found in the Gay Community Periodic Surveys (Lea et al., 2013).

The majority of participants (85.1%) reported hearing about the survey via Facebook, with the remainder hearing about the survey via an email distribution list (9.8%), an advertisement on an organisation's website (2.2%), via a friend (1.4%), or another source (1.3%).

**Table 2. Demographic characteristics of participants**

	n	%
<b>Age (M, SD)</b>	33.7	11.9
<b>Sexual identity</b>		
Gay	1211	96.9
Bisexual	33	2.6
Other	6	0.5
<b>Country of birth</b>		
Australia	1010	80.7
Overseas	241	19.3
<b>Aboriginal and/or Torres Strait Islander</b>		
Yes	37	3.0
No	1214	97.0
<b>Highest level of education</b>		
Up to year 12	433	34.6
Trade certificate	288	23.0
Undergraduate degree	330	26.4
Postgraduate degree	200	16.0
<b>Employment status</b>		
Full-time	739	59.1
Part-time	143	11.4
Student	179	14.3
Unemployed/retired/other	190	15.2

M, mean; SD, standard deviation.

## HIV testing, status and treatment

Most men reported having ever tested for HIV (89.3%). According to self-report, 79.1% (n = 990) of participants were HIV-negative, 8.5% (n = 106) were HIV-positive, and 12.4% (n = 155) were untested or of unknown HIV status. Among HIV-negative participants, 75.7% reported testing for HIV in the 12 months prior to the survey. Among untested/unknown status participants, 86.5% reported having never tested for HIV. These are similar levels of testing to men in the Melbourne and Sydney Gay Community Periodic Surveys (Hull et al., 2015; Lee et al., 2015).

Participants in NSW were significantly more likely than participants in other locations to report having ever tested for HIV (92.9% vs. 87.5;  $p = .003$ ). There was a higher proportion of HIV-negative participants in NSW compared to other locations (82.4% vs. 77.5%), a lower proportion of untested/unknown status participants (8.8% vs. 14.2%), and a similar proportion of HIV-positive participants (8.8% vs. 8.3%;  $p = .02$ ).

Among HIV-positive participants, 93.4% were currently receiving antiretroviral treatments for HIV and 90.6% reported having an undetectable viral load when they were last tested.

## Sex with men in the previous six months

Four in ten men (n=716, 42.8%) reported having a current regular male partner, and of those 716 men, just under half (48.6%) reported that their relationship was monogamous and more than half (53.4%) had been in a relationship for at least two years. Among the 716 participants with a current regular partner, HIV-negative men were more likely than HIV-positive men to be in a HIV seroconcordant relationship (82.7% vs. 40.7%,  $p < .001$ ).

Among all men, more than half (54.2%) reported any condomless anal intercourse with regular partners in the six months prior to the survey (see Table 3). Among all men, one-third (33.3%) of HIV-negative and untested/unknown status participants, and 62.3% of HIV-positive participants, reported any condomless anal intercourse with casual partners in the six months prior to the survey ( $p < .001$ ; see Table 3).

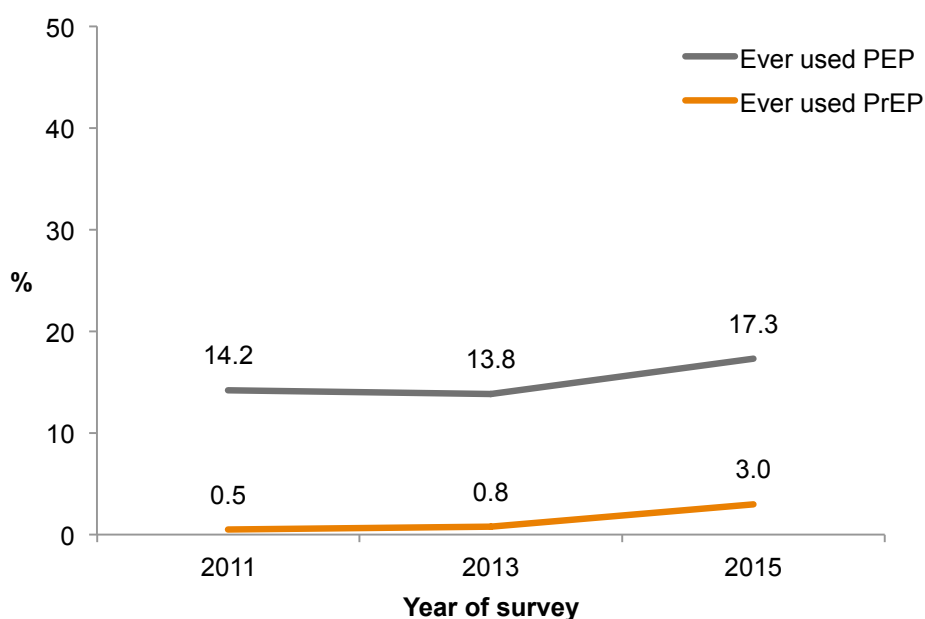
**Table 3. Current relationships and sex with regular and casual male partners in the six months prior to the survey**

	HIV-negative & untested/ unknown (n=1145)		HIV-positive (n=106)	
	n	%	n	%
<b>Relationships with regular partner</b>				
No regular partner	483	42.2	52	49.1
Monogamous relationship	331	28.9	17	16.0
Non-monogamous relationship	331	28.9	37	34.9
<b>HIV status of regular partner</b>				
No regular partner	483	42.2	52	49.1
HIV-negative	522	45.6	31	29.2
Untested/unknown status	88	7.7	1	0.9
HIV-positive	52	4.5	22	20.8
<b>Anal intercourse with regular partners</b>				
No partner / no intercourse	366	32.0	35	33.0
Consistent condom use	159	13.9	13	12.3
Any anal intercourse without condoms	620	54.1	58	54.7
<b>Anal intercourse with casual partners</b>				
No partner / no intercourse	473	41.3	27	25.5
Consistent condom use	291	25.4	13	12.3
Any anal intercourse without condoms	381	33.3	66	62.3

## Use of PEP and PrEP

Seventeen per cent of all participants ( $n = 217$ ) reported having ever received post-exposure prophylaxis (PEP) after a suspected exposure to HIV (a significant increase from the 2013 survey;  $p = .01$ ). Three per cent of all participants ( $n = 38$ ) reported having ever taken anti-HIV drugs before sex (PrEP) to reduce the chance of HIV infection (a significant increase from 2013;  $p < .001$ ) (see Figure 1).

**Figure 1. Participants who reported having ever received post-exposure prophylaxis (PEP) and having ever received pre-exposure prophylaxis (PrEP)**



In 2015, participants who had ever taken PrEP reported that they had accessed PrEP overseas ( $n = 13$ ), in a research study / demonstration project ( $n = 11$ ), via a prescription from a doctor ( $n = 11$ ), or via an HIV-positive person ( $n = 3$ ; categories not mutually exclusive).

Two per cent of participants ( $n = 24$ ) reported that they were currently taking PrEP at the time of the 2015 survey. Almost all men who were currently using PrEP reported that they were taking it daily ( $n = 21$ ), two men reported taking it before and after sex, and one man reported taking it only before sex.

## Awareness of PrEP

Twenty-three per cent of all participants reported having never heard of PrEP before the survey, 50.8% reported having heard “a little” about PrEP, and 25.4% reported having heard “a lot”. This is a high level of awareness of PrEP compared to international research conducted over the last five years. Predominantly US research has typically found that a fifth to a quarter of gay and bisexual men have heard of PrEP (Holt, 2014). More than half of participants who were HIV untested or of unknown status (52.9%) had not heard of PrEP, compared with 21.4% of HIV-negative participants and 2.8% of HIV-positive participants ( $p < .001$ ).

Awareness of PrEP was related to risk practice: men who had had condomless anal intercourse with casual partners in the six months prior to the survey were more likely to have heard of PrEP than other men (84.1% vs. 71.9%,  $p < .001$ ). Participants who had not heard of PrEP were significantly younger ( $M = 29.5$  years;  $SD = 0.7$ ) than men who had heard of PrEP ( $M = 34.9$  years;  $SD = 0.4$ ;  $p < .001$ ).

Twenty-nine per cent of all participants reported that they knew someone who had taken or was currently taking PrEP. Participants in NSW were significantly more likely to know someone who had taken or was taking PrEP compared to participants in other locations (32.8% vs. 27.0%;  $p = .03$ ). Few participants who were HIV untested or of unknown status (9.0%) knew someone who had taken or was taking PrEP, compared with 29.2% of HIV-negative participants and 55.7% of HIV-positive participants ( $p < .001$ ).

Sixteen per cent of all participants reported having discussed PrEP with a doctor. This was more commonly reported by HIV-negative participants compared to participants who were untested or of unknown HIV status (17.4% vs. 3.2%;  $p < .001$ ).

Participants most commonly reported having heard about PrEP via gay community media, Australian-based websites, friends, gay community organisations, and overseas-based websites (see Table 4). Only a small proportion of participants had heard about PrEP via sexual partners, their doctor, or on radio or television.

**Table 4. Where participants reported having heard about PrEP**

	n	%
Gay community media	507	40.5
Internet / website based in Australia	505	40.4
Friends	408	32.6
Gay community organisation	358	28.6
Internet / website based overseas	345	27.6
HIV organisation	321	25.7
Hospital / clinic	239	19.1
Newspaper article	209	16.7
Research study	203	16.2
Sexual partner(s)	167	13.3
Doctor	156	12.5
Radio or television	92	7.4

Note: Participants could select more than one response.

From a list of provided statements about PrEP, participants most commonly reported that they had heard that PrEP “is a welcome development in HIV prevention”, “gives gay and bisexual men more options to remain safe”, and that “gay and bisexual men who take PrEP are being responsible” (see Table 5), suggesting that participants had seen relatively positive media coverage about PrEP. Smaller proportions of participants reported having heard less favourable things about PrEP e.g., “Gay and bisexual men who take PrEP are risk-takers”.

**Table 5. What participants reported having heard about PrEP**

	n	%
It's a welcome development in HIV prevention	712	56.9
It gives gay and bisexual men more options to remain safe	645	51.6
Gay and bisexual men who take PrEP are being responsible	527	42.1
It's highly effective	456	36.5
It's expensive	456	36.5
It's controversial within HIV prevention	409	32.7
It's an excuse for gay and bisexual men not to use condoms	355	28.4
It's partially effective	248	19.8
Gay and bisexual men who take PrEP are risk-takers	233	18.6
Gay and bisexual men who take PrEP are promiscuous	208	16.6

Note: Participants could select more than one response.

## Knowledge about PrEP

A number of items assessing knowledge of PrEP were included for the first time in the 2015 survey. The mean number of correct knowledge items identified by participants was 5.2 out of 13 (SD = 4.1; median = 6) (see Table 6), suggesting relatively poor knowledge of scientific results about PrEP, the way it can currently be accessed in Australia and recommended dosing regimes. HIV-positive participants had significantly higher knowledge scores (M = 7.7, SD = 3.5) compared with HIV-negative and untested/unknown status participants (M = 5.0, SD = 4.1;  $p < .001$ ).

More than half of participants correctly identified as false that “PrEP is effective if you take it on a one-off basis”, and as true that “PrEP is available through research studies in Australia”, “PrEP's effectiveness depends on how often you take it”, and that “PrEP is available overseas”. Less than one-quarter of participants correctly identified as false that “anyone who is worried about HIV is recommended to take PrEP”, and as true that “PrEP can be more effective than condoms in preventing HIV” (see Table 6).

**Table 6. Knowledge about PrEP**

	Correct response	Correct (%)	Don't know (%)
PrEP is effective if you take it on a one-off basis (like a “morning after” pill)	False	53.2	42.7
PrEP is available through research studies in Australia	True	53.1	45.2
PrEP's effectiveness depends on how often you take it	True	51.8	44.2
PrEP is available overseas	True	50.9	45.6
Taking PrEP has no side effects	False	47.5	50.9
Taking anti-HIV drugs every day is the current recommended PrEP regimen	True	46.1	43.4
Doctors can write private prescriptions for PrEP in Australia	True	44.0	49.6
PrEP is available as a subsidised medicine in Australia	False	38.8	55.4
Being prescribed PrEP involves regular clinical visits	True	38.5	55.1
Only people confirmed as HIV-negative should take PrEP	True	32.2	51.0
Only people at high risk of HIV are recommended to take PrEP	True	29.1	45.2
Anyone who is worried about HIV is recommended to take PrEP	False	23.0	44.0
PrEP can be more effective than condoms in preventing HIV	True	13.3	44.5
Total number of correct items (maximum 13) (M, SD)	-	5.2	4.1

M, mean; SD, standard deviation.

## Attitudes towards taking PrEP

This section presents findings from three scales that were developed during the first PrEPARE survey in 2011. These scales examine the attitudes of HIV-negative and untested/unknown status participants towards taking PrEP.

## Willingness to use PrEP

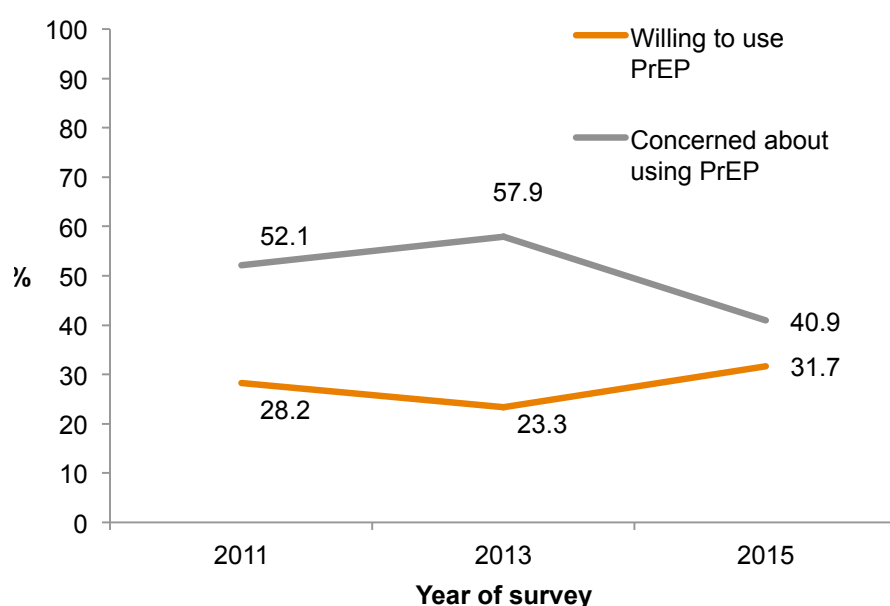
In 2015, the mean score on the *Willingness to use PrEP* scale was 3.6 (SD = 0.7). Based on a score of  $\geq 4$  on the scale, 31.7% of HIV-negative and untested/unknown status participants were categorised as willing to use PrEP in 2015, and 68.3% were categorised as unwilling to use or neutral about using PrEP. This represents a significant increase from the 23.3% of participants who indicated that they were willing to use PrEP in 2013 ( $p < .001$ ; controlling for confounding variables) (see Figure 2).



## Concern about using PrEP

In 2015, the mean score on the *Concern about using PrEP* scale was 3.5 (SD = 0.8). Based on a score of  $\geq 4$  on the scale, 40.9% of HIV-negative and untested/unknown status participants were categorised as concerned about using PrEP, and 59.1% were categorised as unconcerned or neutral about using PrEP (see Figure 2). This represents a significant decrease from the 57.9% of participants who were concerned about using PrEP in 2013 ( $p < .001$ ; controlling for confounding variables) (see Figure 2).

**Figure 2. Participants who were willing to use PrEP and participants who were concerned about using PrEP, among those who were HIV-negative or of untested/unknown status**



## Likelihood of reduced condom use if using PrEP

Among HIV-negative and untested/unknown status participants who were willing to use PrEP in 2015 ( $n = 355$ ), the mean score on the *Likelihood of decreased condom use if using PrEP* scale was 2.5 (SD = 1.1). Based on a score of  $\geq 4$  on the scale, 15.8% of these men were categorised as likely to reduce condom use if they were receiving PrEP and 84.2% were categorised as unlikely to reduce or neutral about reducing condom use if they were taking PrEP. This represents a significant increase in the proportion likely to reduce condom use since 2011 (8.0% in 2011;  $p = .005$ ; controlling for confounding variables), but no significant change from 2013 (11.9% in 2013;  $p = .29$ ).

## Attitudes towards other men taking PrEP

This section presents findings from scales that were developed in the 2015 survey round. These scales examine the attitudes of participants towards gay and bisexual men taking PrEP, and attitudes towards participants' male sex partners taking PrEP. All participants were presented the questions that were included in these scales.

The mean score on the *Support for gay and bisexual men taking PrEP* scale was 4.0 (SD = 0.7). Based on a score of  $\geq 4$  on the scale, 54.5% of participants were categorised as being supportive of gay and bisexual men taking PrEP, and 45.5% were categorised as unsupportive or neutral. HIV-positive participants were significantly more likely than HIV-negative and untested/unknown status participants to be supportive of gay and bisexual men taking PrEP ( $p = .01$ ; see Table 7).

The mean score on the *Willingness to have sex with gay and bisexual men taking PrEP* scale was 3.6 (SD = 0.7). Based on a score of  $\geq 4$  on the scale, 39.2% of participants were regarded as willing to have sex with gay and bisexual men who were taking PrEP, and 60.8% of participants were regarded as unwilling or neutral. HIV-positive participants were significantly more likely than HIV-negative and untested/unknown status participants to be willing to have sex with gay and bisexual men who were taking PrEP ( $p < .001$ ; see Table 7). Participants who reported condomless anal intercourse with casual partners in the six months prior to the survey were significantly more likely to be willing to have sex with men who were taking PrEP compared to participants who reported no condomless anal intercourse with casual partners (66.0% vs. 24.4%,  $p < .001$ ).

The mean score on the *Expecting sex partners to take PrEP* scale was 2.9 (SD = 0.9). Based on a score of  $\geq 4$  on the scale, 17.4% of participants were categorised as expecting their sex partners to take PrEP and 82.6% of participants were categorised as not expecting or neutral. There were no significant differences on this scale according to HIV status (see Table 7).

**Table 7. Attitudes towards other gay and bisexual men and male sex partners taking PrEP**

	HIV-negative & untested/ unknown		HIV-positive	
	n	%	n	%
<b>Support for GBM taking PrEP (n = 1251)</b>				
Scale score (M, SD)	4.0	0.7	4.2	0.7
Support (score $\geq 4$ )	612	53.4	70	66.0
Do not support/neutral (score $< 4$ )	533	46.6	36	34.0
<b>Willing to have sex with GBM taking PrEP (n = 1251)</b>				
Scale score (M, SD)	3.6	0.7	4.2	0.7
Willing (score $\geq 4$ )	415	36.2	76	71.7
Unwilling/neutral (score $< 4$ )	730	63.8	30	28.3
<b>Expecting partners to take PrEP (n = 1177)<sup>a</sup></b>				
Scale score (M, SD)	2.9	0.9	2.9	1.0
Expect (score $\geq 4$ )	185	16.9	19	22.6
Do not expect/neutral (score $< 4$ )	908	83.1	65	77.4

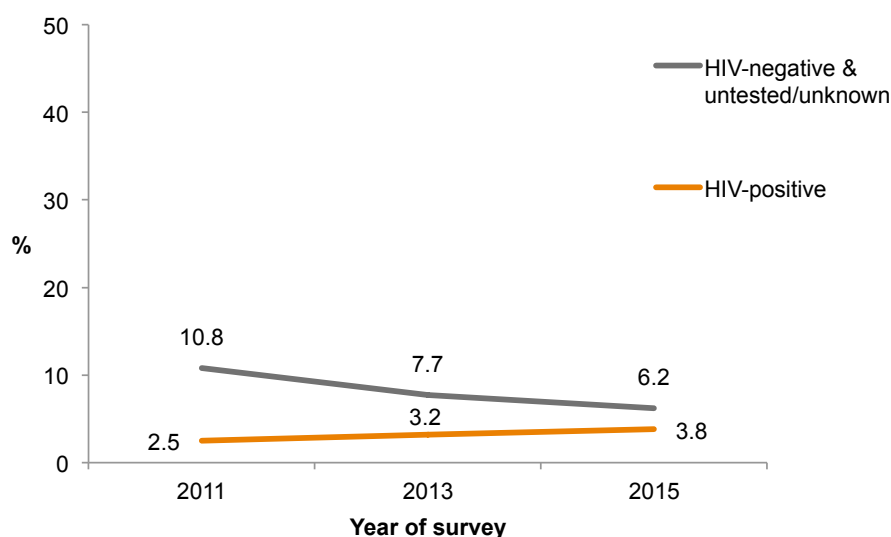
GBM, gay and bisexual men; M, mean; SD, standard deviation.

<sup>a</sup>Excluded men with HIV-positive regular partners.

## Attitudes towards condoms

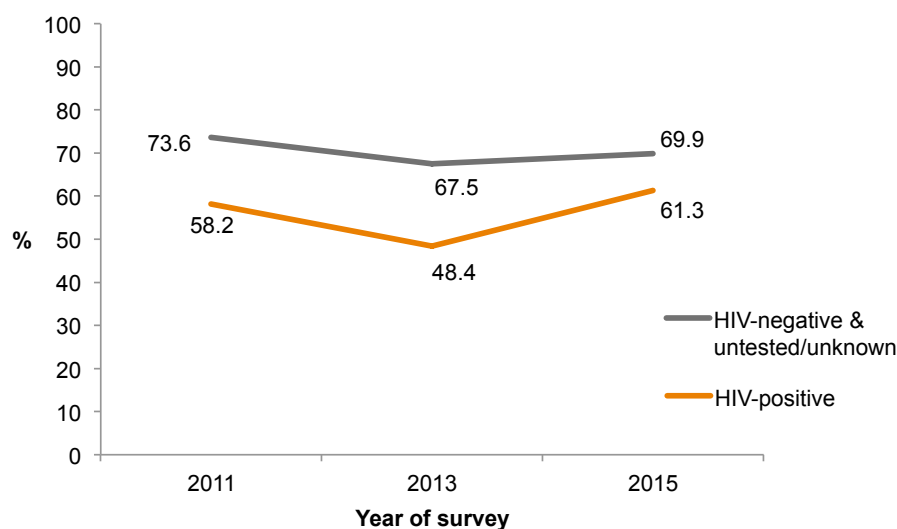
Questions about attitudes towards condoms were asked of all participants in all three survey rounds. Two scales, *Personal Experience in Using Condoms* and *Confidence in Discussing Condoms With Partners*, were examined. Our results indicate that most men have neutral or negative experiences in using condoms but remain confident in using them (discussing them with partners). This remains one of the key challenges in HIV prevention (sustaining use of a strategy which many men use but do not particularly enjoy).

**Figure 3. Participants who reported positive experiences of using condoms**



Based on scores of  $\geq 4$  on the *Personal experience in using condoms* scale, 6.2% of HIV-negative and untested/unknown status participants and 3.8% of HIV-positive participants in 2015 were regarded as having positive experiences of using condoms ( $p = .31$ ). There was a significant reduction over time in the proportion of HIV-negative and untested/unknown status men who reported positive experiences in using condoms (down from 10.8% in 2011;  $p = .02$ ) (controlling for confounding variables; see Figure 3). The change over time among HIV-positive participants was not significant ( $p = .17$ ).

**Figure 4. Participants that reported confidence in discussing condoms with partners**



Based on scores of  $\geq 4$  on the *Confidence in discussing condoms with partners* scale, 69.9% of HIV-negative and untested/unknown status participants and 61.3% of HIV-positive participants in 2015 were regarded as having confidence in discussing condoms with partners ( $p = .07$ ). There was no significant change over time among HIV-negative and untested/unknown status participants ( $p = .48$ ), nor among HIV-positive participants ( $p = .40$ ) (controlling for confounding variables; see Figure 4).

## Attitudes towards HIV treatment as prevention

This section presents findings from two scales that were developed during the 2013 survey. These scales examine attitudes towards HIV treatment as prevention.

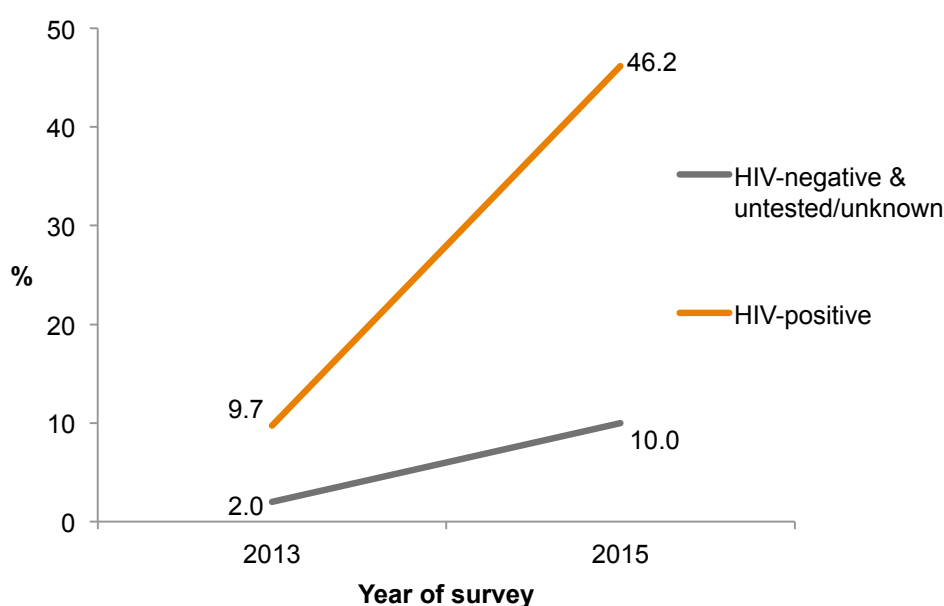
### HIV treatment reduces transmission

The mean score on the *HIV treatment prevents transmission* scale was 2.6 (SD = 0.9) among HIV-negative and untested/unknown status participants, and 3.4 (SD = 1.1) among HIV-positive participants in 2015 ( $p < .001$ ).

Based on a score of  $\geq 4$  on the scale, 13.1% of all participants were categorised as believing that HIV treatment prevents transmission (10.0% of HIV-negative and untested/unknown status participants and 46.2% of HIV-positive participants). This was a significant increase from 2013 (in which only 2.6% of all participants believed that HIV treatment prevented transmission). The increase was statistically significant among both HIV-negative and untested/unknown status participants ( $p < .001$ ) and HIV-positive participants ( $p < .001$ ) (controlling for confounding variables; see Figure 5). The increase was most noticeable among HIV-positive men.

Among HIV-negative and untested/unknown status participants in 2015, a higher proportion of men in NSW reported a belief that HIV treatment prevents transmission compared to men in other locations (12.8% vs. 8.7%;  $p = .03$ ).

**Figure 5. Participants who agreed that HIV treatment prevents transmission**



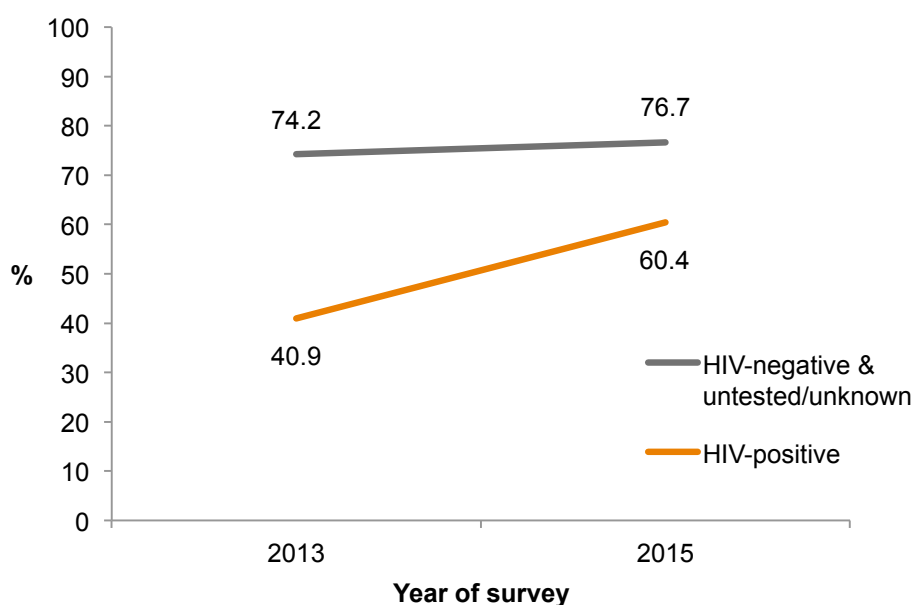
## Early HIV treatment is necessary

The mean score on the *Early HIV treatment is necessary* scale was 4.3 (SD = 0.7) among HIV-negative and untested/unknown status participants, and 4.0 (SD = 0.9) among HIV-positive participants in 2015 ( $p < .001$ ).

Based on a score of  $\geq 4$  on the scale, 71.8% of participants were classified as agreeing that early HIV treatment is necessary in 2013 and this increased to 75.3% in 2015 ( $p = .02$ , controlling for confounding variables). Three-quarters (76.7%) of HIV-negative and untested/unknown status participants and 60.4% of HIV-positive participants were categorised as believing that early HIV treatment is necessary in 2015. This was not a significant change from 2013 for HIV-negative and untested/unknown status participants ( $p = .07$ ), but was a significant increase for HIV-positive participants ( $p = .03$ ) (controlling for confounding variables; see Figure 6). Among HIV-positive men, those who agreed that early HIV treatment was necessary were significantly younger ( $M = 41.5$ ,  $SD = 1.6$ ) than men who did not agree or were neutral about early HIV treatment ( $M = 47.2$ ,  $SD = 1.7$ ;  $p = .02$ ). HIV-positive men remain less enthusiastic about early treatment than HIV-negative/untested men, but their attitudes to early treatment have become more supportive over the last two years.

Among HIV-negative and untested/unknown status participants in 2015, a higher proportion of men in NSW reported a belief that early HIV treatment is necessary compared to men in other locations (81.3% vs. 74.4%;  $p = .01$ ).

**Figure 6. Participants that agreed that early HIV treatment is necessary**



# Discussion

The 2015 round of the PrEPARE Project survey revealed inconsistent levels of knowledge about HIV pre-exposure prophylaxis among Australian gay and bisexual men, but relatively positive attitudes about gay and bisexual men using PrEP. The survey also revealed changing attitudes to PrEP, HIV treatment and condoms, including significant increases in willingness to use PrEP and the belief that HIV treatment prevents transmission. HIV-negative and untested men reported slightly less positive attitudes to using condoms in the 2015 survey.

Compared to the 2011 and 2013 survey rounds, the 2015 survey participants were slightly more likely to have ever used antiretroviral drugs as post-exposure prophylaxis (17%) or pre-exposure prophylaxis (3%). However, only 24 men (2%) were currently using antiretroviral drugs as PrEP at the time of the 2015 survey. This is a similar level of use to that found in the Melbourne and Sydney Gay Community Periodic Surveys (Hull et al., 2015; Lee et al., 2015). Most of the 24 men using PrEP were taking antiretroviral drugs on a daily basis. Given the relatively small number of men taking PrEP in our survey, we cannot provide reliable or detailed information about current PrEP users; this will need to be explored through other data sources.

In the 2015 survey round we asked gay and bisexual men about their awareness and knowledge of PrEP. Three-quarters of men had heard of PrEP; HIV-positive men and older men were the most likely to have heard of it. Over a quarter of men said they knew someone who was taking PrEP. Knowing someone who was taking PrEP was most likely to be reported by men from New South Wales. The most common sources of information about PrEP were gay community media, friends, the internet, gay community and HIV organisations; relatively few men had heard about PrEP from doctors or sexual partners. Participants generally reported that they had heard positive things about PrEP i.e. that it was a welcome development in HIV prevention.

Levels of knowledge about PrEP were inconsistent, suggesting community education about PrEP would be useful. Few participants knew how PrEP is currently accessed in Australia, the recommended dosing regime (daily at the time of writing), the need for regular clinical monitoring if taking PrEP or that prescribing guidelines suggest PrEP should only be taken by people at high risk of HIV. HIV-positive men tended to know more about PrEP than HIV-negative men, which may reflect their greater exposure to HIV medicine and treatment information.

Attitudes towards using PrEP appear to have become more positive over time, although there seem to be some reservations about having sex with men using PrEP. Just under a third of HIV-negative and untested men were willing to use PrEP in 2015, a significant increase from previous survey rounds. Concern about using PrEP has declined while the likelihood of decreased condom use if using PrEP has remained stable. Although we have not conducted the analysis for this summary report, we anticipate that men at higher risk of HIV remain the most interested in using PrEP, as we have previously found (Holt et al., 2014a; Holt et al., 2012). Over half of men in the 2015 survey expressed support for other gay

and bisexual men using PrEP, although only one in six expected their sex partners to use PrEP. A third of men indicated that they were willing to have sex with someone who was on PrEP (similar to the proportion of men who indicated they were willing to use PrEP). It is possible that while men are generally supportive of others using PrEP, they do not see it as a relevant strategy for them or their partners (as they do not have condomless sex with casual partners, for example). This is supported by the finding that men who reported condomless sex with casual partners were much more willing to have sex with someone using PrEP. HIV-positive men were also more willing than HIV-negative and untested men to have sex with someone using PrEP.

As we have found in previous rounds, relatively few gay and bisexual men report positive experiences in using condoms but most remain confident in discussing them with their sex partners. HIV-negative and untested men have become slightly less likely to report positive experiences in using condoms over time. The reason for this change is unclear, but it is possible that the availability of alternative options like PrEP and TasP has made condoms seem less appealing to some men. This is worthy of further assessment and monitoring, as there continues to be a risk that a decline in condom use, particularly among men not using PrEP and TasP, will undermine the preventative benefits of PrEP and TasP (de Wit & Adam, 2014; Imrie, Elford, Kippax, & Hart, 2007).

We have assessed attitudes to HIV treatment and particularly the use of HIV treatment for prevention for a number of survey rounds (Holt et al., 2014b; Holt et al., 2013). The 2015 survey results show a large increase in the belief that HIV treatment prevents transmission, particularly among HIV-positive men. While only one in ten HIV-negative and untested men believes in TasP, nearly half of HIV-positive men now do so. This suggests that HIV-positive men in particular have seen or heard coverage of positive trial results or community campaigns about the benefits of treatment over the last few years and have become much more optimistic about TasP.

In contrast to beliefs about TasP, the majority of gay and bisexual men continue to support the idea of early HIV treatment. As we have previously noted, this is likely to be due to greater comfort in the idea of HIV treatment conferring health benefits to the individual rather than using HIV treatment for prevention (Holt et al., 2014b). Over three-quarters of HIV-negative and untested men believe that early HIV treatment is necessary. HIV-positive men are less likely to believe that early treatment is necessary, presumably due to greater reservations about committing to lifelong treatment (Holt et al., 2014b; Newman et al., 2015). However, between 2013 and 2015 there was a substantial increase in support for early HIV treatment among HIV-positive men (60% now support early treatment). Younger HIV-positive men are more likely to support early HIV treatment compared to older HIV-positive men, suggesting that HIV-positive men who have a longer treatment history may be more wary about being encouraged to take treatment (Newman et al., 2015).

# Recommendations

- Improve gay and bisexual men's knowledge of PrEP, particularly recommendations about access, dosing and clinical monitoring. This may be achieved through community awareness campaigns and by encouraging doctors who work with gay men to discuss PrEP with their patients.
- Engage with gay and bisexual men's concerns about PrEP, particularly about having sex with partners using PrEP. This may be achieved through fostering community dialogue in the media, in forums and through peer networks.
- Assess whether the growing awareness of PrEP and TasP is associated with a decline in condom use among gay and bisexual men.
- Continue to engage gay and bisexual men about the health and preventative benefits of HIV treatment and the conditions under which TasP is most likely to be effective e.g. achieving a sustained undetectable viral load through treatment in the absence of sexually transmissible infections. This could be achieved through community education and by encouraging doctors to discuss TasP with their patients.



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# Appendix

## Demographic characteristics (%)

	All (N=1251)	NSW (n=421)	VIC (n=307)	QLD (n=241)
<b>Age (M, SD)</b>	33.7 (11.9)	34.9 (12.4)	34.3 (11.7)	32.3 (12.0)
<b>Sexual identity</b>				
Gay	96.9	97.6	97.7	96.3
Bisexual / other	3.1	2.4	2.3	3.7
<b>HIV status</b>				
HIV-negative	79.1	82.4	78.8	74.3
HIV-positive	8.5	8.8	10.4	8.3
Untested / unknown status	12.4	8.8	10.8	17.4
<b>Country of birth</b>				
Australia	80.7	80.0	80.8	81.7
Overseas	19.3	20.0	19.2	18.3
<b>Aboriginal and/or Torres Strait Islander</b>				
Yes	3.0	3.6	1.3	2.1
No	97.0	96.4	98.7	97.9
<b>Highest level of education</b>				
Up to year 12	34.6	29.2	33.9	40.7
Trade certificate	23.0	21.1	22.5	21.6
Undergraduate degree	26.4	28.3	25.7	28.2
Postgraduate degree	16.0	21.4	17.9	9.5
<b>Employment status</b>				
Full-time	59.1	61.3	59.9	59.8
Part-time	11.4	10.9	12.7	12.9
Student	14.3	12.1	13.4	14.1
Unemployed/retired/other	15.2	15.7	14.0	13.3
<b>Residential location</b>				
Capital city	68.7	65.3	77.5	57.7
Other city	12.7	14.0	7.5	19.1
Regional centre/town	12.4	13.8	9.8	15.8
Rural or remote area	6.2	6.9	5.2	7.5

M, mean; SD, standard deviation.

**HIV testing (%)**

	All	NSW	VIC	QLD
<b>Ever tested</b>	(N=1251)	(n=421)	(n=307)	(n=241)
All participants	89.3	92.9	90.9	83.8
<b>HIV-negative participants</b>	(N=990)	(n=347)	(n=242)	(n=179)
Tested in past 12 months	75.7	75.5	78.1	76.0

**HIV treatment and viral load among HIV-positive participants (%)**

	All (N=106)	NSW (n=37)	VIC (n=32)	QLD (n=20)
Currently on antiretroviral treatment	93.4	97.3	96.9	85.0
Undetectable viral load	90.6	91.9	93.8	80.0

**Current relationships and sex with regular and casual male partners in the six months prior to the survey (%)**

	HIV-negative & untested/unknown				HIV-positive
	All (N=1145)	NSW (n=384)	VIC (n=275)	QLD (n=221)	All (N=106)
<b>Relationships with regular partner</b>					
No regular partner	42.2	41.1	40.7	47.1	49.1
Monogamous relationship	28.9	28.1	29.1	25.3	16.0
Non-monogamous relationship	28.9	30.7	30.2	27.6	34.9
<b>HIV status of regular partner</b>					
No regular partner	42.2	41.1	40.7	47.1	49.1
HIV-negative	45.6	46.9	45.8	39.4	29.2
Untested/unknown status	7.7	6.5	8.7	9.0	0.9
HIV-positive	4.5	5.5	4.7	4.5	20.8
<b>Anal intercourse with regular partners</b>					
No partner / no intercourse	32.0	33.3	24.7	35.3	33.0
Consistent condom use	13.9	14.1	13.5	14.0	12.3
Any anal intercourse without condoms	54.1	52.6	61.8	50.7	54.7
<b>Anal intercourse with casual partners</b>					
No partner / no intercourse	41.3	41.1	30.2	43.4	25.5
Consistent condom use	25.4	25.0	27.6	26.7	12.3
Any anal intercourse without condoms	33.3	33.9	42.2	29.9	62.3

**Use of PEP and PrEP (%)**

	All (N=1251)	NSW (n=421)	VIC (n=307)	QLD (n=241)
Ever received PEP	17.3	19.0	22.1	14.5
Ever taken PrEP	3.0	3.3	5.2	2.1
Currently taking PrEP	2.1	3.6	0.8	1.9

**Awareness of PrEP (%)**

	All (N=1251)	NSW (n=421)	VIC (n=307)	QLD (n=241)
<b>PrEP awareness</b>				
Never heard of PrEP	23.7	21.1	17.3	26.1
Heard a little	50.8	49.6	52.1	52.7
Heard a lot	25.4	29.2	30.6	21.2
<b>Know someone who has taken PrEP</b>	28.9	32.8	38.8	24.1
<b>Discussed PrEP with doctor</b>	15.8	15.4	22.5	13.3

**Where participants reported having heard about PrEP (%)**

	All (N=1251)	NSW (n=421)	VIC (n=307)	QLD (n=241)
Gay community media	40.5	46.3	45.3	34.9
Internet / website based in Australia	40.4	43.2	45.9	36.1
Friends	32.6	36.3	36.8	31.5
Gay community organisation	28.6	30.9	31.9	24.9
Internet / website based overseas	27.6	28.0	30.9	24.9
HIV organisation	25.7	28.5	29.6	24.5
Hospital / clinic	19.1	20.0	19.9	15.8
Newspaper article	16.7	17.3	21.8	13.3
Research study	16.2	17.8	20.5	12.0
Sexual partner(s)	13.3	15.4	16.3	11.2
Doctor	12.5	11.9	16.6	11.2
Radio or television	7.4	5.7	10.7	5.0

## What participants reported having heard about PrEP (%)

	All (N=1251)	NSW (n=421)	VIC (n=307)	QLD (n=241)
It's a welcome development in HIV prevention	56.9	59.6	64.2	53.5
It gives gay and bisexual men more options to remain safe	51.6	54.4	58.3	49.0
Gay and bisexual men who take PrEP are being responsible	42.1	45.4	46.3	39.4
It's highly effective	36.5	40.9	45.0	28.6
It's expensive	36.5	37.5	40.4	36.1
It's controversial within HIV prevention	32.7	33.0	36.8	32.0
It's an excuse for gay and bisexual men not to use condoms	28.4	33.0	31.9	24.9
It's partially effective	19.8	16.6	21.2	23.2
Gay and bisexual men who take PrEP are risk-takers	18.6	20.7	21.8	17.0
Gay and bisexual men who take PrEP are promiscuous	16.6	19.5	21.2	10.8

## Knowledge about PrEP (%)

	Correct response	All (N=1251)	NSW (n=421)	VIC (n=307)	QLD (n=241)
PrEP is effective if you take it on a one-off basis (like a "morning after" pill)	False	53.2	54.6	60.3	49.8
PrEP is available through research studies in Australia	True	53.1	56.5	61.2	47.7
PrEP's effectiveness depends on how often you take it	True	51.8	53.9	59.6	49.8
PrEP is available overseas	True	50.9	54.9	61.2	46.5
Taking PrEP has no side effects	False	47.5	48.2	51.1	47.3
Taking anti-HIV drugs every day is the current recommended PrEP regimen	True	46.1	47.5	54.1	41.5
Doctors can write private prescriptions for PrEP in Australia	True	44.0	44.9	46.6	44.0
PrEP is available as a subsidised medicine in Australia	False	38.8	41.1	47.2	34.4
Being prescribed PrEP involves regular clinical visits	True	38.5	40.6	45.6	37.3
Only people confirmed as HIV-negative should take PrEP	True	32.2	33.7	41.4	29.5
Only people at high risk of HIV are recommended to take PrEP	True	29.1	30.6	36.8	22.0
Anyone who is worried about HIV is recommended to take PrEP	False	23.0	23.0	28.0	22.4
PrEP can be more effective than condoms in preventing HIV	True	13.3	12.6	15.3	14.5
Total number of correct items (maximum 13) (M, SD)	-	5.2 (4.1)	5.4 (4.1)	6.1 (4.1)	4.9 (4.1)

M, mean; SD, standard deviation.

## Attitudes towards taking PrEP among HIV-negative and untested/unknown status participants (%)

Scale score $\geq 4$	All (N=1145)	NSW (n=384)	VIC (n=275)	QLD (n=221)
Willing to use PrEP	31.7	31.5	36.4	32.9
Concerned about using PrEP	40.9	44.5	43.2	36.5
	(N=355)	(n=118)	(n=96)	(n=72)
Likely to reduce condom use if using PrEP (among men willing to use PrEP)	15.8	20.3	18.8	6.9

## Attitudes towards other men taking PrEP (%)

Scale score $\geq 4$	All	NSW	VIC	QLD
HIV-negative and untested/unknown participants	(N=1145)	(n=384)	(n=275)	(n=221)
Support GBM taking PrEP	53.4	53.9	62.2	48.4
Willing to have sex with GBM taking PrEP	36.2	39.6	43.6	30.8
	(N=1093)	(n=363)	(n=262)	(n=211)
Expect partners to take PrEP scale <sup>a</sup>	16.9	14.6	19.1	19.0
HIV-positive participants	(N=106)			
Support GBM taking PrEP	66.0			
Willing to have sex with GBM taking PrEP	71.7			
	(N=84)			
Expect partners to take PrEP scale <sup>a</sup>	22.6			

Not reported  
by state due to small  
cell frequencies.

<sup>a</sup> Excludes participants with HIV-positive regular partners.

## Attitudes towards condoms (%)

Scale score $\geq 4$	All	NSW	VIC	QLD
HIV-negative and untested/unknown participants	(N=1145)	(n=384)	(n=275)	(n=221)
Positive experience in using condoms	6.2	7.0	5.8	6.3
Confident discussing condoms with partners	69.9	72.1	71.6	67.4
HIV-positive participants	(N=106)			
Positive experience in using condoms	3.8			
Confident discussing condoms with partners	61.3			

Not reported by  
state due to small  
cell frequencies.

**Attitudes towards HIV treatment as prevention (%)**

<b>Scale score <math>\geq 4</math></b>	<b>All</b>	<b>NSW</b>	<b>VIC</b>	<b>QLD</b>
HIV-negative and untested/ unknown participants	(N=1145)	(n=384)	(n=275)	(n=221)
HIV treatment prevents transmission	10.0	12.8	12.7	5.9
Early HIV treatment is necessary	76.7	81.3	74.2	72.9
HIV-positive participants	(N=106)	(n=37)	(n=32)	(n=20)
HIV treatment prevents transmission	46.2	45.9	56.3	35.0
Early HIV treatment is necessary	60.4	54.1	56.3	65.0