



**Migrant Blood-borne Virus
& Sexual Health Survey
2020-2021:
Queensland results**

2021

Migrant Blood-borne Virus
and Sexual Health Survey

MiBSS

Cite as:

Vujcich D, Reid A, Durham J, Mullens AB, Gu Z, Debattista J, Parma G, Mao L, Guy R, Brown G, Hartley L, Roberts M, Lobo R. Migrant Blood-borne Virus and Sexual Health Survey 2020-2021: Queensland results. Perth: Curtin University.

Note:

This report is part of a suite of state-specific reports on the MiBSS project. Some general content, including methodology, may be reproduced across the reports. All reports will be made available at mibss.org/publications

CONTENTS

01	Introduction
03	Methods
05	Results
55	Discussion
63	References

INTRODUCTION

In Australia, there are significant health disparities between domestic- and overseas-born residents with respect to sexually transmissible infections (STIs) and blood-borne viruses (BBVs). For instance, in 2017 the HIV notification rate in Australia was over three times higher for people born in South-East Asia (14 per 100,000) and Sub-Saharan Africa (13.5 per 100,000) compared to Australian-born residents (4.0 per 100,000) [1]. Of the 27,545 people estimated to be living with HIV in Australia, 9.2% (2,529) were born in South-East Asia and 5.6% (1,553) were born in Sub-Saharan Africa [1]. With respect to people living with chronic hepatitis B in Australia (estimated prevalence = 233,957), 21.4% were born in North-East Asia and 17% were born in South-East Asia [1].

People from culturally and linguistically diverse (CaLD) backgrounds are recognised as priority populations in:

- the Third National Hepatitis B Strategy 2018-2022 [2];
- the Fourth National Sexually Transmissible Infections Strategy 2018-2022 [3];
- the Fifth National Hepatitis C Strategy 2018-2022 [4]; and
- the Eighth National HIV Strategy 2018-2022 [5].

Key areas for action under the Strategies include:

- Improving priority populations' knowledge and awareness of STIs and BBVs [2], [4], [5].
- Ensuring priority populations are able to access prevention methods, including condoms, pre-exposure prophylaxis, and relevant vaccinations [2], [4], [5].
- Addressing barriers affecting the health seeking behaviours of priority populations [2-5].

However, there is currently no systematic way to measure progress against these strategic actions over time. Efforts to understand STI and BBV knowledge, behaviour and access to services among CaLD populations in Australia have largely been in the form of "short-term, small-scale projects and research studies" [6].

The aim of the Migrant Blood-Borne Virus and Sexual Health Survey (MiBSS) is to investigate the feasibility of a periodic national survey of CaLD people's knowledge, attitudes, and practices with respect to STIs and BBVs, and to collect baseline data.



The project was funded as an Australian Research Council Linkage Project led by Curtin University to collect data in Western Australia, South Australia, and Victoria.

Additional funding from the Queensland Department of Health through the ASHM Sexual Health Research Fund enabled data collection to be extended to Queensland.

The design and implementation of the Queensland sub-study was overseen by a Steering Group comprising representatives from:

- Queensland University of Technology;
- University of Southern Queensland;
- Ethnic Communities Council of Queensland;
- True Relationships and Reproductive Health;
- MetroNorth Public Health;
- Queensland Positive People; and
- Queensland Department of Health.

This report presents the methods and findings of the Queensland sub-study. A national report with state-by-state comparisons of data will follow.

METHODS

An English-language survey instrument was drafted incorporating items from existing instruments [7-12]. Whereas previous CaLD surveys in Australia focused on collecting information relevant to HIV or hepatitis B only, the draft MIBSS survey included questions to gauge knowledge about HIV, chlamydia, gonorrhoea, syphilis, hepatitis B, and hepatitis C.

The draft instrument was pretested using a hybrid qualitative method developed by Oresmus, Cosby and Wolfson [13]. Under the hybrid method, small groups of participants known as 'panels' are asked to complete the survey and a moderator then uses a script to gauge attitudes toward survey instructions, survey appearance, and the wording and relevance of questions and responses.

The pretesting process was led by peer researchers based in partner organisations in Queensland, South Australia, and Western Australia. Details of the pretesting methods adopted and the issues identified through pretesting are described elsewhere [14].

In summary, sixty-two respondents pretested the survey across three rounds. Issues were identified in all three rounds

of pretesting, and included uncertainty around; (1) subjective adjectives and concepts (e.g. "regular", "effective"), (2) defined technical/medical terms (e.g. pre-exposure prophylaxis" and "infertility"); and (3) terms unfamiliar to people with low health literacy or from different cultural or linguistic backgrounds (e.g. "oral sex" and "gender"). The draft survey was revised to clarify terminology and enhance cultural appropriateness and relevance.

The finalised English-language survey was then translated into Vietnamese, Simplified Chinese, Traditional Chinese and Khmer, using the best practice TRAPD (Translation, Review, Adjudication, Pretesting and Documentation) method. The method involved obtaining two independent translations for each language, comparing the translations and selecting the best translation for each item, pretesting the draft translated survey with people fluent in each language, and undertaking relevant revisions [15].

The final English and translated surveys were made available online and in paper form. Recruitment in Queensland was led by peer researchers employed by the Ethnic Communities Council of Queensland (ECCQ). Respondents were eligible for recruitment if they were 18

years of age or older and were born in South-East Asia, North-East Asia or Sub-Saharan Africa.

Methods of recruitment comprised direct invitation (by email, telephone, and using social media platforms), promotion through print and social media (e.g. newsletters, Facebook), and face-to-face approaches during community events and outreach activities. Recruitment attempts were documented to enable participation rates to be calculated. Data on participation rates will be presented and analysed in a separate paper.

The period of recruitment was September 2020 to April 2021, and necessary precautions were taken in response to the coinciding COVID-19 pandemic.

All respondents were provided with an information sheet. Respondents to the paper-based survey received an AUD 30 gratuity, as approved by the Curtin University Human Research Ethics Committee (HRE 2019-0395). Online respondents were provided the opportunity to enter a draw to win a voucher worth AUD 200.

STATA was used to conduct basic descriptive statistical analysis (e.g. frequencies and proportions). Unless otherwise indicated, chi-squared tests were used to determine whether differences observed between groups (e.g. by age, region of birth, gender, time in

Australia) were statistically significant. Fisher's exact test was used where more than 20% of cells in a table had expected frequencies of less than five. For the purposes of this paper, a p-value of less than 0.05 is statistically significant.

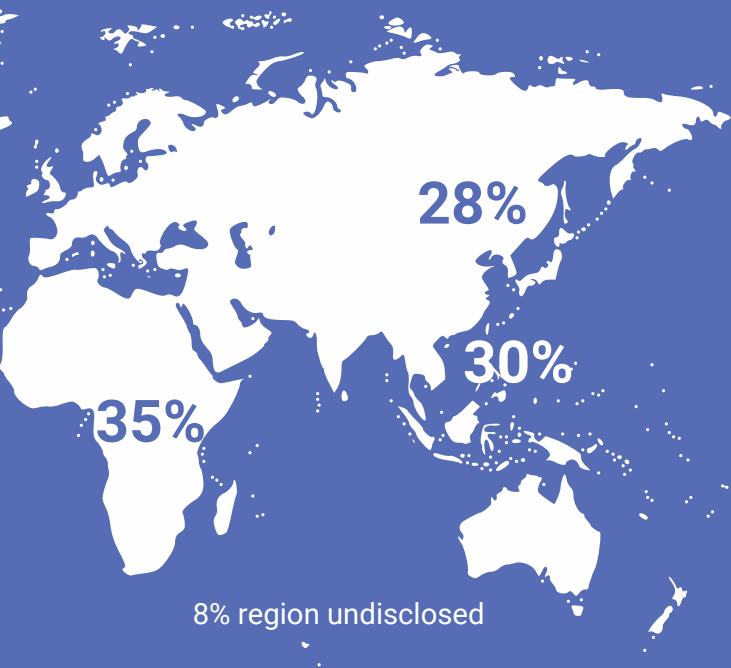
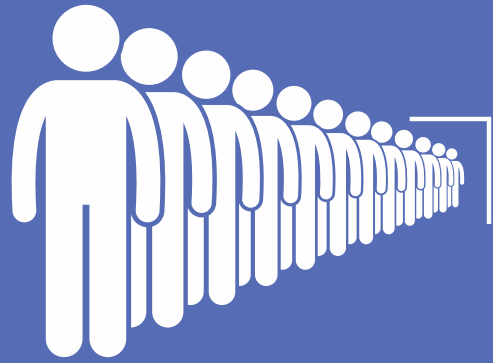


RESULTS

NOTE: Percentages presented in infographics exclude missing data (i.e. respondents who skipped questions)

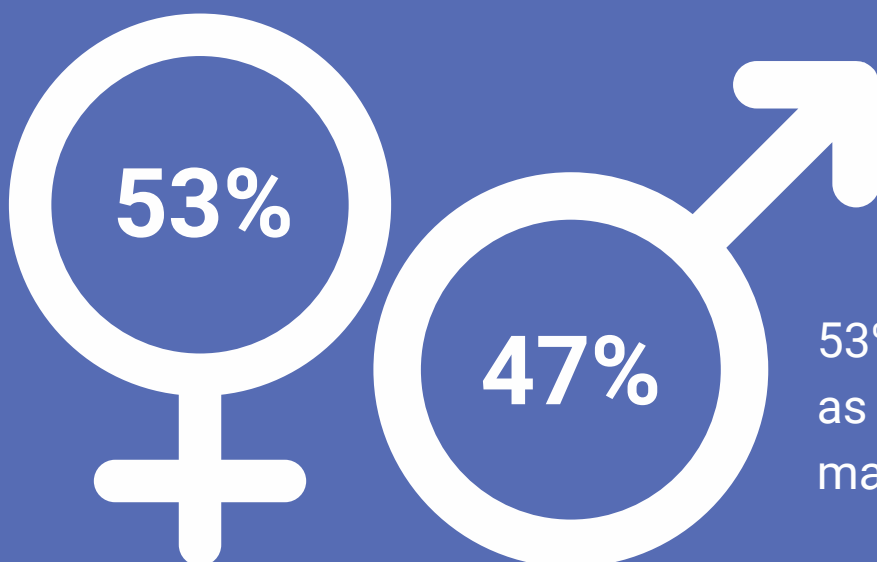
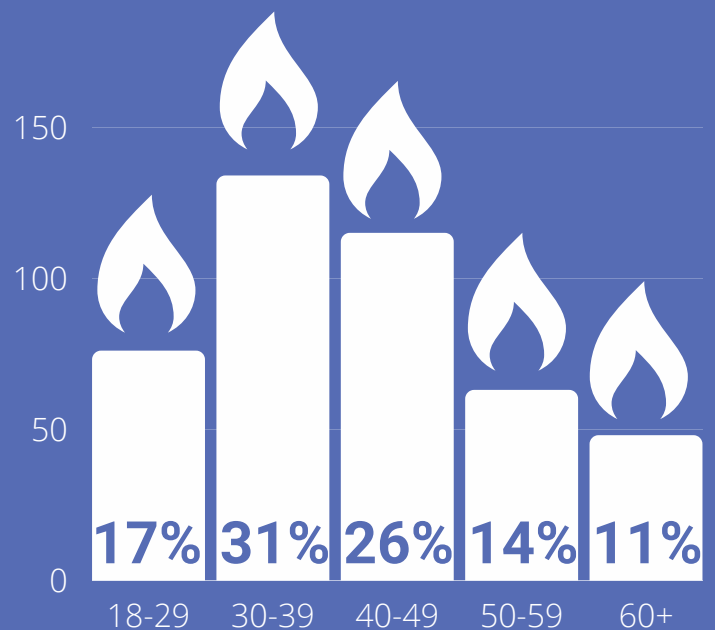
Demographics at a glance

There were 454 included survey respondents from Queensland.



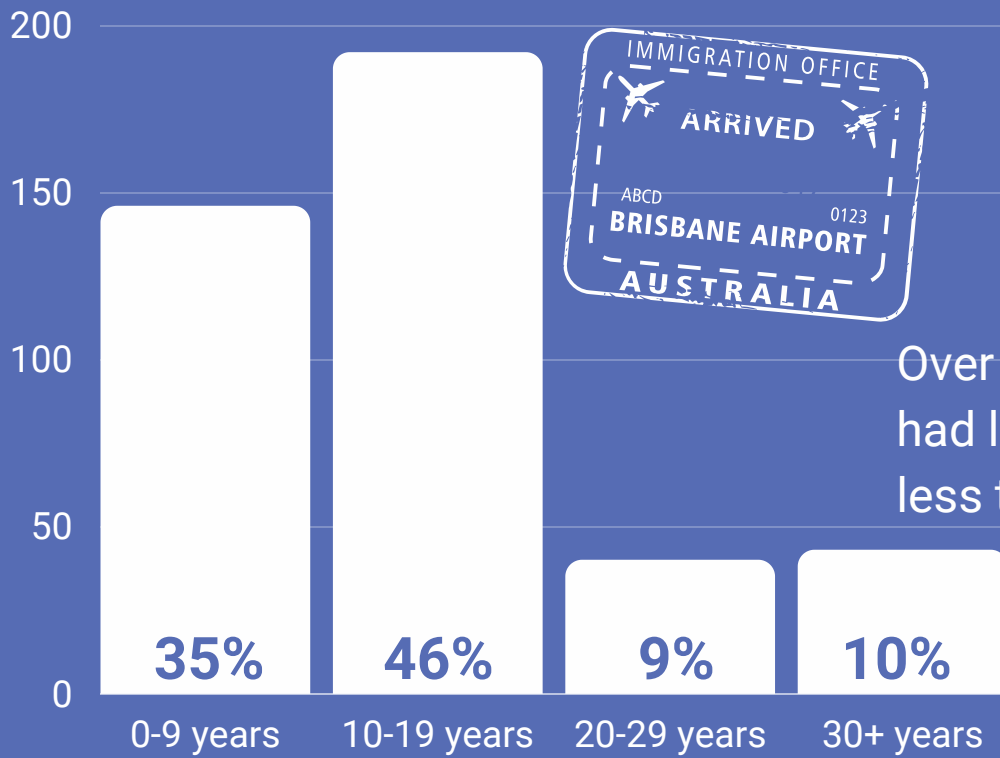
The largest proportion of the sample was born in Sub-Saharan Africa, with the remainder being relatively evenly distributed between North- and South-East Asia.

The majority of survey respondents were between 30 and 49 years old.



53% of respondents identified as female, compared to 47% male.

Demographics at a glance



Over 80% of respondents had lived in Australia for less than 20 years.

93% reported being attracted to the 'opposite' gender only
7% were attracted to the same or multiple genders

94% of respondents resided in South-East Queensland.

A total of 466 survey responses can be identified as originating from Queensland.* Twelve surveys were excluded on the basis that less than 25 percent of the survey had been completed, resulting in a final sample of 454.

As shown in Table 1, 35.02 percent (n=159) of all survey respondents reported being born in a Sub-Saharan African (SSA) country, 27.53 percent (n=125) were born in a North-East Asian (NEA) country and 29.52 percent (n=134) were born in a South-East Asian (SEA) country. Thirty-six respondents (7.93%) did not disclose a country of birth.^

Table 1: Number and proportion of respondents (n=454), by country and region of birth

Region	Country / UN sub-region^^	No. Respondents (%)
Sub-Saharan Africa (n=159)	Northern sub-region (Sudan)	18 (3.96)
	Eastern sub-region (Burundi, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Tanzania, Uganda, Zambia, Zimbabwe)	106 (23.35)
	Middle sub-region (Dem. Rep. Congo, Rep. Congo)	12 (2.64)
	Southern sub-region (Botswana, South Africa)	6 (1.32)
	Western sub-region (Benin, Guinea, Liberia, Nigeria, Sierra Leone, Togo)	6 (1.32)
North-East Asia (n=125)	China (includes Hong Kong and Macau)	51 (11.23)
	Japan	3 (0.66)
	Korean Peninsula	51 (11.23)
	Taiwan	20 (4.41)

Table continued on next page

*A survey was deemed to originate from Queensland if it met one of the following conditions: (a) it was a paper survey sent from a Queensland partner; (b) it was an online survey and the answer to the postcode question was a Queensland postcode; (c) it was an online survey and the URL source indicated it had been disseminated by a Queensland partner.

^It is assumed that these surveys met the eligibility criteria as the eligible countries were clearly stated on the cover page of the survey and in associated participant information forms and promotional materials.

Table 1 continued: Number and proportion of respondents (n=454), by country and region of birth

Region	Country	No. Respondents (%)
South-East Asia (n=134)	Cambodia	4 (0.88)
	Indonesia	12 (2.64)
	Myanmar	22 (4.85)
	Malaysia	20 (4.41)
	Philippines	10 (2.20)
	Singapore	8 (1.76)
	Thailand	5 (1.10)
	Vietnam	53 (11.67)
UNSPECIFIED REGION		36 (7.93)

As shown in Table 2 below, over half of the survey respondents who reported their age (56.85%; n=249) were between 30 and 49 years old. The Sub-Saharan African sub-sample had a larger proportion of people aged 18-29 years and the South-East Asian sub-sample had a larger proportion of respondents aged 60 years and over, compared to other regions.

Table 2: Number and proportion of respondents (n=438)[^], by age and region of birth

Region	18-29 yrs n (%)	30-39 yrs n (%)	40-49 yrs n (%)	50-59 yrs n (%)	60 + yrs n (%)	p-value
SSA (n=158)	43 (27.22)	49 (31.01)	43 (27.22)	18 (11.39)	5 (3.16)	<0.000
SEA (n=129)	18 (13.95)	33 (25.58)	26 (20.16)	22 (17.05)	30 (23.26)	
NEA (n=124)	10 (8.06)	44 (35.48)	40 (32.26)	17 (13.71)	13 (10.48)	
Unspecified (n=27)*	5 (18.52)	8 (29.63)	6 (22.22)	6 (22.22)	2 (7.41)	
ALL (n=438)	76 (17.35)	134 (30.59)	115 (26.26)	63 (14.38)	50 (11.42)	

[^]Excludes 16 who did not report age

*Unspecified regions excluded from chi2 analysis

Of those who answered the gender question (n=436), 52.75% percent (n=230) identified as female only, compared to 46.56 percent (n=203) male only, and three respondents who identified as either non-binary or both male and female (0.69%). Table 3 shows that statistically significant differences were observed in gender distribution by region of birth. Most notably, among the North-East Asian sub-sample, almost two-thirds (63.20%; n=79) of respondents identified as female. The majority of respondents to the sexual attraction questions identified as heterosexual (93.05%; n=375), with 6.95% (n=28) reporting same- or multiple-gender attraction (15 were men who were attracted to other men/non-binary people).

Table 3: Number and proportion of respondents (n=433)^, by gender and region of birth

Region	Male n (%)	Female n (%)	p-value
SSA (n=152)	81 (53.29)	71 (47.71)	0.020
SEA (n=130)	60 (46.15)	70 (53.85)	
NEA (n=125)	46 (36.80)	79 (63.20)	
Unspecified (n=26)	16 (61.54)	10 (38.46)	
ALL (n=433)	203 (46.88)	230 (53.12)	NA

^Excludes those who did not report gender, those who reported being non-binary or both male and female

Over four-fifths (80.38%; n=340) of respondents who reported length of stay had lived in Australia for less than 20 years as shown in Table 4; however, compared to other regions a larger proportion of respondents born in South-East Asia had lived in Australia for at least 30 years. The majority of respondents (86.05%; n=364) who answered the visa question were permanent residents/citizens, 8.04% (n=34) were on student visas and 3.31 percent (n=14) were on work visas.

Table 4: Number and proportion of respondents (n=423)^, by time in Australia and region of birth

Region	0-9 yrs n (%)	10-19 yrs n (%)	20-29 yrs n (%)	30 + yrs n (%)	p-value
SSA (n=151)	52 (34.44)	89 (58.94)	8 (5.30)	2 (1.32)	<0.000
SEA (n=129)	43 (33.33)	35 (27.13)	17 (13.18)	34 (26.36)	
NEA (n=122)	47 (38.52)	55 (45.08)	15 (12.30)	5 (4.10)	
Unspecified (n=21)*	4 (19.05)	15 (71.43)	0 (0.00)	2 (9.52)	NA*
ALL (n=423)	146 (34.52)	194 (45.86)	40 (9.46)	43 (10.17)	

^Excludes those who did not report time in Australia

*Unspecified regions excluded from chi2 analysis; all cells included in chi2 analysis had expected frequencies greater than 5

Respondents who provided a postcode predominately resided in South-Eastern Queensland, as shown in Table 5.

Table 5: Number and proportion of respondents (n=397)[^], by local government area of residence*

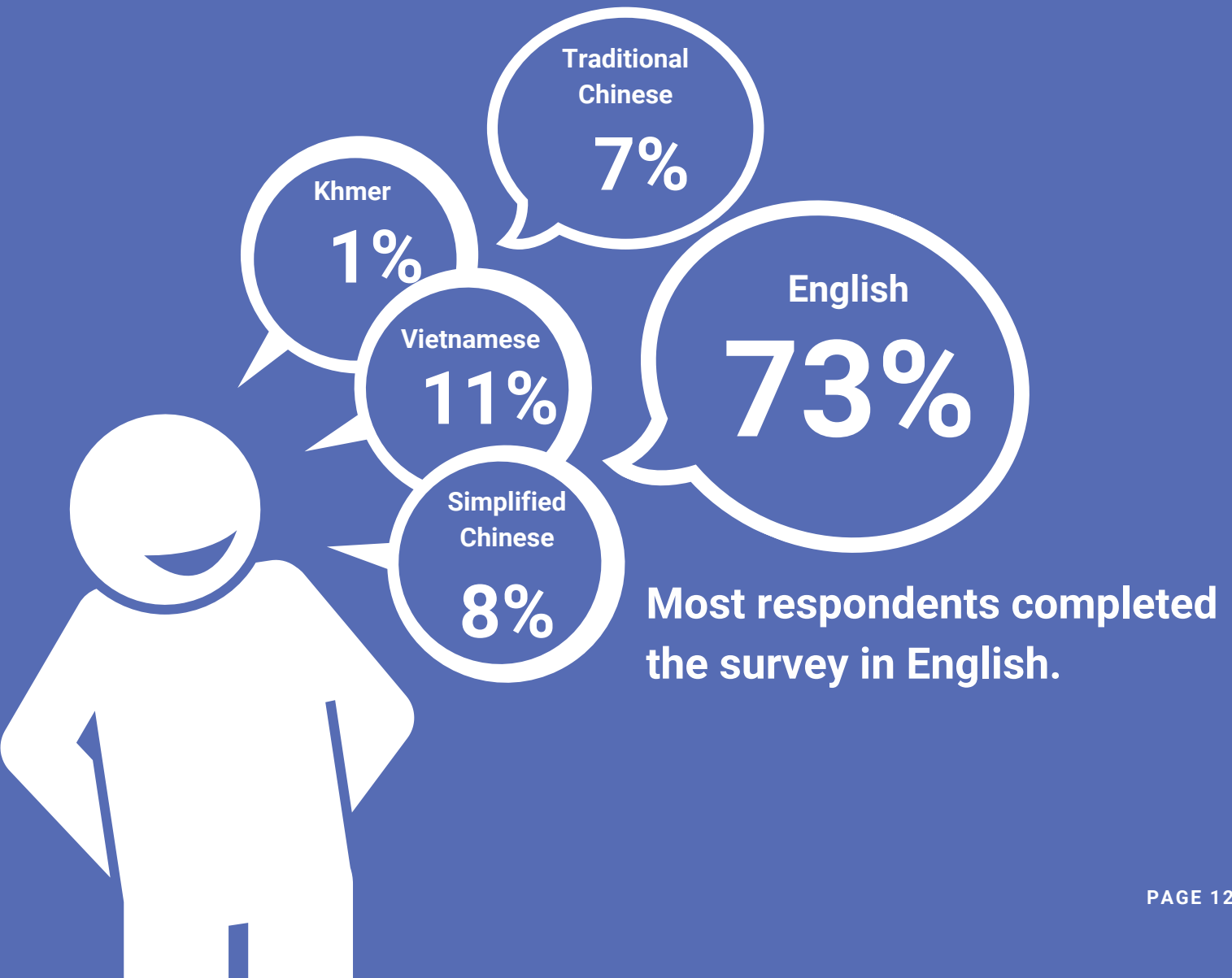
Qld region	Local Government Area	n (%)
SOUTH-EASTERN QUEENSLAND (n=373)	Toowoomba	34 (8.56)
	Brisbane City	196 (49.62)
	Logan	74 (18.64)
	Moreton Bay	8 (2.02)
	Redland	3 (0.76)
	Gold Coast	6 (1.51)
	Ipswich	40 (10.08)
	Sunshine Coast	10 (2.52)
	Somerset	1 (0.25)
QUEENSLAND OTHER (n=24)	Bundaberg	19 (4.79)
	Western Downs	1 (0.25)
	Fraser Coast	1 (0.25)
	Townsville	1 (0.25)
	Cairns	2 (0.50)

[^]Excludes those who did not report a valid postcode.

*Local government areas determined by postcode as listed in <https://www.qgso.qld.gov.au/geographies-maps/concordances/place-names-concordance-2020>. Some postcodes are shared by more than one local government area so may have been misclassified into an adjoining area.

Mode of completion at a glance

The majority of surveys were completed in paper form.



Most respondents completed the survey in English.

The majority of surveys (81.72%; n=371) were completed in paper form. Higher proportions of women (Table 6), people born in North-East Asia (Table 7), and people aged 30-39 years completed the online survey compared to the paper survey (Table 8). Differences in modes of completion by gender, age, and region of birth were statistically significant (Tables 6-8).

Table 6: Number and proportion of respondents (n=433)[^], by mode of completion and gender

Survey mode	Male n (%)	Female n (%)	p-value
Paper (n=358)	176 (49.16)	182 (50.84)	0.038
Online (n=75)	27 (36.00)	48 (64.00)	
ALL (n=433)	203 (46.88)	230 (53.12)	

[^]Excludes those who did not report gender, and those who reported non-binary or both male and female genders (due to small numbers)

Table 7: Number and proportion of respondents (n=418)[^], by mode of completion and region of birth

Survey mode	SSA n (%)	SEA n (%)	NEA n (%)	p-value
Paper (n=341)	131 (38.42)	118 (34.60)	92 (26.98)	0.011
Online (n=77)	28 (36.36)	16 (20.78)	33 (43.86)	
ALL (n=418)	159 (38.04)	134 (32.06)	125 (29.90)	

[^]Excludes those who did not report region of birth

Table 8: Number and proportion of respondents (n=438)[^], by mode of completion and age

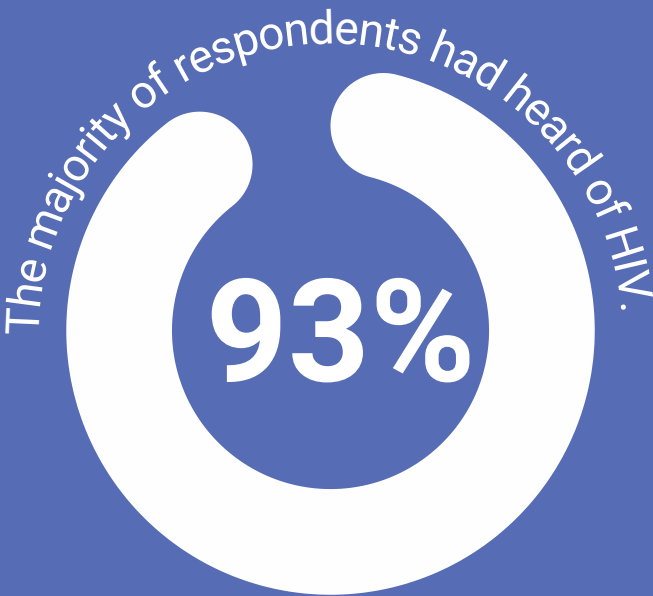
Survey mode	18-29 yrs n (%)	30-39 yrs n (%)	40-49 yrs n (%)	50-59 yrs n (%)	60 + yrs n (%)	p-value
Paper	66 (18.28)	102 (28.25)	91 (25.21)	56 (15.51)	46 (12.74)	0.032*
Online	10 (12.99)	32 (41.56)	24 (31.17)	7 (9.09)	4 (5.19)	
ALL (n=438)	76 (17.35)	134 (30.59)	115 (26.26)	63 (14.38)	50 (11.42)	

[^]Excludes those who did not report age

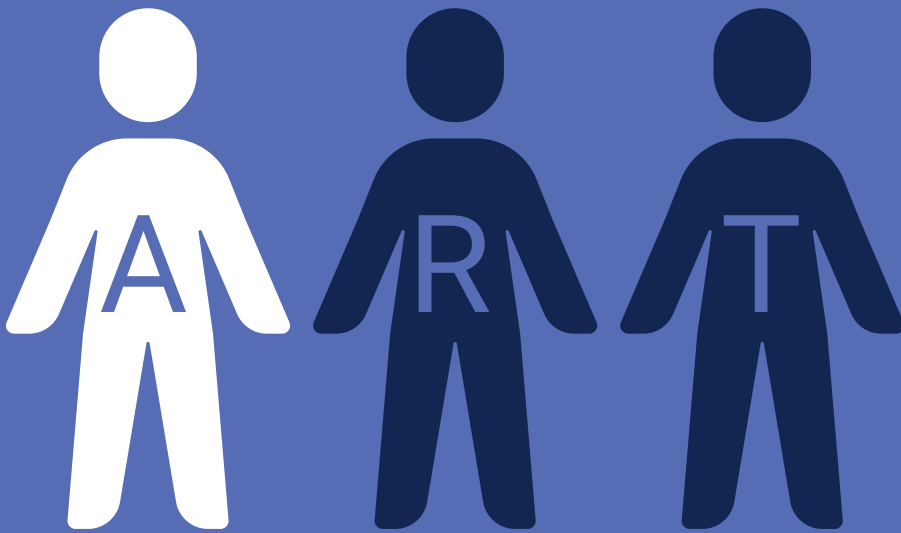
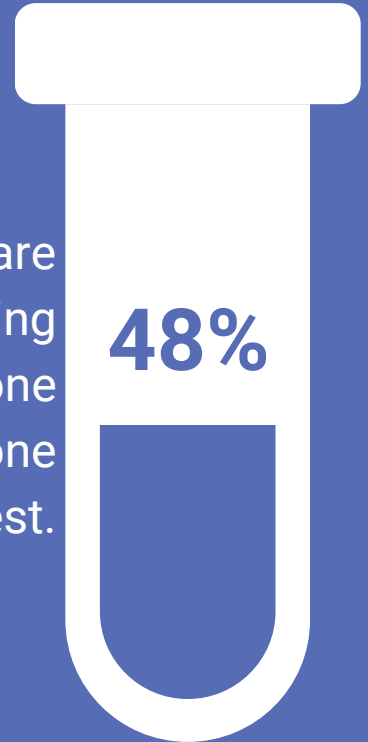
*All cells had expected frequencies greater than 5

The majority of surveys (72.91%; n=331) were completed in English. Surveys were also completed in Traditional Chinese (7.27%; n=33), Simplified Chinese (8.37%; n=38), Vietnamese (10.79%; n=49), and Khmer (0.66%, n=3).

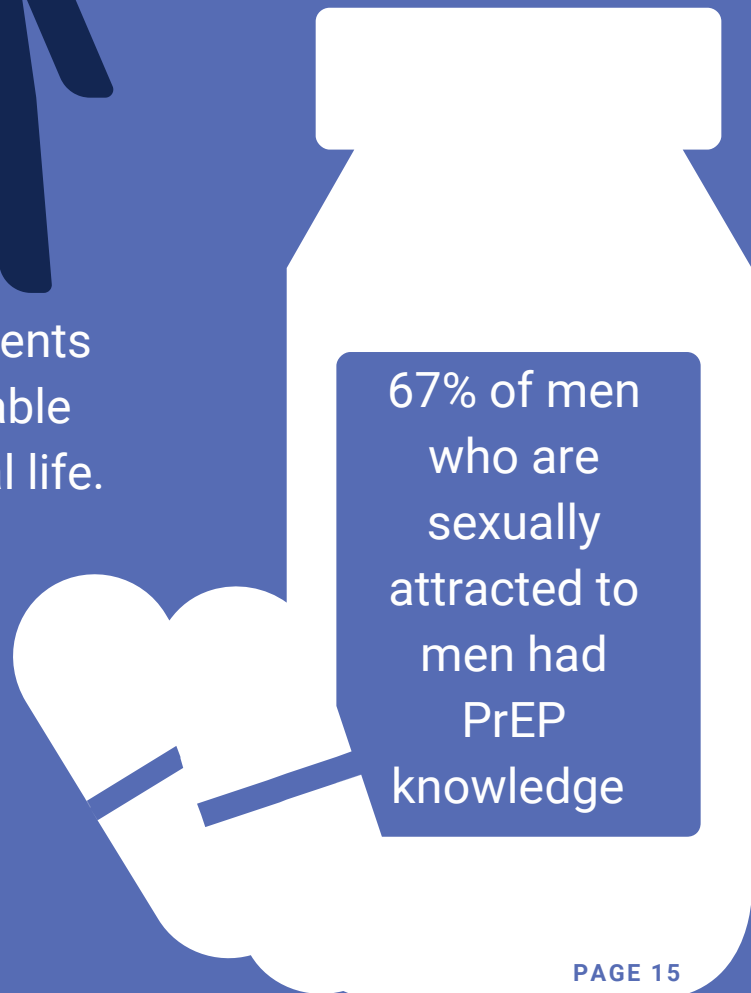
HIV knowledge at a glance



Of those ...
less than half were aware
HIV testing
is NOT done
whenever someone
has a blood test.



Approximately one in three respondents knew that there is medication available so people with HIV can live a normal life.



The majority of respondents (93.48%; n=416; nine missing responses excluded) had heard of HIV. Of those who had heard of HIV and answered specific knowledge questions:

- less than half (47.82%; n=197; 4 missing/invalid responses excluded) were aware that HIV testing is not done whenever someone has a blood test in Australia;
- only 7.06 percent (n=29; 5 missing/invalid responses excluded) were aware that it is safe to have sex without a condom with someone who has very low* amounts of the HIV virus in their blood;
- just over one-third (36.56%; n=151; 3 missing/invalid responses excluded) were aware that non-traditional* medicine is available for people living with HIV so they can live a normal life; and
- only 16.67 percent (n=68; 8 missing/invalid responses excluded) knew that there are medicines that people can take before sex to protect themselves against HIV.

No statistically significant differences in responses were observed in relation to respondent age or length of time in Australia. Table 9 shows that the question about whether HIV testing is included in all adult blood tests in Australia was the only one that varied statistically significantly by gender, where a greater proportion of females (54.67%) answered correctly compared to males (41.44%).

Table 9: Responses^a to HIV knowledge questions, by gender

Survey question (correct answer)	Correct/incorrect	Male n (%)	Female n (%)	TOTAL n (%)	p-value
Is an HIV test done whenever someone has a blood test in Australia? (No)	Correct	75 (41.44)	117 (54.67)	192 (48.61)	0.009
	Incorrect / Don't know	106 (58.56)	97 (45.33)	203 (51.39)	
Is it safe to have sex without a condom with someone who has VERY LOW amounts of HIV in their blood? (Yes)	Correct	15 (8.24)	11 (5.16)	26 (6.58)	0.219
	Incorrect / Don't know	167 (91.76)	202 (94.84)	369 (93.42)	
Is there non-traditional medication available for people living with HIV so they can live a normal life? (Yes)	Correct	63 (34.81)	86 (40.00)	149 (37.63)	0.288
	Incorrect / Don't know	118 (65.19)	129 (60.00)	247 (62.37)	
Are there any medicines that people can take BEFORE SEX to protect themselves against HIV? (Yes)	Correct	36 (20.11)	30 (14.15)	66 (16.88)	0.117
	Incorrect / Don't know	143 (79.89)	182 (85.85)	325 (83.12)	

^aExcludes respondents who skipped or provided invalid responses to specific knowledge questions, respondents who had not heard of HIV, and respondents who did not report male or female gender

Answering correctly varied by region of birth for two questions: one relating to transmission for undetectable viral loads* and the other relating to pre-exposure prophylaxis (Table 10). Most notably, a larger proportion of respondents born in Sub-Saharan Africa (24.48%; n=35) were aware that pre-exposure prophylaxis was available, compared to respondents born in other regions.

*Feedback on the final survey revealed that some respondents had difficulty understanding the terms "non-traditional medicine" and "very low amounts of virus" (both of which were suggested by pre-test participants). The results should be read in light of this feedback (see Discussion).

Table 10: Responses^a to HIV knowledge questions, by region of birth

Survey question (correct answer)	Correct/ incorrect	SSA n (%)	SEA n (%)	NEA n (%)	TOTAL n (%)	p-value*
Is an HIV test done whenever someone has a blood test in Australia? (No)	Correct	75 (51.37)	52 (44.44)	58 (48.33)	185 (48.30)	0.536
	Incorrect / Don't know	71 (48.63)	65 (55.56)	62 (51.67)	198 (51.70)	
Is it safe to have sex without a condom with someone who has VERY LOW amounts of HIV in their blood? (Yes)	Correct	11 (7.59)	14 (11.86)	2 (1.67)	27 (7.05)	0.008
	Incorrect / Don't know	134 (92.41)	104 (88.14)	118 (98.33)	356 (92.95)	
Is there non-traditional medication available for people living with HIV so they can live a normal life? (Yes)	Correct	57 (38.78)	40 (34.19)	47 (39.17)	141 (37.50)	0.673
	Incorrect / Don't know	90 (61.22)	77 (65.81)	73 (60.83)	240 (62.50)	
Are there any medicines that people can take BEFORE SEX to protect themselves against HIV? (Yes)	Correct	35 (24.31)	18 (15.52)	9 (7.56)	62 (16.36)	0.001
	Incorrect / Don't know	109 (75.69)	98 (84.48)	110 (92.44)	317 (83.64)	

^aExcludes respondents who skipped or provided invalid responses to specific knowledge questions, respondents who had not heard of HIV, and respondents who did not report country of birth.

*All cells had expected frequencies greater than 5.

A significantly higher proportion of men who are sexually attracted to men/non-binary people (MSM) were aware that it is safe to have sex without a condom with someone who has very low amounts of HIV in their blood, and that pre-exposure prophylaxis is available, compared to non-MSM respondents (Table 11).

Table 11: Responses^A to HIV knowledge questions, by sexuality (MSM* v non-MSM)

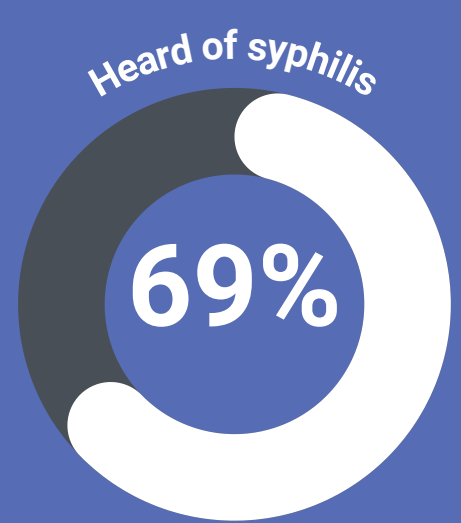
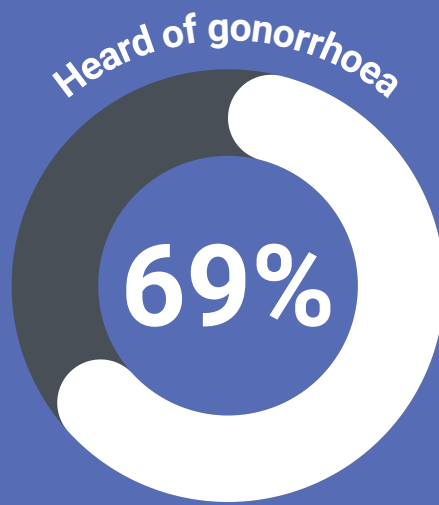
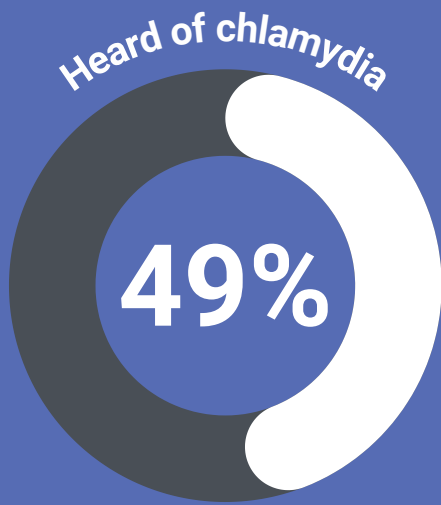
Survey question (correct answer)	Correct/ incorrect	MSM n (%)	Non-MSM n (%)	TOTAL n (%)	p-value
Is an HIV test done whenever someone has a blood test in Australia? (No)	Correct	3 (25.00)	179 (49.86)	182 (49.06)	0.090
	Incorrect / Don't know	9 (75.00)	180 (50.14)	189 (50.94)	
Is it safe to have sex without a condom with someone who has VERY LOW amounts of HIV in their blood? (Yes)	Correct	3 (25.00)	22 (6.13)	25 (6.74)	0.04 (FE)**
	Incorrect / Don't know	9 (75.00)	337 (93.87)	346 (93.26)	
Is there non-traditional medication available for people living with HIV so they can live a normal life? (Yes)	Correct	1 (8.33)	135 (37.50)	136 (36.56)	0.063 (FE)**
	Incorrect / Don't know	11 (91.67)	225 (62.50)	236 (63.44)	
Are there any medicines that people can take BEFORE SEX to protect themselves against HIV? (Yes)	Correct	8 (66.67)	56 (15.73)	64 (17.39)	<0.000 (FE)**
	Incorrect / Don't know	4 (33.33)	300 (84.27)	304 (82.61)	

^AExcludes respondents who skipped or provided invalid responses to specific knowledge questions, respondents who had not heard of HIV, and respondents who did not report data to enable sexuality to be determined.

*MSM defined as men who reported being sexually attracted to men/non-binary people

**FE = based on Fisher's exact test as more than 20% of cells had an expected frequency of less than 5

STI knowledge at a glance



Of those who had heard of at least one STI...



59% knew that a person can have an STI without any symptoms



59% knew that a person with only one sexual partner can get an STI



67% knew that STIs can make it harder for women to get pregnant

Of respondents who provided a valid answer to the question about awareness of specific STIs (n=440), fewer respondents reported knowledge of chlamydia (49.32%; n=217) compared to gonorrhoea (69.09%; n=304) and syphilis (68.64%; n=302). Sixty-five respondents (14.77%) indicated that they had not heard of gonorrhoea, chlamydia or syphilis, and 67 respondents (15.23%) said that they "know some STIs but ... don't know what they are called in English" (this option was not included in the translated versions of the survey).

Differences in awareness of gonorrhoea, syphilis, and chlamydia were not statistically significant when comparing gender, sexuality (heterosexual/non-heterosexual) or time in Australia (data not shown), but some statistically significant differences were observed between regions of birth as set out in Table 12. Notably, a larger proportion of respondents born in Sub-Saharan Africa had heard of gonorrhoea and chlamydia, compared to respondents from other regions. However, a significantly larger proportion of Sub-Saharan African-born respondents also reported having not heard of any STIs and not knowing the English names for some STIs, compared to other regional groups.* Additionally, a statistically significantly higher proportion of 18-29 year olds had heard of chlamydia, compared to other age groups (Table 13)

Table 12: Number and proportion of respondents[^] who had heard of individual STIs, by region of birth

Have you heard of the following STIs? (Tick as many as apply)	SSA n (%)	SEA n (%)	NEA n (%)	Total n (%)	p-value
Gonorrhoea	125 (82.24)	86 (65.15)	74 (59.20)	285 (69.68)	<0.000
Syphilis	113 (74.34)	86 (65.15)	82 (65.60)	281 (68.70)	0.167
Chlamydia	98 (64.47)	56 (42.42)	48 (38.40)	202 (49.39)	<0.000
I haven't heard of any of them	16 (23.40)	28 (21.21)	19 (15.20)	63 (15.40)	0.045
I know some STIs but I don't know what they are called in English*	28 (18.42)	9 (6.82)	21 (16.80)	58 (14.18)	0.012

[^]Excludes those who did not report country of birth, those who skipped the question and invalid responses

*The larger proportion of SSA respondents choosing this option may reflect the fact that translations of the survey were available in North-East and South-East Asian but not African languages; however, a high proportion of North East Asian respondents also chose this option notwithstanding the availability of traditional Chinese and simplified Chinese translations. See Table 14 for further language data.

Table 13: Number and proportion of respondents[^] who had heard of individual STIs, by age

Have you heard of the following STIs? (Tick as many as apply)	18-29 yrs n (%)	30-39 yrs n (%)	40-49 yrs n (%)	50-59 yrs n (%)	60+ yrs n (%)	TOTAL n (%)	p-value*
Gonorrhoea	54 (72.00)	95 (71.97)	75 (68.18)	39 (62.90)	36 (73.47)	299 (69.86)	0.678
Syphilis	44 (58.67)	98 (74.24)	74 (67.27)	44 (70.97)	35 (71.43)	295 (68.93)	0.212
Chlamydia	47 (62.67)	69 (52.27)	53 (48.18)	28 (45.16)	17 (34.69)	214 (50.00)	0.034
I haven't heard of any of them	14 (18.67)	20 (15.15)	20 (18.18)	7 (11.29)	4 (8.16)	65 (15.19)	0.395
I know some STIs but I don't know what they are called in English	6 (8.00)	14 (10.61)	21 (19.09)	10 (16.13)	10 (20.41)	61 (14.25)	0.106

[^]Excludes those who did not report age, those who skipped the question and invalid responses

*All cells had expected frequencies greater than 5.

While a significantly larger proportion of respondents completing the non-English surveys had heard of syphilis, the opposite was true for chlamydia (Table 14). A significant difference was also observed in relation to the option "I haven't heard of any of them"; only one respondent completing this question in the translated surveys selected this option, compared to 20.63% (n=66) of respondents to this question in the English-language survey.

Table 14: Number and proportion of respondents[^] who had heard of individual STIs, by survey language

Have you heard of the following STIs? (Tick as many as apply)	English n (%)	Not English n (%)	Total n (%)	p-value
Gonorrhoea	214 (66.88)	90 (75.00)	304 (69.09)	0.100
Syphilis	206 (64.38)	96 (80.00)	302 (68.64)	0.002
Chlamydia	176 (55.00)	41 (34.17)	217 (49.32)	<0.000
I haven't heard of any of them	66 (20.63)	1 (0.83)	67 (15.23)	<0.000

[^]Excludes those who skipped the question and invalid responses

Of the respondents who indicated that they had heard of at least one STI (n=375), more than half were aware that a person can have an STI without any symptoms (58.76%; n=218; 4 missing/invalid responses excluded), that a person with only one sexual partner can get an STI through sex (59.25%; n=221; 2 missing/invalid responses excluded) and that some STIs can make it harder for women to get pregnant (67.11%; n=251; 1 missing/invalid response excluded).

There was no statistically significant difference between correct responses by region of birth for STI knowledge questions, other than the statement "some STIs can make it harder for women to get pregnant" which a larger proportion of North-East Asian-born respondents identified correctly (Table 15). A significantly higher proportion of female respondents also demonstrated this knowledge, compared to males (Table 16). Compared to other age groups, a significantly larger proportion of respondents aged 18-29 were aware that STIs can be asymptomatic, and can be acquired by people who have only one sexual partner (Table 17). A significantly greater proportion of those who had been in Australia for less than 10 years was also aware that people with only one sexual partner could still acquire an STI, compared to groups who had been in Australia for longer periods of time (Table 18). No statistically significant differences in responses were observed on the basis of sexuality (heterosexual/non-heterosexual) (data not shown).

Table 15: Responses[^] to STI knowledge questions, by region of birth

Survey question (correct answer)	Correct/ incorrect	SSA n (%)	SEA n (%)	NEA n (%)	TOTAL n (%)	p-value
Can a person have an STI without any symptoms? (Yes)	Correct	85 (64.43)	56 (54.37)	64 (60.38)	205 (59.77)	0.365
	Incorrect / Don't know	49 (36.57)	47 (45.63)	42 (39.62)	138 (40.23)	
Can a person with ONLY one sexual partner get an STI through sex? (Yes)	Correct	85 (62.50)	53 (51.46)	66 (62.26)	204 (59.13)	0.167
	Incorrect / Don't know	51 (37.78)	51 (49.04)	40 (37.74)	142 (41.16)	
Can some STIs make it harder for women to get pregnant? (Yes)	Correct	93 (68.38)	59 (56.73)	79 (74.53)	231 (66.76)	0.021
	Incorrect / Don't know	43 (31.62)	45 (43.27)	27 (25.47)	115 (33.24)	

[^]Excludes respondents who did not report region of birth, respondents who skipped relevant questions, invalid responses, and those who reported that they had never heard of any STIs

Table 16: Responses^ to STI knowledge questions, by gender

Survey question (correct answer)	Correct/ incorrect	Male n (%)	Female (%)	TOTAL n (%)	p-value
Can a person have an STI without any symptoms? (Yes)	Correct	97 (58.79)	117 (60.00)	214 (59.44)	0.815
	Incorrect / Don't know	68 (41.21)	78 (40.00)	146 (40.56)	
Can a person with ONLY one sexual partner get an STI through sex? (Yes)	Correct	95 (56.55)	122 (62.89)	217 (59.94)	0.220
	Incorrect / Don't know	73 (43.45)	72 (37.11)	145 (40.06)	
Can some STIs make it harder for women to get pregnant? (Yes)	Correct	101 (60.12)	142 (72.82)	243 (66.94)	0.010
	Incorrect / Don't know	67 (39.88)	53 (27.18)	120 (33.06)	

^Excludes respondents who did not report gender, respondents who skipped relevant questions, invalid responses and respondents who reported that they had never heard of any STIs

Table 17: Responses[^] to STI knowledge questions, by age

Survey question (correct answer)	Correct/ incorrect	18-29 yrs n (%)	30-39 yrs n (%)	40-49 yrs n (%)	50-59 yrs n (%)	60+ yrs n (%)	TOTAL n (%)	p-value
Can a person have an STI without any symptoms? (Yes)	Correct	46 (67.65)	75 (63.56)	54 (61.36)	26 (50.00)	15 (40.54)	216 (59.50)	0.036
	Incorrect / Don't know	22 (32.35)	43 (36.44)	34 (38.64)	26 (50.00)	22 (59.46)	147 (40.50)	
Can a person with ONLY one sexual partner get an STI through sex? (Yes)	Correct	49 (71.01)	74 (62.71)	56 (64.37)	25 (48.08)	13 (33.33)	217 (59.45)	0.001
	Incorrect / Don't know	20 (28.99)	44 (37.29)	31 (35.63)	27 (51.92)	26 (66.67)	148 (40.55)	
Can some STIs make it harder for women to get pregnant? (Yes)	Correct	43 (62.32)	78 (66.10)	66 (75.00)	35 (67.31)	23 (58.97)	245 (66.94)	0.354
	Incorrect / Don't know	26 (37.68)	40 (33.90)	22 (25.00)	17 (32.69)	16 (41.03)	121 (33.06)	

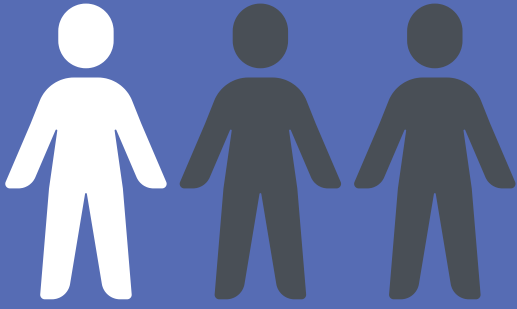
[^]Excludes respondents who did not report age, respondents who skipped relevant questions, invalid respondents, and respondents who reported that they had never heard of any STIs

Table 18: Responses[^] to STI knowledge questions, by time in Australia

Survey question (correct answer)	Correct/ incorrect	0-9 years n (%)	10-19 yrs n (%)	20-29 yrs n (%)	30+ yrs n (%)	TOTAL n (%)	p-value
Can a person have an STI without any symptoms? (Yes)	Correct	82 (64.06)	87 (55.77)	21 (63.64)	19 (54.29)	209 (59.38)	0.452
	Incorrect / Don't know	46 (35.94)	69 (44.23)	12 (36.36)	16 (45.71)	143 (40.63)	
Can a person with ONLY one sexual partner get an STI through sex? (Yes)	Correct	84 (65.63)	93 (59.24)	20 (60.61)	13 (36.11)	211 (59.32)	0.017
	Incorrect / Don't know	44 (34.38)	64 (40.76)	13 (39.39)	23 (63.89)	144 (40.68)	
Can some STIs make it harder for women to get pregnant? (Yes)	Correct	88 (68.22)	105 (66.88)	25 (75.76)	20 (55.56)	238 (67.04)	0.338
	Incorrect / Don't know	41 (31.78)	52 (33.12)	8 (24.24)	16 (44.44)	117 (32.96)	

[^]Excludes respondents who did not report time in Australia, respondents who skipped relevant questions, invalid respondents, and respondents who reported that they had never heard of any STIs

Hepatitis B knowledge at a glance



Around one-third of respondents "have heard of hepatitis B and know what it is"

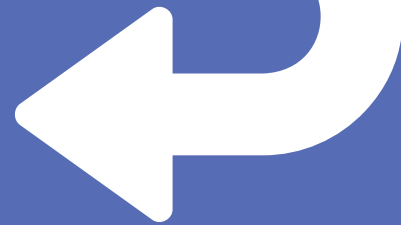
Of those who had heard of hepatitis B and knew what it was ...



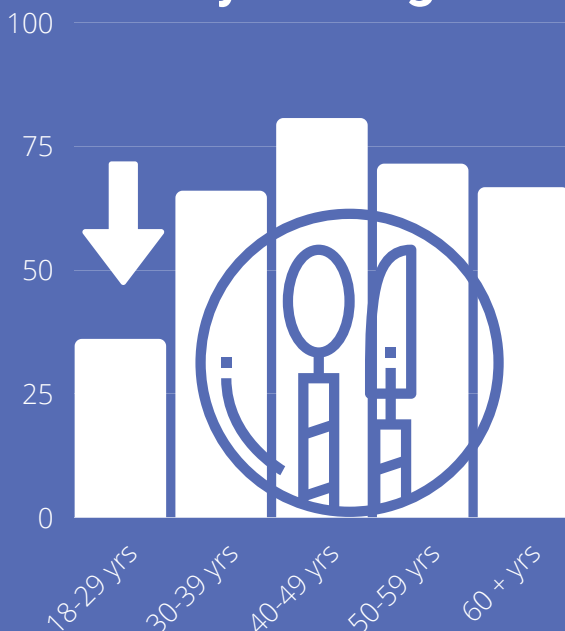
a high proportion gave correct answers to most hepatitis B knowledge questions ...

but

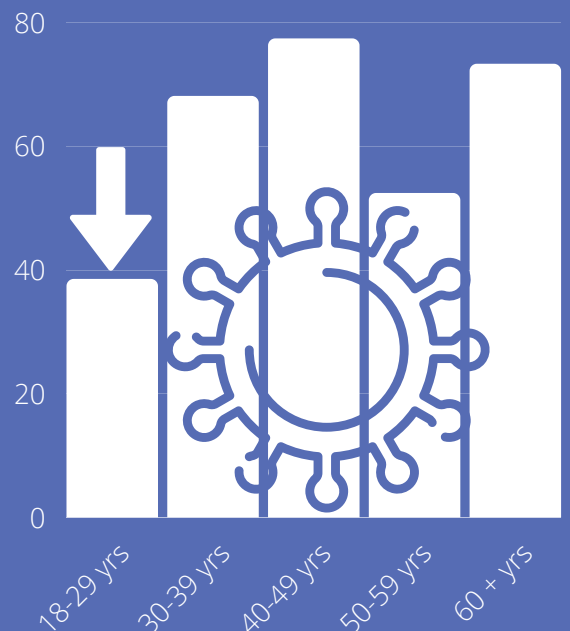
a low proportion of 18-29 year olds



knew it cannot be passed on by sharing food



knew there is no cure



*Excluding those who skipped those questions

Excluding skipped and invalid responses (n=36), one-third of respondents (n=143; 34.21%) indicated that they “have heard of hepatitis B and know what it is”, compared to 22.73 percent (n=95) who indicated that they had heard of hepatitis but did not know “if it was hepatitis B or another type of hepatitis”, and 35.17 percent (n=147) had heard of both hepatitis B and hepatitis C but did not “know the difference between them” (Table 19).

Table 19: Responses to question “Which of the following best describes you?” (n=418)^

Response	n (%)
I have heard of hepatitis but I don't know if it was hepatitis B or another type of hepatitis (for example, hepatitis A or hepatitis C)	95 (22.73)
I have heard of hepatitis B and hepatitis C but I don't know the difference between them	147 (35.17)
I have not heard of hepatitis B	33 (7.89)
I have heard of hepatitis B and I know what it is*	143 (34.21)

^Excludes skipped/invalid responses

*Only those who selected this response were required to answer specific hepatitis B knowledge questions

Differences observed between groups on the basis of age, gender, sexuality (heterosexual/non-heterosexual), or time spent in Australia were not statistically significant. However, familiarity with hepatitis B differed significantly by region of birth, as shown in Table 20, with a greater proportion of Sub-Saharan African-born respondents indicating that they knew what hepatitis B was, when compared to respondents born in other regions.

Table 20: Number and proportion of respondents[^] who had heard of hepatatitits B, by region of birth

Which of the following best describes you? (Tick one)	SSA n (%)	SEA n (%)	NEA n (%)	TOTAL n (%)	p-value
I have heard of hepatitis but I don't know if it was hepatitis B or another type of hepatitis (for example hepatitis A or hepatitis C)	20 (13.70)	35 (28.69)	34 (27.64)	89 (22.76)	<0.000
I have heard of hepatitis B and hepatitis C but I don't know the difference between them	42 (28.77)	37 (30.33)	58 (47.15)	137 (35.04)	
I have not heard of hepatitis B	14 (9.59)	10 (8.20)	5 (4.07)	29 (7.42)	
I have heard of hepatitis B and I know what it is	70 (47.95)	40 (32.79)	26 (21.14)	136 (34.78)	

[^]Excludes those who skipped the question or provided invalid responses (i.e. chose more than one option), or did not report region of birth

Only those who reported that they had “heard of hepatitis B and know what it is” (n=143) were required to answer specific hepatitis B knowledge questions. Table 21 shows that the proportion of correct answers was generally high (ranging from 84.29 percent to 61.97 percent) for specific knowledge questions, with the exception of the question “Can you get hepatitis from swallowing food or water containing the faeces (poo) of an infected person?” which only 47.89 percent (n=68) of respondents answered correctly.

Table 21: Responses[^] to hepatitis B knowledge questions

Survey question (correct answer)	Correct n (%)	Incorrect / don't know n (%)
Is there a vaccine (injection) to stop people from getting hepatitis B? (Yes)	118 (84.29)	22 (15.71)
Can you get hepatitis B from swallowing food or water containing the faeces (poo) of an infected person? (No)	68 (47.89)	74 (52.11)
Is there non-traditional medicine that can make the hepatitis B virus completely go away from a person's body? (No)	88 (61.97)	54 (38.03)
Can hepatitis B normally be passed on through sex without a condom? (Yes)	102 (72.34)	39 (27.66)
Can hepatitis B normally be passed on by sharing a toothbrush or shaving razor? (Yes)	109 (77.86)	31 (22.14)
Can hepatitis B normally be passed on by sharing food with an infected person? (No)	90 (63.83)	51 (36.17)

[^]Excludes respondents who did not answer that they "have heard of hepatitis B and know what it is", and who skipped specific knowledge questions.

Correct responses to specific hepatitis B questions varied significantly by region of birth for two questions only. "Can hepatitis B normally be passed on by sharing a toothbrush or shaving razor?" was answered correctly by a larger proportion of North East Asian-born respondents (88.00%; n=22) compared to Sub-Saharan African-born respondents (67.14%; n=47), and "Can hepatitis B normally be passed on by sharing food with an infected person?" was answered correctly by a larger proportion of Sub-Saharan African-born respondents (74.29%; n=52) compared to respondents from other regions (Table 22).

Table 23 shows that a significantly larger proportion of males correctly identified that hepatitis B "can normally be passed on through sex without a condom" (males: 83.05%; n=49; females: 63.29%; n=50).

Compared to other age groups, a significantly lower proportion of 18 to 29 year olds were aware that there is no cure for hepatitis B and that hepatitis B cannot be passed on by sharing food; that age group also had the second lowest proportion of respondents who were aware that there was a vaccine for hepatitis B (Table 24).

There were no significant differences in responses to hepatitis B knowledge questions by the length of time in Australia or sexuality (heterosexual/non-heterosexual) (data not shown).

Table 22: Responses[^] to hepatitis B knowledge questions, by region of birth

Survey question (correct answer)	Correct/ incorrect	SSA n (%)	SEA n (%)	NEA n (%)	TOTAL n (%)	p-value
Is there a vaccine (injection) to stop people from getting hepatitis B? (Yes)	Correct	55 (79.71)	31 (81.58)	25 (96.15)	111 (83.46)	0.144 (FE)*
	Incorrect / Don't know	14 (20.29)	7 (18.42)	1 (3.85)	22 (16.54)	
Can you get hepatitis B from swallowing food or water containing the faeces (poo) of an infected person? (No)	Correct	33 (47.83)	15 (37.50)	17 (65.38)	65 (48.15)	0.086
	Incorrect / Don't know	36 (52.17)	25 (62.50)	9 (34.62)	70 (51.85)	
Is there non-traditional medicine that can make the hepatitis B virus completely go away from a person's body? (No)	Correct	39 (55.71)	26 (66.67)	19 (73.08)	84 (62.22)	0.235
	Incorrect / Don't know	31 (44.29)	13 (33.33)	7 (26.92)	51 (37.78)	
Can hepatitis B normally be passed on through sex without a condom? (Yes)	Correct	53 (75.71)	27 (71.05)	18 (69.23)	98 (73.13)	0.770
	Incorrect / Don't know	17 (24.29)	11 (28.95)	8 (30.77)	36 (26.87)	
Can hepatitis B normally be passed on by sharing a toothbrush or shaving razor? (Yes)	Correct	47 (67.14)	33 (86.84)	22 (88.00)	102 (76.69)	0.023
	Incorrect / Don't know	23 (32.86)	5 (13.16)	3 (12.00)**	31 (23.31)	
Can hepatitis B normally be passed on by sharing food with an infected person? (No)	Correct	52 (74.29)	16 (42.11)	18 (69.23)	86 (64.18)	0.003
	Incorrect / Don't know	18 (25.71)	22 (57.89)	8 (30.77)	48 (35.82)	

[^]Excludes respondents who did not report region of birth, respondents who skipped relevant questions, invalid responses, and respondents who did not report that they had "heard of hepatitis B and know what it is".

*FE = based on Fisher's exact test as more than 20% of cells had an expected frequency of less than 5

**Expected frequency >5

Table 23: Responses^a to hepatitis B knowledge questions, by gender

Survey question (correct answer)	Correct/ incorrect	Male		Female		TOTAL n (%)	p-value
		n (%)	(%)	n (%)	(%)		
Is there a vaccine (injection) to stop people from getting hepatitis B? (Yes)	Correct	50 (84.75)	65 (83.33)	115 (83.94)	0.824		
	Incorrect / Don't know	9 (15.25)	13 (16.67)	22 (16.06)			
Can you get hepatitis B from swallowing food or water containing the faeces (poo) of an infected person? (No)	Correct	30 (49.18)	36 (46.15)	66 (47.48)	0.723		
	Incorrect / Don't know	31 (50.82)	42 (53.85)	73 (52.52)			
Is there non-traditional medicine that can make the hepatitis B virus completely go away from a person's body? (No)	Correct	38 (63.33)	48 (60.76)	86 (61.87)	0.757		
	Incorrect / Don't know	22 (36.67)	31 (39.24)	53 (38.13)			
Can hepatitis B normally be passed on through sex without a condom? (Yes)	Correct	49 (83.05)	50 (63.29)	99 (71.74)	0.011		
	Incorrect / Don't know	10 (16.95)	29 (36.71)	39 (28.26)			
Can hepatitis B normally be passed on by sharing a toothbrush or shaving razor? (Yes)	Correct	44 (73.33)	62 (80.52)	106 (77.37)	0.319		
	Incorrect / Don't know	16 (26.67)	15 (19.48)	31 (22.63)			
Can hepatitis B normally be passed on by sharing food with an infected person? (No)	Correct	43 (72.88)	46 (58.23)	89 (64.49)	0.075		
	Incorrect / Don't know	16 (27.12)	33 (41.77)	49 (35.51)			

^aExcludes respondents who did not report gender, respondents who skipped relevant questions, invalid responses, and respondents who did not report that they had "heard of hepatitis B and know what it is".

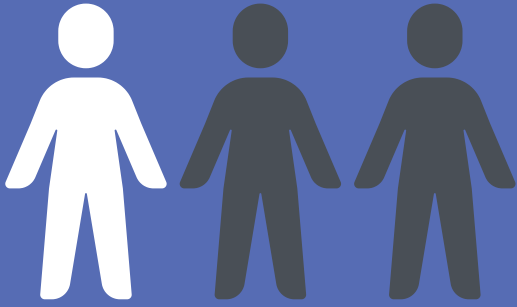
Table 24: Responses[^] to hepatitis B knowledge questions, by age

Survey question (correct answer)	Correct/ incorrect	18-29 yrs n (%)	30-39 yrs n (%)	40-49 yrs n (%)	50-59 yrs n (%)	60 + yrs n (%)	TOTAL n (%)	p-value
Is there a vaccine (injection) to stop people from getting hepatitis B? (Yes)	Correct	18 (69.23)	44 (93.62)	26 (83.87)	20 (95.24)	8 (61.54)	116 (84.06)	0.006 (FE)*
	Incorrect / Don't know	8 (30.77)	3 (6.38)	5 (16.13)	1 (4.76)	5 (38.46)	22 (15.94)	
Can you get hepatitis B from swallowing food or water containing the faeces (poo) of an infected person? (No)	Correct	7 (26.92)	23 (48.94)	17 (54.84)	14 (66.67)	6 (40.00)	67 (47.86)	0.074
	Incorrect / Don't know	19 (73.08)	24 (51.06)	14 (45.16)	7 (33.33)	9 (60.00)	73 (52.14)	
Is there non-traditional medicine that can make the hepatitis B virus completely go away from a person's body? (No)	Correct	10 (38.46)	32 (68.09)	24 (77.42)	11 (52.38)	11 (73.33)	88 (62.86)	0.020
	Incorrect / Don't know	16 (61.54)	15 (31.91)	7 (22.58)	10 (47.62)	4 (26.67)	52 (37.14)	
Can hepatitis B normally be passed on through sex without a condom? (Yes)	Correct	18 (69.23)	35 (76.09)	24 (77.42)	15 (17.43)	9 (60.00)	101 (72.66)	0.735
	Incorrect / Don't know	8 (30.77)	11 (23.91)	7 (22.58)	6 (28.57)	6 (40.00)	38 (27.34)	
Can hepatitis B normally be passed on by sharing a toothbrush or shaving razor? (Yes)	Correct	20 (76.92)	39 (82.98)	25 (80.65)	23 (67.65)	28 (82.35)	107 (77.54)	0.544
	Incorrect / Don't know	6 (23.08)	8 (17.02)	6 (19.35)	11 (32.35)	28 (82.35)	31 (22.46)	
Can hepatitis B normally be passed on by sharing food with an infected person? (No)	Correct	9 (36.00)	31 (65.96)	25 (80.65)	15 (71.43)	10 (66.67)	90 (64.75)	0.012
	Incorrect / Don't know	16 (64.00)	16 (34.04)	6 (19.35)	6 (19.35)	5 (33.33)	49 (35.25)	

[^]Excludes skipped/invalid responses and respondents who did not report age, and did not report they had "heard of hepatitis B and know what it is".

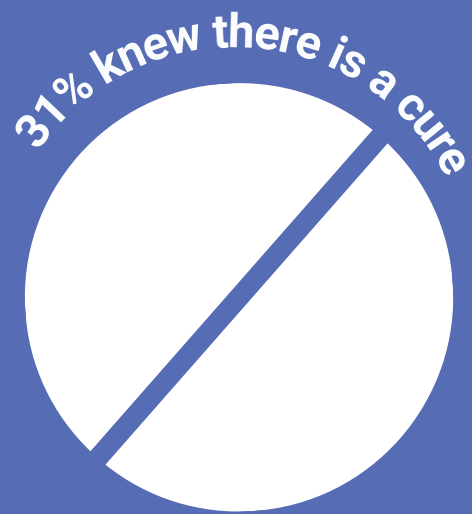
*FE = Fisher's exact test used

Hepatitis C knowledge at a glance



Less than one-third of all respondents (n=127) had heard of hepatitis C and could distinguish it from other forms of hepatitis

Of those ...



but a higher proportion (84%) were aware that



Two hundred and six respondents (45.37% of total sample) indicated that they “have heard of hepatitis C” but this included respondents who had not correctly followed skip logic and were not required to answer this question based on their response to an earlier hepatitis B threshold question (i.e. had indicated in an earlier question that they did not know the difference between different types of hepatitis). After excluding those respondents, there was a total of 127 respondents who had heard of hepatitis C and were aware of how it was distinct from other forms of hepatitis. No significant differences between groups by age, gender, region of birth, time in Australia, or sexuality (heterosexual/non-heterosexual) were observed.

Of the respondents who had heard of hepatitis C and answered specific hepatitis C questions, 37.60 percent (n=47) were aware that there was no vaccine for hepatitis C, and 30.95 percent (n=39) were aware that a cure is available. As shown in Table 25 below, there were higher levels of knowledge that hepatitis C can be passed on by sharing injecting equipment and that reinfection is possible. No statistically significant differences by age, region of birth, or years in Australia were observed in any of the hepatitis C data (data not shown), but significant differences were noted between genders, with knowledge being better among female respondents (Table 26). A significantly larger proportion of respondents who identified as heterosexual were aware that hepatitis C reinfection is possible (49.04%; n=51), compared to non-heterosexual respondents (12.50%; n=1) (Table 27).

Table 25: Responses[^] to hepatitis C knowledge questions

Survey question (correct answer)	Correct n (%)	Incorrect / don't know n (%)
Is there a vaccine (injection) to stop people from getting hepatitis C? (No)	47 (37.60)	78 (62.40)
Is there non-traditional medicine that can make the hepatitis C virus completely go away from a person's body? (Yes)	39 (30.95)	87 (69.05)
Can hepatitis C be passed on by sharing injecting equipment like needles and syringes? (Yes)	102 (84.30)	19 (15.70)
Can someone get hepatitis C more than once in their lifetime? (Yes)	57 (46.72)	65 (53.28)

[^]Excludes respondents who skipped relevant questions, those who did not report that they had "heard of hepatitis C", and those who did not know the distinction between different types of hepatitis

Table 26: Responses^a to hepatitis C knowledge questions, by gender

Survey question (correct answer)	Correct/ incorrect	Male		Female		TOTAL n (%)	p-value
		n (%)	(%)	n (%)	(%)		
Is there a vaccine (injection) to stop people from getting hepatitis C? (No)	Correct	20 (34.48)	27 (40.91)	47 (37.90)	0.462		
	Incorrect / Don't know	38 (65.52)	39 (59.09)	77 (62.10)			
Is there non-traditional medicine that can make the hepatitis C virus completely go away from a person's body? (Yes)	Correct	16 (27.59)	23 (34.33)	39 (31.20)	0.417		
	Incorrect / Don't know	42 (72.41)	44 (65.67)	86 (68.80)			
Can hepatitis C be passed on by sharing injecting equipment like needles and syringes? (Yes)	Correct	43 (76.79)	58 (90.63)	101 (84.17)	0.038		
	Incorrect / Don't know	13 (23.21)	6 (9.38)	19 (15.83)			
Can someone get hepatitis C more than once in their lifetime? (Yes)	Correct	18 (32.73)	38 (57.58)	56 (46.28)	0.006		
	Incorrect / Don't know	37 (67.27)	28 (42.42)	65 (53.72)			

^aExcludes respondents who skipped relevant questions, those who did not report that they had "heard of hepatitis C", those who did not report gender, and those who did not know the distinction between different types of hepatitis

Table 27: Responses^a to hepatitis C knowledge questions, by sexuality

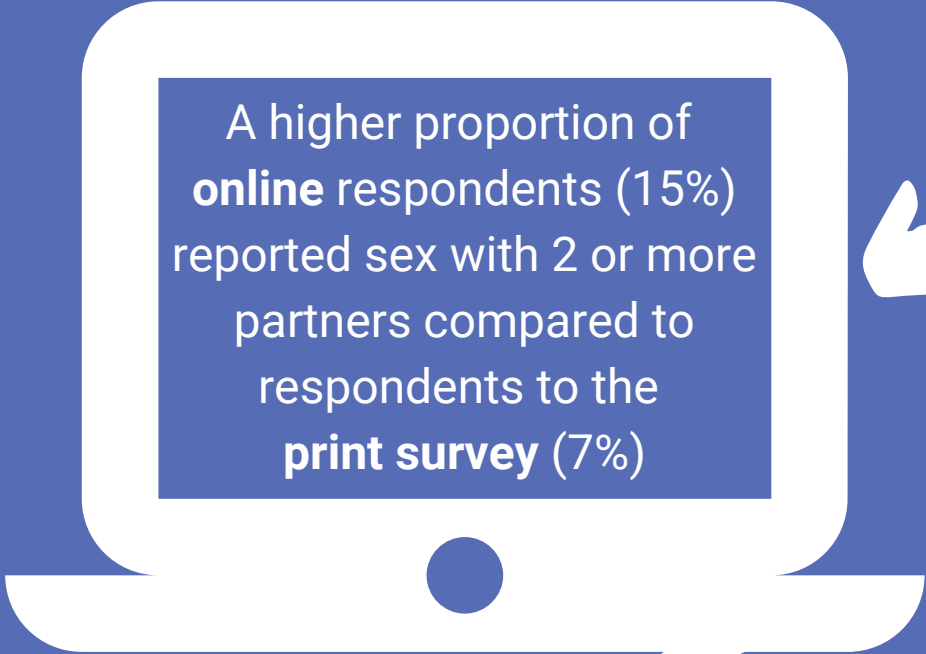
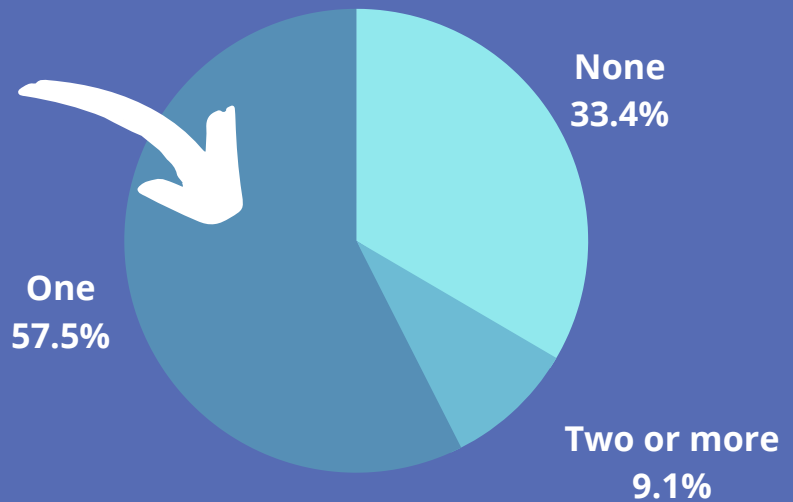
Survey question (correct answer)	Correct/ incorrect	Heterosexual		Other sexualities		TOTAL n (%)	p-value
		n (%)	n (%)	n (%)	n (%)		
Is there a vaccine (injection) to stop people from getting hepatitis C? (No)	Correct	41 (36.68)	1 (11.11)	42 (36.52)	0.152 (FE)*		
	Incorrect / Don't know	65 (61.32)	8 (88.89)	73 (63.48)			
Is there non-traditional medicine that can make the hepatitis C virus completely go away from a person's body? (Yes)	Correct	30 (28.04)	3 (33.33)	33 (28.45)	0.712 (FE)*		
	Incorrect / Don't know	77 (71.55)	6 (66.67)	83 (71.55)			
Can hepatitis C be passed on by sharing injecting equipment like needles and syringes? (Yes)	Correct	85 (81.73)	8 (100.00)	93 (83.04)	0.347 (FE)*		
	Incorrect / Don't know	19 (18.27)	0 (0.00)	19 (16.96)			
Can someone get hepatitis C more than once in their lifetime? (Yes)	Correct	51 (49.04)	1 (12.50)	52 (46.43)	0.066 (FE)*		
	Incorrect / Don't know	53 (50.96)	7 (87.50)	60 (53.57)			

^aExcludes respondents who skipped relevant questions, those who did not report that they had "heard of hepatitis C", those who did not report sexuality, and those who did not know the distinction between different types of hepatitis

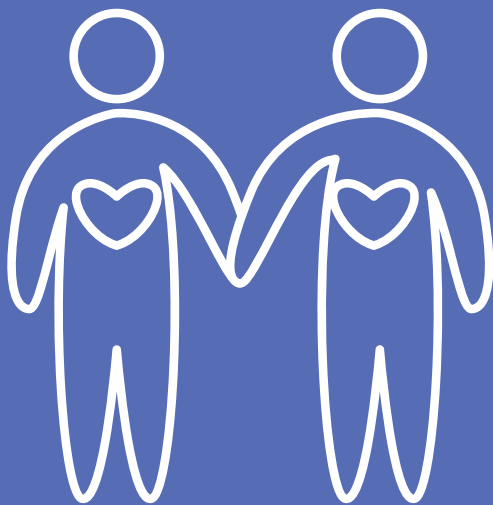
*FE = Fisher's exact test used

Sexual partners at a glance

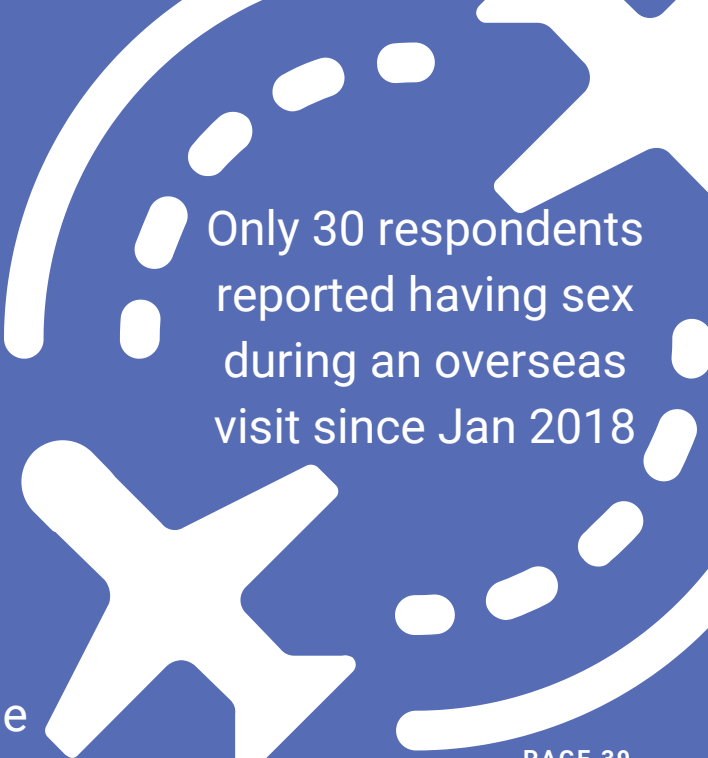
The majority of respondents reported only one sexual partner in the previous 12 months



A higher proportion of **online** respondents (15%) reported sex with 2 or more partners compared to respondents to the **print survey** (7%)



The majority of sexually active respondents (89%) reported that they were in a committed relationship with the most recent person they had sex with.



Only 30 respondents reported having sex during an overseas visit since Jan 2018

Three hundred and forty-one respondents provided a valid answer to the question “In the past twelve months, how many people have you had sexual intercourse with (vaginal or anal)?” Of those, one-third (n=114, 33.43%) reported having no sexual partners in the previous 12 months, 57.48 percent (n=196) reported one sexual partner only and a small proportion (n=31; 9.09%) reported at least two or more sexual partners. Table 28 shows that a higher proportion of online respondents reported one or more sexual partners, compared to paper respondents, and the differences were statistically significant. Statistically significant differences were also observed in responses by region (Table 29).

Table 28: Reported number[^] of sexual partners in past 12 months, by survey mode

Survey mode	None n (%)	One n (%)	Two or more n (%)
Paper (n=268)	102 (38.06)	147 (54.85)	19 (7.09)
Online (n=73)	12 (16.44)	49 (67.12)	12 (16.44)
TOTAL (n=341)	114 (33.43)	196 (57.48)	31 (9.09)

[^]Excludes those who did not provide a valid response to the sexual partners question

*p=0.001

Table 29: Reported number[^] of sexual partners in past 12 months, by region of birth

Region	None n (%)	One n (%)	Two or more n (%)
SSA (n=119)	45 (37.82)	61 (51.26)	13 (10.92)
SEA (n=94)	39 (41.94)	47 (50.00)	8 (8.51)
NEA (n=109)	25 (22.94)	76 (69.72)	8 (7.34)
TOTAL (n=322)	109 (33.82)	184 (57.32)	29 (9.01)

[^]Excludes those who did not provide a valid response to the sexual partners question and those who did not report country of birth

*p=0.022

Statistically significant differences were also observed between groups on the basis of sexuality (Table 30) and age (Table 31). No significant differences were observed by time in Australia or gender (data not shown).

Table 30: Reported number^a of sexual partners in past 12 months, by sexuality

Sexuality	None n (%)	One n (%)	Two or more n (%)
Heterosexual (n=296)	98 (33.11)	177 (59.80)	184 (58.04)
Other sexualities (n=21)	7 (33.33)	7 (33.33)	7 (33.33)
TOTAL (n=317)	105 (33.12)	184 (58.04)	28 (8.83)

^aExcludes those who did not provide a valid response to the sexual partners question and those who did not report sexuality

*p<0.000

Table 31: Reported number^a of sexual partners in past 12 months, by age

Sexuality	None n (%)	One n (%)	Two or more n (%)
18 to 29 yrs (n=58)	34 (58.62)	17 (29.31)	7 (12.07)
30 to 39 yrs (n=109)	19 (17.43)	76 (69.72)	14 (12.84)
40 to 49 yrs (n=91)	25 (27.47)	61 (67.03)	5 (5.49)
50 to 59 yrs (n=42)	15 (35.71)	24 (57.14)	3 (7.14)
60+ years (n=32)	17 (53.13)	15 (46.88)	0 (0.00)
TOTAL (n=332)	110 (33.13)	193 (58.13)	29 (8.73)

^aExcludes those who did not provide a valid response to the sexual partners question and those who did not report age

*p<0.000 (chi2 used as number of cells with expected frequencies of < 5 did not exceed 20%)

The majority (n=234; 88.97%) of participants who answered “Which of the following best describes the most recent person you had sex with?” reported sex in a committed relationship; 26 (9.89%) reported sex with a casual sexual partner and three (1.14%) reported sex with a sex worker (excludes 26 who reported partner type despite indicating that they had no sexual partners in previous 12 months). Statistically significant differences in responses by region of birth and sexuality are set out in Tables 32 and 33. No statistically significant differences were observed between groups based on the mode of survey completion, gender, age, or years spent in Australia (data not shown). While 253 respondents indicated that they had traveled overseas at least once since January 2018, only 30 of those respondents (11.86%) reported sexual intercourse on any of those visits with at least one person who lives outside of Australia (data not shown).

Table 32: Reported[^] relationship to most recent sexual partner, by region

Region	Committed n (%)	Not Committed n (%)
SSA (n=85)	75 (88.24)	10 (11.76)
SEA (n=66)	53 (80.30)	13 (19.70)
NEA (n=91)	88 (96.70)	3 (3.30)
TOTAL (n=242)	216 (89.26)	26 (10.74)

[^]Excludes those who did not report region of birth or type of sexual partners. These figures include some who skipped or provided valid responses to the question about the number of sexual partners, but exclude anyone who indicated that they had **no** sexual partners in the previous 12 months.

*p=0.004

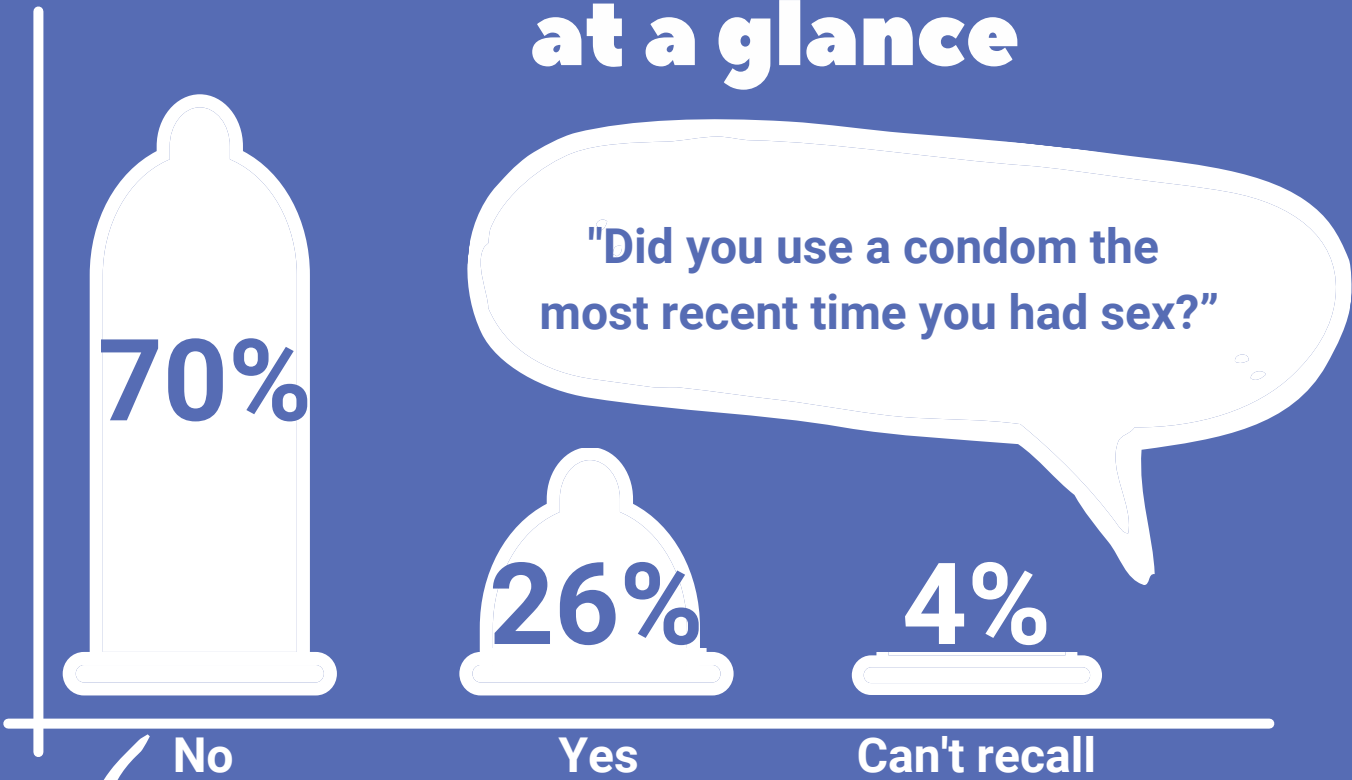
Table 33: Reported[^] relationship to most recent sexual partner, by sexuality

Sexuality	Committed n (%)	Not Committed n (%)
Heterosexual (n=219)	203 (92.69)	16 (7.31)
Other sexualities (n=16)	9 (56.25)	7 (43.75)
TOTAL (n=235)	212 (90.21)	23 (9.79)

[^]Excludes those who did not report sexuality or type of sexual partners. These figures include some who skipped or provided valid responses to the question about the number of sexual partners, but exclude anyone who indicated that they had **no** sexual partners in the previous 12 months.

*p<0.000; Fisher's exact test used

Condom use at a glance



Why not?

#1 reason

My partner and I trust each other

#2 reason

My partner and I don't have any illnesses that can be passed on through sex



The majority (n=187; 70.04%) of respondents who answered “Did you use a condom the most recent time you had sex?” answered ‘No’; 70 (26.22%) answered ‘Yes’ and 10 (3.75%) could not remember (excludes responses of those who indicated that they had not had any sexual partners in last 12 months). No statistically significant differences were observed between groups by partner type, gender, region of birth or time in Australia. However, Table 34 shows that a significantly larger proportion of 18-29 year olds reported condom use at last sex, compared to other age groups. Of those who reported sex with a casual partner or sex worker at last sexual encounter and answered the condom use question (n=32), the majority (n=19; 59.38%) did not use or could not recall whether they had used a condom.

Table 34: Condom use at last sexual encounter, by age[^]

Condom use	18-29 years n (%)	30-39 years n (%)	40-49 years n (%)	50-59 years n (%)	60+ years n (%)
Used (n=68)	13 (46.43)	31 (31.63)	16 (21.62)	7 (20.00)	1 (4.00)
Not used / can't recall (n=192)	15 (53.57)	67 (68.37)	58 (78.38)	28 (80.00)	24 (96.00)

[^]Excludes those who did not report age, those who reported no sexual partners in last 12 months, those who did not report whether condoms used at last sex and invalid responses *p=0.004

Among those who reported no condom use (including can't remember) at last sexual encounter and provided a reason (n=204), Table 35 shows that the most commonly reported reason was “My partner and I trust each other” (n=90; 44.12%), followed by “My partner and I don't have any illnesses that can be passed on through sex” (n=75; 36.76%).

Among those whose last sexual experience was with a casual partner/sex worker and who provided a reason for not using a condom (n=18), the most frequently reported reasons were "My partner did not want to use one" (n=5; 27.78%), "I did not want to use one" (n=6; 33.33%), "My partner doesn't like the way they feel" (n=5; 27.78%), "I don't like the way they feel" (n=4; 22.22%) and "My partner and I don't have any illnesses that can be passed on through sex" (n=5; 27.78%) (data not shown).

Table 35: Reasons for not using a condom at last sexual encounter

Reason	n (%)
My partner and/or I did not have one	21 (10.29)
My partner and/or I could not afford one	2 (0.98)
My partner did not want to use one	21 (10.29)
I did not want to use one	30 (14.71)
My partner and/or I did not know where to get one	1 (0.49)
My partner doesn't like the way they feel	16 (7.84)
I don't like the way they feel	13 (6.37)
My partner or I was trying to get pregnant	27 (13.24)
It is against my or my partner's culture or religion	9 (4.41)
My partner and I don't have any illnesses that can be passed on through sex	75 (36.76)
My partner and I trust each other	90 (44.12)

^Respondents could choose more than one option

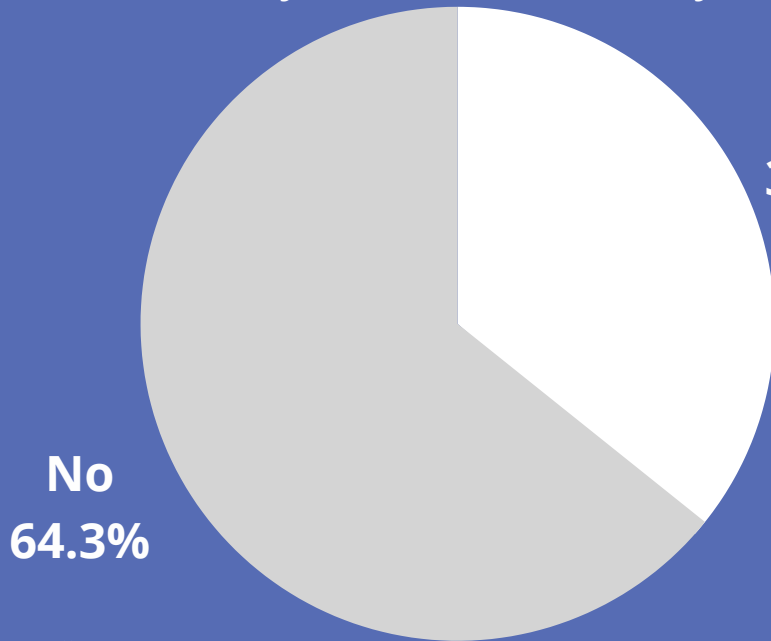
Less than a third (n=9; 30.0%) of respondents who reported having had sex with people who live outside of Australia during overseas visits since January 2018, reported "always" using condoms (Table 36).

Table 36: Condom use among those who reported sex overseas since January 2018 (n=30)

Frequency of condom use overseas	n (%)
Always	9 (30.00)
Sometimes	11 (36.67)
Never	10 (33.33)

Testing at a glance

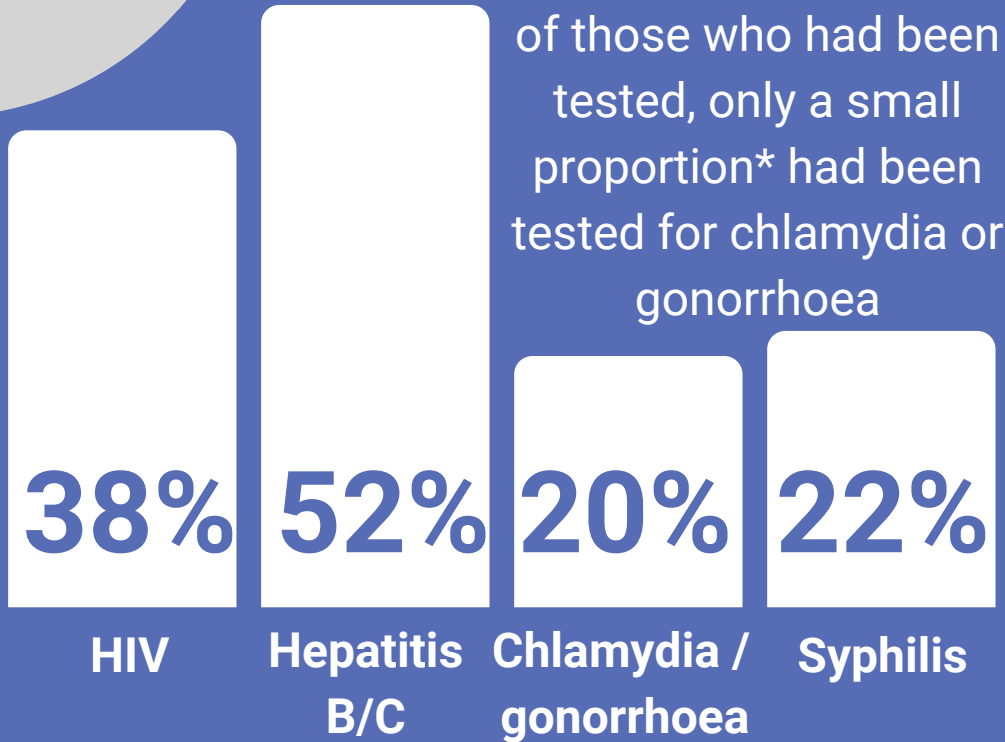
Proportion tested
for any STI/BBV in last 2 years



Yes
35.7%

No
64.3%

of those who had been tested, only a small proportion* had been tested for chlamydia or gonorrhoea



38%

HIV

52%

Hepatitis
B/C

20%

Chlamydia /
gonorrhoea

22%

Syphilis

Top reasons for NOT testing:

- I did not do anything to put me at risk
- I did not have any symptoms



Testing at a glance

How would you feel if a doctor in Australia offered you STI and BBV tests during an appointment without you requesting any of these tests?



52%

Okay - STI and BBV testing is normal



4%

Embarrassed - I'd rather not talk about these things



12%

Offended - why are they asking me?

Only 12 respondents said that they had actually been tested because a doctor or nurse had suggested it

Table 37 shows that just over one-third of all respondents who answered the test timing question (n=158; 35.75%) reported having had an STI or BBV test within the last two years.

Table 37: Time since last STI and/or BBV test

Time since last STI and/or BBV test	n (%)
Less than 12 months ago	95 (21.49)
1 to 2 years ago	63 (14.13)
More than 2 years ago	111 (25.11)
I have never been tested	67 (15.16)
I don't know	106 (23.98)

[^]Excludes those who did not report time since last test.

Tables 38-41 show that significantly greater proportions of people under the age of 39, males, people living in South East Queensland and people born in Sub-Saharan Africa had been tested in the last two years, compared to other groups. Differences according to sexuality (heterosexual/non-heterosexual and MSM/non-MSM) and time in Australia were not significant (data not shown).

Table 38: Time since last STI and/or BBV test, by age

Time of last STI/BBV test	18-29 years n (%)	30-39 years n (%)	40-49 years n (%)	50-59 years n (%)	60+ years n (%)
Within last 2 years (n=158)	31 (42.47)	62 (46.62)	43 (37.39)	13 (20.97)	9 (18.75)
Not within last 2 years (n=273)	42 (57.53)	71 (53.38)	72 (62.61)	49 (79.03)	38 (81.25)

[^]Excludes those who did not report age or time since last test, and invalid responses

*p=0.001

Table 39: Time since last STI and/or BBV test, by gender[^]

Time of last STI/BBV test	Male n (%)	Female n (%)
Within last 2 years (n=155)	91 (45.27)	64 (28.32)
Not within last 2 years (n=272)	110 (54.73)	162 (71.68)

[^]Excludes those who did not report gender or time since last test, and invalid responses

*p<0.001

Table 40: Time since last STI and/or BBV test, by region of residence[^]

Time of last STI/BBV test	SE Queensland n (%)	Queensland other n (%)
Within last 2 years (n=142)	139 (37.87)	3 (13.04)
Not within last 2 years (n=248)	228 (63.13)	20 (86.96)

[^]Excludes those who did not report postcode or time since last test, and invalid responses

*p=0.016

Table 41: Time since last STI and/or BBV test, by region of birth[^]

Time of last STI/BBV test	SSA n (%)	SEA n (%)	NEA n (%)
Within last 2 years (n=145)	67 (43.51)	39 (29.55)	39 (31.20)
Not within last 2 years (n=266)	87 (56.49)	93 (70.45)	86 (68.80)

[^]Excludes those who did not report country of birth or time since last test, and invalid responses

*p=0.025

Among respondents who reported being tested within the last two years and specified the test type (n=143), the most commonly reported test was for hepatitis B and/or hepatitis C (52.45%; n=75), followed by HIV (36.46%; n=55) (Table 42). No significant differences in the proportion of respondents getting particular tests were observed by age, gender, region of birth, or time in Australia (data not shown).

Table 42: Most recent test type in last two years

Test type*	n (%)
HIV	55 (36.46)
Chlamydia and/or gonorrhoea	29 (20.28)
Syphilis	31 (21.68)
Hepatitis B and/or hepatitis C	75 (52.45)
I don't know - it was a blood test	20 (13.99)
I don't know - it was a urine test	6 (4.20)
I don't know - it was a blood and urine test	28 (19.58)
Other	12 (8.39)

*Note: Respondents could choose more than one option.

^Excludes those who did not report getting tested in last two years and those who did not specify test type

The most frequently reported reason for getting an STI and/or BBV test in the last two years was “It was part of my regular health check” (37.07%; n=43), followed by “It was a requirement for my work/study” (n=20.69%; n=24) and “I like to get regular STI/BBV tests” (15.55%; n=18) (Table 43).

Table 43: Reasons for getting tested in last two years

Reason	n (%)
I was applying for permanent residency	5 (4.31)
I had a new sexual partner	8 (6.90)
I shared injecting equipment with someone	3 (2.59)
Something happened that may have put me at risk	5 (4.31)
I was pregnant and had a check up	10 (8.62)
I was getting contraception/birth control	3 (2.59)
My doctor / nurse suggested it	12 (10.34)
My doctor / nurse just did it	4 (3.45)
I wanted to know if I had an STI or a BBV	20 (17.24)
I had symptoms	4 (3.45)
It was part of my regular health check	43 (37.07)
I like to get regular STI/BBV tests	18 (15.52)
It was a requirement for my work/study^^	24 (20.69)
Another reason	31 (36.90)

*Note: Respondents could choose more than one option.

^Excludes those who did not report getting tested in last two years or did not specify reason.

^^People at occupational risk of hepatitis B are recommended to have serological testing after a primary hepatitis B vaccine course

The most frequently reported reason for not getting tested within the last two years was “I did not do anything to put me at risk” (n=133; 62.74%) followed by “I did not have any symptoms” (n=61; 28.77%) (Table 44).

Table 44: Reasons for NOT getting tested in last two years

Reason	n (%)
I did not do anything to put me at risk	133 (62.74)
I was too embarrassed	3 (1.42)
I could not afford extra tests	5 (2.36)
I didn't know where to get one	12 (5.66)
I was scared about the result	0 (0.00)
I don't like needles / blood tests	5 (2.36)
I did not have any symptoms	61 (28.77)
I did not have time to get tested	8 (3.77)
I did not think it was important	22 (10.38)
I couldn't get to a service / clinic	5 (2.36)
Another reason	20 (9.43)

*Note: Respondents could choose more than one option.

^Excludes those who reported getting tested in last two years, those who reported that they 'did not know' when they were last tested, those who did not report test timing, and those who did not offer a reason for not testing

Almost half (n=23; 43.40%) of those who both reported that they did not get tested because they did not have any symptoms and who answered the STI knowledge question about symptoms, had correctly answered that a person can “have an STI without any symptoms”. Similarly, 62 (72.09%) of those who both reported “I did not do anything to put me at risk” and who answered the condom use question reported that they had not used a condom at their last sexual encounter, but only three of these related to respondents who reported having sex with someone other than a regular partner.

Of the priority groups for STI/BBV testing who reported testing practices, 60.00% (n=9) of men who reported being attracted to men (data on whether had sex with men specifically unavailable), 50.00% (n=12) of people under the age of 30 who had had sex in the past 12 months, and 50.00% (n=2) of people whose last sexual partner was a sex worker had been tested for any STI or BBV in the last two years (Table 45). The types of tests reported to have been undertaken are summarised in Table 46.

Table 45: Testing for any STI or BBV in last two years, by priority group[^]

Priority groups for STI/BBV testing	Tested n(%)	Not tested / unsure of timing n (%)
Men attracted to men (n=15)	9 (60.00)	6 (40.00)
People under the age of 30 who have had sex in last 12 months (n=24)	12 (50.00)	12 (50.00)
People whose last sexual partner was a sex worker (n=4)	2 (50.00)	2 (50.00)

[^]Excludes those who did not answer question about whether tested in last two years and those who did not provide data to indicate membership of a priority group.

Table 46: Types of STI or BBV tests undertaken in last two years, by priority group[^]

Priority groups for STI/BBV testing	CT/NG n (%)	Syphilis n (%)	HIV n (%)	HBV/HCV n (%)
Men attracted to men (n=9)	6 (66.67)	5 (55.56)	0 (0.00)	6 (66.67)
People under the age of 30 who have had sex in last 12 months (n=12)	5 (41.67)	3 (25.00)	0 (0.00)	6 (50.00)
People whose last sexual partner was a sex worker (n=2)	1 (50.00)	2 (100.00)	0 (0.00)	2 (100.00)

*Note: Respondents could choose more than one type of test

[^]Excludes those who did not indicate testing in last two years, those who did not provide data to indicate membership of a priority group, those who did not answer the question about last test type and those who could not recall test type.

In response to the question “How would you feel if a doctor in Australia offered you STI and BBV tests during an appointment without you requesting any of these tests?”, the most frequent response was “Okay – STI and BBV testing is normal” (Table 47).

Table 47: Reaction to offer of opportunistic testing (n=422)

Reaction	n (%)
Offended - why are they asking me?	52 (12.32)
Worried - do they think I have an illness?	92 (21.80)
Surprised - I wasn't expecting that	84 (19.19)
Okay - STI and BBV testing is normal	219 (51.90)
Relieved - now I don't have to ask for the tests	29 (6.87)
Embarrassed - I'd rather not talk about these things	19 (4.50)
Other	13 (3.08)

*Note: Respondents could choose more than one option.

In response to the question “If a close friend in Australia told you that they were going to get tested for STIs and BBVs, how would you feel?”, the most frequent response was “Supportive – I am here if they need my help” (Table 48).

Table 48: Reaction to being told a friend was getting an STI/BBV test (n=436)

Reaction	n (%)
Fine - it is none of my business	165 (37.84)
Shocked - I didn't think they would need to get tested	25 (5.73)
Proud - it's a responsible thing to do	79 (18.12)
Supportive - I am here if they need my help	187 (42.89)
Worried - I hope they are okay	104 (23.85)
Disappointed - they must have done something wrong	10 (2.29)
Other	4 (0.92)

*Note: Respondents could choose more than one option.



DISCUSSION

Familiarity with specific STIs and BBVs

Consistent with the results of a 2009 survey of culturally and linguistically diverse (CaLD) people in New South Wales [10], over 90% of MiBSS respondents in Queensland indicated that they had heard of HIV (page 16). There was less familiarity with the names of other STIs (page 20). Notably, less than half of respondents (49.32%) had heard of chlamydia. While awareness was significantly higher among the younger (18-29 year old) cohort of whom 62.67% had heard of chlamydia, it was still lower than that reported in studies of the general population; in the Queensland Sexual Health Youth Attitudes and Behaviour Study of 15-29 years old conducted in 2017, only 7% of participants reported that they had never heard of chlamydia [16] (see also [17]-[20]). The low levels of chlamydia awareness in the MiBSS Queensland sample suggests that current health promotion messaging may not be reaching migrant populations, despite the fact that chlamydia is the most frequently reported STI in Australia [1]. Barriers to knowledge may go beyond factors such as English language-proficiency and time in Australia given that: (1) a significantly higher proportion of respondents answering the English-language survey had heard of chlamydia compared to those completing translated surveys; and (2) length of residence in Australia was not significantly associated with awareness of specific STIs (pages 20, 22).

While only 7.89% of respondents indicated that they “have **not** heard of hepatitis B”, only one-third (34.21%) indicated that they knew how it was distinct from other forms of hepatitis, with knowledge significantly lower among respondents born in South

East Asia (32.79%) and North East Asia (21.24%) compared to those born in Sub-Saharan Africa (47.95%) (pages 28-29). Less than one-third of all respondents (27.97%) indicated familiarity with hepatitis C as distinct from other forms of hepatitis (page 36). These findings are consistent with data from studies of Asian migrant communities in North America. For instance, a study of Korean-Americans found “the majority of participants were not able to distinguish HBV from other types of hepatitis such as hepatitis A” [21], studies of Cambodian-American and Hmong-American migrants found lack of consensus of terminology around hepatitis and its variations [22-23], and a study of Vietnamese-Americans found that some respondents spoke of hepatitis B in general terms (e.g. using the Vietnamese term for ‘liver disease’) [24].

Knowledge

Despite high levels of familiarity with the term HIV, the majority of respondents gave incorrect answers to individual HIV knowledge questions (page 16). The finding that less than half (47.82%) of respondents were aware that HIV testing is not included in all blood tests supports data from other studies indicating that migrants are often confused about post-migration screening and testing practices [25]. The misperception may serve as a barrier to HIV testing in that individuals who have undergone blood tests for other health issues may consider it unnecessary to request and/or consent to offers of HIV testing.

Previous qualitative research has indicated that some migrants may avoid HIV testing in Australia because of a perception (largely formed in the country

of origin) that testing is futile because effective treatments are not available, thereby making HIV a 'death-sentence' [27, 28]. The results from the MiBSS Queensland sub-study suggest that misperceptions about the availability and/or efficacy of HIV treatments are widespread, with only 36.56% of respondents reporting awareness that non-traditional medications are available for "people with living with HIV so they can live a normal life" (page 16). Other studies have also revealed low HIV treatment knowledge among migrant cohorts [28, 29]. However, the MiBSS results must be read in light of the fact that some respondents provided feedback that they did not understand the term 'non-traditional medicine' (which was proposed by pretest participants to distinguish anti-retroviral therapies from herbal/traditional remedies).

Survey feedback also revealed some uncertainty about the meaning of the question "Is it safe to have sex without a condom with someone who has VERY LOW amounts of HIV in their blood?", which only 8.24% of respondents answered correctly (page 16). During the pre-testing process, respondents suggested that the term "undetectable" would not be familiar to some migrants and that another word should be used; however, some respondents to the final survey commented that the meaning of the replacement term "very low" was not clear. It is therefore possible that the low percentage of correct responses to this question underestimates the degree of community knowledge that HIV cannot be transmitted by people with undetectable viral loads (Undetectable = Untransmittable, U=U). An Australian survey of gay and bisexual

men conducted in 2019 found that 34.6% of respondents believed in the effectiveness of treatment as prevention [30], compared to 25.00% of the small sample of Queensland MSM MiBSS respondents (n=15) who correctly answered the question about sex with someone with "very low amounts of HIV in their blood" (page 18). Given the small size of the MiBSS MSM sample in Queensland, more research is needed to gain an accurate insight into U=U knowledge among men who have sex with men in migrant populations.

Knowledge that there are "medicines that people can take BEFORE SEX to protect themselves against HIV" was also significantly higher among Queensland MiBSS MSM respondents (66.67%) compared to non-MSM respondents (15.73%) (page 18). PrEP knowledge among MSM participants in MiBSS is similar to the results of the 2018 Sydney Gay Asian Men's Survey which found 73% of non-HIV respondents agreed that using PrEP before sex could stop HIV transmission [11].

While a lower proportion of all MiBSS respondents had heard of gonorrhoea, syphilis or chlamydia compared to HIV, the majority of those who had heard of at least one STI answered each of the three STI knowledge questions correctly (page 22). Knowledge was higher than that reported among migrant populations in other surveys (although it is important to note differences in the wording of questions and in the demographic characteristics of the cohorts). For instance 67.65% of 18-29 year olds who had heard of at least one STI in the Queensland MiBSS study were aware that STIs can be asymptomatic,

compared to 34.5% of respondents in a survey of 16-24 year old members of the Queensland Sudanese community [31]. Additionally, 62.32% of 18-29 year olds and 60.12% of men who had heard of at least one STI in the Queensland MiBSS sample were aware that “some STIs can make it harder for women to get pregnant”, compared to 23.2% of respondents who knew that “chlamydia can make women infertile” in a 2018 national Australian survey of Chinese international students and 23.5% of respondents in a 2007 study of Vietnamese men in Sydney who knew that “chlamydia can lead to infertility in women” [32, 33].

Among those who reported that they had heard of hepatitis B and knew what it was (40.39% of Queensland sample), hepatitis B knowledge was generally high (correct responses for each question ranged from 61.97% to 84.29%), with one exception; less than half (47.89%) of respondents were aware that you cannot “get hepatitis B from swallowing food or water containing the faeces (poo) of an infected person”, suggesting some confusion between hepatitis B and hepatitis A transmission (page 30). Significant differences were noted between regions of birth, with South-East Asian respondents having lower levels of knowledge that hepatitis B cannot normally be passed on by sharing food with an infected person (42.11%) compared to other groups (page 32). This is consistent with the findings of a systematic review which found that “South Asians commonly attributed transmission of HBV infection to factors such as ... communal sharing of food and drinks” [34].

Hepatitis C knowledge was generally low (correct responses for each question ranged from 30.95% to 46.72% among those who indicated familiarity with hepatitis C), with the exception of responses to the question “Can hepatitis C be passed on by sharing injecting equipment like needles and syringes?” which 84.30% answered correctly (page 36). The finding of low levels of hepatitis C knowledge in relation to vaccination and cure, and higher levels of knowledge about transmission through sharing injecting equipment was consistent with an Australian study of hepatitis C knowledge among Egyptian migrants living in Sydney [35].

Sexual behaviours

With respect to behaviours, a third (33.4%) of respondents reported no sex in the previous 12 months (page 40). This figure was higher than that reported by respondents in the Second Australian Study of Health and Relationships (ASHR2) survey of the general population (19.2%) [36], comparable to that reported in a community survey of people from culturally and linguistically diverse (CaLD) backgrounds in New South Wales (30.3%) [9], and lower than reported in a survey of South-East Asian and Sub-Saharan African migrants living in Western Australia (50%) [8].

Only 9.1% of respondents reported sex with two or more partners in the previous 12 months and there were no statistically significant differences by gender. This figure appears comparable to ASHR2 which found that 11.2% of respondents in the general population had had sex with at

least two people in the last year [36]. Interestingly, in the Queensland MiBSS study, a significantly larger proportion of online (compared to paper-based) respondents reported that they had had sex with more than one person in the previous 12 months (15% online, 7% paper) (page 40). The difference may reflect the fact that a larger proportion of online respondents were aged 18-39 years, or it may be indicative of a social desirability bias; studies have shown that web-based respondents feel a greater sense of 'anonymity' and may therefore be inclined to answer sensitive questions more truthfully compared to survey modes involving greater levels of personal interaction [37, 38].

The majority (89.3%) of sexually active respondents reported that their last sexual encounter was with a regular partner (page 42). While no comparable question was asked in the ASHR2 survey, it found that "[a]mong all respondents who had been sexually active in the year before being interviewed, 88.8% were currently in a heterosexual regular relationship" and, of those who had been in a relationship for at least one year only 96.8% reported being monogamous [39].

Only one-quarter (26.22%) of sexually active respondents reported that they had used a condom at their last sexual encounter (page 44), which is comparable to ASHR2 findings that 23.3% of respondents who had engaged in vaginal intercourse in the previous year used a condom in their most recent sexual encounter [40]. Condom use was significantly higher among 18-29 year olds (46.4%) compared to other age groups, and was consistent with a survey of Sudanese youth in Queensland which also found that 46.4% of respondents had

used a condom at their last sexual encounter [31]. The main reasons given for not using condoms related to expectations of monogamy – "My partner and I trust each other" (44.1%) and "My partner and I don't have any illnesses that can be passed on through sex" (36.8%) (page 45); in the NSW CaLD community survey 73% of respondents who did not use condoms in the last 12 months said that it was because they were in "a steady relationship" [9].

Of those who reported sex with a casual partner or sex worker at last sexual encounter and answered the condom use question, the majority (n=19; 59.38%) did not use or could not recall whether they had used a condom (page 44). By contrast, in ASHR2, 49% of heterosexual respondents with recent casual partners reported always using condoms [40]. While the MiBSS figure is based on a small sub-sample, it points to a possible area for increased health promotion attention.

Only 30 respondents answered the question about condom use during sex in the course of overseas travel since January 2018 and, of those, less than one-third (30.0%) reported always using condoms and 37% reported using condoms "sometimes" during sex overseas (page 45). The remaining one-third reported that they never used condoms during sex overseas. The only comparable data comes from the NSW CaLD community survey which found that only 14% used condoms during visits to their country of origin (note difference in wording) [9]. The small number of respondents to this question in the MiBSS survey may reflect sensitivities around travel and disease transmission in the context of the COVID-19 pandemic.

Testing

The Australasian STI Management Guidelines recommend the following testing for key priority populations:

- Men who have had (non-monogamous) sex with another man in the previous three months should be offered 3-monthly testing for chlamydia, gonorrhoea, syphilis and HIV;
- Men who have sex with men but who are in a monogamous relationship or not sexually active should be tested at least annually for chlamydia, gonorrhoea, syphilis and HIV;
- Sexually active people under the age of 30 years should be offered chlamydia testing at least annually [41].

The findings suggest that the guidelines are not being met for at least 40.00% of men who have sex with men (page 53). Significantly, no MSM respondents reported having had an HIV test in the previous two years. Additionally, only 50.00% of sexually active respondents under 30 reported being tested for any STI or BBV in the previous two years. While only a small sub-sample of MiBSS respondents belonged to these priority testing groups, the results point to the need for further investigation.

While opportunistic offers of testing are encouraged under the Australasian STI Management Guidelines, only 12 respondents reported that their reason for testing was because a doctor/nurse suggested it (page 51). However, it is noteworthy that the majority of respondents (51.90%) reported that they would be "okay" with an offer for STI/BBV testing, while only a minority reported negative reactions (12.32% said they would be offended) (page 54).

Reasons for not testing mainly related to low risk perception (62.74% said they had not done anything to put themselves at risk), rather than issues of service access (e.g. transport or cost) (page 52). This is consistent with the findings from a Western Australian study of South-East Asian and Sub-Saharan African migrants which found that 55.9% of respondents did not get tested for HIV because they did not believe that they had done anything to put themselves at risk [8].

Limitations

The main limitation of this study relates to the fact that a convenience sampling method was adopted. While convenience sampling is common for surveys of this nature, the recruitment method raises questions about whether the sample is representative of the source population. Sampling bias is also likely to have resulted from the fact that translations of the English survey were only made available in four Asian languages (Khmer, Vietnamese, Simplified Chinese, and Traditional Chinese) thereby excluding other non-English speaking respondents. Finally, while rigorous pretesting of the survey instrument was conducted, post-completion survey feedback indicates that some respondents had difficulties understanding some questions.

It should also be noted that while survey research is well-suited to *describing* knowledge, attitudes, and practices, it is more limited in its ability to *explain* the reasons that people think and act in certain ways. Box 1 below highlights a number of questions emerging from this survey that may benefit from qualitative research to assist service providers and policy makers design effective responses for the prevention and control of STIs and BBVs in migrant populations.

Box 1: Areas for possible qualitative research

- Why does a significantly lower proportion of male respondents know that HIV testing is not included in all blood tests, compared to migrant women (page 16)?
- What are the reasons that 33.33% of respondent men who are sexually attracted to other men do not know about PrEP (page 18)?
- What are the reasons that 75.00% of respondent men who have sex with men do not know about U=U (page 18)?
- What are the reasons that only 63.44% of respondents were aware of the existence of effective medications to manage HIV (page 16)?
- What accounts for the finding that significantly lower proportions of North-East Asian respondents had heard of chlamydia and gonorrhoea, compared to respondents born in other regions (page 20)?
- How does the fact that 15.23% of respondents did not know the English names for any STIs influence the effectiveness of current health promotion messaging (page 20)?
- What are the reasons that significantly lower proportions of South-East Asian respondents were aware that some STIs can lead to infertility, compared to respondents born in other regions (page 21)?
- What explains the finding that the majority of respondents could not distinguish between different forms of viral hepatitis (page 28)?
- Why do lower proportions of North-East Asian respondents understand the difference between hepatitis B and other forms of hepatitis compared to migrants from other regions (page 29)?
- What are the reasons that significantly lower proportions of 18-29 year old respondents were aware that there is a vaccine for hepatitis B, compared to respondents from other age groups (page 34)?
- What are the reasons that significantly lower proportions of 18-29 year old respondents were aware that there is no cure for hepatitis B, compared to respondents from other age groups (page 34)?
- Why is knowledge around hepatitis C generally low among respondents (page 36)?
- What are the barriers to men who have sex with men and sexually active young people getting tested in accordance with Australasian STI testing guidelines (page 53)?

Conclusion

The findings of the Queensland MiBSS study, when read in the context of the available literature, suggest the following potential areas for priority action:

- 1) Raise awareness of chlamydia among migrant populations;
- 2) Improve migrant awareness of the differences in transmission, prevention and treatment pathways for the various types of viral hepatitis;
- 3) Raise awareness that HIV testing is not routinely included in all blood tests;
- 4) Further investigate whether MSM+ migrants' knowledge of HIV prevention strategies such as PrEP and U=U is comparable to knowledge among MSM people in the general population;
- 5) Ensure that communication strategies around the availability of a cure for hepatitis C are inclusive of migrants;
- 6) Emphasise the importance of using condoms during overseas sexual encounters and when having sex with casual partners;
- 7) Promote the importance of annual STI and BBV testing among sexually active people under the age of 30, in accordance with clinical guidelines;
- 8) Disseminate findings about the acceptability of opportunistic testing in migrant communities and encourage health providers to offer more opportunistic STI and BBV testing (as clinically appropriate).

REFERENCES

1. The Kirby Institute. *HIV, viral hepatitis and sexually transmissible infections in Australia: annual surveillance report 2018*. 2018:1-218. https://kirby.unsw.edu.au/sites/default/files/kirby/report/KI_Annual-Surveillance-Report-2018.pdf.
2. Department of Health. *Third National Hepatitis B Strategy 2018-2022*. 2018:1-40. [https://www1.health.gov.au/internet/main/publishing.nsf/Content/ohp-bbvs-1/\\$File/Hep-B-Third-Nat-Strategy-2018-22.pdf](https://www1.health.gov.au/internet/main/publishing.nsf/Content/ohp-bbvs-1/$File/Hep-B-Third-Nat-Strategy-2018-22.pdf).
3. Department of Health. *Fourth National STI Strategy 2018-2022*. 2018:1-44. <https://www1.health.gov.au/internet/main/publishing.nsf/Content/ohp-bbvs-1/%24File/STI-Fourth-Nat-Strategy-2018-22.pdf>.
4. Department of Health. *Fifth National Hepatitis C Strategy 2018-2022*. 2018:1-36. [https://www1.health.gov.au/internet/main/publishing.nsf/Content/ohp-bbvs-1/\\$File/Hep-C-Fifth-Nat-Strategy-2018-22.pdf](https://www1.health.gov.au/internet/main/publishing.nsf/Content/ohp-bbvs-1/$File/Hep-C-Fifth-Nat-Strategy-2018-22.pdf).
5. Department of Health. *Eighth National HIV Strategy 2018-2022*. 2018:1-40. [https://www1.health.gov.au/internet/main/publishing.nsf/Content/ohp-bbvs-1/\\$File/HIV-Eight-Nat-Strategy-2018-22.pdf](https://www1.health.gov.au/internet/main/publishing.nsf/Content/ohp-bbvs-1/$File/HIV-Eight-Nat-Strategy-2018-22.pdf). Accessed:
6. Crawford G, Lobo R, Brown G, Langdon P. *HIV and mobility in Australia: roadmap for action*. 2014:1-67. https://siren.org.au/wp-content/uploads/2016/08/HIV_and_Mobility_Report.pdf.
7. Roy T, Anderson C, Evans C, Rahman MS, Rahman M. Cross-cultural adaptation of the short form condom attitude scale: validity assessment in a sub-sample of rural-to-urban migrant workers in Bangladesh. *BMC Public Health*. 2013;13(240):1-10. doi:10.1186/1471-2458-13-240
8. Gray C, Crawford G, Reid A, Lobo R. HIV knowledge and use of health services among people from South-East Asia and sub-Saharan Africa living in Western Australia. *Health Promot J Aust*. 2018;29(3):274-281. doi:10.1002/hpja.168
9. The Kirby Institute. *HIV knowledge, risk behaviour and testing: A community survey in people from culturally and linguistically diverse (CALD) backgrounds in NSW, Australia*. 2016:1-171. https://kirby.unsw.edu.au/sites/default/files/kirby/report/SERP_CALD-survey-report.pdf.
10. Asante A, Körner H, McMahon T, Sabri We, Kippax S. Sarah Fitzherbert, ed. *Periodic survey of HIV knowledge and use of health services among people from culturally and linguistically diverse backgrounds, 2006–2008*. National Centre in HIV Social Research; 2009:1-28. <http://unsworks.unsw.edu.au/fapi/datastream/unsworks:9831/SOURCE01?view=true>.

11. Wong THH, Mao L, Chen T, et al. *2018 Sydney Gay Asian Men Survey: Brief report on findings*. 2018:1-14.
<http://unsworks.unsw.edu.au/fapi/datastream/unsworks:54728/binc298c684-bb89-4a94-af22-e4b774bb959d?view=true>.
12. Sande V. *Validated a survey tool to measure knowledge, attitudes and behaviours about blood borne viruses and sexually transmissible infections amongst migrants from Southeast Asia, sub-Saharan Africa and Northeast Asia living in Australia* [unpublished thesis]. 2018.
13. Oremus M, Cosby JL, Wolfson C. A hybrid qualitative method for pretesting questionnaires: The example of a questionnaire to caregivers of Alzheimer disease patients. *Res Nurs Health*. 2005;28(5):419-430. doi:10.1002/nur.20095
14. Vujcich D, Roberts M, Brown G, et al. Pretesting a sexual health survey in culturally and linguistically diverse populations: methods, results and recommendations. [Forthcoming]
15. Vujcich D, Roberts M, Gu Z, et al. Translating best practice into real practice: methods, results and lessons from a project to translate an English sexual health survey into four Asian languages. [Forthcoming]
16. Queensland Department of Health. *Sexual Health Youth Attitudes and Behaviour Survey: Summary of findings*. n.d:1-5.
https://www.health.qld.gov.au/__data/assets/pdf_file/0036/727785/sexual-health-18-survey-findings.pdf.
17. Garland SM, Gunasekaran B, Ahmed N, et al. P3.302 Sexual Health Experience and Knowledge of Human Papillomavirus (HPV) and Chlamydia in Young Women Recruited Via Social Networking Sites. *Sex Transm Infect*. 2013;89(1):1. doi:10.1136/sextrans-2013-051184.0757
18. Mason L. Knowledge of sexually transmitted infections and sources of information amongst men. *J R Soc Promot Health*. 2005;125(6):266-271.
doi:10.1177/146642400512500608
19. Lorimer K, Hart GJ. Knowledge of Chlamydia trachomatis among men and women approached to participate in community-based screening, Scotland, UK. *BMC Public Health*. 2010;10(794):1-9. doi:10.1186/1471-2458-10-794
20. Pépin C, Souala F, By E, Bérar M, Arvieux C, Fily F. Awareness of Chlamydia trachomatis infection by people attending a sexual transmitted infection (STI) clinic and missed opportunities for screening in a primary health care setting. *Infect Dis Now*. 2021;51(2):205-208. doi:10.1016/j.medmal.2020.10.008
21. Lee H-O, Lee O-J, Kim S, Hontz I, Warner A. Differences in knowledge of hepatitis B among Korean immigrants in two cities in the Rocky Mountain region. *Asian Nurs Res (Korean Soc Nurs Sci)*. 2007;1(3):165-175. doi:10.1016/S1976-1317(08)60019-5
22. Burke NJ, Do HH, Talbolt J, Sos C, Svy D, Taylor VM. Chumnguh Thleum: Understanding Liver Illness and Hepatitis B Among Cambodian Immigrants. *J Community Health*. 2011;36(1):27-34. doi:10.1007/s10900-010-9277-y
23. Kue J, Thorburn S. Hepatitis B knowledge, screening, and vaccination among Hmong Americans. *J Health Care Poor Underserved*. 2013;24(2):566-578.
doi:10.1353/hpu.2013.0081

24. Burke NJ, Jackson JC, Thai HC, et al. Honoring tradition, accepting new ways': development of a hepatitis B control intervention for Vietnamese immigrants. *Ethn Health*. 2004;9(2):153-169. doi:10.1080/1355785042000222860
25. Nkulu Kalengayi FK, Hurtig A-K, Nordstrand A, Ahlm C, Ahlberg BM. Perspectives and experiences of new migrants on health screening in Sweden. *BMC Health Serv Res*. 2015;16(14):1-13. doi:10.1186/s12913-015-1218-0
26. Collaboration for Evidence Research and Impact in Public Health. "I want to test but I'm afraid": Barriers to HIV testing among people born in South East Asia and sub-Saharan Africa: Final report. 2018:1-36. https://siren.org.au/wp-content/uploads/2017/10/FinalReportv4_online.pdf.
27. Gray C, Lobo R, Narciso L, et al. Why I Can't, Won't or Don't Test for HIV: Insights from Australian Migrants Born in Sub-Saharan Africa, Southeast Asia and Northeast Asia. *Int J Environ Res Public Health*. 2019;16(6):1-18. doi:10.3390/ijerph16061034
28. Akinsulure-Smith AM. Exploring HIV knowledge, risk and protective factors among West African forced migrants in New York City. *J Immigr Minor Health*. 2014;16(3):481-491. doi:10.1007/s10903-013-9829-1
29. Tiitala P, Kivelä P, Liitsola K, et al. Important Gaps in HIV Knowledge, Attitudes and Practices Among Young Asylum Seekers in Comparison to the General Population. *J Immigr Minor Health*. 2018;20(6):1415-1423. doi:10.1007/s10903-018-0707-8
30. Holt M, MacGibbon J, Bear B, et al. Trends in Belief That HIV Treatment Prevents Transmission Among Gay and Bisexual Men in Australia: Results of National Online Surveys 2013-2019. *AIDS Educ Prev*. 2021;33(1):62-72. doi:10.1521/aeap.2021.33.1.62
31. Dean J, Mitchell M, Stewart D, Debattista J. Sexual health knowledge and behaviour of young Sudanese Queenslanders: A cross-sectional study. *Sex Health*. 2017;14(3):254-260. doi:10.1071/SH16171
32. Douglass CH, Qin C, Martin F, Xiao Y, El-Hayek C, Lim MSC. Comparing sexual behaviours and knowledge between domestic students and Chinese international students in Australia: findings from two cross-sectional studies. *Int J STD AIDS*. 2020;31(8):781-790. doi:10.1177/0956462420921726
33. O'Connor CC, Wen LM, Rissel C, Shaw M, Quine S. Knowledge of STIs and blood-borne viruses among Vietnamese men in metropolitan Sydney. *Aust N Z J Public Health*. 2007;31(5):464-467. doi:10.1111/j.1753-6405.2007.00119.x
34. Owiti JA, Greenhalgh T, Sweeney L, Foster GR, Bhui K. Illness perceptions and explanatory models of viral hepatitis B & C among immigrants and refugees: a narrative systematic review. *BMC Public Health*. 2015;15(151):1-17. doi:10.1186/s12889-015-1476-0
35. Horwitz R, Brener L, Treloar C, Sabri We, Moreton R, Sedrak A. Hepatitis C in an Australian Migrant Community: Knowledge of and Attitudes towards Transmission and Infection. *Contemp Drug Probl*. 2010;37(4):659-683. doi:10.1177/009145091003700408
36. Rissel C, Badcock PB, Smith AMA, et al. Heterosexual experience and recent heterosexual encounters among Australian adults: the Second Australian Study of Australian Relationships. *Sex Health*. 2014;11(5):416-426. doi:10.1071/SH14105

37. Burkill S, Copas A, Couper MP, et al. Using the Web to Collect Data on Sensitive Behaviours: A Study Looking at Mode Effects on the British National Survey of Sexual Attitudes and Lifestyles. *PLoS ONE*. 2016;11(2):1-12. doi:10.1371/journal.pone.0147983
38. Jones MK, Calzavara L, Allman D, Worthington CA, Tyndall M, Iveniuk J. A Comparison of Web and Telephone Responses From a National HIV and AIDS Survey. *JMIR Public Health Surveill*. 2016;2(2):1-16. doi:10.2196/publichealth.5184
39. Badcock PB, Smith AMA, Richters J, et al. Characteristics of heterosexual regular relationships among a representative sample of adults: The Second Australian Study of Health and Relationships. *Sex Health*. 2014;11(5):427-438. doi:10.1071/SH14114
40. de Visser RO, Badcock PB, Rissel C, et al. Safer sex and condom use: Findings from the Second Australian Study of Health and Relationships. *Sex Health*. 2014;11(5):495-504. doi:10.1071/SH14102
41. ASHM. Australasian STI Management Guidelines. 2018. <http://www.sti.guidelines.org.au/>.