



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

WAA

Migrant Blood-borne Virus
and Sexual Health Survey

MiBSS

Cite as:

Vujcich D, Reid A, Hosny A, Pillay V, Mao L, Guy R, Brown G, Hartley L, Roberts M, Wilshin C, Lobo R. *Migrant Blood-borne Virus and Sexual Health Survey 2020-2021: Western Australian results*. Perth: Curtin University.

Version: 16 August 2021

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
50	Discussion
58	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 was provided to extend the project to Queensland.

This report presents the methods and findings of the Western Australian sub-study, which received additional funding from the Western Australian Department of Health Sexual Health and Blood-borne Viruses Program. In-kind assistance was also provided by the WA AIDS Council and the Office of Multicultural Interests.

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 Western Australia was led by peer researchers employed by the Ethnic Communities Council of Western Australia. 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 May 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 after February 2021 received an AUD 15 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.

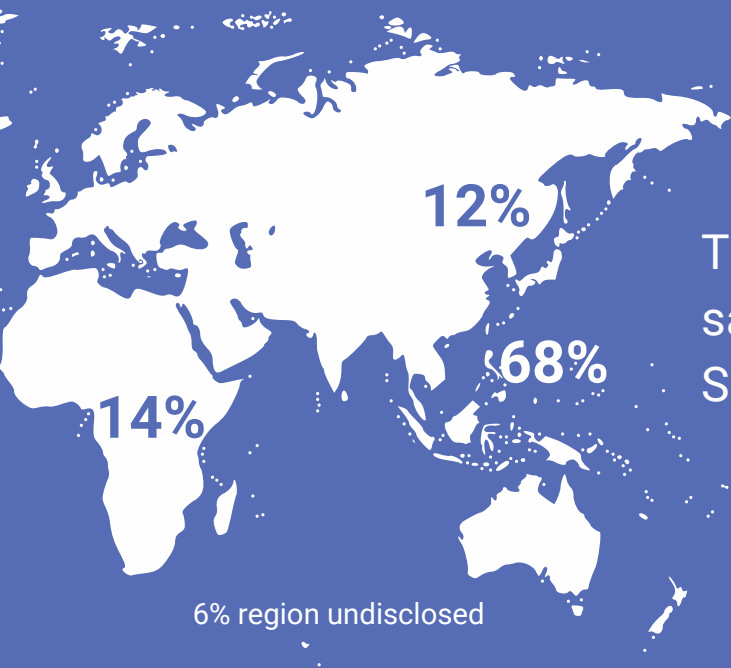
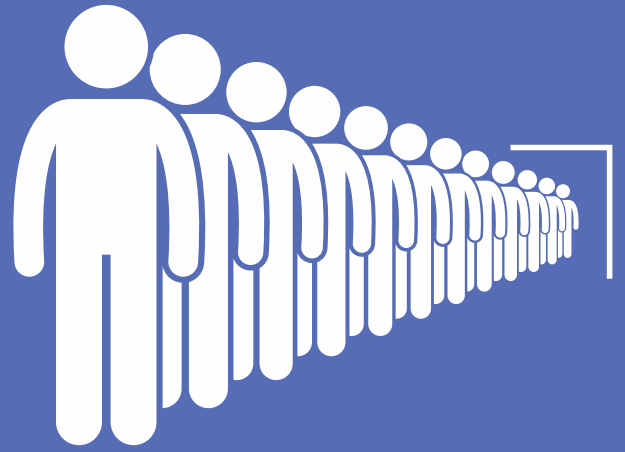
RESULTS

NOTE:

Percentages presented in infographics exclude missing data (i.e. respondents who skipped questions) and are rounded to nearest whole number

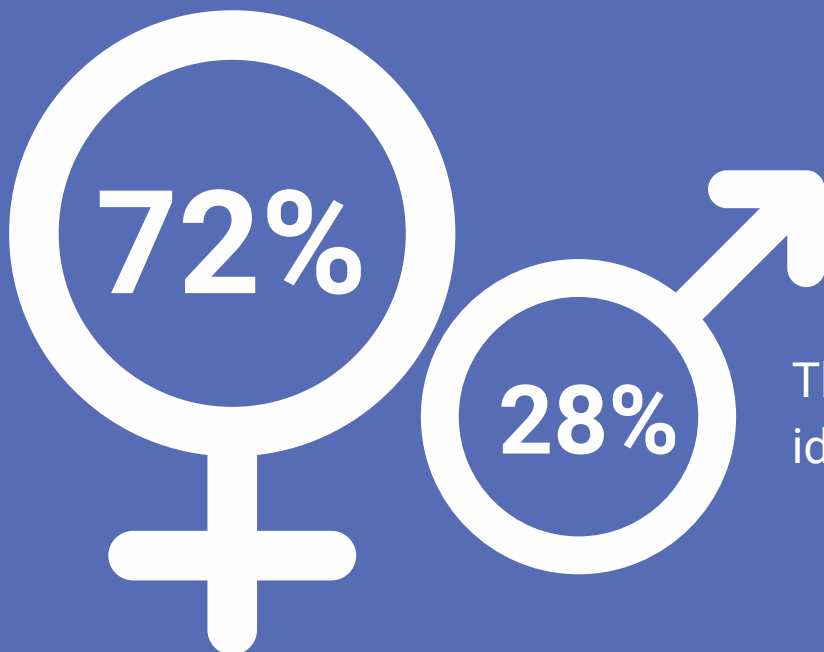
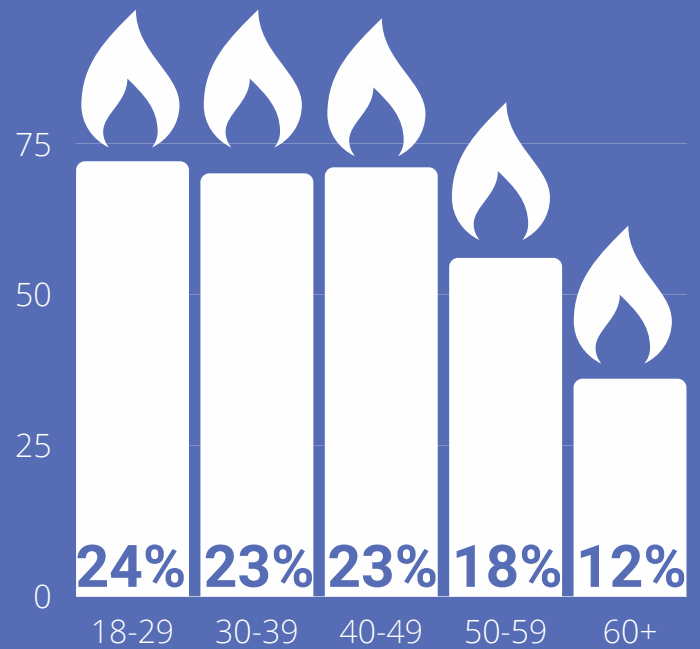
Demographics at a glance

There were 311 included survey respondents from Western Australia.



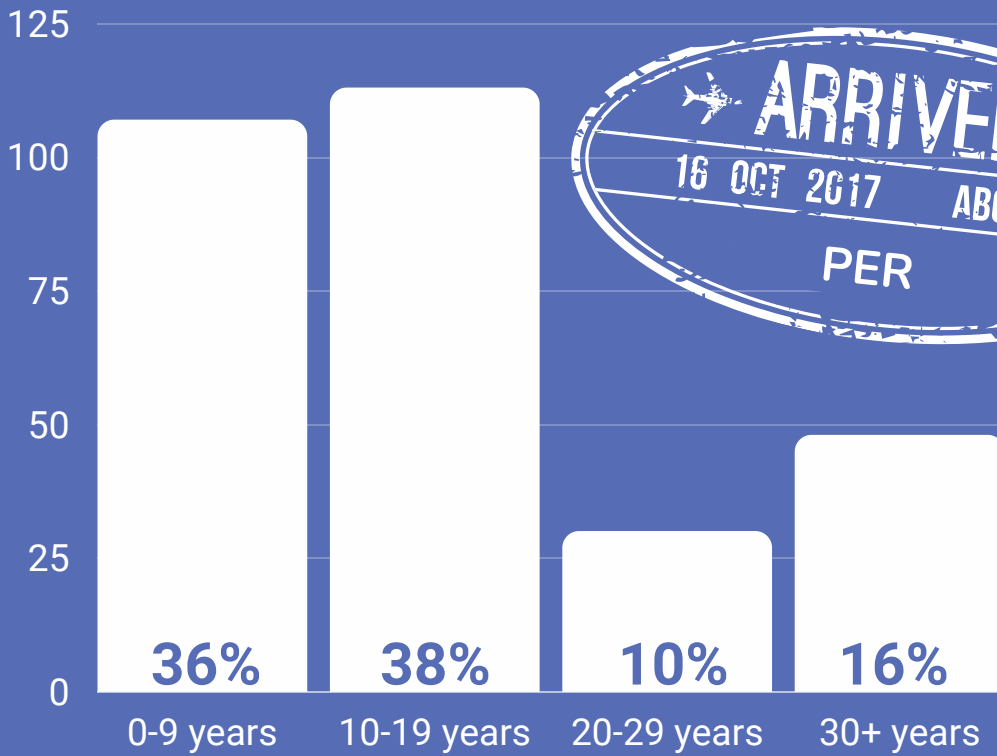
The largest proportion of the sample was born in South-East Asia.

Respondents were relatively evenly distributed by age.



The majority of respondents identified as female.

Demographics at a glance



Over 70% of respondents had lived in Australia for less than 20 years.



99% of respondents resided in Perth.

A total of 326 survey responses can be identified as originating from Western Australia.* Thirteen surveys that were less than 25 percent complete, one response identifying as an overseas resident, and one response where the country of birth was Australia were excluded, leaving a sample of 311. As shown in Table 1, 13.50 percent (n=42) of all survey respondents reported being born in a Sub-Saharan African (SSA) country, 11.90 percent (n=37) were born in a North-East Asian (NEA) country and 68.49 percent (n=213) were born in a South-East Asian (SEA) country. Nineteen respondents (6.11%) did not disclose a country of birth.^

Table 1: Number and proportion of respondents (n=311), by country and region of birth

Region	Country / UN sub-region^^	Number of Respondents (%)
Sub-Saharan Africa (n=42)	Northern sub-region (Sudan)	8 (2.57)
	Eastern sub-region (Ethiopia, Kenya, Somalia, South Sudan, Tanzania, Uganda, Zambia, Zimbabwe)	29 (9.32)
	Middle sub-region (Dem. Rep. Congo, Rep. Congo)	0 (0.00)
	Southern sub-region (Botswana, South Africa)	4 (1.29)
	Western sub-region (Nigeria)	1 (0.32)
North-East Asia (n=37)	China (includes Hong Kong and Macau)	18 (5.79)
	Japan	1 (0.32)
	Korean Peninsula	12 (3.86)
	Taiwan	6 (1.93)

Table continued on next page

*A survey was deemed to originate from Western Australia if it met one of the following conditions: (a) it was a paper survey sent from a Western Australian partner; (b) it was an online survey and the answer to the postcode question was a Western Australian postcode; (c) it was an online survey and the URL source indicated it had been disseminated by a Western Australian 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=311), by country and region of birth

Region	Country / UN sub-region	Number of Respondents (%)
South-East Asia (n=213)	Brunei	1 (0.32)
	Indonesia	141 (45.34)
	Myanmar	2 (0.64)
	Malaysia	25 (8.04)
	Philippines	12 (3.86)
	Singapore	16 (5.14)
	Thailand	2 (0.64)
	Vietnam	14 (4.50)
UNSPECIFIED REGION		19 (6.11)

As shown in Table 2 below, almost half of the survey respondents who reported their age (46.71%; n=142) were between 18 and 39 years old. The North-East Asian 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 birth regions.

Table 2: Number and proportion of respondents (n=304)^, 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=42)	12 (28.57)	20 (47.62)	8 (19.05)	2 (4.76)	0 (0.00)	<0.000
SEA (n=210)	40 (19.05)	34 (16.19)	57 (27.14)	45 (21.43)	34 (16.19)	
NEA (n=37)	16 (43.24)	12 (32.43)	5 (13.51)	4 (10.81)	0 (0.00)	
Unspecified (n=15)*	4 (26.67)	4 (26.67)	1 (6.67)	5 (33.33)	1 (6.67)	
ALL (n=304)	72 (23.68)	70 (23.03)	71 (23.36)	56 (18.42)	35 (11.51)	

^Excludes respondents who did not report age

*Unspecified regions excluded from chi2 analysis

Of those who provided a valid answer to the gender question (n=304), 72.04 percent (n=219) identified as female (including one transgender female), compared to 27.96 percent (n=85) male (including one transgender male). Table 3 shows that no statistically significant differences were observed in gender distribution by region of birth.

Table 3: Number and proportion of respondents (n=304)^, by gender and region of birth

Region	Male n (%)	Female n (%)	p-value
SSA (n=40)	11 (27.50)	29 (72.50)	0.896
SEA (n=213)	60 (28.17)	153 (71.83)	
NEA (n=36)	11 (30.56)	25 (69.44)	
Unspecified (n=15)	3 (20.00)	12 (80.00)	
ALL (n=304)	85 (27.96)	219 (72.04)	NA

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

The majority of respondents to the sexual attraction questions identified as heterosexual only (94.19%; n=276), with four (1.37%) being men attracted to other men or non-binary people, 12 (4.10%) being women attracted to women or non-binary people and one person being attracted to 'other undefined' (0.34%).

Almost three-quarters (73.83%; n=220) 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 (76.49%; n=231) who answered the visa question were permanent residents/citizens, 16.23 percent (n=49) were on student visas and 3.97 percent (n=12) were on partner visas.

Table 4: Number and proportion of respondents (n=298)^, 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=41)	7 (17.07)	31 (75.61)	0 (0.00)	3 (7.32)	<0.000
SEA (n=207)	70 (33.82)	68 (32.85)	28 (13.53)	41 (19.81)	
NEA (n=36)	26 (72.22)	7 (19.44)	2 (5.56)	1 (2.78)	
Unspecified (n=14)*	4 (28.57)	7 (50.00)	0 (0.00)	3 (21.43)	
ALL (n=298)	107 (35.91)	113 (37.92)	30 (10.07)	48 (16.11)	NA*

^Excludes those who did not report time in Australia

*Unspecified regions excluded from chi2 analysis; more than 80% of cells included in chi2 analysis had expected frequencies greater than 5

Respondents who provided a postcode predominately resided in metropolitan Perth, as shown in Table 5.

Table 5: Number and proportion of respondents (n=283)^, by area of residence

WA region	Sub-region	n (%)
Perth (n=279)	Perth North*	87 (30.74)
	Perth South*	192 (67.84)
Country WA* (n=4)	Pilbara	2 (0.71)
	Wheatbelt	1 (0.35)
	Southwest	1 (0.35)

^Excludes those who did not report a valid postcode.

*Perth North: 6000-6038; 6050-6083

*Perth South: 6100-6215

*Country WA: 6218-6770

Perth north/south classifications are based on Postal Area Concordance data for Public Health Networks:
<https://www1.health.gov.au/internet/main/publishing.nsf/Content/PHN-Concordances>

Note that postcodes 6107 and 6111 have been classified as Perth South although small portions of them also fall within Perth North under PHN classifications. North/South comparisons should be interpreted with this caveat.

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 (77.49%; n=241) were completed in paper form. No significant differences were observed by gender or birth region (data not shown). Some statistically significant differences were observed by age, as set out in Table 6.

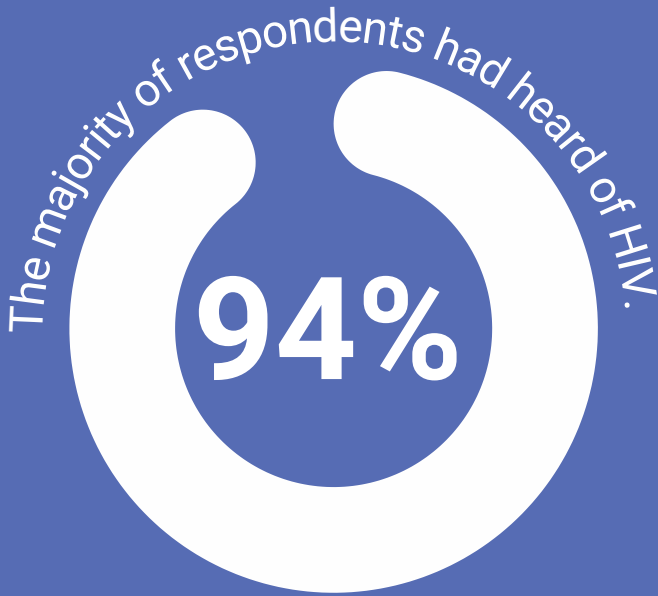
Table 6: Number and proportion of respondents (n=304)^, by mode of completion and age

Survey mode	18-29 yrs n (%)	30-39 yrs n (%)	40-49 yrs n (%)	50-59 yrs n (%)	60 + yrs n (%)	p-value
Paper (n=239)	53 (22.18)	61 (25.52)	51 (21.34)	49 (20.50)	25 (10.46)	0.045
Online (n=65)	19 (29.23)	9 (13.85)	20 (30.77)	7 (10.77)	10 (15.38)	
ALL (n=304)	72 (23.68)	70 (23.03)	71 (23.36)	56 (18.42)	35 (11.51)	

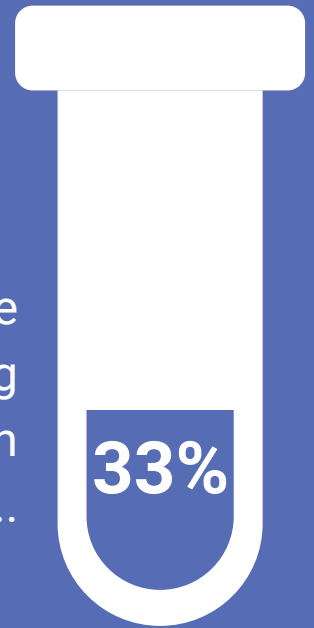
^Excludes those who did not report age

The majority of surveys (91.32%; n=284) were completed in English. Surveys were also completed in Vietnamese (1.61%; n=5), Traditional Chinese (5.14%; n=16), and Simplified Chinese (1.93%; n=6).

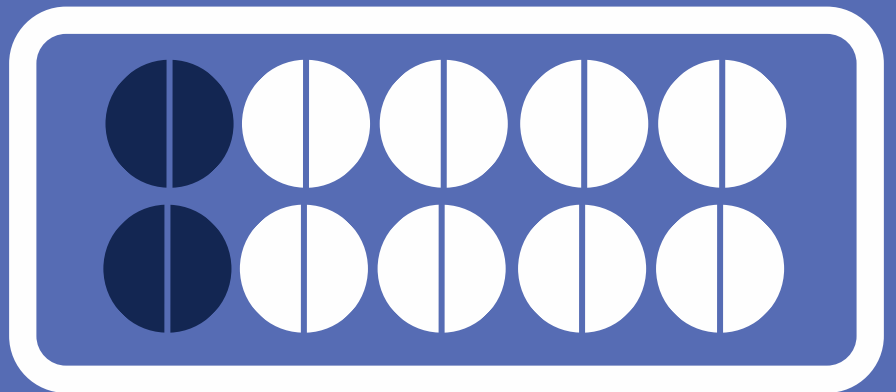
HIV knowledge at a glance



Of those ...
one-third were aware
that HIV testing
is NOT included in
ALL blood tests...



... and only **20%** knew
that there is medication
for people with HIV to
live a normal life.



Sub-Saharan African respondents
had higher awareness of the
existence of effective
HIV treatments and PrEP
compared to other groups

The majority of respondents (94.06%; n=285; eight missing responses excluded) had heard of HIV. Of those who had heard of HIV and answered specific knowledge questions:

- one-third (33.10%; n=93; 4 missing/invalid responses excluded) were aware that HIV testing is **not** done whenever someone has a blood test in Australia;
- only 3.18 percent (n=9; 2 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;
- one-fifth (20.14%; n=57; 2 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 9.19 percent (n=26; 2 missing/invalid responses excluded) knew that there are medicines that people can take before sex to protect themselves against HIV.

A statistically significantly higher proportion of:

- Sub-Saharan African respondents were aware of the existence of effective HIV treatments and pre-exposure prophylaxis, compared to respondents from other regions (Table 7);
- female respondents were aware that HIV testing is not included in all blood tests, compared to male respondents (Table 8);
- people under the age of 40 were aware of the existence of a pre-exposure prophylaxis (Table 9).

*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 7: 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	16 (39.02)	63 (32.14)	11 (33.33)	90 (33.33)	0.697
	Incorrect / Don't know	25 (60.98)	133 (67.86)	22 (66.67)	180 (66.67)	
Is it safe to have sex without a condom with someone who has VERY LOW amounts of HIV in their blood? (Yes)	Correct	1 (2.44)	6 (3.03)	2 (6.06)	9 (3.31)	0.552** (FE)
	Incorrect / Don't know	40 (97.56)	192 (96.97)	31 (93.94)	263 (96.69)	
Is there non-traditional medication available for people living with HIV so they can live a normal life? (Yes)	Correct	14 (34.15)	34 (17.17)	8 (24.24)	56 (20.59)	0.043
	Incorrect / Don't know	27 (65.85)	164 (82.83)	25 (75.76)	216 (79.41)	
Are there any medicines that people can take BEFORE SEX to protect themselves against HIV? (Yes)	Correct	9 (21.95)	12 (6.06)	2 (6.06)	23 (8.46)	0.007** (FE)
	Incorrect / Don't know	32 (78.05)	186 (93.94)	31 (93.94)	249 (91.54)	

^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.

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

Table 8: Responses[^] 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	13 (16.46)	78 (39.20)	91 (32.73)	<0.000
	Incorrect / Don't know	66 (83.54)	121 (60.80)	187 (67.27)	
Is it safe to have sex without a condom with someone who has VERY LOW amounts of HIV in their blood? (Yes)	Correct	3 (3.80)	6 (2.99)	9 (3.21)	0.715** (FE)
	Incorrect / Don't know	76 (96.20)	195 (97.01)	271 (96.79)	
Is there non-traditional medication available for people living with HIV so they can live a normal life? (Yes)	Correct	17 (21.25)	39 (19.50)	56 (20.00)	0.741
	Incorrect / Don't know	63 (78.75)	161 (80.50)	224 (80.00)	
Are there any medicines that people can take BEFORE SEX to protect themselves against HIV? (Yes)	Correct	9 (11.25)	17 (8.50)	26 (9.29)	0.474
	Incorrect / Don't know	71 (88.75)	183 (91.50)	254 (90.71)	

[^]Excludes 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

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

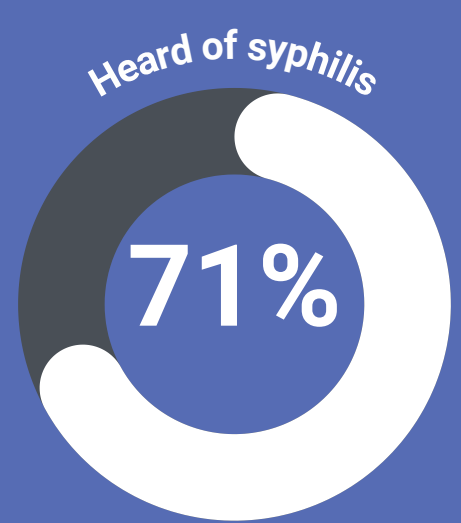
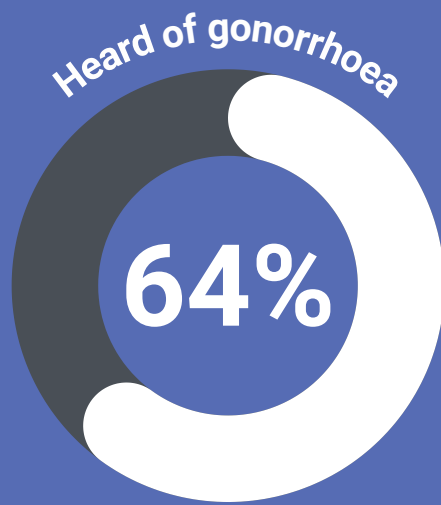
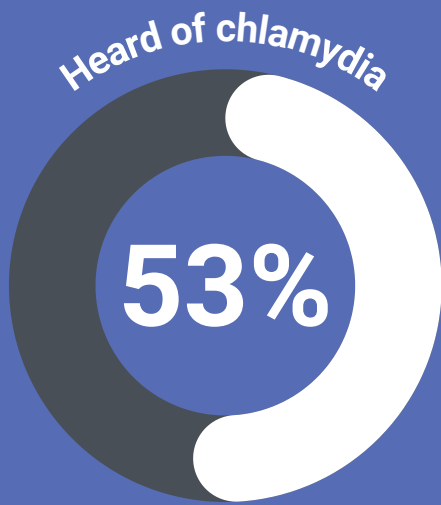
Table 9: Responses^a to HIV knowledge questions, by age

Survey question (correct answer)	Correct/ incorrect	18-29 n (%)	30-39 n (%)	40-49 n (%)	50-59 n (%)	60+ n (%)	TOTAL n (%)	p-value*
Is an HIV test done whenever someone has a blood test in Australia? (No)	Correct	15 (23.44)	22 (31.88)	28 (43.08)	15 (29.41)	13 (44.83)	93 (33.45)	0.102
	Incorrect / Don't know	49 (76.56)	47 (68.12)	37 (56.92)	36 (70.59)	16 (55.17)	185 (66.55)	
Is it safe to have sex without a condom with someone who has VERY LOW amounts of HIV in their blood? (Yes)	Correct	2 (3.08)	1 (1.45)	3 (4.55)	2 (3.92)	1 (3.33)	9 (3.20)	0.863** (FE)
	Incorrect / Don't know	63 (96.92)	68 (98.55)	63 (95.45)	49 (96.08)	29 (96.67)	272 (96.80)	
Is there non-traditional medication available for people living with HIV so they can live a normal life? (Yes)	Correct	14 (21.54)	22 (31.88)	10 (15.15)	8 (16.00)	3 (10.00)	57 (20.36)	0.052
	Incorrect / Don't know	51 (78.46)	47 (68.12)	56 (84.85)	42 (84.00)	27 (90.00)	223 (79.64)	
Are there any medicines that people can take BEFORE SEX to protect themselves against HIV? (Yes)	Correct	8 (12.50)	14 (20.29)	3 (4.55)	1 (1.96)	0 (0.00)	26 (9.29)	0.001
	Incorrect / Don't know	56 (87.50)	55 (79.71)	63 (95.45)	50 (98.04)	30 (100.00)	254 (90.71)	

^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 age.

**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



65% knew that a person with only one sexual partner can get an STI



60% 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=302), fewer respondents reported knowledge of chlamydia (53.31%; n=161) compared to gonorrhoea (63.58%; n=192) and syphilis (71.19%; n=215). Fifty respondents (16.56%) indicated that they had not heard of gonorrhoea, chlamydia or syphilis, and 41 respondents (13.58%) 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, but some statistically significant differences were observed between regions of birth as set out in Table 10. Notably, a larger proportion of respondents born in Sub-Saharan Africa had heard of gonorrhoea, chlamydia and syphilis, compared to respondents from other regions; by contrast, North-East Asian-born respondents had the lowest levels of awareness for each STI compared to other regions.

Table 10: 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	36 (85.71)	132 (62.86)	17 (45.95)	185 (64.01)	0.001
Syphilis	33 (78.57)	154 (73.33)	18 (48.65)	205 (70.93)	0.005
Chlamydia	32 (76.19)	104 (49.52)	18 (48.65)	154 (53.29)	0.006
I haven't heard of any of them	2 (4.76)	33 (15.71)	12 (32.43)	47 (16.26)	0.004
I know some STIs but I don't know what they are called in English	6 (14.29)	29 (13.81)	6 (16.22)	41 (14.19)	0.928

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

Some statistically significant differences were observed between groups on the basis of age (Table 11). Notably, significantly lower proportions of 18-29 year olds had heard of syphilis compared to other age groups.

Table 11: Number and proportion of respondents^a 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	43 (59.72)	48 (69.57)	45 (63.38)	32 (61.54)	21 (61.76)	189 (63.42)	0.797
Syphilis	42 (58.33)	55 (79.71)	54 (76.06)	41 (78.85)	20 (58.82)	212 (71.14)	0.011
Chlamydia	41 (56.94)	44 (63.77)	37 (52.11)	23 (44.23)	15 (44.12)	160 (53.69)	0.176
I haven't heard of any of them	16 (22.22)	6 (8.70)	10 (14.08)	8 (15.38)	9 (26.47)	49 (16.44)	0.108
I know some STIs but I don't know what they are called in English	10 (13.89)	8 (11.59)	15 (21.13)	3 (5.77)	5 (14.71)	41 (13.76)	0.175

^aExcludes those who did not report age, those who skipped the question and invalid responses

Of the respondents who indicated that they had heard of at least one STI (n=252), more than half were aware that a person can have an STI without any symptoms (58.96%; n=148; 1 missing/invalid response excluded), that a person with only one sexual partner can get an STI through sex (65.34%; n=164; 1 missing/invalid response excluded) and that some STIs can make it harder for women to get pregnant (59.92%; n=151).

A significantly higher proportion of Sub-Saharan African respondents answered each of the knowledge questions correctly, compared to respondents from other regions (Table 12). No significant differences in knowledge were observed with respect to gender (data not shown), but some significant differences were observed by age in relation to the question about whether STIs can be asymptomatic (Table 13).

Table 12: 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	32 (82.05)	93 (52.54)	17 (68.00)	142 (58.92)	0.002
	Incorrect / Don't know	7 (17.95)	84 (47.46)	8 (32.00)	99 (41.08)	
Can a person with ONLY one sexual partner get an STI through sex? (Yes)	Correct	37 (92.50)	104 (59.09)	19 (76.00)	160 (66.39)	<0.000
	Incorrect / Don't know	3 (7.50)	72 (40.91)	6 (24.00)	81 (33.61)	
Can some STIs make it harder for women to get pregnant? (Yes)	Correct	37 (92.50)	90 (50.85)	18 (72.00)	145 (59.92)	<0.000
	Incorrect / Don't know	3 (7.50)	87 (49.15)	7 (28.00)	97 (40.08)	

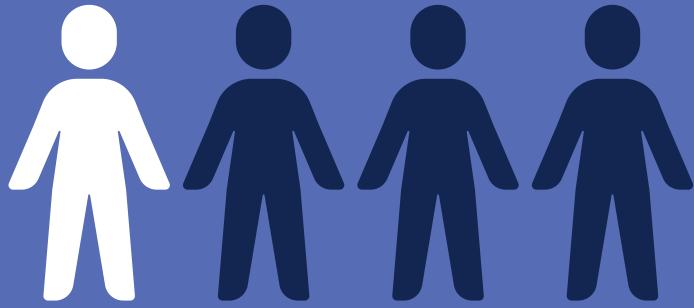
[^]Excludes respondents who did not report region of birth, respondents who skipped relevant questions, invalid responses, and those who reported that they had never heard of any STIs

Table 13: 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	34 (61.82)	49 (77.78)	33 (54.10)	15 (34.09)	16 (64.00)	147 (59.27)	<0.000
	Incorrect / Don't know	21 (38.18)	14 (22.22)	28 (45.90)	29 (65.91)	9 (36.00)	101 (40.73)	
Can a person with ONLY one sexual partner get an STI through sex? (Yes)	Correct	39 (69.64)	47 (74.60)	40 (65.57)	25 (56.82)	13 (52.00)	164 (65.86)	0.182
	Incorrect / Don't know	17 (30.36)	16 (25.40)	21 (34.43)	19 (43.18)	12 (48.00)	85 (34.14)	
Can some STIs make it harder for women to get pregnant? (Yes)	Correct	30 (53.57)	46 (73.02)	39 (63.93)	24 (54.55)	11 (44.00)	150 (60.24)	0.060
	Incorrect / Don't know	26 (46.43)	17 (26.98)	22 (36.07)	20 (45.45)	14 (56.00)	99 (39.76)	

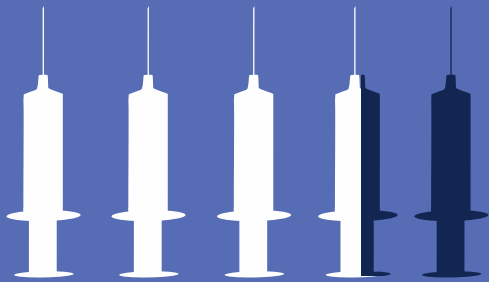
[^]Excludes respondents who did not report age, respondents who skipped relevant questions, invalid respondents, and respondents who reported that they had never heard of any STIs

Hepatitis B knowledge at a glance



Just over one-quarter "have heard of hepatitis B and know what it is"

Of those ...



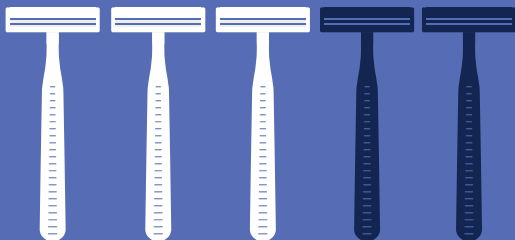
74%

were aware there is a vaccine



66%

were aware it can be passed through sex without a condom



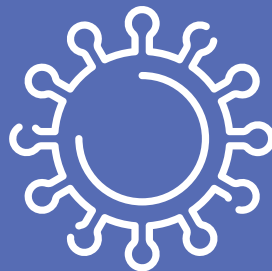
62%

were aware it can be passed on by sharing razors

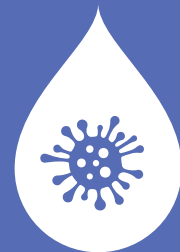
BUT fewer had knowledge that ...



it cannot be passed on by sharing food (41%)



there is no medication to cure the virus (49%)



it cannot be passed through contaminated water (42%)

Excluding skipped and invalid responses (n=17), less than one-third of respondents (28.23%; n=83) indicated that they “have heard of hepatitis B and know what it is”, compared to 27.21 percent (n=80) who indicated that they had heard of hepatitis but did not know “if it was hepatitis B or another type of hepatitis”, and 40.48 percent (n=119) who had heard of both hepatitis B and hepatitis C but did not “know the difference between them” (Table 14). Differences observed between groups on the basis of region, gender or age were not statistically significant (data not shown).

Table 14: Responses to question “Which of the following best describes you?” (n=294)^

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)	80 (27.12)
I have heard of hepatitis B and hepatitis C but I don't know the difference between them	119 (40.48)
I have not heard of hepatitis B	12 (4.08)
I have heard of hepatitis B and I know what it is*	83 (28.23)

^Excludes skipped/invalid responses

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

Only those who reported that they had “heard of hepatitis B and know what it is” (n=83) were required to answer specific hepatitis B knowledge questions. Table 15 shows that the proportion of correct answers was high for vaccine knowledge (74.39%; (n=61; 1 missing/invalid response excluded), knowledge of sexual transmission (65.85%; n=54; 1 missing/invalid response excluded), and knowledge of transmission through the sharing of personal hygiene equipment (61.73%; n=50; 2 missing/invalid responses excluded); knowledge was comparatively lower with respect to the fact that hepatitis B cannot be transmitted through faecal contamination (42.17%; n=35), that no cure is available (49.40%; n=41) and that it cannot be passed through the sharing of food (41.46%; n=34; 1 missing/invalid response excluded).

Table 15: 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)	61 (74.39)	21 (25.61)
Can you get hepatitis B from swallowing food or water containing the faeces (poo) of an infected person? (No)	35 (42.17)	48 (57.83)
Is there non-traditional medicine that can make the hepatitis B virus completely go away from a person's body? (No)	41 (49.40)	42 (50.60)
Can hepatitis B normally be passed on through sex without a condom? (Yes)	54 (65.85)	28 (34.15)
Can hepatitis B normally be passed on by sharing a toothbrush or shaving razor? (Yes)	50 (61.73)	31 (38.27)
Can hepatitis B normally be passed on by sharing food with an infected person? (No)	34 (41.46)	48 (58.54)

[^]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 did not vary significantly by region of birth or age. A significantly higher proportion of female respondents were aware that no cure is available compared to males, but no other significant differences in knowledge were observed with respect to gender (Table 16).

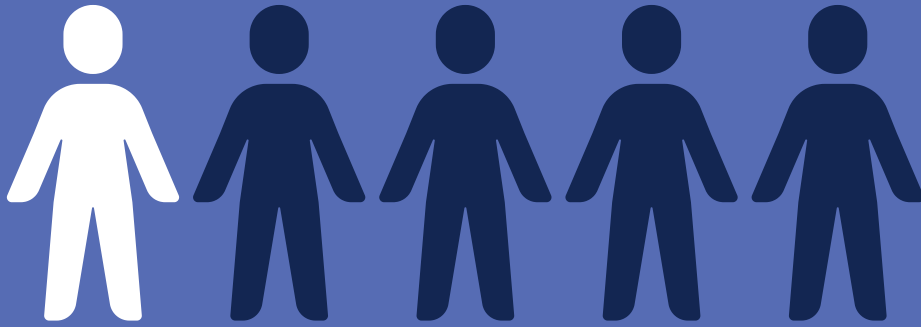
Table 16: Responses[^] to hepatitis B knowledge questions, by gender

Survey question (correct answer)	Correct/ incorrect	Male n (%)	Female (%)	TOTAL n (%)	p-value
Is there a vaccine (injection) to stop people from getting hepatitis B? (Yes)	Correct	11 (68.75)	49 (76.56)	60 (75.00)	0.530** (FE)
	Incorrect / Don't know	5 (31.25)	15 (23.44)	20 (25.00)	
Can you get hepatitis B from swallowing food or water containing the faeces (poo) of an infected person? (No)	Correct	7 (43.75)	27 (42.19)	34 (42.50)	0.910
	Incorrect / Don't know	9 (56.25)	37 (57.81)	46 (57.50)	
Is there non-traditional medicine that can make the hepatitis B virus completely go away from a person's body? (No)	Correct	3 (18.75)	37 (57.81)	40 (50.00)	0.005
	Incorrect / Don't know	13 (81.25)	27 (42.19)	40 (50.00)	
Can hepatitis B normally be passed on through sex without a condom? (Yes)	Correct	10 (62.50)	42 (66.67)	52 (65.82)	0.754
	Incorrect / Don't know	6 (37.50)	21 (33.33)	27 (34.18)	
Can hepatitis B normally be passed on by sharing a toothbrush or shaving razor? (Yes)	Correct	11 (68.75)	37 (59.68)	48 (61.54)	0.506
	Incorrect / Don't know	5 (31.25)	25 (40.32)	30 (38.46)	
Can hepatitis B normally be passed on by sharing food with an infected person? (No)	Correct	5 (31.25)	27 (42.86)	32 (40.51)	0.398
	Incorrect / Don't know	11 (68.75)	36 (57.14)	47 (59.49)	

[^]Excludes 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".

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

Hepatitis C knowledge at a glance

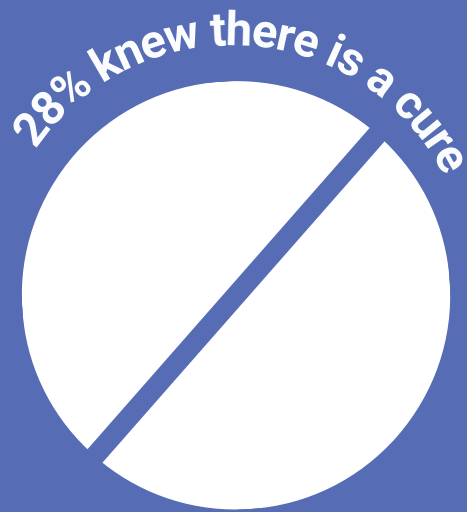


One-fifth of all respondents (n=65) had heard of hepatitis C and could distinguish it from other forms of hepatitis

Of those ...



VACCINE



but a higher proportion (78%) were aware that



Ninety-one respondents (29.26% of the 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 65 respondents (20.90% of the total sample) who had heard of hepatitis C and were aware of how it was distinct from other forms of hepatitis. No significant differences were observed between groups by age, gender or region of birth (data not shown).

Of the respondents who had heard of hepatitis C and answered specific hepatitis C questions, 30.77 percent (n=20) were aware that there was no vaccine for hepatitis C, and 27.69 percent (n=18) were aware that a cure is available. As shown in Table 17 below, there were higher levels of knowledge that hepatitis C can be passed on by sharing injecting equipment and that reinfection is possible.

Table 17: 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)	20 (30.77)	45 (69.23)
Is there non-traditional medicine that can make the hepatitis C virus completely go away from a person's body? (Yes)	18 (27.69)	47 (72.31)
Can hepatitis C be passed on by sharing injecting equipment like needles and syringes? (Yes)	50 (78.13)	14 (21.88)
Can someone get hepatitis C more than once in their lifetime? (Yes)	28 (43.08)	37 (56.92)

[^]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

A significantly higher proportion of Sub-Saharan African-born respondents were aware that hepatitis C can be passed on by sharing injecting equipment, compared to respondents born in other regions (Table 18). Knowledge that there is no hepatitis C vaccine was significantly lower among 18-29 year olds, compared to other age groups (Table 19). No statistically significant differences were observed with respect to gender (data not shown).

Table 18: Responses[^] to hepatitis C 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 C? (No)	Correct	1 (8.33)	17 (41.46)	2 (22.22)	20 (32.26)	0.090** (FE)
	Incorrect / Don't know	11 (91.67)	24 (58.54)	7 (77.78)	42 (67.74)	
Is there non-traditional medicine that can make the hepatitis C virus completely go away from a person's body? (Yes)	Correct	4 (33.33)	10 (24.39)	3 (33.33)	17 (27.42)	0.760** (FE)
	Incorrect / Don't know	8 (66.67)	31 (75.61)	6 (66.67)	45 (72.58)	
Can hepatitis C be passed on by sharing injecting equipment like needles and syringes? (Yes)	Correct	11 (91.67)	33 (80.49)	3 (37.50)	47 (77.05)	0.017** (FE)
	Incorrect / Don't know	1 (8.33)	8 (19.51)	5 (62.50)	14 (22.95)	
Can someone get hepatitis C more than once in their lifetime? (Yes)	Correct	4 (33.33)	17 (41.46)	4 (44.44)	25 (40.32)	0.862** (FE)
	Incorrect / Don't know	8 (66.67)	24 (58.54)	5 (55.56)	37 (59.68)	

[^]Excludes respondents who did not report region of birth, respondents who skipped relevant questions, invalid responses, and those who reported that they had not heard about hepatitis C or were not aware of the distinction between different types of hepatitis

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

Table 19: Responses[^] to hepatitis C knowledge questions, by age

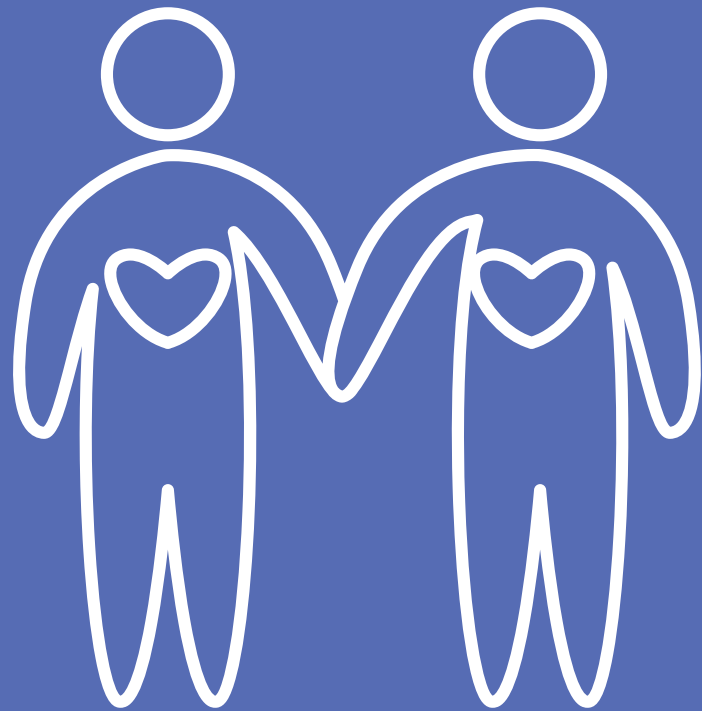
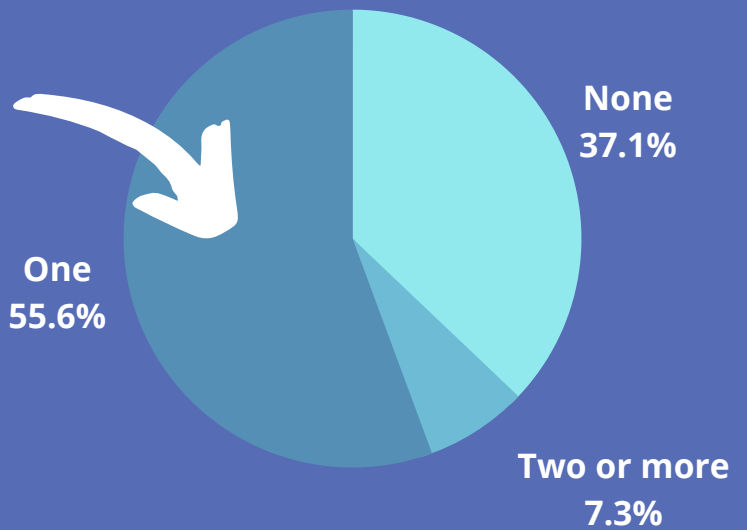
Survey question (correct answer)	Correct/ incorrect	Age Group					TOTAL n (%)	p-value
		18-29 yrs n (%)	30-39 yrs n (%)	40-49 yrs n (%)	50-59 yrs n (%)	60+ yrs n (%)		
Is there a vaccine (injection) to stop people from getting hepatitis C? (No)	Correct	0 (0.00)	7 (35.00)	5 (25.00)	5 (83.33)	3 (60.00)	20 (31.25)	0.001** (FE)
	Incorrect / Don't know	13 (100.00)	13 (65.00)	15 (75.00)	1 (16.67)	2 (40.00)	44 (68.75)	
Is there non-traditional medicine that can make the hepatitis C virus completely go away from a person's body? (Yes)	Correct	4 (30.77)	7 (35.00)	5 (25.00)	0 (0.00)	1 (20.00)	17 (26.56)	0.610** (FE)
	Incorrect / Don't know	9 (69.23)	13 (65.00)	15 (75.00)	6 (100.00)	4 (80.00)	47 (73.44)	
Can hepatitis C be passed on by sharing injecting equipment like needles and syringes? (Yes)	Correct	11 (84.62)	16 (80.00)	13 (65.00)	5 (100.00)	4 (80.00)	49 (77.78)	0.546** (FE)
	Incorrect / Don't know	2 (15.38)	4 (20.00)	7 (35.00)	0 (0.00)	1 (20.00)	14 (22.22)	
Can someone get hepatitis C more than once in their lifetime? (Yes)	Correct	6 (46.15)	7 (35.00)	12 (60.00)	1 (16.67)	1 (20.00)	27 (42.19)	0.258** (FE)
	Incorrect / Don't know	7 (53.85)	13 (65.00)	8 (40.00)	5 (83.33)	4 (80.00)	37 (57.81)	

[^]Excludes respondents who did not report age, respondents who skipped relevant questions, invalid responses, and respondents who reported that they had not heard about hepatitis C or were not aware of the distinction between different types of hepatitis

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

Sexual partners at a glance

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



The majority of sexually active respondents (94%) reported that they were in a committed relationship with the most recent person they had sex with.



Only 5% of respondents who had been overseas since Jan 2018 reported having sex during one of those visits

Two hundred and forty-eight 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, over one-third (37.10%; n=92) reported having no sexual partners in the previous 12 months, 55.65 percent (n=138) reported one sexual partner only and a small proportion (7.26%; n=18) reported two or more sexual partners. There were no statistically significant differences in responses by mode of survey completion (paper/online) (data not shown). Statistically significant differences were observed in responses by region, with a higher proportion of South-East Asian respondents reporting no sexual partners in the 12 months, compared to other regions (Table 20).

Table 20: Reported number^A of sexual partners in past 12 months, by region of birth

Region	None n (%)	One n (%)	Two or more n (%)
SSA (n=35)	10 (28.57)	15 (42.86)	10 (28.57)
SEA (n=171)	70 (40.94)	97 (56.73)	4 (2.34)
NEA (n=31)	7 (22.58)	20 (64.52)	4 (12.90)
TOTAL (n=237)	87 (36.71)	132 (55.70)	18 (7.59)

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

*p<0.000; based on Fisher's exact test as 2/9 cells had an expected frequency of <5

Statistically significant differences were also observed between groups on the basis of gender, with a higher proportion of men reporting two or more sexual partners, compared to women (Table 21).

Table 21: Reported number^A of sexual partners in past 12 months, by gender

Gender	None n (%)	One n (%)	Two or more n (%)
Male (n=68)	21 (30.88)	36 (52.94)	11 (16.18)
Female (n=176)	70 (39.77)	100 (56.82)	6 (3.41)
TOTAL (n=244)	91 (37.30)	136 (55.74)	17 (6.97)

^AExcludes those who did not provide a valid response to the gender or sexual partners questions

*p=0.002

The majority (94.29%; n=165) of participants who provided a valid answer to the question “Which of the following best describes the most recent person you had sex with?” reported sex in a committed relationship; nine (5.14%) reported sex with a casual sexual partner and one (0.57%) reported sex with a sex worker (excludes 15 who reported partner type despite indicating that they had no sexual partners in previous 12 months and one invalid response).

Statistically significant differences in responses by region of birth and gender are set out in Tables 22-23. No statistically significant differences were observed between groups based on age (data not shown).

Table 22: Reported[^] relationship to most recent sexual partner, by region

Region	Committed n (%)	Not Committed n (%)
SSA (n=28)	21 (75.00)	7 (25.00)
SEA (n=114)	112 (98.25)	2 (1.75)
NEA (n=25)	25 (100.00)	0 (0.00)
TOTAL (n=167)	158 (94.61)	9 (5.39)

[^]Excludes those who did not report country of birth or type of sexual partners. These figures include some who skipped or provided invalid 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; based on Fisher's exact test as 2/6 cells had an expected frequency of <5.

Table 23: Reported[^] relationship to most recent sexual partner, by gender

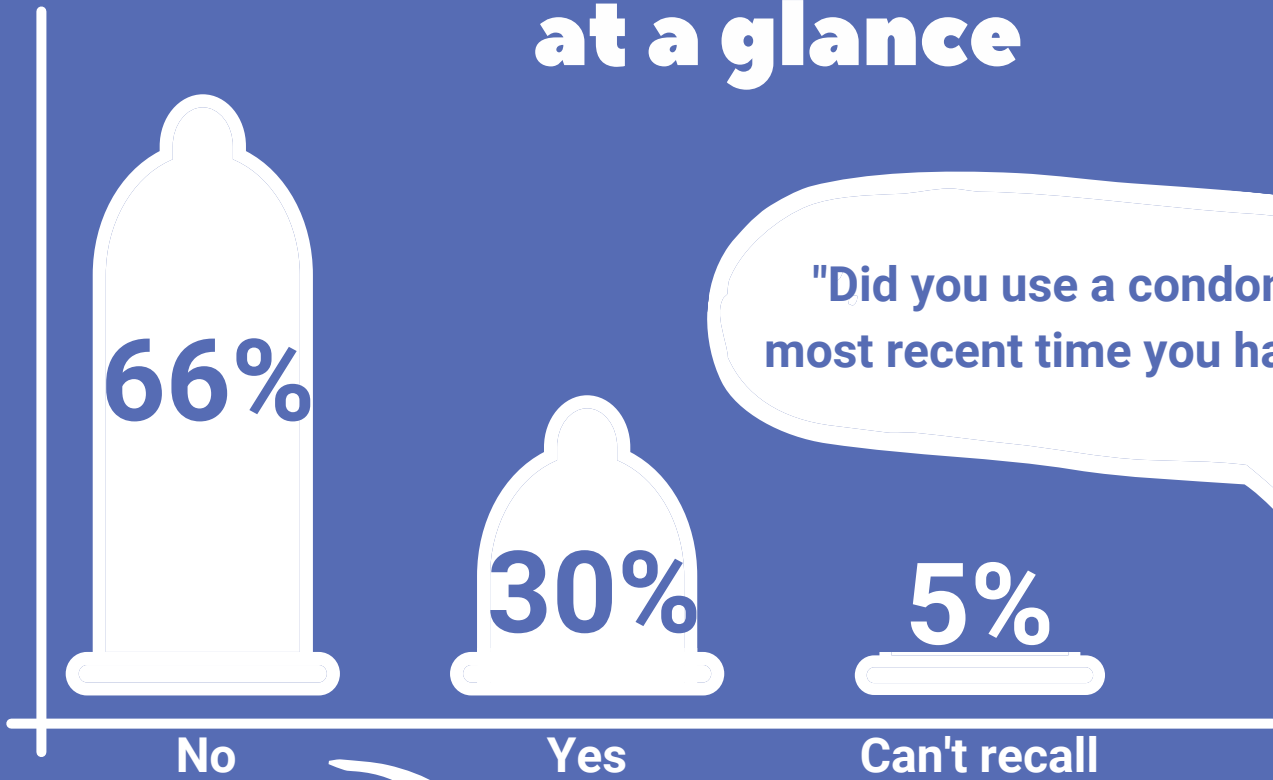
Gender	Committed n (%)	Not Committed n (%)
Male (n=49)	43 (87.76)	6 (12.24)
Female (n=124)	120 (96.77)	4 (3.23)
TOTAL (n=173)	163 (94.22)	10 (5.78)

[^]Excludes those who did not report gender or type of sexual partners. These figures include some who skipped or provided invalid 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=0.032; based on Fisher's exact test as 1/4 cells had an expected frequency of <5.

Two hundred and twenty respondents indicated that they had traveled overseas at least once since January 2018 and answered the question about sex while traveling; of those, 12 (5.45%) reported sexual intercourse on any of those visits with at least one person who lives outside of Australia, and a further 16 (7.27%) indicated that they would prefer not to answer the question (data not shown).

Condom use at a glance



"Did you use a condom the most recent time you had sex?"

Why not?

#1 reason
we
trust each
other

55% of those who reported sex overseas since 2018 **always** used condoms during those encounters

The majority (65.71%; n=115) of respondents who answered “Did you use a condom the most recent time you had sex?” answered ‘No’; 52 (29.71%) answered ‘Yes’ and 8 (4.57%) could not remember (excludes 16 responses from those who indicated that they had not had any sexual partners in last 12 months). No statistically significant differences were observed between groups by gender (data not shown). However, Tables 24-26 show that a significantly larger proportion of people from North-East Asia, 18-29 year olds, and people in non-committed relationships reported condom use at last sex, compared to other groups.

Table 24: Condom use at last sexual encounter, by region[^]

Condom use	SSA n (%)	SEA n (%)	NEA n (%)
Used (n=48)	6 (20.69)	29 (25.66)	13 (52.00)
Not used / can't recall (n=119)	23 (79.31)	84 (74.34)	12 (48.00)

[^]Excludes those who did not report country of birth, 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=0.018

Table 25: 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=52)	19 (55.88)	18 (36.73)	4 (9.52)	11 (30.56)	0 (0.00)
Not used / can't recall (n=122)	15 (44.12)	31 (63.27)	38 (90.48)	25 (69.44)	13 (100.00)

[^]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<0.000 based on chi2 as only 1/10 cells expected frequency of <5.

Table 26: Condom use at last sexual encounter, by type of relationship[^]

Condom use	Committed n (%)	Not committed n (%)
Used (n=51)	44 (27.16)	7 (70.00)
Not used / can't recall (n=121)	118 (72.84)	3 (30.00)

[^]Excludes those who did not report partner type, 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=0.008; Fisher's exact test used as 1/4 cells had an expected frequency of <5.

Among those who reported no condom use (including can't remember) at last sexual encounter and provided a reason (n=125), Table 27 shows that the most commonly reported reason was "My partner and I trust each other" (35.20%; n=44), followed by "My partner and I don't have any illnesses that can be passed on through sex" (26.40%; n=33).

Table 27: Reasons for not using a condom at last sexual encounter

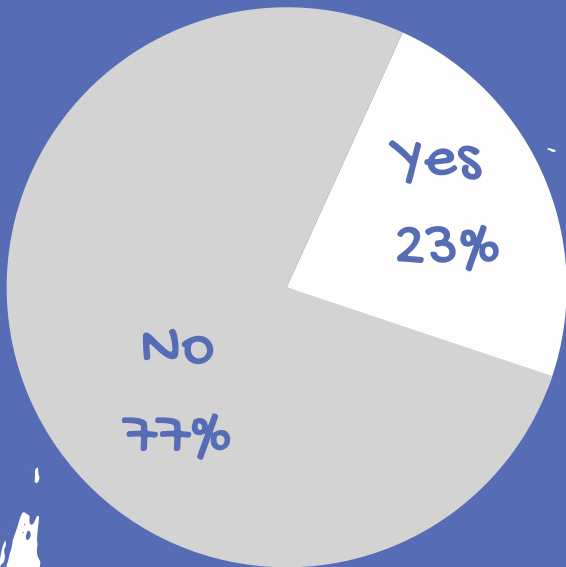
Reason^	n (%)
My partner and/or I did not have one	9 (7.20)
My partner and/or I could not afford one	1 (0.80)
My partner did not want to use one	15 (12.00)
I did not want to use one	14 (11.20)
My partner and/or I did not know where to get one	1 (0.80)
My partner doesn't like the way they feel	7 (5.60)
I don't like the way they feel	12 (9.60)
My partner or I was trying to get pregnant	9 (7.20)
It is against my or my partner's culture or religion	5 (4.00)
My partner and I don't have any illnesses that can be passed on through sex	33 (26.40)
My partner and I trust each other	44 (35.20)

^Respondents could choose more than one option

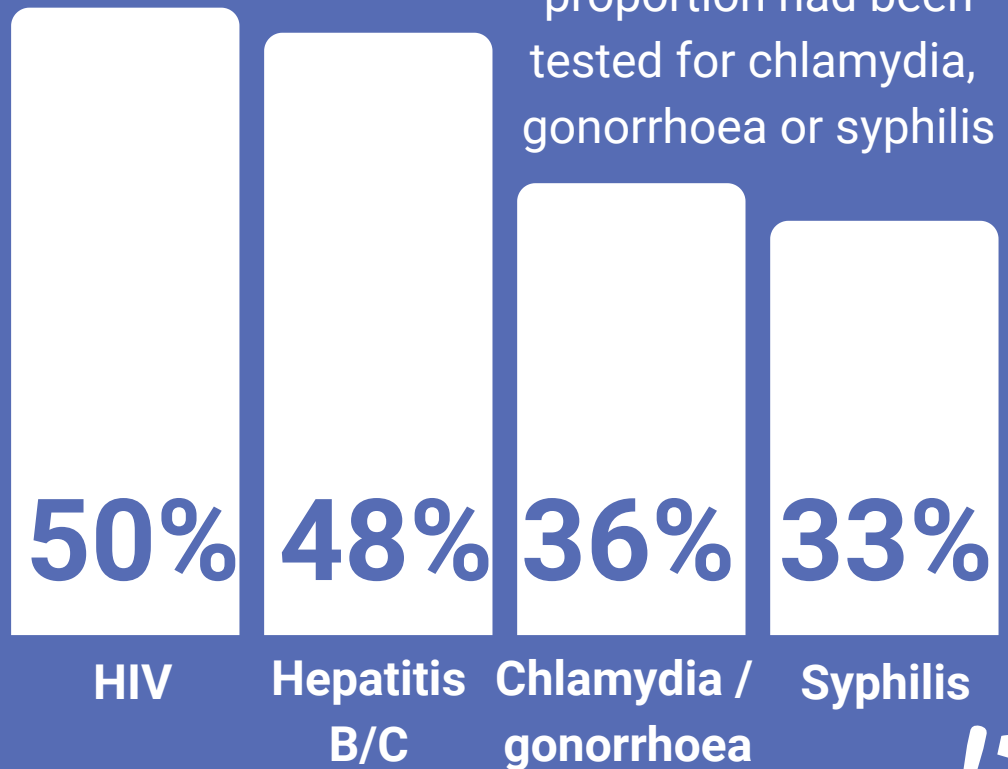
More than half (54.55%; n=6) of respondents who reported having had sex with people who live outside of Australia during overseas visits since January 2018, reported "always" using condoms during those sexual encounters, 9.09 percent (n=1) reported "sometimes" using condoms and 36.36 percent (n=4) reported "never" using condoms during overseas sex (one respondent who reported overseas sex did not answer the question about overseas condom use).

Testing at a glance

Proportion tested for any STI/BBV
in last 2 years



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



50%

Okay - STI and BBV testing is normal



5%

Embarrassed - I'd rather not talk about these things



10%

Offended - why are they asking me?

Only 5 respondents said that they had actually been tested because a doctor or nurse had suggested it

Table 28 shows that less than one-quarter of all respondents who answered the test timing question (23.41%; n=70) reported having had an STI or BBV test within the last two years.

Table 28: Time since last STI and/or BBV test (n=299)^

Time since last STI and/or BBV test	n (%)
Less than 12 months ago	39 (13.04)
1 to 2 years ago	31 (10.37)
More than 2 years ago	58 (19.40)
I have never been tested	119 (39.80)
I don't know	52 (17.39)

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

Tables 29-30 show that significantly greater proportions of Sub-Saharan African-born respondents and people under the age of 40 reported being tested within the last two years. Differences according to gender were not significant (data not shown).

Table 29: 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=69)	24 (57.14)	34 (16.19)	11 (31.43)
Not within last 2 years (n=218)	18 (42.86)	176 (83.81)	24 (68.57)

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

*p<0.000

Table 30: 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=70)	19 (27.14)	32 (48.48)	15 (21.13)	3 (5.45)	1 (2.94)
Not within last 2 years (n=226)	51 (72.86)	34 (51.52)	56 (78.87)	52 (94.55)	33 (97.06)

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

*p<0.000

A larger proportion of respondents who resided in the north metropolitan area of Perth reported being tested in the last two years, compared to south metropolitan respondents (Table 31); however, the results need to be read in light of the caveat set out on page 12 regarding postcode classifications.

Table 31: Time since last STI and/or BBV test, by place of residence (metropolitan Perth)^

Time of last STI/BBV test	North metropolitan n (%)	South metropolitan n (%)
Within last 2 years (n=67)	33 (37.93)	34 (18.28)
Not within last 2 years (n=206)	54 (62.07)	152 (81.72)

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

*p<0.000

Among respondents who reported being tested within the last two years and specified the test type (n=66), the most commonly reported test was for HIV (50.00%; n=33), followed by hepatitis B and/or hepatitis C (48.48%; n=32) (Table 32).

Table 32: Most recent test type in last two years (n=66)^

Test type*	n (%)
HIV	33 (50.00)
Chlamydia and/or gonorrhoea	24 (36.36)
Syphilis	22 (33.33)
Hepatitis B and/or hepatitis C	32 (48.48)
I don't know - it was a blood test	12 (18.18)
I don't know - it was a urine test	3 (4.55)
I don't know - it was a blood and urine test	13 (19.70)
Other	1 (1.52)

*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

A significantly lower proportion of South-East Asian-born respondents reported getting a chlamydia/gonorrhoea test, compared to respondents born in other regions (Table 33); no statistically significant regional differences were observed for other test types.

Table 33: Whether STI/BBV test in last 2 years included an chlamydia/gonorrhoea test, by region of birth[^]

Whether CT/NG testing included	SSA n (%)	SEA n (%)	NEA n (%)
Yes (n=24)	11 (45.83)	7 (20.59)	6 (54.55)
No (n=45)	13 (54.17)	27 (79.41)	5 (45.45)

[^]Excludes those who did not report country of birth or time since last test, type of test, and invalid responses
*p=0.045

A higher proportion of men reported being tested for chlamydia/gonorrhoea compared to women, but the opposite was true for hepatitis B/hepatitis C tests (Table 34). No statistically significant differences were observed by age (data not shown).

Table 34: Type of STI/BBV test in last two years, by gender[^]

Test type	Male n (%)	Female n (%)	p value
HIV	11 (50.00)	22 (46.81)	0.805
Chlamydia/ gonorrhoea	11 (50.00)	12 (25.53)	0.045
Syphilis	10 (45.45)	11 (23.40)	0.064
Hepatitis B/ Hepatitis C	6 (27.27)	26 (55.32)	0.029

[^]Excludes those who did not report male/female gender or time since last test, type of test, and invalid responses

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” (37.25%; n=19), followed by “I like to get regular STI/BBV tests” (15.69%; n=8) (Table 35).

Table 35: Reasons for getting tested in last two years[^]

Reason*	n (%)
I was applying for permanent residency	7 (13.73)
I had a new sexual partner	3 (5.88)
I shared injecting equipment with someone	0 (0.00)
Something happened that may have put me at risk	1 (1.96)
I was pregnant and had a check up	5 (9.80)
I was getting contraception/birth control	2 (3.92)
My doctor / nurse suggested it	5 (9.80)
My doctor / nurse just did it	1 (1.96)
I wanted to know if I had an STI or a BBV	5 (9.80)
I had symptoms	2 (3.92)
It was part of my regular health check	19 (37.25)
I like to get regular STI/BBV tests	8 (15.69)
It was a requirement for my work/study ^{^^}	1 (1.96)
Another reason	6 (11.76)

*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” (68.39%; n=119) followed by “I did not have any symptoms” (21.84%; n=38) (Table 36).

Table 36: Reasons for NOT getting tested in last two years (n=174)^

Reason*	n (%)
I did not do anything to put me at risk	119 (68.39)
I was too embarrassed	1 (0.57)
I could not afford extra tests	3 (1.72)
I didn't know where to get one	7 (4.02)
I was scared about the result	1 (0.57)
I don't like needles / blood tests	6 (3.45)
I did not have any symptoms	38 (21.84)
I did not have time to get tested	6 (3.45)
I did not think it was important	16 (9.20)
I couldn't get to a service / clinic	1 (0.57)
Another reason	15 (8.62)

*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 (48.48%; n=16) 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”. Just over one-quarter (27.12%; n=16) 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 used a condom at their last sexual encounter.

Of the priority groups for STI/BBV testing who reported testing practices, 33.33% (n=4) of people who had lived in Australia for less than 12 months, and 46.87% (n=15) of people under the age of 30 who had had sex in the past 12 months had been tested for any STI or BBV in the last two years (Table 37). The types of tests reported to have been undertaken are summarised in Table 38.

Table 37: 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 (%)
People who have lived in Australia for less than 1 year (n=12)	4 (33.33)	8 (66.67)
People under the age of 30 who have had sex in last 12 months (n=32)	15 (46.87)	17 (53.13)

[^]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 38: 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 (%)
People who have lived in Australia for less than 1 year (n=4)	1 (25.00)	1 (25.00)	2 (50.00)	2 (50.00)
People under the age of 30 who have had sex in last 12 months (n=15)	6 (40.00)	5 (33.33)	9 (60.00)	8 (53.33)

*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 39).

Table 39: Reaction to offer of opportunistic testing (n=287)

Reaction	n (%)
Offended - why are they asking me?	28 (9.76)
Worried - do they think I have an illness?	45 (15.68)
Surprised - I wasn't expecting that	55 (19.16)
Okay - STI and BBV testing is normal	143 (49.83)
Relieved - now I don't have to ask for the tests	17 (5.92)
Embarrassed - I'd rather not talk about these things	15 (5.23)
Other	20 (6.97)

*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 responses were “Fine - it's none of my business” and “Supportive – I am here if they need my help” (Table 40).

Table 40: Reaction to being told a friend was getting an STI/BBV test (n=298)

Reaction	n (%)
Fine - it is none of my business	129 (43.29)
Shocked - I didn't think they would need to get tested	15 (5.03)
Proud - it's a responsible thing to do	52 (17.45)
Supportive - I am here if they need my help	120 (40.27)
Worried - I hope they are okay	51 (17.11)
Disappointed - they must have done something wrong	7 (2.35)
Other	4 (1.34)

*Note: Respondents could choose more than one option.



DISCUSSION

Familiarity with specific STIs and BBVs

Consistent with the results of a survey of culturally and linguistically diverse (CaLD) people in New South Wales [10], over 90% of MiBSS respondents in Western Australia indicated that they had heard of HIV (page 16). There was less familiarity with the names of other STIs (page 21). Notably, only 53.31% of respondents had heard of chlamydia. The low levels chlamydia awareness in the MiBSS Western Australian sample is comparable to the findings from the Queensland and South Australian MiBSS sub-studies [16, 17], and 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].

While only 4.08% of respondents indicated that they “have **not** heard of hepatitis B”, less than one-third (28.23%) indicated that they knew how it was distinct from other forms of hepatitis (page 27). Similarly, less than one-third of all respondents (29.26%) indicated familiarity with hepatitis C as distinct from other forms of hepatitis (page 31). 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” [18], studies of Cambodian-American and Hmong-American migrants found a lack of consensus of terminology around hepatitis and its variations [19-20], 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’) [21].

Knowledge

Despite high levels of familiarity with the term HIV, the majority of respondents did not know the correct answers to individual HIV knowledge questions (page 16). The finding that only one-third (33.10%) 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 [22]. 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’ [23, 24]. The results from the MiBSS Western Australian sub-study suggest that misperceptions about the availability and/or efficacy of HIV treatments are widespread, with only 20.14% 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 [25, 26]. 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 3.18% 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).

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 (pages 21, 23). The fact that only people who had reported hearing of at least one STI were required to answer specific STI knowledge questions sets MiBSS apart from other surveys but makes comparison difficult. Just over half (53.57%) of 18-29 year olds and 72.00% of North-East Asian respondents who had heard of at least one STI in the Western Australian MiBSS sample were aware that "some STIs can make it harder for women to get

pregnant" (pages 24-25). By contrast, in a 2018 national Australian survey of Chinese international students, 23.2% of all respondents (not just those who had heard of chlamydia) knew that "chlamydia can make women infertile" [27], and 45% of predominately Australian-born 16-29 year olds in the South Australian Sexual Health (SASH) Survey knew that chlamydia "can make a woman unable to have a baby" [28].

The proportion of respondents who were aware that a person can have an STI without symptoms (58.96%) was comparable to a survey of female West African migrants in Western Australia in which 56% of respondents knew that it is false that "sexually transmitted infections can only be spread when symptoms are present" [29].

Among those who reported that they had heard of hepatitis B and knew what it was (28.23% of the Western Australian sample), hepatitis B knowledge was generally high (correct responses for each question ranged from 49.40% to 74.39%), with two exceptions. Only 42.17% 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, and only 41.46% were aware that hepatitis B cannot be transmitted by sharing food (page 28).

Hepatitis C knowledge was generally low (correct responses for each question ranged from 27.69% to 43.08% 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 78.13% answered correctly (page 31). 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 [30].

Sexual behaviours

With respect to behaviours, over a third (37.10%) of respondents reported no sex in the previous 12 months (page 35). 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%) [31], 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 an earlier survey of South-East Asian and Sub-Saharan African migrants living in Western Australia (50%) [8].

Only 7.26% of respondents reported sex with two or more partners in the previous 12 months (page 35). This figure appears similar 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 [31]. In the Western Australian MiBSS study, a statistically significantly higher proportion of males reported two or more partners (16.18%) compared to females (3.41%).

The majority (94.29%) of sexually active respondents reported that their last sexual encounter was with a regular partner

(page 36). 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 96.8% reported being monogamous [32].

Less than one-third (29.71%) of sexually active respondents reported that they had used a condom at their last sexual encounter (page 39), which was 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 [33]. Condom use was significantly higher among 18-29 year olds (55.88%) compared to other age groups.

In MiBSS, the main reasons given for not using condoms related to expectations of monogamy – “My partner and I trust each other” (35.20%) and “My partner and I don’t have any illnesses that can be passed on through sex” (26.40%) (page 40); 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 (70.00%; n=7) reported using a condom (page 39); this was comparable to results from the South Australian sub-study (66.76% of those whose most recent sexual activity was with a non-committed partner reported using a condom during that encounter) [17]. By contrast, in ASHR2, 49% of

heterosexual respondents with recent casual partners reported always using condoms [33], and in the Queensland MiBSS sub-study the majority (59.38%; n=19) reported that they had not used a condom or could not recall whether they had used a condom with a casual sexual partner [16].

Only 11 respondents answered the question about condom use during sex in the course of overseas travel since January 2018 and, of those, 54.55% reported always using condoms and 36.36% reported never using condoms (page 40). 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 Australian 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;
- Refugees and newly arrived migrants from similar settings should be offered screening for chronic hepatitis B and

syphilis and, if from a region with HIV prevalence of greater than 1%, repeat HIV testing in the event that months have passed since pre-migration testing;

- Sexually active people under the age of 30 years should be offered chlamydia testing at least annually [34].

The findings suggest that only 33.33% of respondents who had lived in Australia for less than 12 months and less than half of the sexually active respondents under the age of 30 had been tested for any STI or BBV in the previous two years (page 48). While only a small sub-sample of MiBSS respondents belonged to these priority testing groups, the results point to the need for further investigation. Moreover, testing practices among MSM respondents were not analysed due to the under-representation of this group in the Western Australian sub-study.

While opportunistic offers of testing are encouraged under the Australian STI Management Guidelines, only five respondents reported that their reason for testing was because a doctor/nurse suggested it (page 46). However, it is noteworthy that almost half of the respondents (49.83%) reported that they would be "okay" with an offer for STI/BBV testing, while only a minority reported negative reactions (9.76% said they would be offended) (page 49). This finding contrasts with a 2016 study among South-East Asian and Sub-Saharan African migrants in Perth which reported a negative reaction to what was perceived as 'targeted' screening [35].

Reasons for not testing mainly related to low risk perception (68.39% said they had

not done anything to put themselves at risk), rather than issues of service access (e.g. transport or cost) (page 47). 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. Respondents were more likely to be women. South-East Asian-born, heterosexual, English-speakers and Perth residents.

While rigorous pretesting of the survey instrument was conducted, post-completion survey feedback indicates that some respondents had difficulties understanding some questions.

Data collection coincided with the COVID-19 pandemic. The results ought therefore to be read alongside data from the Adelaide Sexual Health Centre *Changes to Sexual Health Behaviour during COVID-19 restrictions* study, when they are released [36]. While not Western Australian specific, the study is likely to provide relevant insights into the impact of the pandemic on sexual practices.

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

- What are the reasons that only 20.14% 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, gonorrhoea, and syphilis compared to respondents born in other regions (page 21)?
- What accounts for the finding that significantly lower proportions of 18-29 year-old respondents had heard of syphilis compared to respondents in other age groups (pages 21-22)?
- Why do significantly higher proportions of Sub-Saharan African-born respondents know the correct answers to STI knowledge questions, compared to respondents from other regions (page 23)?
- What explains the finding that the majority of respondents could not distinguish between different forms of viral hepatitis (page 27)?
- Why is knowledge around hepatitis C generally low among respondents (page 31)?
- Why do only 54.55% of respondents report always using condoms during overseas sexual encounters (page 40)?
- Why does a significantly higher proportion of Sub-Saharan African-born respondents report being tested for STIs/BBVs in the last two years, compared to respondents from other regions (page 43)?
- What are the reasons for low chlamydia and gonorrhoea testing practices (page 44)?
- What are the barriers to newly arrived migrants and sexually active young people getting tested in accordance with Australian STI testing guidelines (page 48)?

Conclusion

The findings of the Western Australian 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) Ensure that communication strategies around the availability of a cure for hepatitis C are inclusive of migrants;
- 5) Emphasise the importance of using condoms during overseas sexual encounters;
- 6) Promote the importance of annual STI and BBV testing among sexually active people under the age of 30 and newly arrived migrants, in accordance with clinical guidelines;
- 7) Further explore reasons for differential testing practices between migrants from different regions, and the public health implications of these variations;
- 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).
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. 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.
17. Vujcich D, Reid A, Oudih E, Calabretto H, Mao L, Guy R, Brown G, Hartley L, Roberts M, Wilshin C, Lobo R. Migrant Blood-borne Virus and Sexual Health Survey 2020-2021: South Australian results. Perth: Curtin University.
18. 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
19. 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
20. 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
21. 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
22. 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
23. 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.

24. 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
25. 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
26. 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
27. 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
28. South Australian Health and Medical Research Institute. 'Let's talk about it': South Australian Sexual Health Survey Results 2019. Available: www.sahmriresearch.org/user_assets/7d8cc013b227045b843ef39a53689c3a5bf86334/lets_talk_about_it_-_survey_report.pdf
29. Drummond P, Mizan A, Burgoyne A, Wright B. A survey of sexual health knowledge in migrants from West Africa. Undated. https://ww2.health.wa.gov.au/~/_/media/Files/Corporate/Reports-and-publications/Sexual-health/survey-of-sexual-health-knowledge-in-migrants-from-west-africa.pdf
30. 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
31. 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
32. 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
33. 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
34. ASHM. Australasian STI Management Guidelines. 2018. <http://www.sti.guidelines.org.au/>.
35. Agu J, Lobo R, Crawford G, Chigwada B. Migrant sexual health help-seeking and experiences of stigmatization and discrimination in Perth, Western Australia: exploring barriers and enablers. *Int J Environ Res Public Health*. 2016;13(5):485. doi:10.3390/ijerph13050485.
36. Government of South Australia. Sexual health research. 2021. Available: <https://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/services/primary+and+specialised+services/sexual+health+services/adelaide+sexual+health+centre/sexual+health+research/sexual+health+research>