



Incident HIV infection has fallen rapidly in men who have sex with men in Melbourne, Australia (2013-2017) but not in the newly-arrived Asian-born.

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Australasian HIV&AIDS Conference



3



4



Background

Biomedical prevention has transformed the epidemiology of HIV

- HIV Incidence in Australian MSM is falling
 - Incomplete coverage of any intervention will leave certain populations vulnerable and may reduce the overall population effectiveness.
 - Behavioural prevention (condoms) were highly accessible and high coverage was sustained through decades of health promotion.
 - Because biomedical prevention is accessed through health care systems, those with less access will benefit less.
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Background

Medicare eligibility

- Often not available to newly-arrived, Asian-born MSM who must access health care through complicated private health insurance schemes which have not been optimised for access
 - Required (in Victoria) for subsidised PrEP access (pre- and post-PBS listing)
 - Required for HIV treatment except for notable exceptions created by compassionate access programs and state government block funding of sexual health centres
 - Results in a differential in health care accessibility, including all forms of biomedical HIV prevention
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Aims

To examine the difference in HIV incidence between newly-arrived Asian-born and other MSM.

Determine if it has changed since universal treatment guidelines (2015) and widescale PrEP availability (2016).

Hypothesis

A difference in incident HIV infection between newly-arrived Asian-born MSM would emerge during the 2 years from July 2015 to June 2017 that had not been present in the 2 years from July 2013 to June 2015.

Methods

Retrospective observational study of MSM presenting for HIV testing between July 1st 2013-June 30th 2017 (referred in this study as the Year to June 2014, YTJ2015, YTJ2016, YTJ2017).

Excluded:

- **those with no prior HIV test**
- those with any positive HIV test previously
- referrals for HIV care
- PrEP clinic patients

Extracted: age, gender, country of birth, year of arrival in Australia, number and gender of sexual partners, condom use, date of most recent HIV tests, symptoms of STI, results for STI and HIV testing

Incident HIV infection: confirmed diagnosis with a negative test within 1 year or negative/indeterminate Western Blot at diagnosis.

Asian-born: country of birth one of 26 South, East and Southeast Asian Countries

Newly-arrived: year of arrival in Australia 4 years or less than the year of the HIV test.

Methods

Compared newly-arrived Asian-born to other MSM with regard to primary outcome measure:

- Proportion of individuals tested each year who are diagnosed with incident HIV.

Statistical analysis:

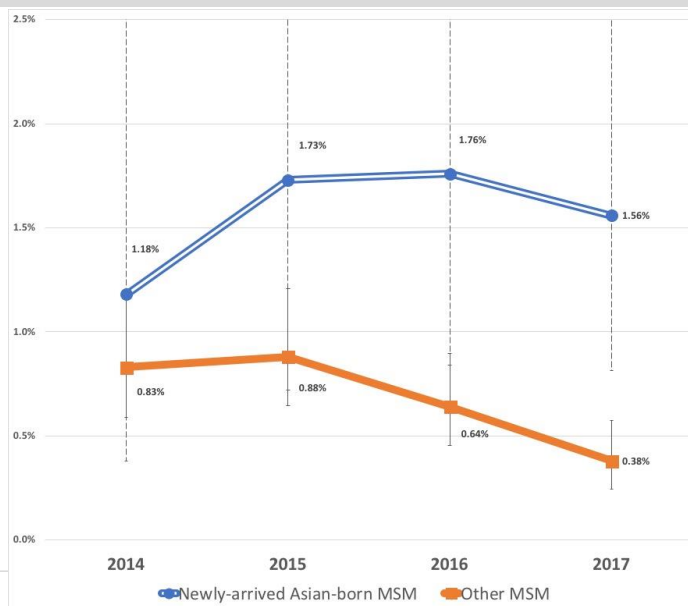
- Factors associated with odds of diagnosis of incident infection examined using logistic regression with generalized estimating equation models for repeated observations in individuals.

Approved by Alfred Health Ethics Committee (335/17)

Results

	Newly arrived Asian born MSM	Other MSM	P value
Number of people tested	1,047	11,133	
Number of tests	2,781	32,962	
Age, years median (IQR)	26.4 (23.5-29.8)	29.5 (25.0-37.0)	<.0001§
Born in Australia, n (%)	-	6,723 (60.4%)	-
Positive HIV tests, n	36	175	
% of tests performed	1.29	0.53	<.001¶
% of people tested	3.53%	1.56%	<.001¶
Incident HIV, n	24	126	
% positive tests	66.7%	72.0%	.52¶
% tests performed	0.87	0.38	<.001¶
% of people tested	2.42%	1.13%	<.001¶

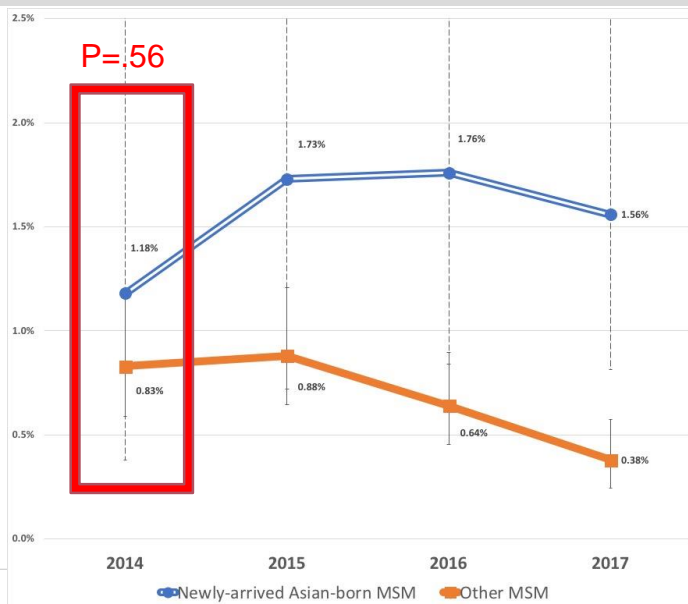
Proportion tested each year with incident HIV infection



Incident HIV in Newly-Arrived Asian-Born MSM at MSHC



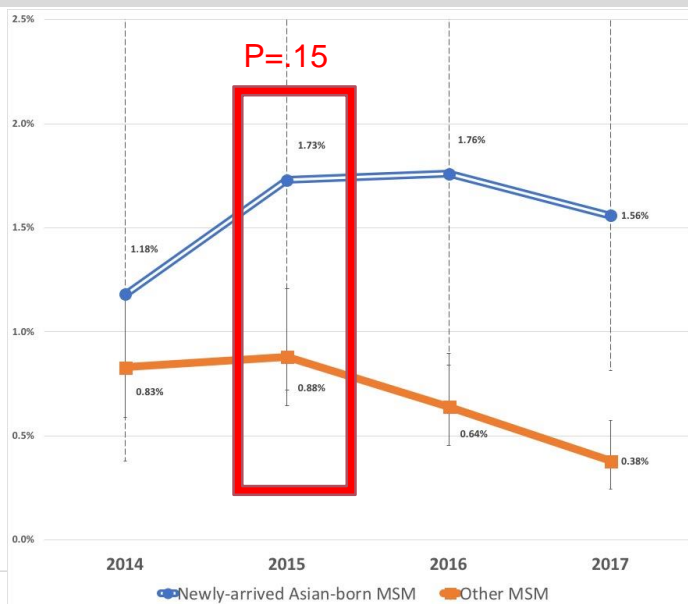
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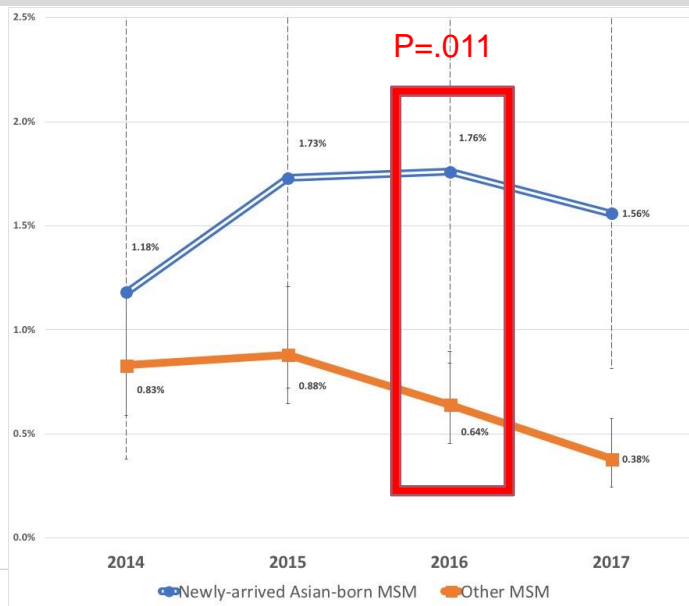
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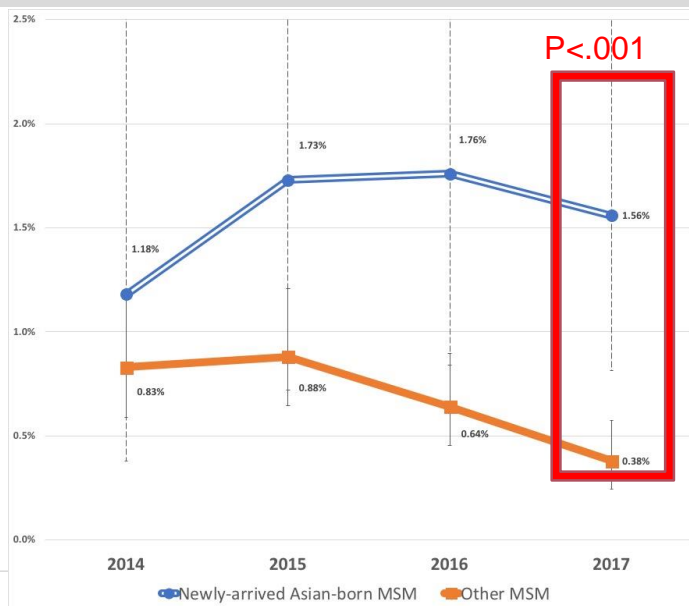
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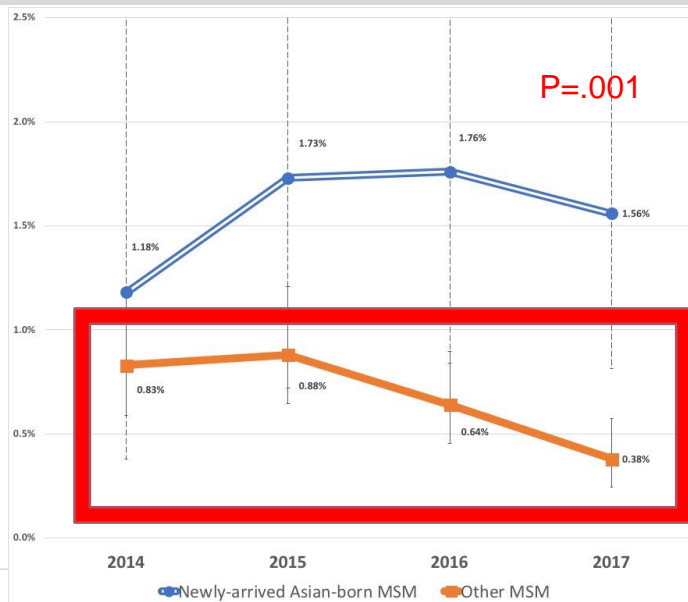
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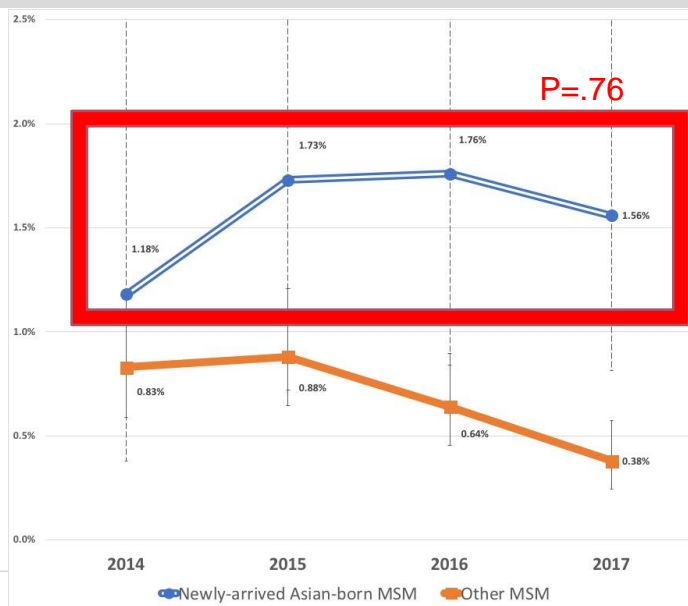
Results: YTJ2017

	Newly arrived Asian born MSM	Other MSM	p
Individuals tested, n	581	5608 [§]	
HIV tests, n	1,138	10,462	
Age in yrs, median (IQR)	26.7 (24.0-30.0)	30.3 (25.6-37.5)	<.0001[§]
Days since previous HIV test, median (IQR)	114 (73-238)	101 (61-189)	<.0001[§]
Tests with:			
Symptoms n (%)	195(17.1%)	2059(19.7%)	.039[†]
Syphilis n (%)	19 (1.67%)	161 (1.54%)	.73 [†]
Pharyngeal gonorrhoea n (%)	4 (0.35%)	68 (0.65%)	.23 [†]
Urethral gonorrhoea n (%)	12 (1.05%)	239 (2.28%)	.007[†]
Urethral chlamydia n (%)	28 (2.46%)	298 (2.85%)	.45 [†]
Anal gonorrhoea n (%)	61 (5.36%)	535 (5.11%)	.72 [†]
Anal chlamydia n (%)	89 (7.82%)	740 (7.07%)	.35 [†]
100% condom use n (%)	522 (51.9%)	3537 (38.2%)	<.001[†]
10 or more partners in 3 months n (%)	110 (9.67%)	1450 (13.9%)	<.001[†]
Positive HIV tests, n	14	38	
% tests	1.23%	0.36%	<.001 [†]
% people tested	2.41%	0.68%	<.001 [†]
Incident HIV, n	9	21	
% positives	64.3%	55.3%	.56 [†]
% tests	0.79%	0.20%	<.001 [†]
% people tested	1.56%	0.38%	<.001 [†]
(95%CI)	(0.81%-2.98%)	(0.25%-0.58%)	

Proportion tested each year with incident HIV infection



Proportion tested each year with incident HIV infection



Predictors of incident HIV infection: YTJ2014&2015

	OR	p	aOR	p
Age years	0.77 (0.60-0.98)	.036	0.93 (0.72-1.20)	.56
Not newly-arrived not Asian-born	ref			
Newly-arrived Asian-born	1.79 (0.85-3.79)	.13	1.51 (0.63-3.62)	.36
Asian-born not newly arrived	1.06 (0.53-2.09)	.88		
Newly-arrived not Asian-born	1.44 (0.77-2.71)	.26		
Months since prior test	0.97 (0.94-1.00)	.054	0.98 (0.95-1.01)	.12
Symptoms n (%)	1.79 (1.13-2.84)	.013	1.41 (0.84-2.36)	.80
Syphilis n (%)	1.83 (0.45-7.49)	.40		
Pharyngeal gonorrhoea	1.89 (0.59-6.01)	.28		
Urethral gonorrhoea	2.80 (1.13-6.97)	.027	0.86 (0.28-2.63)	.80
Urethral chlamydia	2.05 (0.75-5.63)	.16	1.30 (0.44-3.79)	.63
Anal gonorrhoea	9.41 (5.58-15.9)	<.001	5.97 (3.25-10.97)	<.001
Anal chlamydia	4.70 (2.67-8.27)	<.001	2.46 (1.28-4.73)	.007
100% condom use	0.43 (2.67-8.27)	.001	0.55 (0.33-0.91)	.019
10 or more partners in 3 months	2.46 (1.50-4.03)	<.001	2.05 (1.21-3.46)	.007

Logistic regression analysis, using generalized estimating equations for multiple observations in individuals, on odds of being diagnosed with incident HIV infection in the time period 1 July 2013 to 30 June 2015

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Predictors of incident HIV infection: YTJ2016&2017

	OR	p	aOR	p
Age years	0.8 (0.68-1.12)	.27		
Not newly-arrived not Asian-born	ref			
Newly-arrived Asian-born	3.92 (2.14-7.18)	<.001	4.40 (2.38-8.15)	<.001
Asian-born not newly arrived	2.43 (1.31-4.51)	.005	2.63 (1.41-4.93)	.002
Newly-arrived not Asian-born	1.52 (0.70-3.31)	.29		
Months since prior test	0.99 (0.96-1.01)	.35		
Symptoms n (%)	1.37 (0.80-2.34)	.25		
Syphilis n (%)	5.72 (2.46-13.3)	<.001	4.01 (1.68-9.55)	.002
Pharyngeal gonorrhoea	1.57 (0.22-11.4)	.65		
Urethral gonorrhoea	1.33 (0.36-5.44)	.69		
Urethral chlamydia	1.05 (0.26-4.28)	.95		
Anal gonorrhoea	4.09 (2.23-7.49)	<.001	2.97 (1.57-5.63)	.001
Anal chlamydia	2.70 (1.45-5.03)	.002	1.69 (0.87-3.27)	.12
100% condom use	0.57 (0.34-0.95)	.032	0.65 (0.39-1.11)	.12
10 or more partners in 3 months	2.09 (1.21-3.62)	.008	1.80 (1.02-3.17)	.04

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Discussion

A difference emerged between newly-arrived Asian-born MSM in the proportion diagnosed with incident HIV infection.

By the end of the study period newly-arrived Asian-born MSM were four times more likely to be diagnosed with incident HIV infection.

These infections most likely occurred after the individuals first arrived in Australia.

Consistently throughout the study, newly-arrived Asian-born MSM reported less sexual partners and more consistent condom use.

There was a change in risk factors:

- Condom use and partner numbers less predictive
-

Discussion

The probability of acquisition of HIV infection is related to:

- Frequency of exposure
 - partner numbers ?
 - Per-exposure probability of transmission
 - Condom use
 - Pre-exposure prophylaxis
 - Prevalence of undiagnosed or untreated HIV infection in sexual partners
 - $U=U / TasP$
-

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***amount of sex not captured**

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 - ~~Condom use~~*
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***if condoms were used with some partners but not others was not captured**

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The probability of acquisition of HIV infection is related to:

- Frequency of exposure
 - ~~partner numbers~~
- Per-exposure probability of transmission
 - ~~Condom use~~
 - ~~Pre-exposure prophylaxis*~~
- Prevalence of undiagnosed or untreated HIV infection in sexual partners
 - **U=U / TasP**

***because the effect was first
observed in the year to June 2016
when PrEP uptake was still quite low**

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The probability of acquisition of HIV infection is related to:

- Frequency of exposure
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- Per-exposure probability of transmission
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*

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 - ~~Pre-exposure prophylaxis??~~
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Failure of Treatment as Prevention:

Delayed diagnosis and viral suppression in the sexual partners of newly arrived Asian-born MSM explains the difference in risk of HIV infection observed in this study.

Hypothesis

Newly-arrived Asian-born MSM are at increased risk of HIV

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**Newly-arrived Asian-born MSM are at increased risk of HIV
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They are Medicare ineligible

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who

Are likely to have delayed HIV diagnosis and viral suppression

because

They are Medicare ineligible and experience other obstacles to care

or

Newly-arrived Asian-born MSM also may have poorer knowledge of HIV and sexual health or be less successful in negotiation behavioural risk reduction strategies.

Limitations

Is the primary outcome measure a marker of incidence?

- The short periods between HIV tests suggest that it is related to incidence and not testing patterns.
 - It is likely to under-estimate incidence because some recent infections would have been excluded because of no recent negative test.
 - The slightly longer period between HIV tests in newly-arrived Asian-born MSM suggests that the primary outcome measure would, if anything, underestimate incidence **more** in this group than in other MSM and that the actual difference in incidence is greater than observed in this study.
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Limitations

Generalisability

- Newly-arrived Asian-born MSM attending MSHC may not be representative.
 - Other MSM attending MSHC may not be representative.
 - Medicare ineligible MSM were eligible for PrEP demonstration studies in NSW but not in Victoria.
 - Medicare ineligible MSM can freely access testing and sexual health services at sexual health centres without using their insurance.
 - Victoria has 1 sexual health centre for 6.4 million people.
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Discussion

HIV infection is preventable and is particularly devastating for these individuals as it complicates their attempts to immigrate, which many dream of, and many may return to countries with less protection and services for MSM and for people living with HIV and may experience stigma, discrimination and poorer health outcomes.

“I feel like I have lost everything.”

Conclusions

Having a subpopulation with higher rates of HIV transmission and lower rates of viral suppression will undermine the effectiveness of biomedical prevention across the community and reduce the return on investment for PrEP and U=U/TasP.

Failing to address inequalities in access to care for newly-arrived Asian-born MSM and other individuals who are not eligible for Australia's universal health care insurance scheme Medicare may lead to ongoing high rates of HIV transmission in this subpopulation and the wider community.

This may also threaten Australia's international reputation as a safe country to live, visit, work and study and our \$30 billion/year overseas study industry.

Acknowledgements

Co-authors:

- Tim Read, Eric Chow, Jason Ong, Marcus Chen, Ian Denham, Praveena Gunaratnum, Kit Fairley.

Funding: NHMRC

Site: MSHC

**Newly-arrived Asian-born and *other* MSM
whose data has been included in this research.**
