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A tale of two studies:

Interpreting results from studies of undiagnosed HIV among gay and bisexual men in Melbourne in 2008 and 2014.

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Background

- Undiagnosed HIV contributes disproportionately to new HIV infections
- Diagnosis a pivotal step in an era of Test and Treat
  - Diagnosis and time to diagnosis
- Seventh National Strategy Objective to reduce proportion (%) undiagnosed

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Background

- Melbourne one of two jurisdictions in Australia to assess prevalence of undiagnosed HIV among gay and bisexual men (GBM) twice

Suck it & See (2008)   COUNT (2014)

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Methods

	Suck It & See	COUNT
Time Period	June 2008	January 2014
Recruitment	Sex & social venues*	Community Events, sex and social venues*
Participation Type	Anonymous, no results provided	Anonymous or confidential (with results provided)
Survey	Standalone behavioural survey	Linked to Gay Community Periodic Survey (GCPS)
Sample testing	Oral fluid tested for HIV antibody using same assay at NRL.	

*Sex and social venues included gay bars, clubs, and sex-on-premises venues

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Results

	Suck It & See (n=639)	COUNT (n=993)
Recruitment location	n (%)	n (%)
Sex/Social Venues	639 (100.0)	238 (24.0)
Community Events	-	755 (76.0)
Condomless anal sex with casual partners in previous 6 months	172 (35.3)	246 (24.8)
Sex/Social Venues	172 (35.3)	78 (32.8)
Community Events	-	168 (22.3)
Tested for HIV in past 12 months*	328 (74.4)	596 (65.2)
Sex/Social Venues	328 (74.4)	143 (66.8)
Community Events	-	453 (64.7)

*Testing among men of HIV negative or unknown status at time of survey

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Results

	Suck It & See (n=639)	COUNT (n=993)
	% (95% CI)	% (95% CI)
HIV Prevalence	9.5 (7.4-12.1)	7.0 (5.6-8.8)
Sex/Social Venues	-	7.1 (3.8-10.4)
Community Events	-	7.0 (5.3-9.1)
% Undiagnosed	31.1 (19.9-44.3)	7.1 (3.1-15.7)
Sex/Social Venues	-	11.8 (0.0-27.1)
Community Events	-	3 (11.8-15.7)

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Summary of differences

- Lower overall prevalence of HIV in COUNT (7%)

- Lower % of undiagnosed HIV in COUNT (7% vs 31%)

- Fewer COUNT participants reporting CAIC in previous 6 months (25% vs 35%)

How to interpret these differences?!

Possible explanations

- The difference in % undiagnosed is an artefact of the differing study designs

- The results reflect a true reduction in HIV prevalence and in % undiagnosed

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Impact of study design

- Venue-only vs. community event recruitment

  - Differences in risk behaviour between venue recruitment:

    - **COUNT**: CAIC reported by 33% of venue-based sample vs 22% of event based sample

    - **Suck It & See**: CAIC reported by 35% of sample

Impact of study design

	Suck It & See (n=639)	Anonymous COUNT (n=278)
Recruitment location	**n (%)**	**n (%)**
Sex/Social Venues	639 (100.0)	70 (25.2)
Community Events	-	208 (74.8)
	% (95% CI)	**% (95% CI)**
HIV Prevalence	9.5 (7.4-12.1)	19.4 (14.8-24.0)
Sex/Social Venues	-	18.6 (9.4-27.7)
Community Events	-	19.7 (14.5-25.8)
% Undiagnosed	31.1 (19.9-44.3)	1.9 (0.0-5.5)
Sex/Social Venues	-	7.7 (0.0-22.2)
Community Events	-	No observations

Impact of study design

	Suck It & See (n=639)	Anonymous COUNT (n=278)
	% (95% CI)	**% (95% CI)**
% Undiagnosed (as % of HIV neg and unknown)	3.3 (1.9-4.7)	0.4 (0.0-1.2)
Sex/Social Venues	-	1.7 (0.0-5.1)
Community Events	-	No observations

Impact of study design

	Suck It & See (n=639)	Anonymous COUNT (n=278)
	% (95% CI)	% (95% CI)
% Undiagnosed (as % of HIV neg and unknown)	3.3 (1.9-4.7)	0.4 (0.0-1.2)
Sex/Social Venues	-	1.7 (0.0-5.1)
Community Events	-	No observations

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Impact of study design

- It is possible that COUNT provides a more representative estimate of the gay community and of % undiagnosed, when compared to Suck It & See's 'higher risk' men.

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Is it real?

- This would require a substantial increase in testing frequency over time.

	2007	2008	2009	2010	2011	2012	2013	P
Individuals	1928	2042	2095	2241	2376	3170	4052	
HIV tests	4431	5231	5732	6483	6816	8031	9336	<0.01
Return tests in 12 months (n)	1985	2444	2891	3279	3519	4280	-	<0.01
Return tests in 12 months (%)	44.8	46.7	50.4	50.6	51.6	53.3	-	<0.01
Median tests per individual	1.0	2.0	2.0	2.0	2.0	2.0	1.0	

Wilkinson et al (2015)

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Is it real?

- What do we know about new diagnoses from Victorian passive surveillance data?

HIV notifications among GBM in Victoria

Legend: Total MSM notifications, % newly acquired
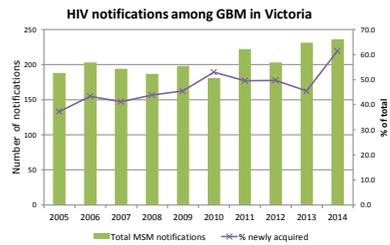
Source: Victorian Dept of Health and Human Services

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Is it real?

$$\text{\% Undiagnosed} = \frac{\text{\# of participants testing positive \& self-reported HIV negative or untested}}{\text{Total \# of participants who tested positive (Overall HIV prevalence)}}$$

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Is it real?

- Study HIV Prevalence:
  - Overall biological HIV prevalence in COUNT is lower than in 2014 Melbourne GCPS self-reported HIV status: 7.0% vs 9.7%

  - Self-reported HIV status of GCPS-only participants who opted out of COUNT
    - HIV positive: 11.1%
    - Unknown/no response: 14.8%

  - Given under-recruitment of known HIV+ men, % undiagnosed in COUNT may be inflated

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Summary

- The difference in % undiagnosed is an artefact of the differing study designs
  - Difference in risk profiles between study samples based on recruitment locations
  - Could be a more representative sample (and therefore estimate) of gay community

- The results reflect a true reduction in HIV prevalence and in % undiagnosed:
  - Partially supported by sentinel surveillance data
  - Supported by HIV passive surveillance
  - But hard to answer given under-recruitment of men with known HIV infection

Conclusions

COUNT in Melbourne has provided us with valuable learnings

- Study is acceptable in the community
  - High participation rates

- Results delivery model acceptable
  - In every city, roughly 75% of participants opted to receive their results, mostly via SMS

- Can be done alongside GCPS with minimal impact to survey numbers

Conclusions

- Undiagnosed HIV is an important indicator of HIV epidemic, but it is tough to measure

- The challenge in interpretation underscore importance of standardised methodology in future practice:

  - Sample frames:
    - high risk or gay community as whole (Sex/social venues vs. broader community events)

  - Anonymous vs. confidential:
    - What is the primary aim?
      - Epidemiological study (no results)
      - Public health intervention (results provision)

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COUNT & Suck It & See participants

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