Trends in incidence of bacterial sexually transmitted infections among gay and bisexual men using PrEP in Australia

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on behalf of ACCESS

Background

PrEP users have a high burden of STIs globally[1]

Baseline risk

HIV-risk criteria for PrEP

PrEP use is associated with declining condom use at the individual-level[2] and population-level[3]

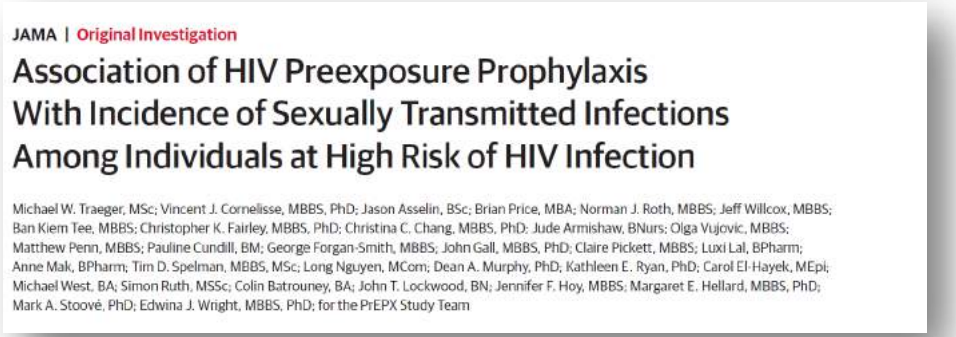
Does PrEP use increase STI risk?

1. Ong et al. JAMA Network Open. 2019.
2. Traeger et al. CID. 2018
3. Holt et al. Lancet HIV. 2018

PrEP and STIs: The PrEPX Study

Findings

- High incidence of bacterial STIs during follow-up (91.9 per 100 person-years)
- Highly concentrated among those with repeat infections
- Increase in STI incidence after PrEP initiation (aIRR = 1.21)
- **Median of 14 months of PrEP use**



JAMA | Original Investigation

Association of HIV Preexposure Prophylaxis With Incidence of Sexually Transmitted Infections Among Individuals at High Risk of HIV Infection

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	Incidence rate (per 100 person-years)
Any STI	91.9
Chlamydia	44.8
Gonorrhea	38.6
Syphilis	8.0
Any rectal infection	56.6
Any urethral infection	22.4
Any pharyngeal infection	23.5

Traeger MW, et al. JAMA **2019**; 312(14):1380-90

What are the long-term trends in STI incidence among PrEP users in Australia?

Has STI incidence continued to increase among PrEP users?

Does sustained regular testing impact STI trends?

ACCESS

Australian Collaboration for Coordinated Enhanced Sentinel Surveillance of Blood-borne Viruses and Sexually Transmitted Infections

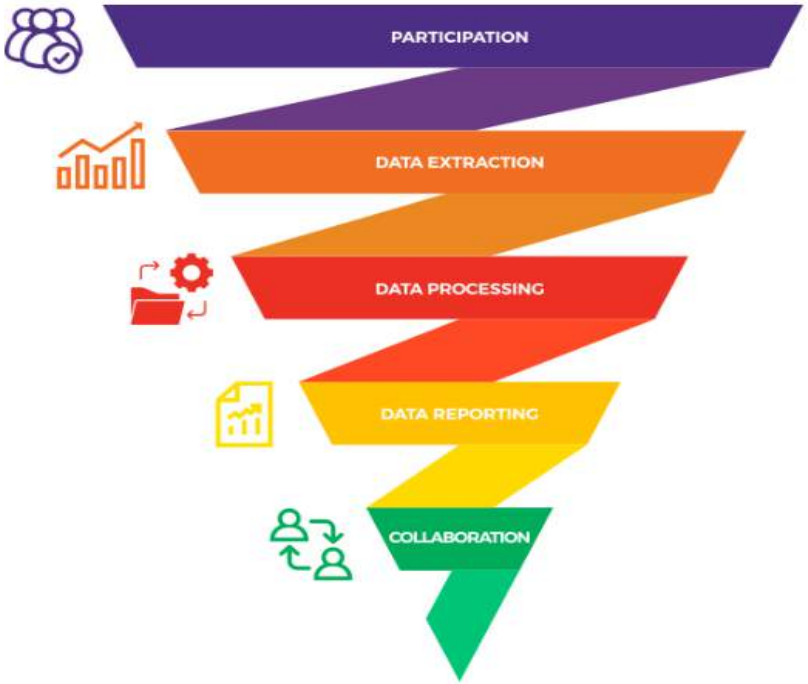
- National sentinel surveillance project
- Monitors blood-borne viruses and sexually transmitted infections
- Been running for over 10 years

Burnet Institute
Medical Research. Practical Action.

Kirby Institute

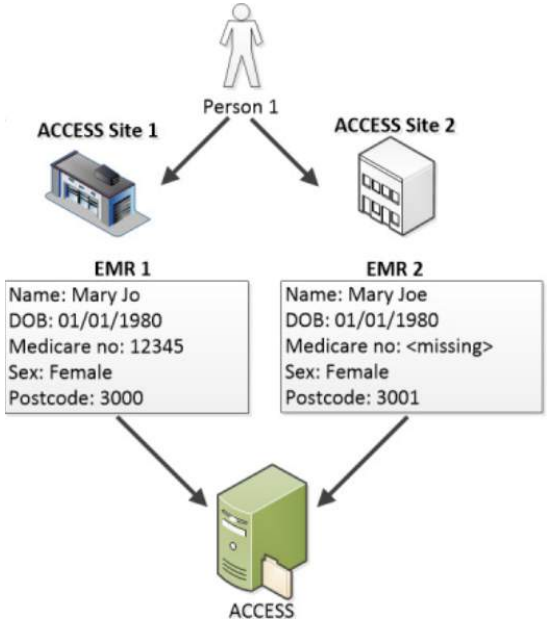
NRL
Science of Quality

ACCESS



- Sentinel clinics are chosen based on priority populations
- Specialised data extraction software **GHRANITE** installed on the server at participating clinics
- Patient data are deidentified **at the clinic**, then sent to Burnet Institute
- Patient records are linked across services using a highly sensitive probabilistic linkage algorithm
- Provides line-listed data for **all tests**, HIV, viral hepatitis, STIs, prescriptions, diagnoses and consultations

High coverage of sexual health and GBM-focused GP clinics in Australia



Allows for longitudinal monitoring of individuals over time and across services

Methods

Cohort

Gay and bisexual men using PrEP between 2016 - 2019

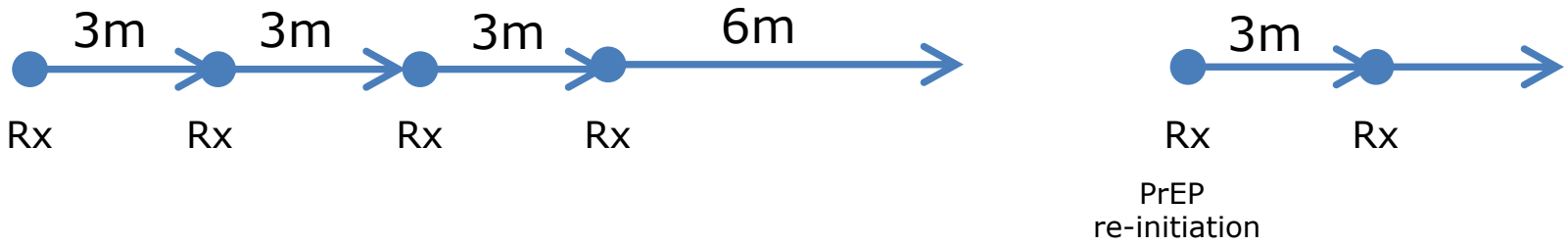
Attending any ACCESS clinic across Australia

Have at least 2 STI test events during PrEP use

PrEP use classification

Evidence of PrEP prescription (tenofovir + emtricitabine)

GBM classified as PrEP users from date of first prescription and for 6 months after last prescription



Methods

Incidence analyses

- Used repeat testing methods for incidence calculations
- Contribute person-time from first STI test event **after** PrEP initiation
- STI diagnosis taken as random point between diagnosis date and previous negative test
- Follow-up time split into calendar half-years
- Calculated half-yearly incidence rate per 100/person-years
- Test for trend using Poisson regression

Individuals censored at:

- Final recorded STI test result in ACCESS
- PrEP cessation (6m after script)
- December 31st 2019

Subgroup analysis

Open cohort
All GBM using PrEP

Dynamic population as
people switch between PrEP and no PrEP use

- More representative
- Heterogenous population
- Risk-profile changes over time
- Incidence trends influenced by changing cohort

Closed cohort
Continuous PrEP users

GBM with continuous PrEP use
from 2016 – 2019

- Static cohort
- Early PrEP-adopters
- 'High-risk' cohort
- More reliable indication of incidence trends

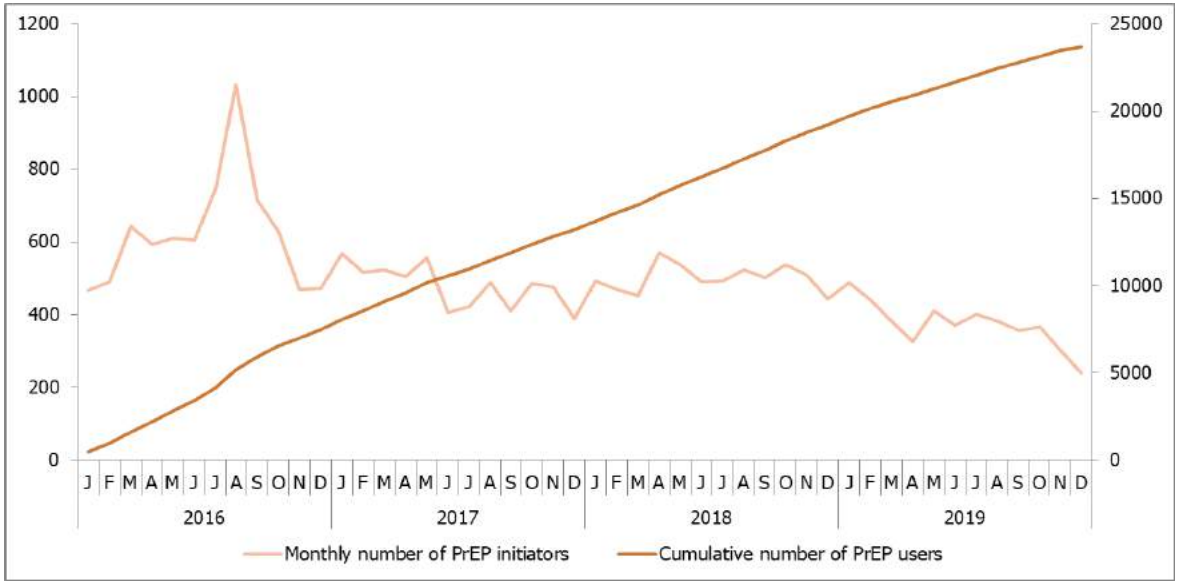
Results

PrEP uptake

23,696

GBM PrEP initiators

across the ACCESS network



17,250

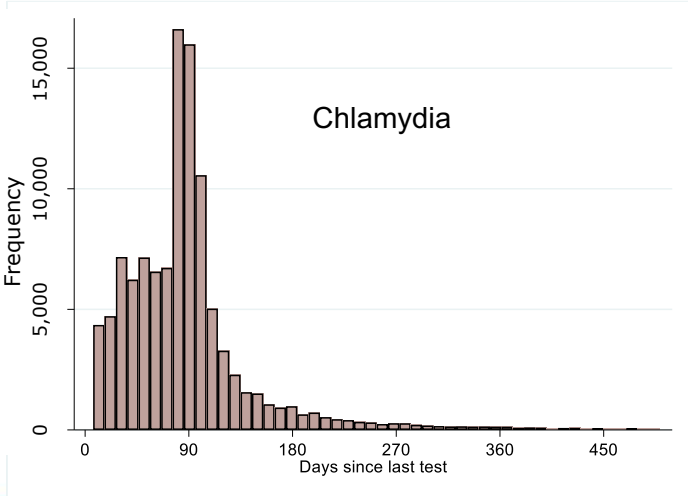
GBM PrEP users had ≥2 STI tests *during PrEP use* and contributed to incidence analyses

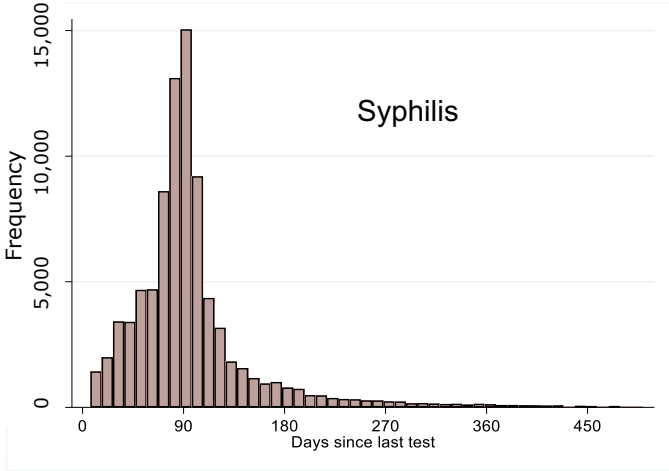
3,498

had continuous PrEP use from 2016 to 2019

Time between STI tests

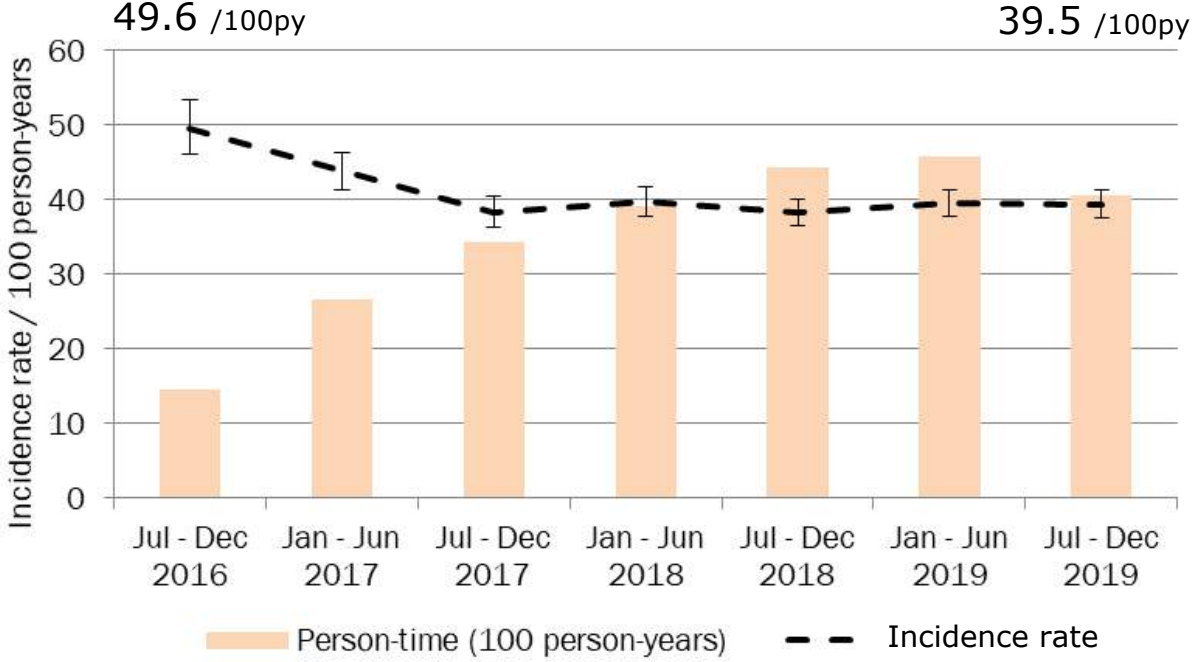
	Tests	Days since previous test	
		median	90th percentile
Chlamydia	113,045	84	149
Gonorrhoea	109,959	84	149
Syphilis	87,110	90	165





Chlamydia incidence

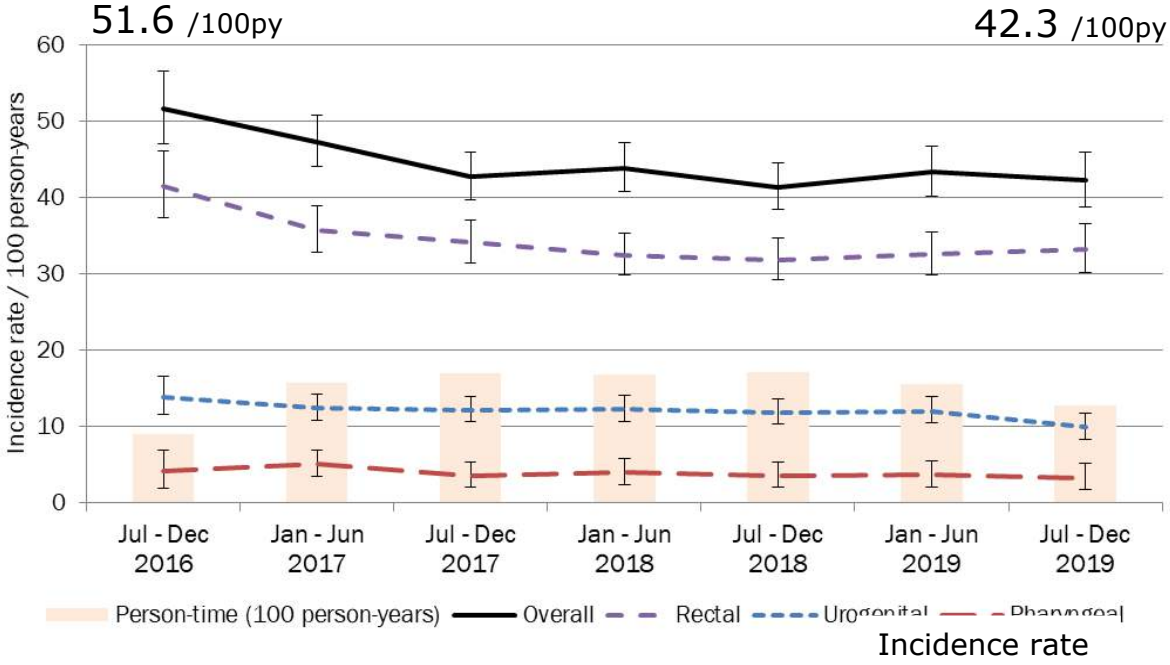
All PrEP users



IRR=0.97
P<0.001

Chlamydia incidence

Continuous PrEP users



IRR=0.97
P<0.001

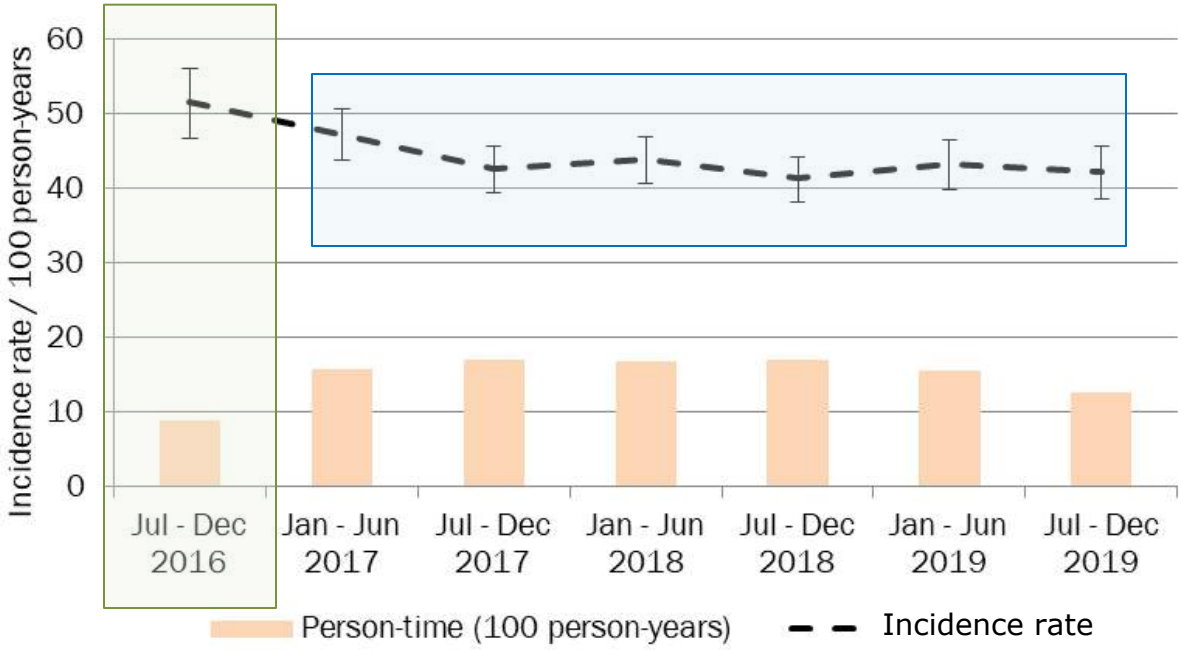
Rectal P=0.002

Urethral P=0.029

Pharyngeal P=0.116

Chlamydia incidence

Continuous PrEP users



Sensitivity analysis

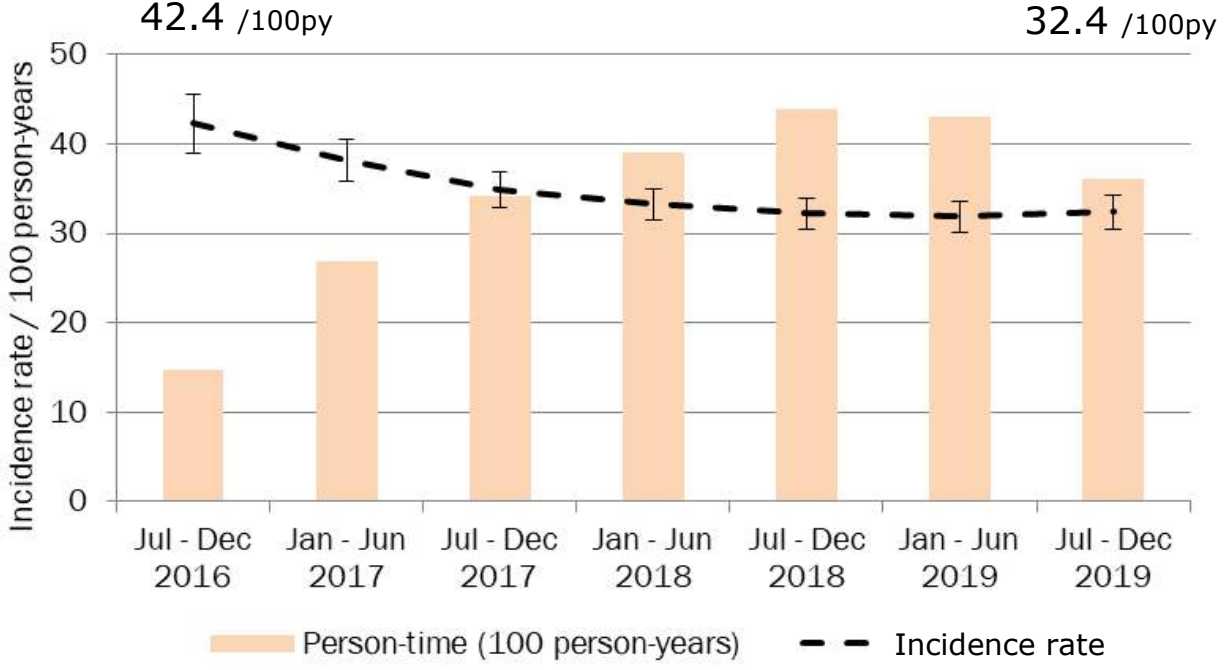
IRR=0.97
P<0.001

2017 - 2019
IRR=0.99
P=0.165

Stable incidence

Gonorrhoea incidence

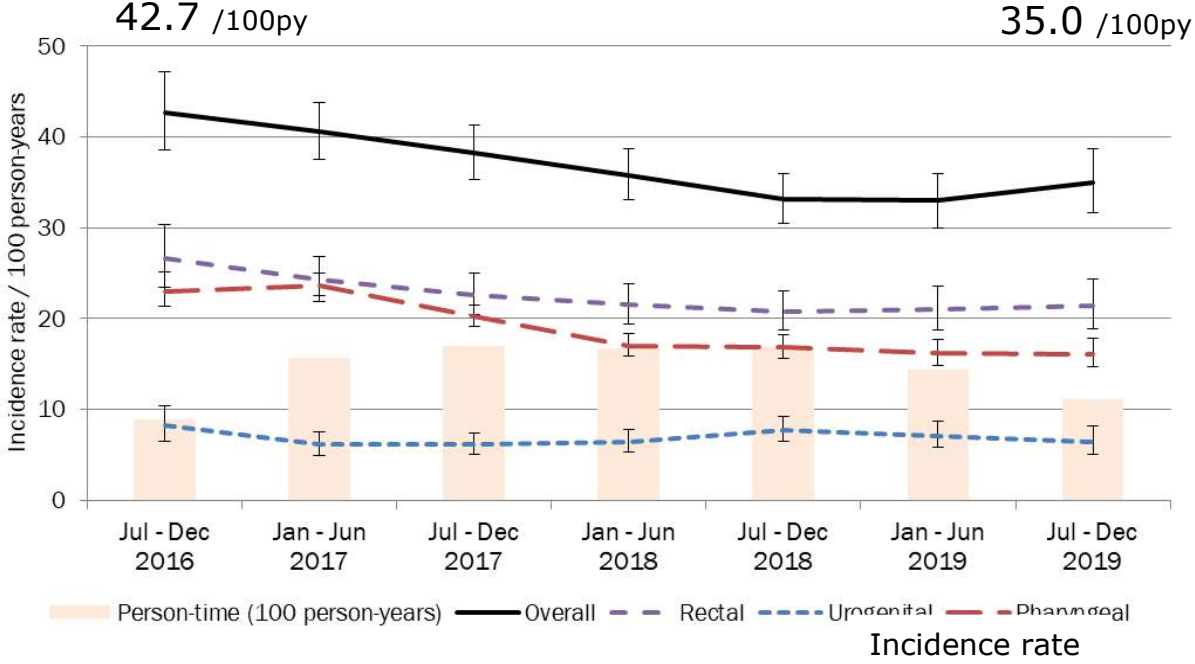
All PrEP users



IRR=0.96
P<0.001

Gonorrhoea incidence

Continuous PrEP users



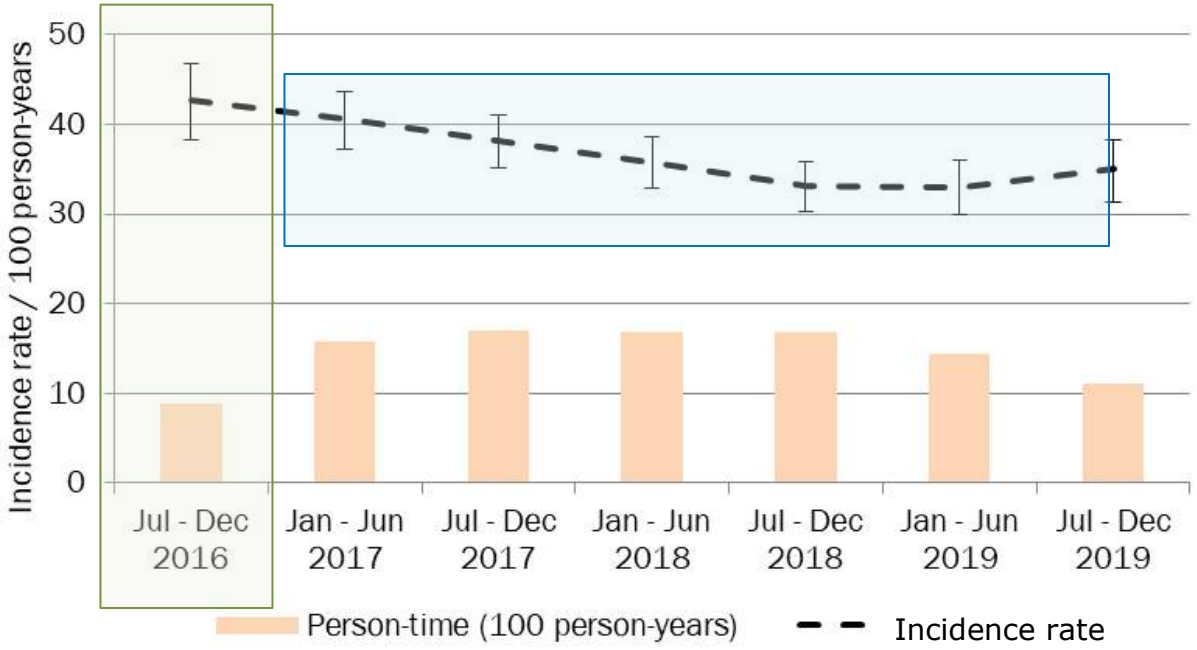
IRR=0.95
P<0.001

Rectal P=0.003
Pharyngeal P<0.001

Urethral P=0.973

Gonorrhoea incidence

Continuous PrEP users



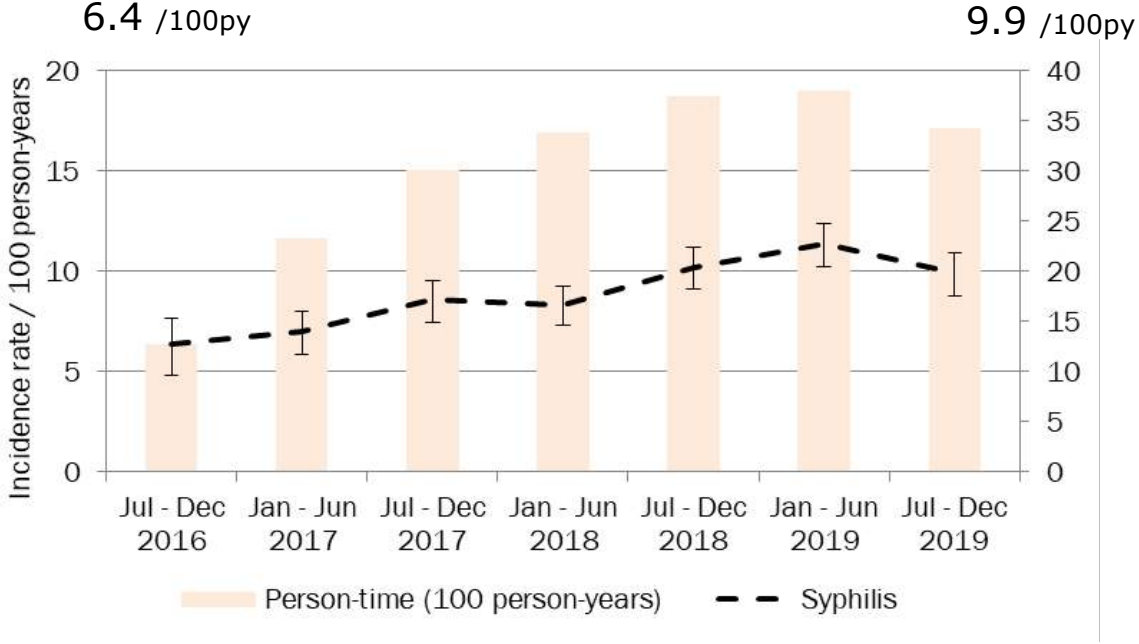
Sensitivity analysis

IRR=0.95
P<0.001

2017 - 2019
IRR=0.96
P<0.001

Syphilis incidence

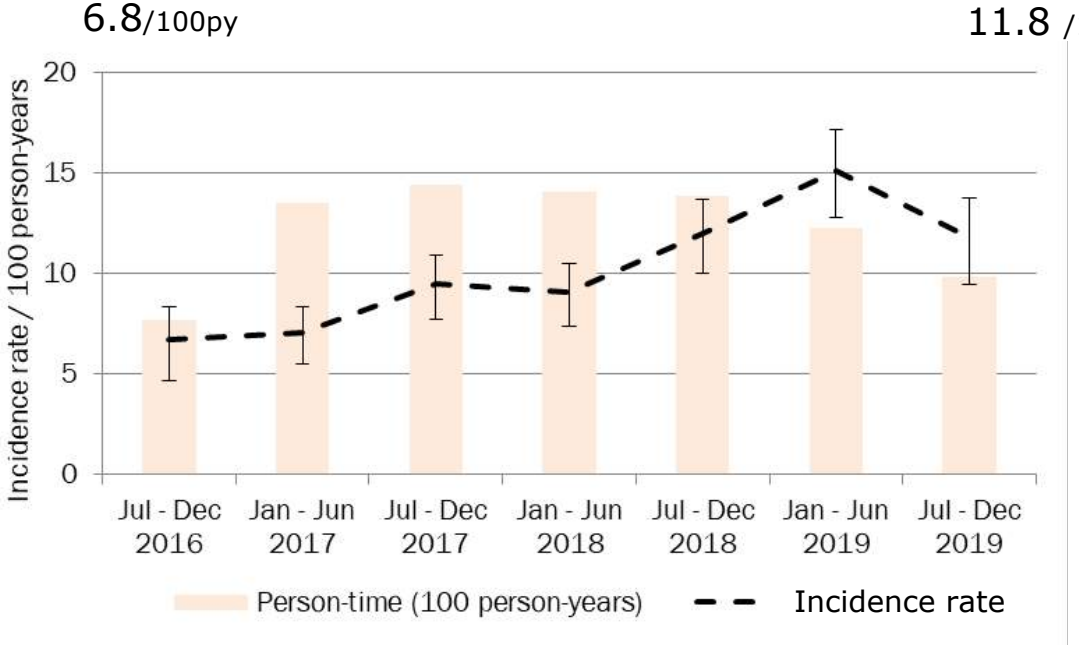
All PrEP users



IRR=1.08
P<0.001

Syphilis incidence

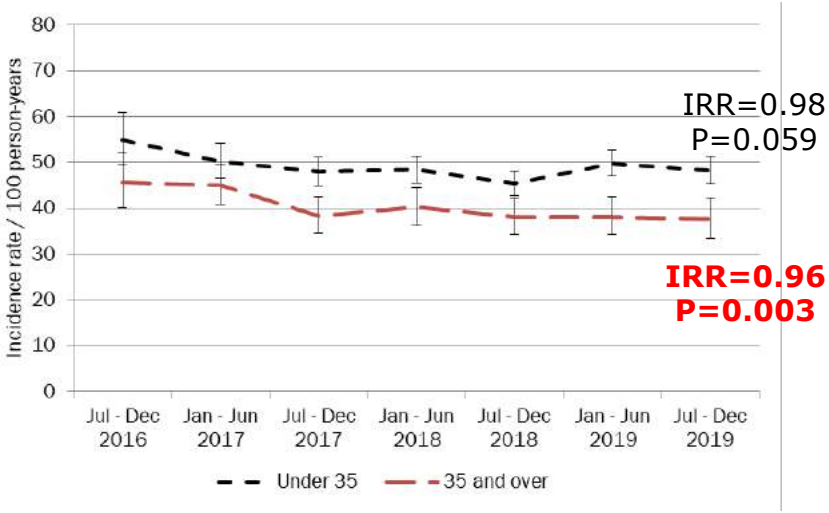
Continuous PrEP users



IRR=1.17
P<0.001

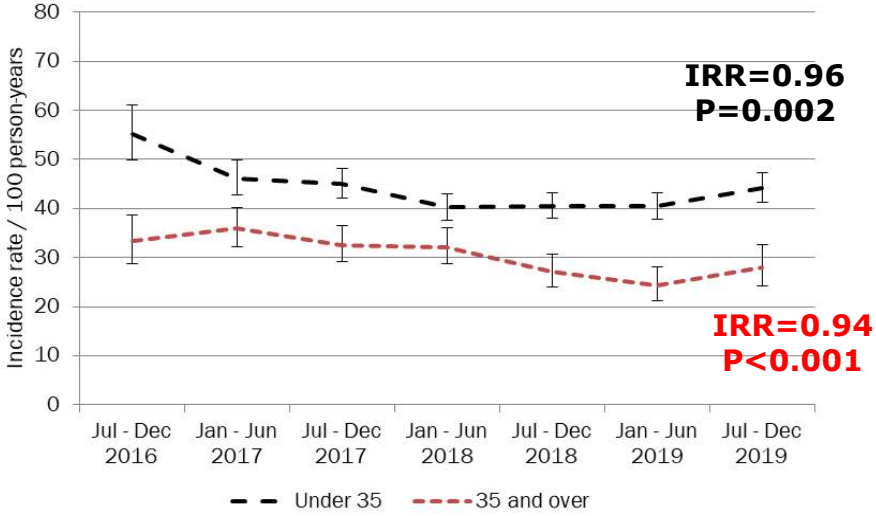
By age group

Chlamydia incidence



N=1568 N=1930

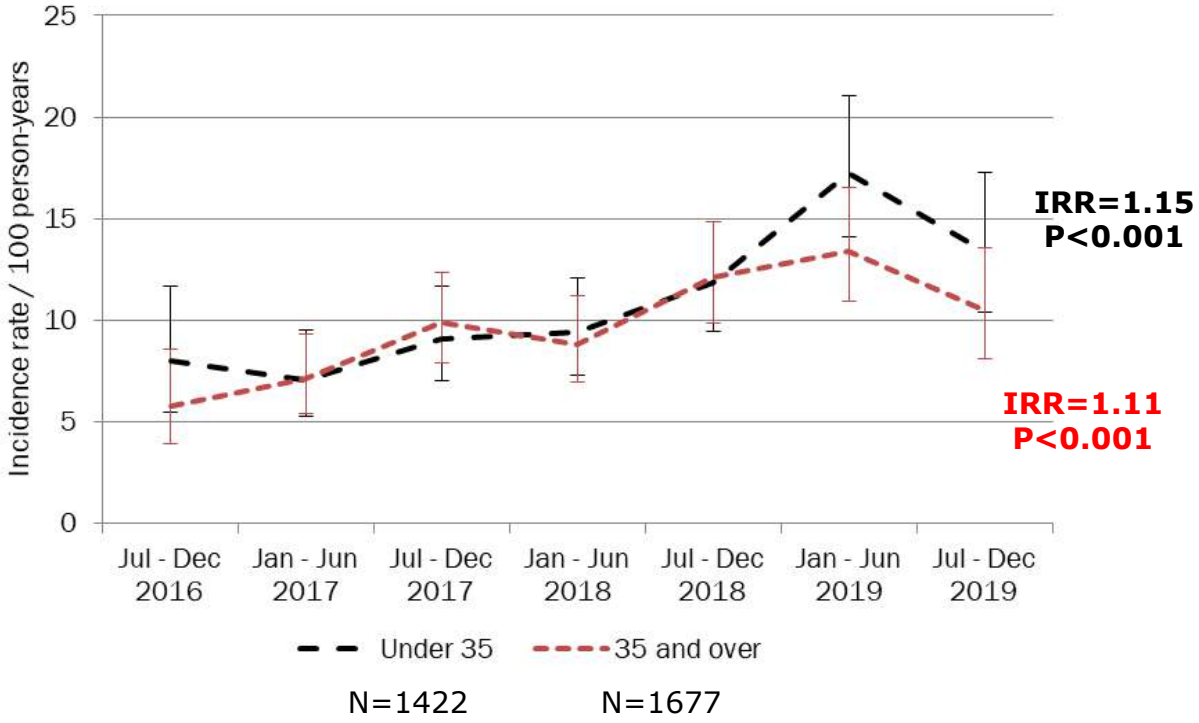
Gonorrhoea incidence



N=1569 N=1915

By age group

Syphilis incidence



Summary

- Australian gay and bisexual men using PrEP remain a priority group for bacterial STIs

- Data suggests that gonorrhoea and chlamydia incidence does not continue to increase following long-term PrEP use
- Some STIs have leveled-off at a ‘high’ level compared to pre-PrEP
- Regular asymptomatic testing among PrEP users may stabilise population-level STI incidence
- Changes in PrEP population and expansion of sexual networks may disperse infections

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- Continue to maintain integrated care for STIs and PrEP with high testing rates
- Focus on targeted interventions to reduce transmission

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