

## Not so hard to swallow? Early adherence to PrEP by the first 50 participants in the VicPrEP study and DBS results at month 6

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## Disclosure of Interest Statement

### Funding for the VicPrEP Study

- Victorian Dept. of Health
- Gilead Sciences (in-kind)

### John de Wit

- Gilead (research funding, in-kind support)
- Boehringer Ingelheim (consultancy fees)
- BMS (lecture fees)

### Norm Roth

- Viiv, MSD, Gilead, Bristol Myers Squibb (honoraria for Advisory Boards and/or educational events)

### Richard Moore

- Gilead, Viiv, Merck (support for education)

### Tim Read

- Gilead (support for education)

### Edwina Wright

- Gilead (research funding, research support, educational resources)
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- Janssen Cilag, Boehringer Ingelheim (research funding)
- Viiv (research support, lecture fees, educational resources)
- Merck (research support)

### Dean Murphy, Luxi Lal, Jen Audsley, BK Tee

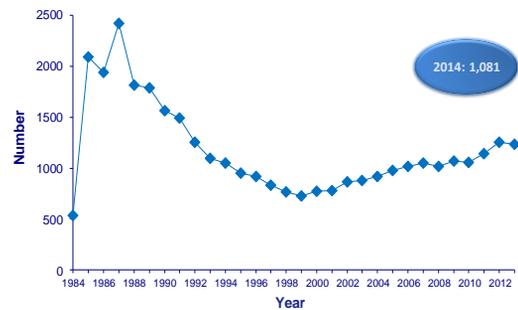
- No interests to disclose



## All Australian States and Territories signed a pledge to end HIV transmissions by 2020



## Newly diagnosed HIV infection in Australia



Kirby Institute, ASR 2015

Source: State/Territory health authorities



## Reducing HIV transmission



## PrEP

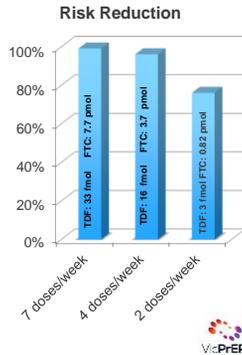


- **Pre-exposure prophylaxis against HIV infection**
  - Daily tablet of Tenofovir (TDF)-Emtricitabine (FTC) taken by HIV negative people at high risk of acquiring HIV, in conjunction with condom use and HIV/STI testing
- **PrEP efficacy in RCTs**
  - 44-75% (heterosexuals, MSM, transgender and PWID populations)
- **iPrEX study enrolled 2,499 HIV-ve MSM and transgender women**
  - 44% reduction in HIV incidence in treatment arm
  - 95% self-reported full adherence
  - However detectable plasma TDF/FTC in < 50% participants
  - Risk reduction in those participants with detectable drug levels?



### Adherence to PrEP in iPrEX

- Those with detectable levels of TDF-FTC in the treatment arm had a 90% HIV risk reduction
- Stratified by doses per week:
  - 7 doses → 99% ↓ risk
  - 4 doses → 96% ↓ risk
  - 2 doses → 76% ↓ risk



Anderson, Sci Transl Med. 2012



### The Victorian Pre-Exposure Prophylaxis Demonstration Project

- Multi-site, open-label PrEP demonstration project
- Four high caseload HIV/STI clinics in Melbourne
- 115 HIV- people at high risk of HIV infection
  - Based on type of sexual exposures in 3 months prior to enrolment



### Methods

- Participants consented to taking daily TDF/FTC for one year, study visits every 3 months
- Participants encouraged to fill prescriptions early to avoid running out of TDF/FTC
- At Month 3, adherence evaluated in the first 50 participants using
  - Self-report at M3 study visit
  - Confidential on-line survey response at M3
  - Refill-based assessment
- At Month 6, TDF/FTC levels in dried blood spot (DBS) samples were evaluated in 78 participants (45 of the 1st 50)



### Methods

**Self-report at study visits evaluated whether during past 3 months participants took**

- <50% of daily doses
- 50-90% of daily doses
- > 90% of daily doses

**Confidential on-line survey response evaluated**

*"number of pills missed in the last 90 days"*

**Refill-based assessment:**  $= \frac{n}{d} \times 100 \%$

**where**

n = number of pills dispensed  
d = days between study visits

**Statistics:** median (IQR), n (%); Mann-Whitney test for factors associated with adherence



### Methods:

#### Dried Blood Spot testing TDF/FTC in Red Blood Cells



Staggs School of Pharmacy and Pharmaceutical Sciences  
UNIVERSITY OF COLLEGIUM ANTHONY/RESEARCH CAMPUS

- FTC phosphorylated to FTC-TP in RBCs with a half-life of 33 (22-53) hours → recent dosing (48-72 hours)
- TDF-DP long half life in RBCs of 17 (15-20) days ⇒ cumulative dosing

Castillo-Mancilla, AIDS Res Hum Retrov. 2013

### Results: Baseline Demographics

Age, yrs	37.5 (32.8-46.3)
Gender, M/F/Trans, %	100/0/0
Ethnicity, n (%)	
Caucasian	47 (94)
Asian	3 (6)
Sexual identity, n (%)	
Gay	47 (94)
Bisexual	3 (6)
Study entry HIV risk factor	
Condomless receptive/insertive anal intercourse, HIV+ partner	19 (38)
Receptive condomless anal intercourse with casual partner HIV status unknown (MSM/TG only)	29 (58)
Uncircumcised male, insertive condomless anal intercourse with casual partner HIV status unknown	2 (4)
Number of partners in previous 3 months (online survey)	8 (3-20)
Number courses of PEP in the previous 12 months (online survey)	2 (0.75-2.25)

Median (IQR) unless stated otherwise

## Results: Month 3 Follow-up

Self-reported side effects, n (%) (y/n)	18(36)/32(64)
Number of partners in previous 3 months (online survey)	8 (5-15)
Any missed PrEP doses, % (y/n) (online survey)	26 (54)/22 (46)
Number missed PrEP doses (online survey)	2 (0-2)
Self-report at clinic visit in previous 3 months	
<50% of daily doses taken, n (%)	0 (0)
50-90% of daily doses taken, n (%)	1 (2)
> 90% of daily doses taken, n (%)	49 (98)
Refill-based assessment (% days drug available)	114 (102-117)
≥ 100% days drug available between study entry & m3, % (n)	45 (90)

Median (IQR) unless stated

- **Participants with drug available ≥ 100% of days**  
Had higher number of sexual partners between study entry and month 3 compared to those with <100% (10 and 2 partners (median), respectively,  $p=0.03$ )



## Results: 6 month DBS findings

Number of samples tested	78
Evidence of recent dosing (FTC-TP), n (%)	74 (94.9)
Median TFV-DP (fmol/punch)	1182
Min, max detectable TFV-DP	172, 2337
Cumulative evidence – doses per week*:	
undetected	1 (1.3)
<2 doses, n (%)	2 (2.6)
2-3 doses, n (%)	5 (6.4)
at least 4 doses, n (%)	70 (89.7)

Median (IQR) unless stated

- \* <349 fmol per punch: < than two tablets per week  
350-699 fmol per punch: two or three tablets per week  
≥700 fmol per punch: four or more tablets per week.



## Conclusions

- At 3 months
  - Self-reported adherence was high
  - Adherence via refill-based assessment was high
  - Participants returning early for M3 visit *before* running out of pills likelier to have higher number of sexual partners
- At 6 months
  - 90% participants taking ≥ 4 doses TDF/FTC weekly (cumulative dosing)
  - 95% participant samples had evidence of recent dosing
- Data showing that:
  - decreased condom use
  - increased enjoyment of sex
  - decreased anxiety around sex
  - together with high adherence to PrEP



## VicPrEP Study Team

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THANK YOU TO ALL STUDY PARTICIPANTS



## Image credits

- DBS punch: <http://www.basinc.com/services/DBS.php>
- Test tube: <http://www.clerk.com/cliparts/s/a/m/v/k/m/empty-test-tube.svg>
- Sero-positioning: <http://www.hiveequal.org/hiv-equal-online/7-different-ways-to-have-safer-sex?slide=6>
- Sero-sorting: copyright BarebackHealth.net, 2009
- Condoms: <http://cdn.zmescience.com/wp-content/uploads/2015/06/colored-condoms-1024x6791.jpg>
- NSEP: <http://www.theguardian.com/society/2013/jun/18/drugs-policy-makers-1980s-knew-score>
- PrEP tablets: <https://apicha.org/wp-content/uploads/2015/08/PrEP-Header.jpg>
- STI testing: <http://healthyblackmen.org/2012/09/09/lies-pride-stis/>
- Blood tube: [http://search.stjames.ie/Labmed/media/Media\\_23953.en.jpg](http://search.stjames.ie/Labmed/media/Media_23953.en.jpg)
- PEP: [http://www.man2man.ie/sex\\_health.html](http://www.man2man.ie/sex_health.html)
- Dry ice box: <http://www.wikihow.com/Ship-Foods-with-Dry-Ice>
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