

# Changes in sexual behavior and STI diagnoses among MSM using PrEP in Seattle, WA

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## BACKGROUND

- PrEP is increasingly used for HIV prevention among MSM.
- In non-research settings, changes in sexual behavior and STI incidence among MSM after PrEP initiation have not been well studied.

**Objective: To examine changes in sexual behavior and STI incidence among MSM after PrEP initiation**

## METHODS

### STUDY POPULATION

- The municipal STD clinic in Seattle, WA provides PrEP to patients at high risk for HIV (patients who meet one of the following criteria):
  - Sexual relationship with HIV+ partner who is not on ART, or not virally suppressed, or within 6 months of ART initiation
  - MSM or transgender person who has sex with men and has diagnosis of rectal GC or early syphilis, or methamphetamine or popper use, or sex work, in last 12 months
- PrEP patients attend an initial evaluation (baseline) visit, and return quarterly for clinical follow-up and monitoring.
- MSM attending the clinic, who initiated PrEP and completed behavioral questionnaires, are included in this analysis.

### DATA COLLECTION

- Data were collected from patients initiating PrEP between September 2014 and June 2016.
- Data on sexual behavior during prior 30 days were collected during quarterly PrEP clinic visits, via computer-assisted self interview (CASI).
- STI diagnosis data were obtained from the Washington State Public Health Issue Management System (PHIMS).

### Outcomes:

- STI diagnoses: chlamydia (CT), gonorrhea (GC), early syphilis
- Number male sexual partners
- Sexual positioning (top/bottom) and condom use with HIV+, HIV-, unknown-status partners

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## DATA ANALYSIS

- We calculated the proportion of MSM reporting each behavior at each visit, using linear regression to assess statistical significance of linear trends.
- We calculated incidence of CT, GC, and early syphilis, and compared with King County STI incidence data for the HIV-negative MSM population (we assume 5.7% of the adult male population of King County are MSM).
- To account for ascertainment bias resulting from increased detection due to increased screening, we separately examined symptomatic STIs (urethral gonorrhea, 1<sup>o</sup>, 2<sup>o</sup> syphilis).

## RESULTS

	Mean	SD
Age	30.6	8.7
Race/Ethnicity	n	%
Hispanic	48	22.0
White, Non-Hispanic	116	53.2
Black, Non-Hispanic	17	7.8
Asian/Pacific Islander, Non-Hispanic	22	10.1
Native American, Non-Hispanic	4	1.8
Unknown	11	5.1

- 218 MSM began PrEP during September 2014 – June 2016, and completed the baseline behavioral questionnaire.
- 108\* completed at least one follow-up visit (Mean follow-up time: 8.3 mos. SD: 4.9 mos.)
- 76 completed both the baseline and the 3-month visits.

\* Includes patients who had visits between baseline and 3 months, or who skipped their 3-month visit

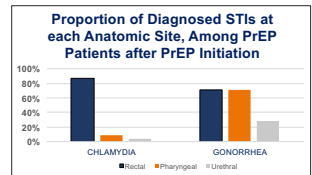
## SEXUAL BEHAVIOR

Behavior	Baseline (Pre-PrEP) N=76	3-Month Visit N=76	6-Month Visit N=58	9-Month Visit N=41	p-Value (Linear Trend)
# Male Sex Partners	Mean (SD) 4.2 (4.1)	Mean (SD) 4.3 (7.5)	Mean (SD) 3.6 (3.8)	Mean (SD) 5.0 (4.3)	0.6
% Reporting Anal Sex, by Partner Type	N (%)	N (%)	N (%)	N (%)	
Any HIV+ Partners	18 (29.5)	16 (24.4)	14 (28.6)	11 (30.6)	0.6
Any HIV- Partners	54 (88.2)	60 (90.9)	43 (87.8)	30 (83.3)	0.3
Any Unknown Status Partners	23 (37.7)	16 (24.2)	7 (14.3)	14 (38.9)	0.9
% Reporting Never Using Condoms during Anal Sex					
Overall	6 (10.3)	10 (15.6)	9 (18.8)	8 (24.2)	<b>0.005</b>
Receptive, with HIV+ Partner	2 (20.0)	3 (30.0)	4 (36.4)	4 (50.0)	<b>0.01</b>
Receptive, with HIV- Partner	4 (9.3)	6 (13.3)	6 (18.8)	8 (32.0)	<b>0.04</b>
Receptive, with Unknown Status Partner	0 (0.0)	3 (27.3)	0 (0.0)	1 (14.3)	0.8
Insertive, with HIV+ Partner	2 (15.4)	5 (38.5)	5 (38.5)	5 (62.5)	<b>0.05</b>
Insertive, with HIV- Partner	6 (14.3)	8 (17.4)	7 (22.6)	10 (43.5)	0.09
Insertive, with Unknown Status Partner	1 (6.3)	3 (23.1)	1 (20.0)	3 (33.3)	0.1

## SEXUALLY TRANSMITTED INFECTIONS

	12 Months Prior to PrEP Initiation		At Baseline (+/- 7 days)		During PrEP Use	
	N	%	N	%	N	%
<b>All STIs</b>						
Chlamydia	7	6.5	18	16.7	24	22.2
Gonorrhea	11	10.2	22	20.4	21	19.4
Syphilis (1 <sup>o</sup> , 2 <sup>o</sup> , Early Latent)	11	10.2	13	12.0	7	6.5
<b>Rectal</b>						
Rectal Chlamydia	5	4.6	16	14.8	21	19.4
Rectal Gonorrhea	10	9.3	15	13.9	15	13.9
<b>Symptomatic STIs</b>						
Urethral Gonorrhea	2	1.9	1	0.9	6	5.6
Syphilis (1 <sup>o</sup> , 2 <sup>o</sup> )	10	9.3	8	7.4	4	3.7

	King County HIV- MSM	PrEP Pts.
<b>Overall</b>		
Chlamydia	22.6	539.3
Gonorrhea	20.7	462.6
Syphilis (1 <sup>o</sup> , 2 <sup>o</sup> , Early Latent)	4.5	97.4
<b>Rectal</b>		
Rectal Chlamydia	14.8	454.1
Rectal Gonorrhea	8.8	260.2
<b>Symptomatic</b>		
Urethral Gonorrhea	6.9	101.2
Syphilis (1 <sup>o</sup> , 2 <sup>o</sup> )	3.1	55.7



\* Because STIs may be diagnosed at more than one site, percentages above may add to more than 100%

## DISCUSSION

### SUMMARY

- MSM reported decreased condom use during receptive anal intercourse with HIV-seropositive partners in the first year after initiating PrEP.
- Incidence of symptomatic STIs was higher among PrEP patients.

### LIMITATIONS

- Lack of an appropriate comparison group may lead to difficulty drawing conclusions about increased STI risk.
- Ascertainment bias may result from increased screening in the period after PrEP initiation, although not for symptomatic STIs.

### CONCLUSIONS

- Some sexual behaviors appear to change following PrEP initiation, which in turn may influence STI acquisition.