NEAR-PERFECT ADHERENCE IN US IPREX RCT SITES: FREQUENCY AND CORRELATES

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BACKGROUND/OBJECTIVES

Adherence to daily oral pre-exposure prophylaxis (PrEP) in randomized controlled trials (RCTs) among diverse populations has varied widely (from <26% to >80%)[1-3], suggesting that adherence to open-label PrEP may also vary by region, community, or cohort.

Given the critical role of drug exposure in observed efficacy outcomes of PrEP, examining study product use within specific cohorts may provide insights into patterns of and factors influencing adherence that are otherwise blurred when combining results across diverse participant groups.

We aimed to characterize adherence and factors associated with overall and over time adherence specifically amongst US (Boston, San Francisco) participants in the iPrEx RCT among MSM and transgender women.

METHODS

Self-report of near-perfect adherence (≥ 90%) collected during monthly interviews was to characterize the US cohort and identify correlates of adherence.

Accuracy of self-report was examined by using drug detection data in PBMCs from a subsample of US participants at study week 24.[4] Concordance between detection and self-report of having taken a dose on ≥50% of days since last visit was determined. High positive predictive value (PPV) was sought, as this value has been particularly suspect in past research.[5-6]

Near-perfect product use was evaluated via generalized estimating equations (GEE) for over time change in adherence and correlates of change. GEE using all available assessments controlling for multiple observations per participant was used for overall adherence and correlates. Site (84 Boston; 139 San Francisco) was controlled for in all analyses.

1 Grant et al., NEJM 2012; 2 Baeten et al., NEJM 2012; 3 VanDamme et al, NEJM 2012; 4 Anderson et al, CROI 2011; 5 Amico et al., CROI 2011; 6 Williams et al., AIDS Behav 2012

RESULTS

Baseline Characteristics of US Cohort Providing at Least One On-Study Adherence Report N=223;	% (N); X (SD) [RANGE]
Age at enrollment (mean)	39 (11) [18-63]
Graduate level education	29.6% (65)
Hispanic ethnicity	13.5% (30)
African American	16.1% (36)
White	67.7% (151)
Asian	5.4% (12)
Bisexual	17.0% (38)
Number of partners in prior 3 months (median)	5 (13) [0-125]
Nc-RAS* in prior 3 months (YES)	45.7% (102)
Nc-RAS* with HIV positive partner(s) in prior 3 months (YES)	9.4% (21)
Drank ≥2-3x/wk. in prior month	57.2% (115)
Drank daily in prior month	30.9% (62)
Drank ≥5 drinks one or more times when drinking in prior month	9.8% (20)
Ever used cocaine, speed, or crack	71.1% (138)

*Nc-RAS= No condom use on one or more reported receptive anal sex events

ACCURACY OF SELF REPORT

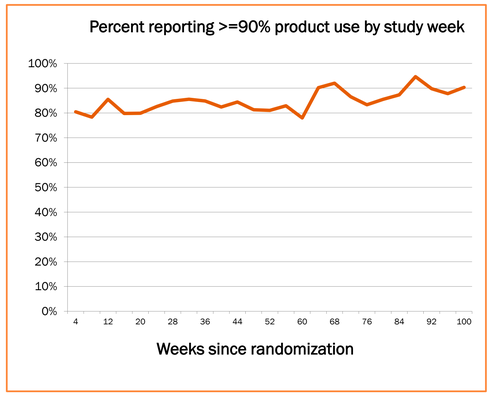
Drug Detection and Self-report [n=34]	%	PPV
Drug detection	97%	
% Reporting taking drug on ≥ 80% of days between visits	88%	
% Reporting taking drug on ≥ 50% of days between visits	93%	
% of those reporting taking drug on ≥ 50% of days between visits who also had drug detected		97%

Accuracy of self-reported adherence to study drug was considered high and supportive of using self-report collected over time to characterize product-use and factors associated with high rates of product use.

NEAR PERFECT ADHERENCE OVER TIME AND CORRELATES

Self-reported near perfect adherence collected over 223 participants over 4 to 112 weeks on study increased over weeks on study (Beta= 0.005, p=0.048).

Only graduate education and baseline report of drinking ≥ 5 drinks on one or more drinking occasions in last month ("binge drinking") associated with greater improvements in product use over time.



RESULTS

NEAR-PERFECT ADHERENCE AND CORRELATES

Over 3143 adherence assessments nested within 223 participants, mean adherence was 93% (mdn 100%, IQR 93-100). 83% of reports were near-perfect.

Factors associated with U.S. participants reporting ≥90% adherence at iPrEx visits, adjusted by study site

	Bivariable		Multivariable	
	Adjusted OR (95% CI)	P-value	Adjusted OR (95% CI)	P-value
Demographics and study assignment (baseline)				
Age at enrollment <40	0.34 (0.22, 0.56)	<0.001	0.33 (0.19, 0.59)	<0.001
Graduate level education	1.67 (1.0, 2.5)	0.037	1.25 (0.67, 2.0)	0.506
Assigned to FTC/TDF	0.91 (0.59, 1.43)	0.748		
Attitudes (over time)				
Perceived likelihood of HIV infection (ref: not likely)				
Could happen	1.11 (0.63, 2.0)	0.626		
Probably/almost certainly will happen	2.00 (0.77, 5.0)	0.152		
Belief in FTC/TDF PrEP effectiveness (ref: don't know)				
0-50% effective	0.83 (0.37, 2.0)	0.736		
60-100% effective	2.0 (1.25, 3.33)	0.005	2.00 (0.91, 3.33)	0.072
Symptoms (over time)				
Nausea, vomiting, diarrhea, or flatulence	0.59 (0.42, 0.83)	0.004	0.56 (0.32, 0.91)	0.023
Headache	0.91 (0.63, 1.25)	0.401		
Symptoms of depression (CES-D, 48 weeks)	1.11 (0.67, 2.00)	0.588		
Sexual behaviors (baseline and over time)				
Nc-RAS at baseline	0.83 (0.53, 1.25)	0.448		
Nc-RAS in prior 3 months	0.83 (0.56, 1.25)	0.368		
Nc-RAS with HIV+ partner in prior 3 months	2.50 (1.25, 5.0)	0.016	3.33 (1.25, 10.0)	0.025
Nc-RAS with HIV- partner in prior 3 months	0.71 (0.48, 1.11)	0.115		
Nc-RAS with HIV-unknown partner in prior 3 months	0.77 (0.42, 1.43)	0.455		
Drug and alcohol use (over time)				
Drank ≥2-3x/wk. in prior month	0.77 (0.48, 1.25)	0.216		
Drank daily in prior month	0.56 (0.29, 1.11)	0.095		
Drank ≥5 drinks when drinking in prior month	0.33 (0.17, 0.63)	0.001	0.40 (0.19, 0.83)	0.020
Used meth or cocaine in prior month	0.56 (0.33, 1.00)	0.041	0.67 (0.33, 1.25)	0.226

Estimated using GEE models with working independence.
Visits were excluded if participant was off study drug or did not know if they had missed pills since their last visit.
Estimates are interpreted as the odds of non-adherence compared with the reference group.
*Nc-RAS = No condom use on one or more reported receptive anal sex events

CONCLUSIONS

Adherence to blinded study medication was high among US participants throughout their participation in the iPrEx study. Adherence increased slightly over time particularly among those with graduate educations and who started the study reporting binge drinking. Recent receptive anal sex without condom use associated with near-perfect adherence, whereas younger age, symptomology, binge drinking and meth use related to <90% adherence. Attending to these factors may be important in promoting PrEP adherence.

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