

# THE DEMO PROJECT



Interest  
Uptake  
Prevention  
Change



Implementation of PrEP in STD and Community Health Clinics in the US:  
High Uptake and Drug Concentrations Among MSM in the Demo Project

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***9<sup>th</sup> International Conference on HIV Treatment and Prevention , Miami, FL***

*The views expressed herein do not necessarily reflect the official policies of the City and County of San Francisco;  
nor does mention of the San Francisco Department of Public Health imply its endorsement.*

# Disclosures

- Gilead Sciences provided study drug for this project.

# Background

- Several studies have shown that daily oral FTC/TDF is effective in preventing HIV infection<sup>1-4</sup>
- In July 2012, FTC/TDF was approved by the FDA for use as PrEP in combination with safer sex practices to prevent sexually-acquired HIV
- CDC issued interim PrEP guidance in 2011-12 and comprehensive clinical practice guidelines in May 2014<sup>6</sup>
- PrEP uptake slow -- only 2317 patients filled prescriptions for FTC/TDF PrEP in the US between 1/2012 and 9/2013; almost half were women<sup>5</sup>
- PrEP demonstration projects recommended to address implementation issues and determine how best to scale up PrEP



<sup>1</sup>Grant NEJM 2010; <sup>2</sup>Baeten NEJM 2012; <sup>3</sup>Thigpen NEJM 2012; <sup>4</sup>Choopanya Lancet 2013

<sup>5</sup>US Public Health Service. CDC 2014

<sup>6</sup>Mera HIV Drug Therapy in the Americas Conference, Rio de Janeiro, Brazil

# The Demo Project

- Multisite, open-label PrEP Demonstration Project in MSM and transgender women in the US
- Key objectives:
  - PrEP uptake (% potentially eligible who enroll)
  - Adherence / Persistence
  - Sexual behaviors
  - Side effects and toxicities
  - Resistance in seroconverters
  - Determine staff and space needed for PrEP delivery

PrEP  
demonstration  
project



Pre-exposure  
Prophylaxis (PrEP)  
for HIV prevention

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  - Determine staff and space needed for PrEP delivery
- Goals of this analysis:
  - Describe levels of interest in PrEP and predictors of PrEP uptake
  - Describe early PrEP adherence data, measured by drug concentrations in dried blood spots

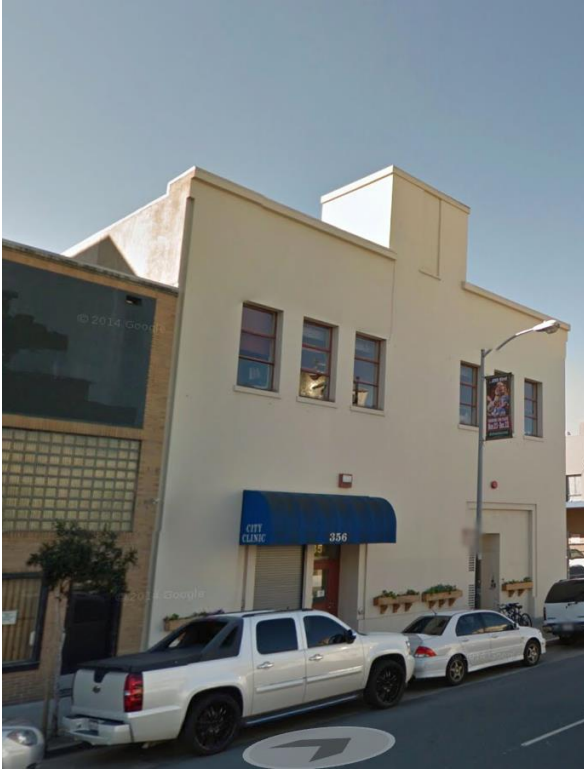
PrEP  
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# Demo Project Sites

**San Francisco City Clinic**



**Miami-Dade County Downtown  
STD clinic**



**Whitman Walker Health**



# HIV epidemics and clinic characteristics: SF, Miami, and DC

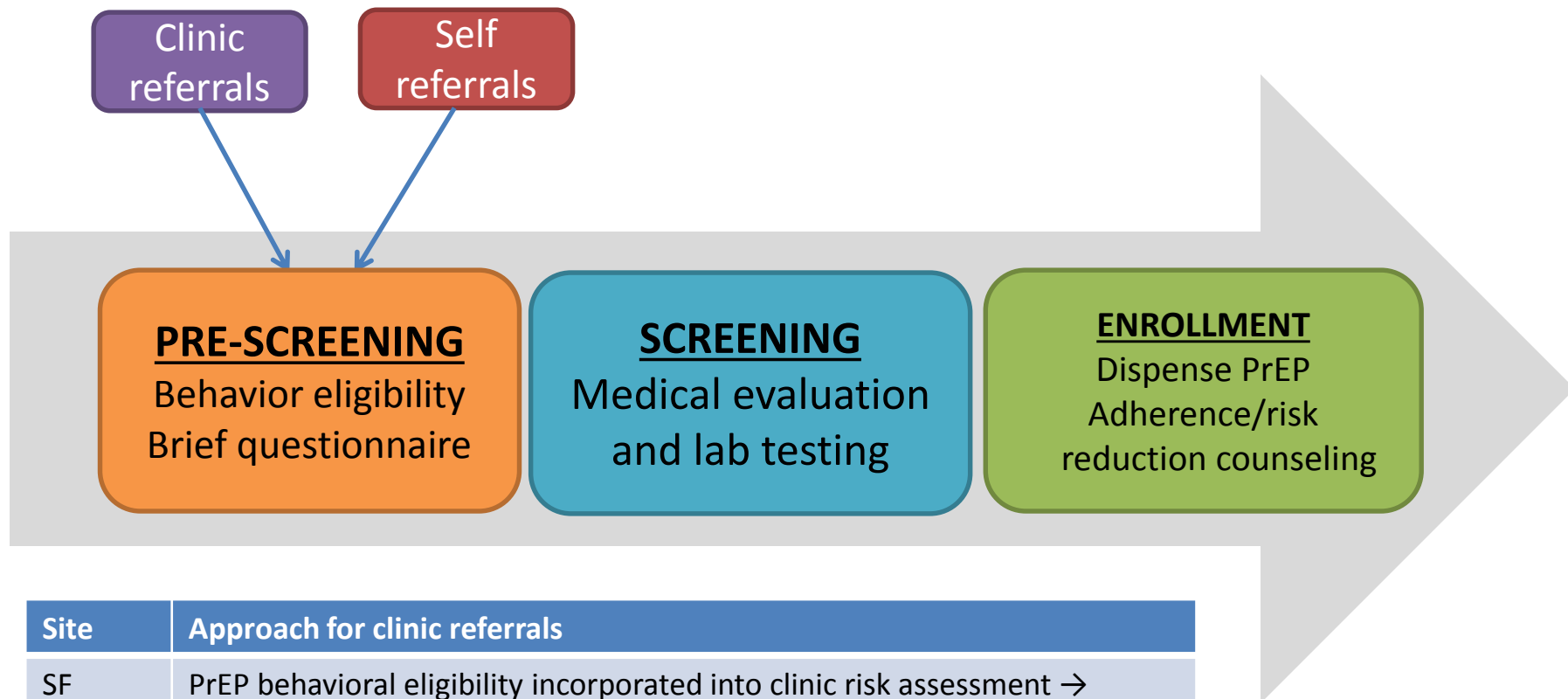
	SF	Miami	DC
<b>City-wide</b>			
Persons living with HIV/AIDS	15,705	24,576	15,056
Male sex	92%	70%	72%
Race/ethnicity			
Black	13%	47%	75%
White	62%	15%	17%
Hispanic	17%	38%	6%
Asian	5%	<1%	2%
Proportion of new HIV cases among MSM	88%	75%	39%
<b>STD clinics/community health center</b>			
Annual visits	22,000	14,000	10,000
HIV incidence	2.3%	4%	2.3%

# Methods: Demo Project eligibility criteria

- Behavioral eligibility (any of the following in past 12 mo)
  - Condomless anal sex with 2+ male or trans female partners
  - 2+ episodes of anal sex with HIV+ partner
  - Sex with male/trans female partner and syphilis, rectal gonorrhea or chlamydia dx
- HIV negative (rapid, 4<sup>th</sup> gen Ag/Ab, HIV RNA pool in SF)
- No serious medical conditions
- CrCl  $\geq$  60 ml/min, negative/trace protein on urine dipstick
- HbSAg negative



# Methods: Referrals and Patient Flow



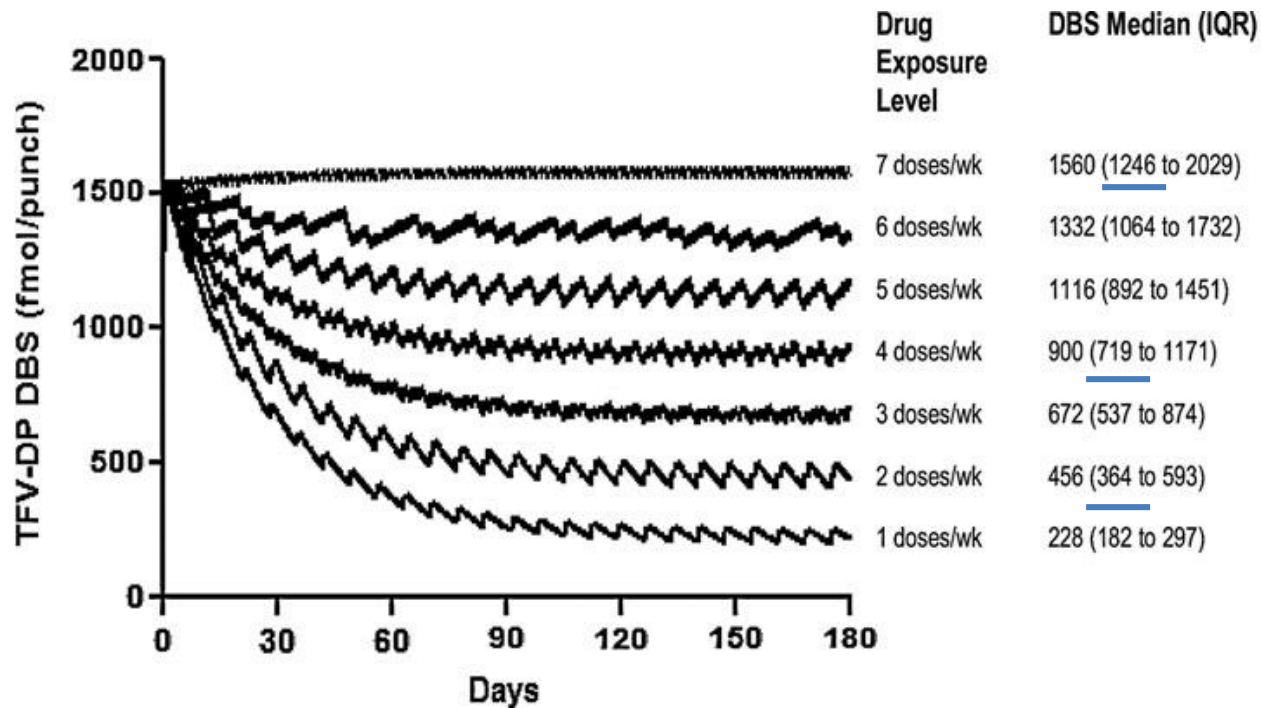
Site	Approach for clinic referrals
SF	PrEP behavioral eligibility incorporated into clinic risk assessment → eligible MSM/TGW prescreened by clinic/study staff
Miami	All interested MSM/TGW referred to study staff for pre-screening
DC	Study staff embedded in HIV/STD testing programs in the clinic and approached MSM/TGW directly for pre-screening

# Methods: statistical and PK analyses

- % PrEP uptake = 
$$\frac{\# \text{ Enrolled}}{(\# \text{ assessed} - \# \text{ ineligible during screening})}$$
- Predictors of enrollment assessed using a multivariable Poisson regression model with robust standard errors
- Tenofovir diphosphate (TFV-DP) levels in dried blood spots (DBS) were assessed:
  - Random sample of participants at week 4 (PrEP initiation)
  - Subset of participants with week 4 testing were selected for longitudinal testing through week 48 (PrEP persistence)



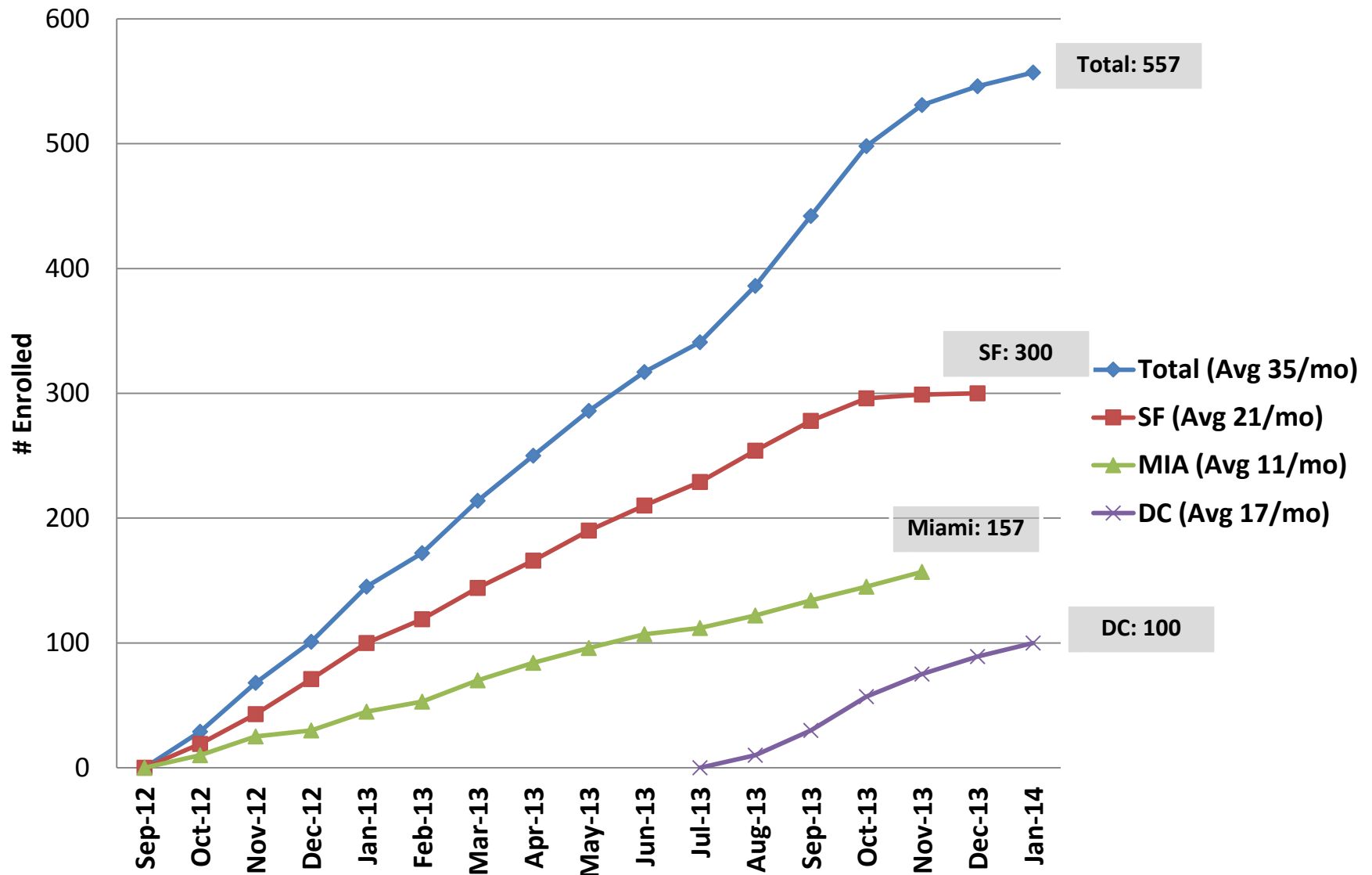
# Interpreting TFV-DP in DBS



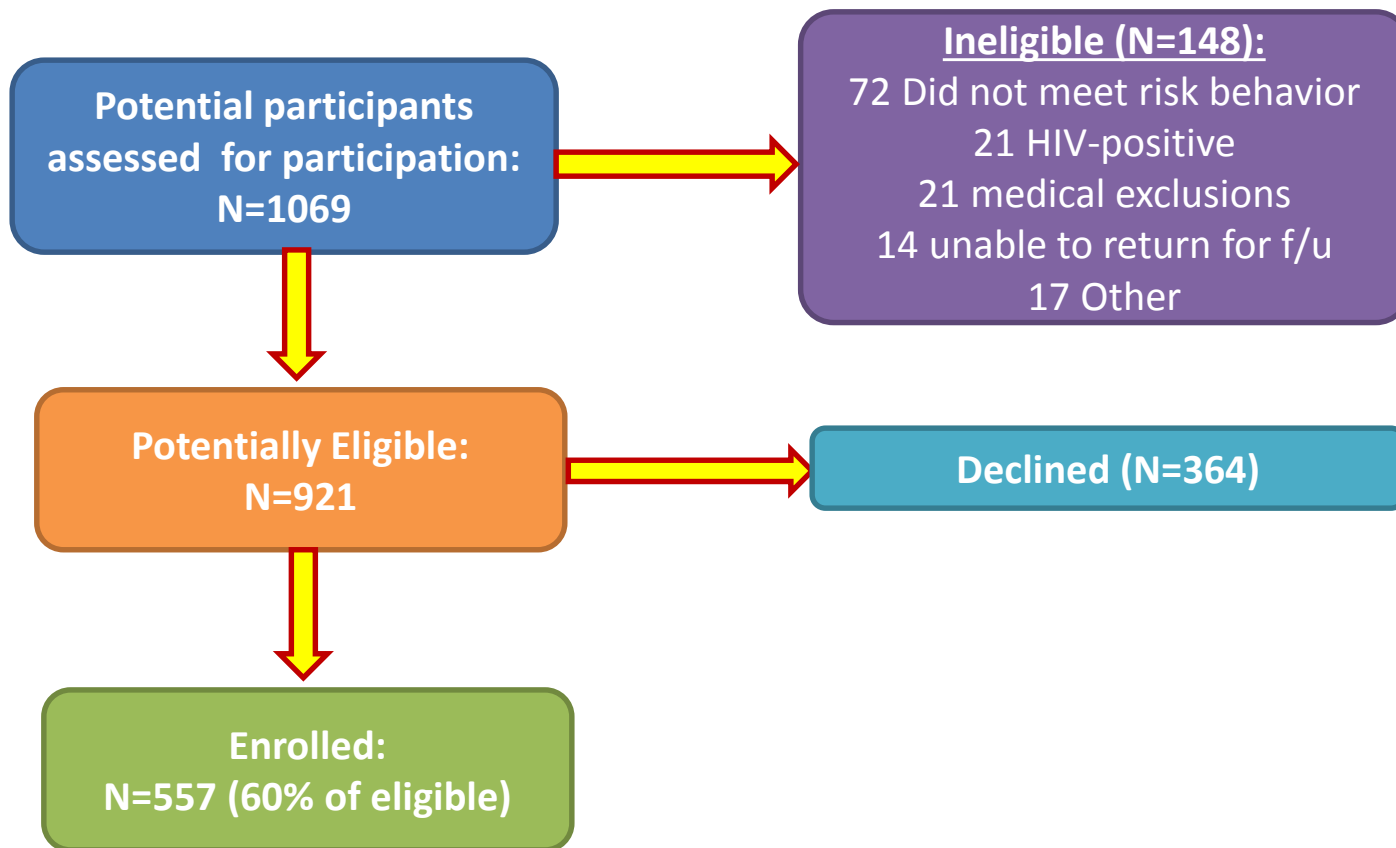
TFV-DP (fmol/punch)	Adherence Interpretation
>1250	daily dosing
>700 to 1250	4-6 doses/wk
350 to 700	2-3 doses/wk
<350	< 2 doses/wk

**Week 4 TFV-DP concentrations extrapolated to steady state**

# PrEP Demo enrollments, by month



# Study flow: initial assessment to enrollment



# Reasons for declining participation

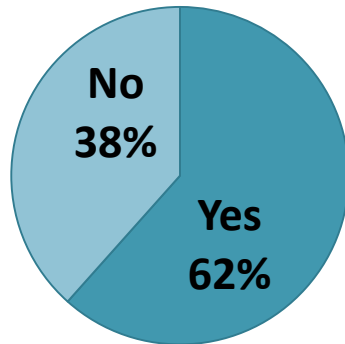
Reason	% of those who responded (N=264*)
No time	23%
Concerns about side effects	22%
Not at high risk for HIV (self-perception)	11%
Wants more time to consider it	11%
Doesn't want to take medications for HIV prevention	8%

*\*100/364 (27%) participants did not provide reason for declining participation*

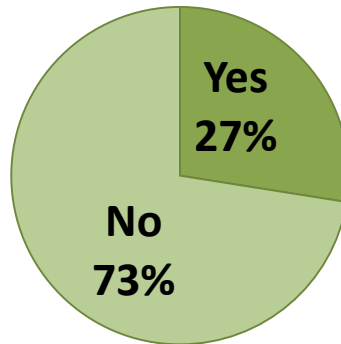
# Substantial proportion declining PrEP were at risk for HIV acquisition

- Among participants who declined participation and provided sexual behavior data:

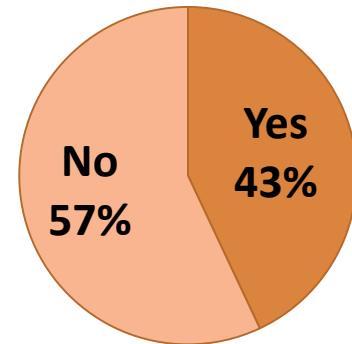
**Condomless receptive anal sex, past 3 mo (N=346)**



**>5 condomless anal sex partners, last 12 mo (N=276)**



**Self-reported rectal GC/CT\*, syphilis, last 12 mo (N=276)**



\*Gonorrhea, chlamydia

# High uptake of PrEP across all demographic groups

Characteristics	Total Eligible	Declined	Enrolled	% uptake
Overall	921	364	557	60%
SF site	572	233	300	56%
Miami site	233	76	157	67%
DC site	155	55	100	65%
Clinic referral	572	314	258	45%
Self referral	345	46	299	87%
Age				
18-35	560	245	321	57%
>35	342	101	236	69%
Gender				
Male	891	343	548	62%
Transgender	13	6	7	54%
Race/ethnicity				
White	383	117	266	70%
Latino	327	135	192	59%
Black	76	36	40	53%
Asian	52	26	26	50%
Other	64	32	32	50%
Education level				
≤ High School	157	75	82	52%
> High school	747	272	475	64%



# Independent predictors of enrollment

Characteristic	aRR (95% CI)	P value
Site		
San Francisco	1.0	
Miami	<b>1.53 (1.33-1.75)</b>	<b>&lt;0.001</b>
DC	<b>1.33 (1.2-1.47)</b>	
Age, per 10 year increase	1.04 (0.99-1.09)	0.09
Race/Ethnicity		
White	1.0	
Latino	0.97 (0.85-1.1)	
Black	0.84 (0.68-1.04)	0.15
Asian	0.88 (0.68-1.14)	
Other	<b>0.82 (0.68-0.99)</b>	
# episodes anal sex with HIV+ partner, last 12 mo		
0-1	1.0	
2-5	<b>1.17 (1.02-1.33)</b>	<b>0.002</b>
>5	<b>1.22 (1.09-1.36)</b>	
Prior PrEP awareness (vs. no awareness)	<b>1.56 (1.05-2.33)</b>	<b>0.04</b>
Self Referral (vs. clinic referral)	<b>1.48 (1.32-1.66)</b>	<b>&lt;0.001</b>

## Self-referrals increased over time

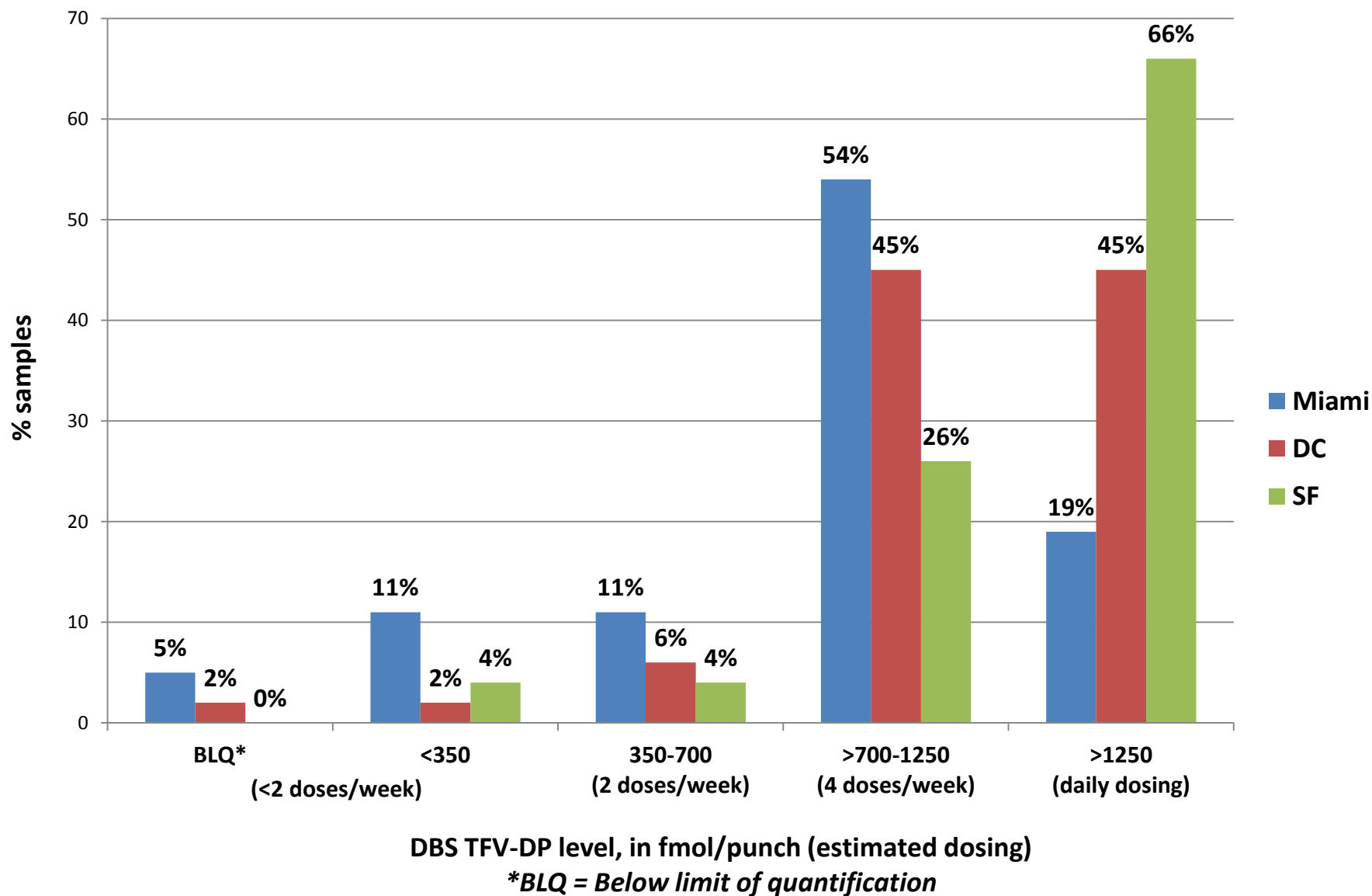
- Proportion of participants self-referred increased throughout the study period (30% in first 3 mo, 53% in last 3 mo,  $p < 0.005$ )
- Hearing about PrEP through a friend or sex partner was highly associated with being a self-referral for PrEP ( $p < 0.001$ )

## TFV-DP Drug levels in DBS at week 4 (N=136)

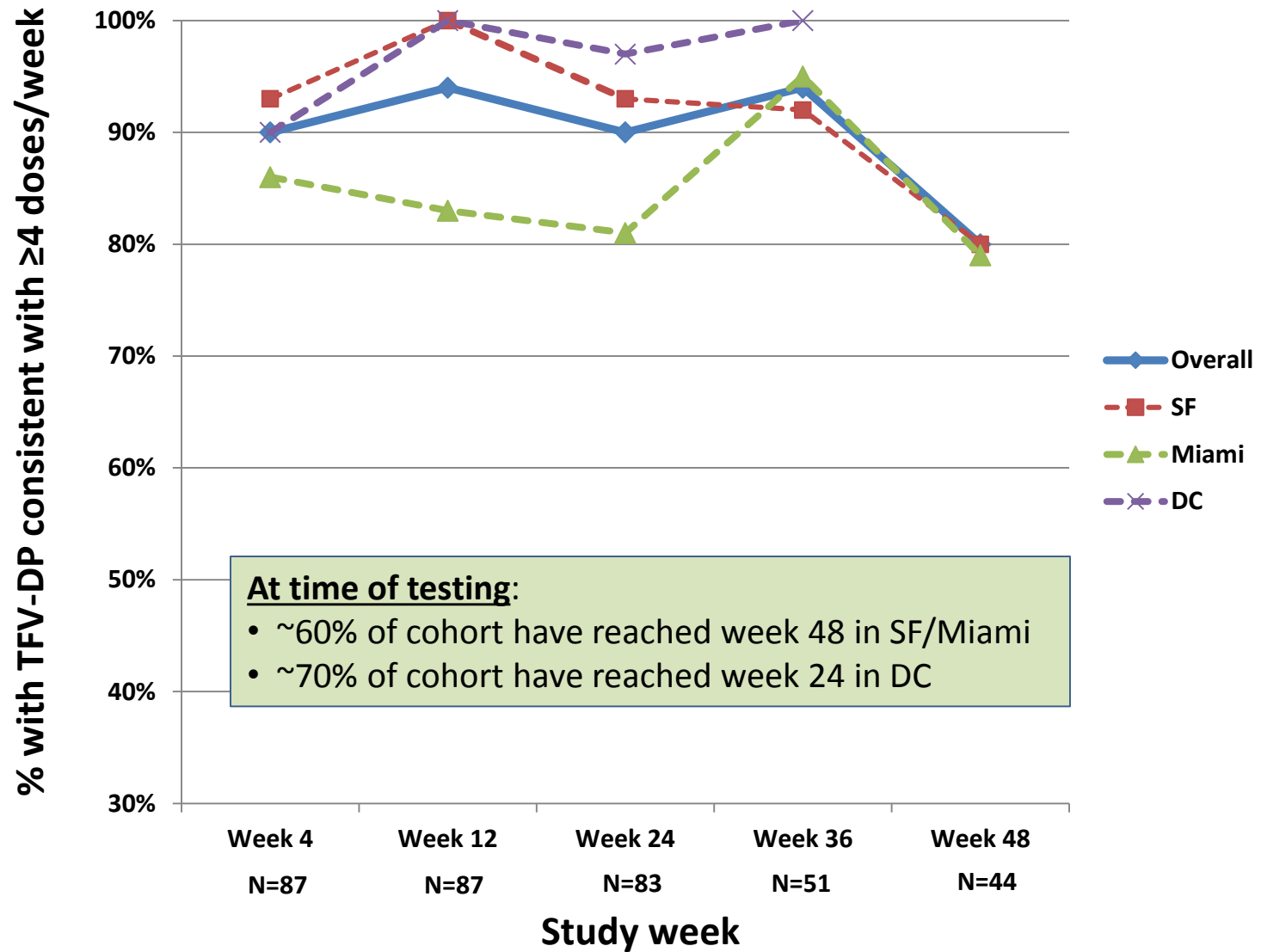
	SF (N=50)	Miami (N=37)	DC (N=49)
TFV-DP detected (%)	100%	95%	98%
Median TFV-DP concentration* (fmol/punch)	1462	929	1188
TFV-DP $\geq$ 700 fmol/punch (~4 doses/week)	92%	73%	90%

*\*Week 4 concentrations extrapolated to steady state*

# DBS TFFV-DP Levels at week 4 (n=136)



# Proportion with estimated $\geq 4$ doses/week in longitudinal cohort (N=90), overall and by site



# Limitations

- Clinic referral process varied by site
  - PrEP uptake may be overestimated in SF and Miami
- Demographic and risk behavior data missing for some participants who declined participation
- DBS PK testing only performed on a subset of participants and time-points. Future analyses need to factor in study retention.

# Conclusions

- Interest in PrEP is high among diverse MSM when offered as part of a comprehensive prevention program in STD & community health clinics
- Drug detected in nearly all participants tested at week 4 – concentrations vary by site, with most participants estimated to be taking 4+ doses/week
  - In preliminary longitudinal analyses, most participants had drug concentrations consistent with taking 4+ doses/week at all visits tested
- Despite limited advertising/outreach, self-referrals increased during the enrollment period, suggesting growing community interest in PrEP
- Few TGW assessed for participation, highlighting the need to increase PrEP awareness/engagement in the transgender community
- Comprehensive PrEP Demo Project results (including retention, risk behaviors, adherence, and safety) available in 2015

# Acknowledgements

## San Francisco

Stephanie Cohen  
Susan Buchbinder  
Oliver Bacon  
Robert Blue  
Nikole Trainor  
Tim Matheson  
Erin Andrew

## Miami

Michael Kolber  
Susanne Doblecki-Lewis  
Jose Castro  
Yannine Estrada  
Daniel Feaster  
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Chris Gordon

## DF/Net

Brian Postle

## Gilead

Jim Rooney  
Keith Rawlings

## Study participants



University of California  
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# Clients assessed for participation, by referral status

	Clinic referral (N=628)*	Self referral (N=369)*	P value
Site			
SF	50%	68%	<b>&lt;0.001</b>
Miami	34%	13%	
DC	16%	19%	
Age (mean)	32.5	36.0	<b>&lt;0.001</b>
Race/ethnicity			
White	30%	61%	<b>&lt;0.001</b>
Latino/Hispanic	45%	22%	
Black	12%	5%	
Asian	7%	4%	
Other	7%	8%	
Education: > high school	79%	86%	<b>0.01</b>
>5 male condomless anal sex partners, last 12 mo	30%	50%	<b>&lt;0.001</b>
Condomless receptive anal sex, last 3 mo	61%	71%	<b>0.001</b>
Prior PrEP awareness	40%	91%	<b>&lt;0.001</b>
HIV risk perception (>5% likelihood of HIV in next yr)	71%	82%	<b>&lt;0.001</b>

*\*Referral status missing for 72/1069 assessed clients*

# Enrolled ppts vary by site, but at substantial risk for HIV acquisition across sites

	SF	Miami	DC
Age (mean)	36.4	31.8	35.0
Race/ethnicity			
White	62%	10%	64%
Latino	21%	74%	14%
Black	3%	14%	10%
Asian	6%	1%	6%
Other	8%	1%	6%
Has health insurance	72%	34%	80%
Has primary care provider	60%	26%	75%
Prior PrEP awareness	84%	32%	70%
Has HIV+ primary partner	28%	12%	30%
Condomless receptive anal sex	70%	54%	59%
>5 condomless anal sex partners, last 12 mo	59%	22%	36%
Early syphilis (primary, secondary, early latent)	3%	10%	1%
Rectal gonorrhea or chlamydia	15%	23%	9%

# PrEP uptake, by risk behaviors/perception, knowledge

	Total Eligible	Declined	Enrolled	% uptake
# male condomless anal sex partners, last 12 mo				
0-1	97	37	60	62%
2-5	424	163	261	62%
>5	312	76	236	76%
# episodes anal sex with HIV+ partner, last 12 mo				
0-1	443	188	255	58%
2-5	130	35	95	73%
>5	260	53	207	80%
Condomless receptive anal sex				
No	316	133	183	58%
Yes	587	213	374	64%
Prior PrEP awareness				
No	372	198	174	47%
Yes	533	150	383	72%
HIV risk perception (likelihood of getting HIV in the next year)				
≤5%	220	110	110	50%
>5%	659	222	437	66%

## Longitudinal TFV-DP concentrations

- 71% always had TFV-DP concentrations consistent with  $\geq 4$  doses/week
- 1% always had TFV-DP concentrations consistent with  $<2$  doses week

# Patterns of drug detection, over time

