

DEVELOPING METRICS TO IMPROVE EQUITABLE IMPLEMENTATION OF HIV PREVENTION

PSMG/C-DIAS

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HIV & PREP BACKGROUND

- 34,800 new HIV infections in 2019
 - 53% in the South
 - 70% among gay, bisexual and other men who have sex with men (GBMSM)
 - 41% among Black/African Americans
 - 29% among Latinx/Hispanic individuals
 - Insufficient data on trans and non-binary individuals

This is NOT due to more "risk" behaviors among racial/ethnic minorities

HIV & PREP BACKGROUND

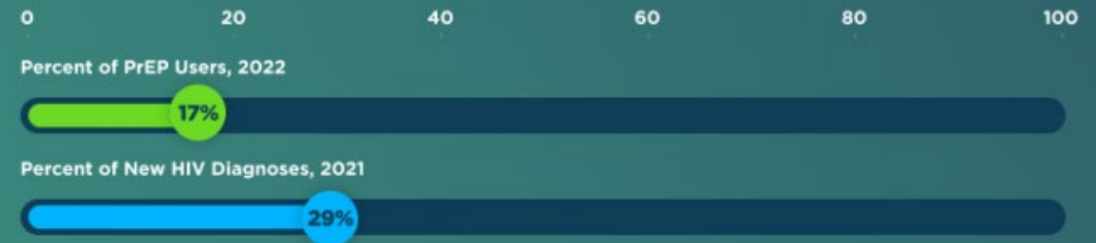
- PrEP is highly effective at preventing HIV (>95% when used correctly)
 - Two options of daily pills
 - One option for every-other month injection



Black People



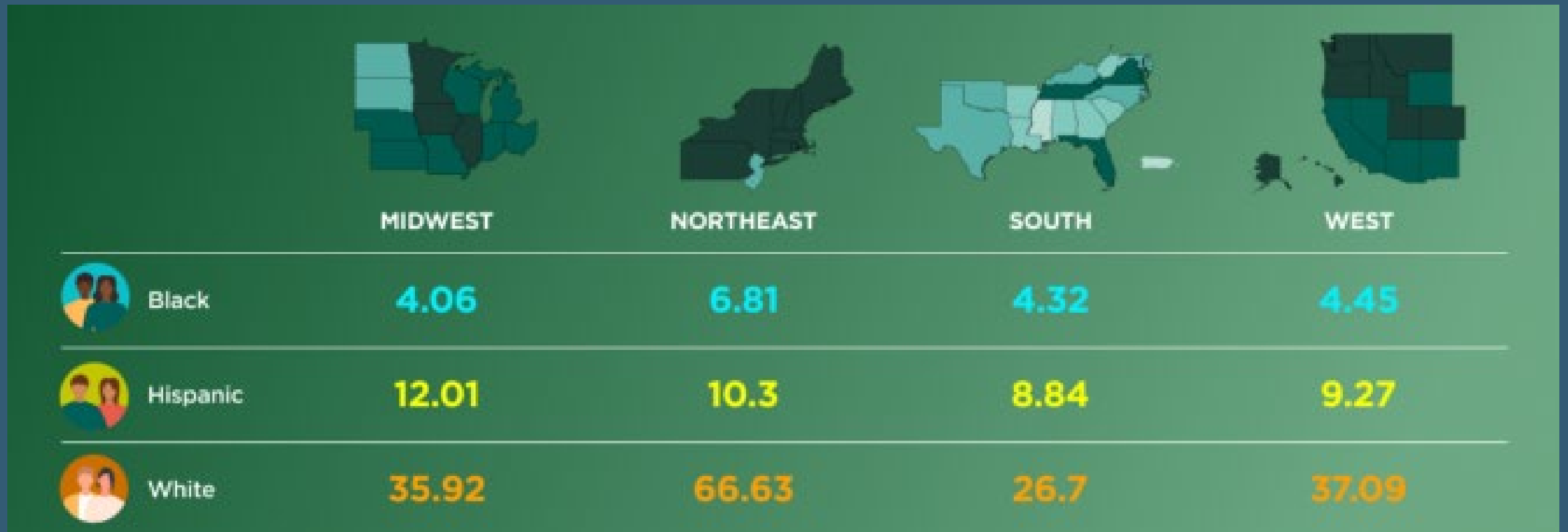
Hispanic/
Latinx
People



White People



PREP-TO-NEED RATIOS, BY REGION & RACE/ETHNICITY



PREP CONTINUUM

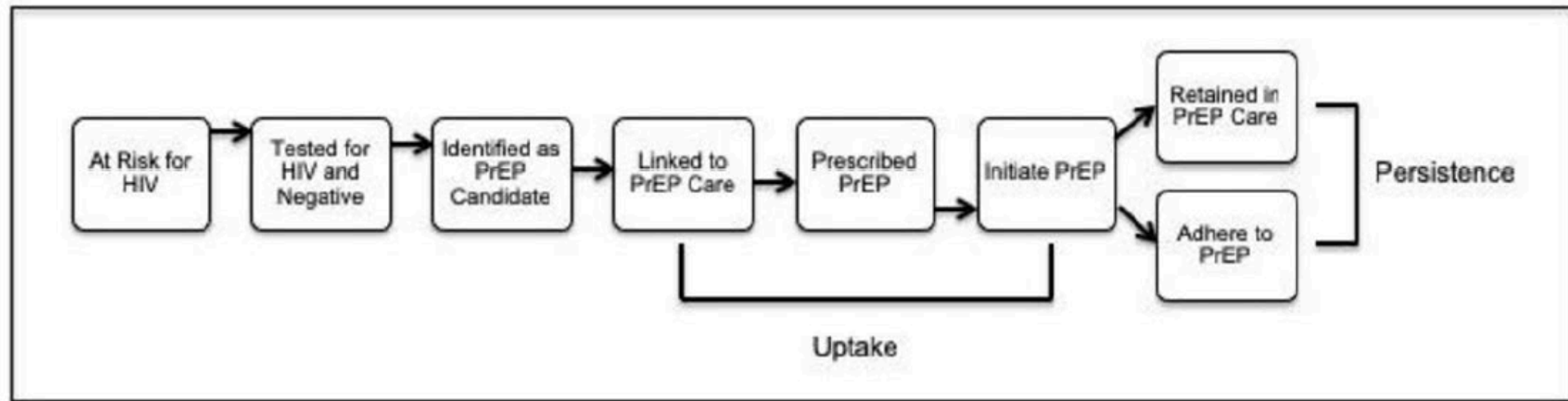
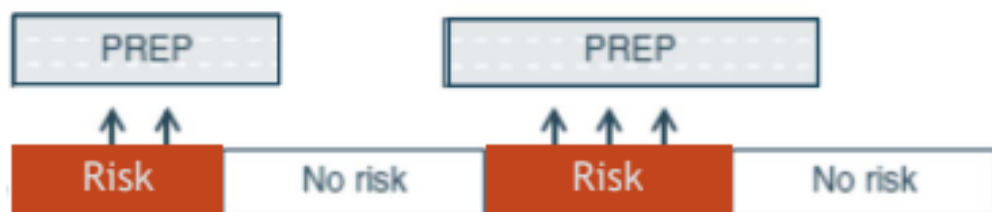




FIGURE 1. PrEP continuum of care with persistence as a marker of both retention in care (including regular STI and HIV testing) and adherence to PrEP. Adapted from Liu et al. (2012) and Nunn et al. (2017).

PREVENTION EFFECTIVE PREP USE



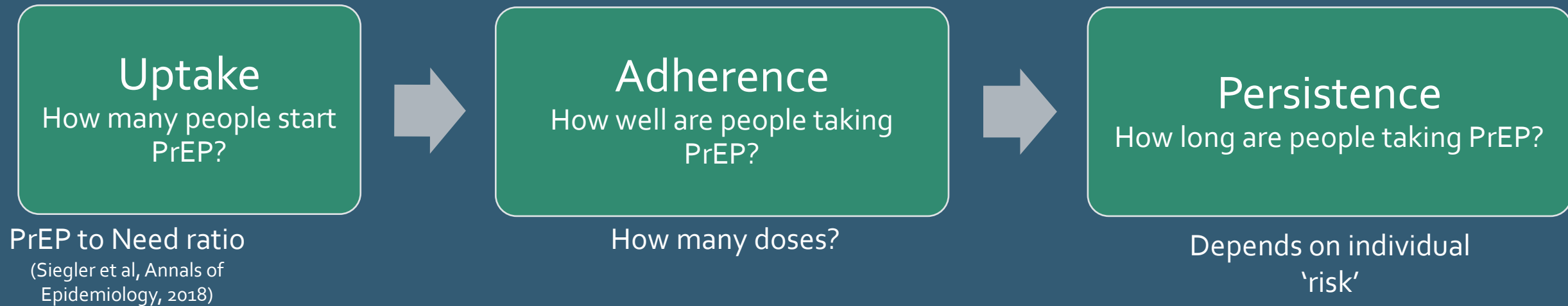
Maximizes HIV protection

Minimizes costs & side-effects

-  HIV treatment is lifelong
-  PrEP use is during periods of HIV risk

Patients need to know when to use PrEP
AND be able to adhere when on PrEP

HOW TO MEASURE PREP USE?



Goal is programmatic-level measures of PrEP use

- Ideally adaptable to future formulations

DEVELOPING PRAGMATIC METRICS FOR PREP



“PREP PERSISTENCE VARIES ACROSS POPULATIONS IN US, RELATIVELY BRIEF IN MOST”

Publication	Location	PrEP Persistence	Definition
Hevey, AIDS Educ and Prev 2018	Milwaukee, WI	81%	Semi-annual follow-up visits; Quarterly HIV tests
Hojilla, AIDS and Behavior 2018	San Francisco, CA	79% at 7m; 62% at 13m	Loss to follow-up
Montgomery, PLOS One 2016	Providence, RI	70% at 6m	Quarterly visits at 3 or 6 months
Marcus, JAIDS 2016	Northern CA	70% (mean f/u 0.9 yrs)	Medication Possession Ratio (MPR) >80%
Krakower, JIAS 2019	Boston, MA	64% (median f/u 1.2 yrs)	7 day discontinuation
Chan, JIAS 2019	RI, MS, MO	60% at 6m	Quarterly visits at 3 or 6 months
Van Epps, JAIDS 2018	US (VA)	56% at 12m	PDC >80% over first 12 months
Rusie, CID 2018	Chicago, IL	43% at 12m	Quarterly PrEP visits over first 12 months
Zucker, JAIDS 2019	New York, NY	42% at 6m	Quarterly visits
Dombrowski, STD 2018	Seattle/King Co, WA	40% at 12m	Patient reported discontinuation or lost
Spinelli, OFID 2019	San Francisco, CA	38% (median f/u 1 year)	Discontinuation (<90 days PrEP/quarter)

Courtesy of Al Liu

CHALLENGES FOR PREP

- Special challenges for understanding PrEP adherence and persistence
- Adherence is key, but must be combined with engagement in care for ongoing prescriptions, HIV & STI testing
- No surveillance system, and no biomedical marker other than self-report (can use TAF/TDF blood and urine spots but not widely available)
 - contrast to HIV: viral load good marker of adherence to antiretroviral therapy
- To understand how to think about persistence on PrEP, adherence, and retention, looked at other conditions where adherence is important – diabetes, contraception

HIV PREVENTION OR CONTRACEPTION?

- ✓ Prevention tool
- ✓ Patient decides when to use, based on sexual activity & relationship
- ✓ Available as a pill, injection, and vaginal ring
- ✓ Variation in effectiveness & duration by method type
- ✓ Partner status important factor

Both!

EXISTING CONTRACEPTIVE METRICS

Unmet need: #married women not using contraception + (# married women pregnant/post partum) + (# married women pregnant/postpartum wanting to delay or not have more children) + (# married women able to have children and wanting to delay or not have more children)

Contraceptive care-post partum: # reproductive age women with a live birth provided an effective method within 60 days/ # reproductive age women with a live birth

Contraception Protection Index: $\sum(\text{Effectiveness of method}_1 \times \% \text{ women using method}_1)$
+ (Effectiveness of method_n x % of women using method_n)

Table 1. Summary of contraception metrics and suggested HIV prevention adaptations

Contraceptive metric	Definition	Adapted HIV prevention metric	Definition of HIV prevention adaptation	Notes on use/limitations
Couple-Years Protection (CYP) [38]	Σ (# doses of method ₁ x duration of dose ₁) + (# doses of method _n x duration of dose _n)	Person-Years HIV Protection (PYHP) ^a	Σ (# doses of method ₁ x duration of dose ₁) + (# doses of method _n x duration of dose _n)	This metric does not include a denominator. It could also be considered a measure of coverage. It should not be used to compare year to year, as high protection in year 1 may cover future years; instead, it can be annualized over duration [38]. It does not comment on effectiveness of the method.
–	–	Net Prevention Coverage (NPC) ^a [34]	((# no anal intercourse with casual partners of any HIV status) + (# consistent condom use with casual partners of any HIV status) + (# U = U with casual partners living with HIV) + (# using PrEP)) / # HIV-negative respondents	NPC is specifically tailored to MSM, where casual sex has been identified as the major factor in HIV acquisition, although it can be adapted to other populations. It is limited by accuracy in knowledge of who would benefit.

Table 1. A taxonomy of pragmatic preexposure prophylaxis measures based on electronic health record data.

Total time and related measures				
Measure	Definition	Captures	Best for	Limitations
TPT	Months from 1st prescription till end of last supply ^a	Persistence	Describing duration of PrEP use; good for prevention-effective adherence	Includes gaps in PrEP use
On PrEP at 6 months	If TPT is ≥ 6 months ^b	Persistence	Comparing PrEP use at a particular time point	May change depending on when it is measured
MRxR	Total no. of pills/TPT in days; capped at 100% ^a	Adherence	Describing adherence for duration	Includes gaps in PrEP use and overlapping prescriptions
MRxR $\geq 85\%$	If MRxR on PrEP $\geq 85\%$ (equivalent to 6/7 doses) ^b <i>Alternative $\geq 57\%$ (equivalent to 4/7 doses)</i>	Adherence	Comparing effective PrEP use for duration	
Quarterly retention over total PrEP time	Total no. of quarters with an HIV test/TPT in quarters ^a	Retention	Describing retention for duration of PrEP use	Does not include retention after PrEP use

For those interested in full duration of PrEP use, and/or settings with limited data resources, we recommend TPT (persistence) and MRxR (adherence).

Proportion of days covered and related measures

Measure	Definition	Captures	Best For	Limitations
Early PDC $\geq 85\%$	For each of the 1st 6 months, $\geq 85\%$ days are covered by PrEP prescriptions ^b <i>Alternative $\geq 57\%$ days are covered</i>	Persistence; adherence	Comparing effective PrEP use at a particular time point	More complicated to calculate
PDC	Number of days covered by PrEP prescriptions over the 1st 6 months, divided by 180 days ^a	Adherence	Describing PrEP use at a particular time point	
Early retention	If each of the first two quarters had an HIV test ^b	Retention	Comparing retention at a particular time point	

MRxR, medication prescription ratio; PDC, proportion of days covered; PrEP, preexposure prophylaxis; TPT, total PrEP time.

^aContinuous measure.

^bBinary measure.

For more developed PrEP programs, settings with strong data resources, and/or those focusing on PrEP use at specific time points, we recommend PDC.

VALIDATION

- Compared HBH EMR data for subsets of patients to:
 - dried blood spot (DBS) data
 - pharmacy fill data
 - chart reviews for retention
- As expected, EMR data overestimates performance
 - DBS data showed PDC at 85% over the past month had a high sensitivity (97%) but low specificity 13%
 - Not all Rx's are filled and not all filled Rx's are taken
 - 60% of Rx's picked up (though likely more were filled at outside pharmacies)

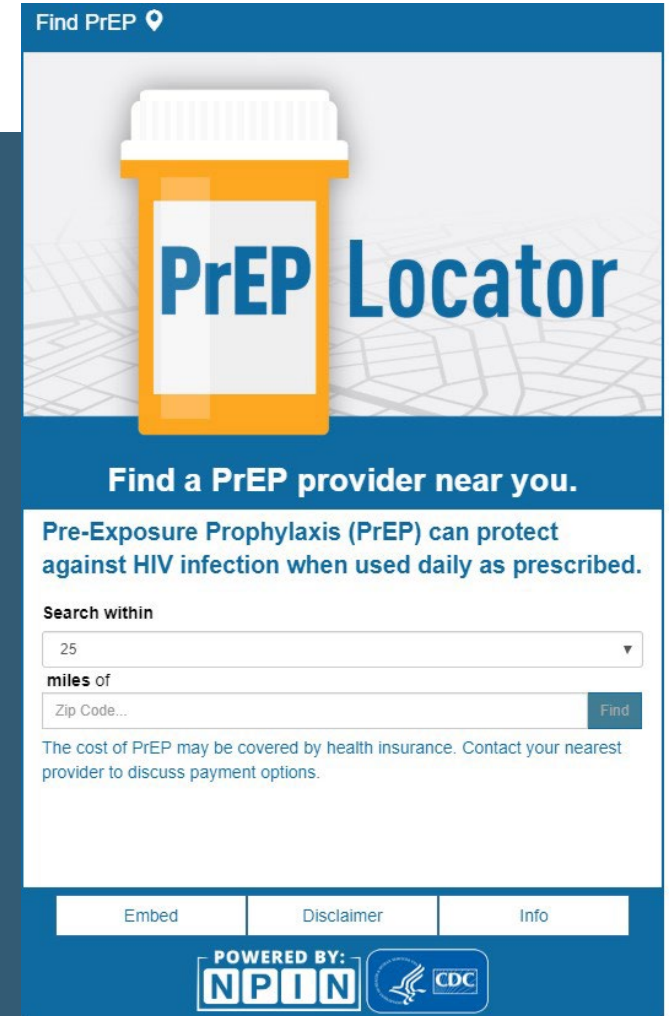
REAL-WORLD USE OF METRICS

USING THE METRICS – REAL-LIFE CHALLENGES

- Worked with PrEP program at Washington University in Saint Louis to apply these metrics and understand how they can be used to improve program and client experience
- Challenges
 - Different variables collected routinely as part of PrEP program
 - Different EMR systems
 - Lack of uniform variables required time standardizing
 - Required data warehouse
 - Complexity of metrics
 - Requires expertise in data cleaning and analysis
 - Differences in staff support
- Facilitators
 - WUSL had detailed REDCap data to supplement EMR data
 - HBH has more dedicated data analytics staff

SURVEY OF PREP-PROVIDING ORGANIZATIONS

- Developed an electronic survey to assess PrEP services, interventions, and monitoring of the PrEP continuum at PrEP-providing organizations in Illinois and Missouri
- PrEP-providing organizations were identified using the CDC PrEP locator and local PrEP locator sources
- Performed cognitive interviews
- Survey distributed via email and administered using Qualtrics from September through November 2020

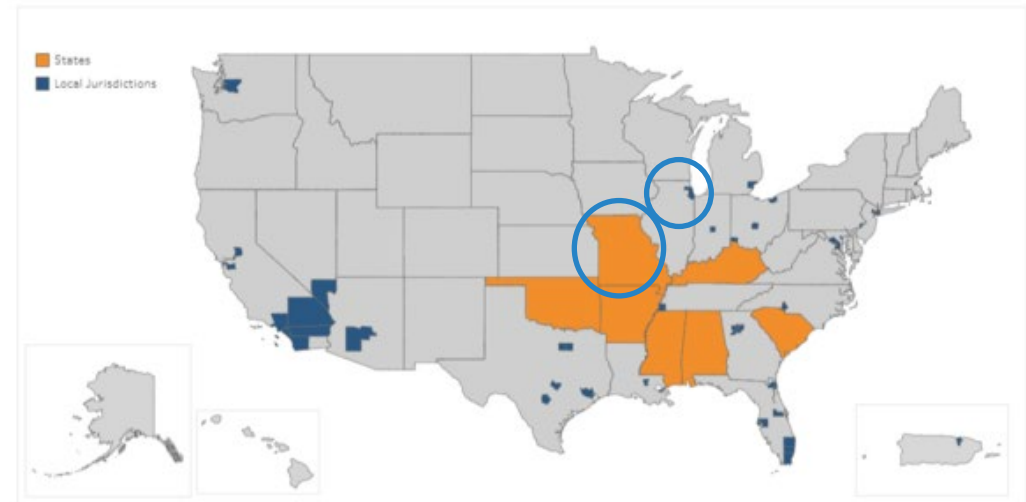


The screenshot shows the 'PrEP Locator' website interface. At the top, there is a search bar labeled 'Find PrEP' with a location pin icon. Below this is a large graphic of an orange pill bottle with a white cap, labeled 'PrEP Locator'. The text 'Find a PrEP provider near you.' is displayed in a blue banner. Below the banner, there is a section titled 'Pre-Exposure Prophylaxis (PrEP) can protect against HIV infection when used daily as prescribed.' This section includes a search form with a dropdown menu for 'Search within' (set to '25'), a label 'miles of', and a text input field for 'Zip Code...'. A 'Find' button is located to the right of the zip code field. Below the search form, there is a note: 'The cost of PrEP may be covered by health insurance. Contact your nearest provider to discuss payment options.' At the bottom of the page, there are three buttons: 'Embed', 'Disclaimer', and 'Info'. The footer features the text 'POWERED BY:' followed by the NPIN logo and the CDC logo.

SURVEY RESULTS

- 76 organizations identified
 - 45 Cook County
 - 31 Missouri
- Survey distributed to 47 organizations
- 26 organizations participated
 - 14 in Cook County, IL
 - 12 in Missouri

Ending the Epidemic (EHE) Phase 1 Jurisdictions:
48 high burden counties, D.C., San Juan, P.R., and 7 states with a high rural burden



Source: KFF analysis of EHE jurisdictions: <https://files.hiv.gov/s3fs-public/ending-the-hiv-epidemic-flyer.pdf>

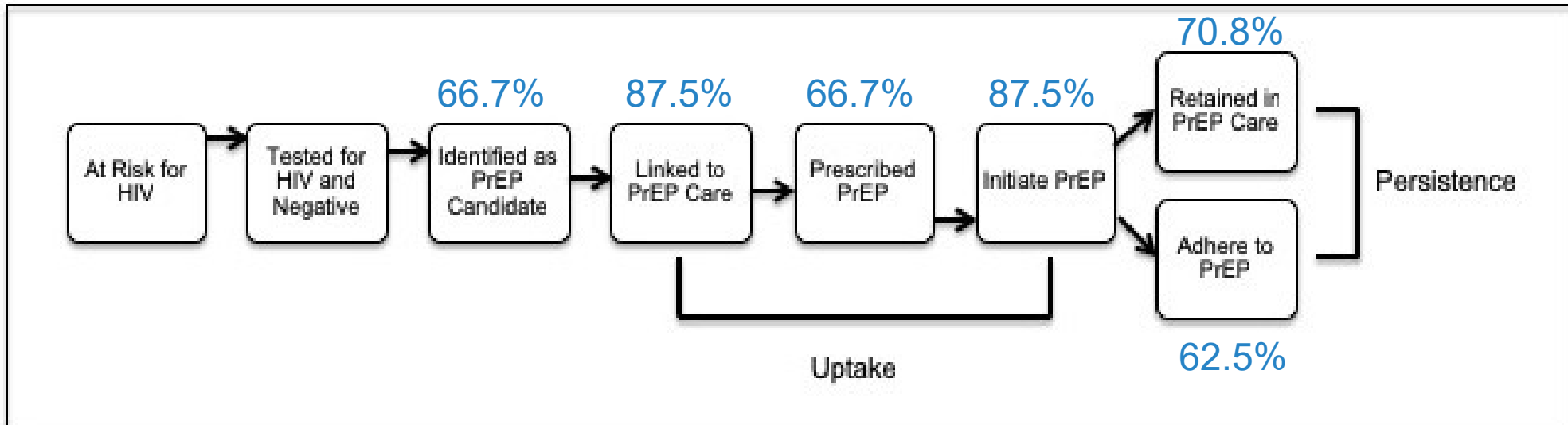
SURVEY RESULTS – ORGANIZATIONAL CHARACTERISTICS

Question	Median (IQR)						
Approximately how many clients does your organization serve annually across all sites?	1000 (80 - 4500)						
Approximately how many clients does your organization provide HIV care for annually?	338 (87.5 – 850)						
Across all sites, how many clients does your organization currently have on PrEP?	70 (10 – 330)						
What percentage of your patients have the following types of insurance?	<table border="0"> <tr> <td data-bbox="1625 965 1997 1011">Public/Subsidized</td> <td data-bbox="1997 965 2527 1011">50% (30% – 66.2%)</td> </tr> <tr> <td data-bbox="1829 1022 1997 1068">Private</td> <td data-bbox="1997 1022 2527 1068">22.5% (10% – 40%)</td> </tr> <tr> <td data-bbox="1778 1079 1997 1125">Uninsured</td> <td data-bbox="1997 1079 2527 1125">17.5% (10% – 26.2%)</td> </tr> </table>	Public/Subsidized	50% (30% – 66.2%)	Private	22.5% (10% – 40%)	Uninsured	17.5% (10% – 26.2%)
Public/Subsidized	50% (30% – 66.2%)						
Private	22.5% (10% – 40%)						
Uninsured	17.5% (10% – 26.2%)						
Does any site within your organization have Ryan White funding?	<table border="0"> <tr> <td data-bbox="1905 1236 1997 1282">Yes</td> <td data-bbox="1997 1236 2527 1282">18 (75.00%)</td> </tr> <tr> <td data-bbox="1913 1293 1997 1339">No</td> <td data-bbox="1997 1293 2527 1339">5 (20.83%)</td> </tr> <tr> <td data-bbox="1837 1350 1997 1396">Unsure</td> <td data-bbox="1997 1350 2527 1396">1 (4.17%)</td> </tr> </table>	Yes	18 (75.00%)	No	5 (20.83%)	Unsure	1 (4.17%)
Yes	18 (75.00%)						
No	5 (20.83%)						
Unsure	1 (4.17%)						

SURVEY RESULTS – ORGANIZATIONAL CHARACTERISTICS

Question	Median (IQR)
What percentage of your patients are the following? <ul style="list-style-type: none"> Cisgender Heterosexual Man Cisgender Men who have Sex with Men Transgender Men Cisgender Women Transgender Women Non-Binary/Gender Non-Conforming People 	10% (5% – 23.8%) 39.5% (30% – 60%) 1% (0.19% – 5%) 27.5% (11.2% – 33.8%) 5% (0.9% – 9%) 1.5% (0.55% – 5%)
Clinic Setting with PrEP Services Available (Choose All That Apply) <ul style="list-style-type: none"> General Primary Care Sexual Health/STI Clinic Subspecialty Care in Infectious Diseases Substance Use/Harm Reduction Treatment Setting Student Health 	17 (68%) 19 (76%) 17 (68%) 11 (44%) 2 (8%)

SURVEY RESULTS: INTERVENTIONS



SURVEY RESULTS: INTERVENTIONS

Does your organization use any of the following to help patients stay on PrEP?	
Appointment reminders	79.2%
Insurance navigation for PrEP coverage	79%
Follow up call, text or email after missed visit	75%
Treatment for substance use disorder	52.2%
Reminder of missed prescription pick-up	45.8%
Motivational interviewing to support PrEP use	45%
Transportation assistance to PrEP appointments	40.9%
Supportive services for housing	40.9%
Social worker or case manager for PrEP clients	39.1%
Supportive services for employment	26.1%
Electronic/mobile app reminders to take PrEP	13%

SURVEY RESULTS: INTERVENTIONS

>75% of respondents indicated they would like to implement or expand interventions that address PrEP retention and adherence for their clients

- 18/23 (78.3%) respondents indicated they were interested in implementing and/or expanding their PrEP retention and adherence efforts.
 - Exploration: 13/18 (72.2%) said their organizations were exploring interventions that would be the best fit
 - Preparation: 1 (5.6%) was preparing to adopt an intervention that had been identified as a good fit
 - Implementation: 1 (5.6%) was currently in the process of implementing an intervention
 - Sustainment: 3 (16.7%) had already implemented an intervention and were in the process of sustainment

MONITORING THE PREP CONTINUUM

Table 2.

Organizational strategies and data collection targeting PrEP continuum points, Cook County, Illinois, and Missouri, 2020

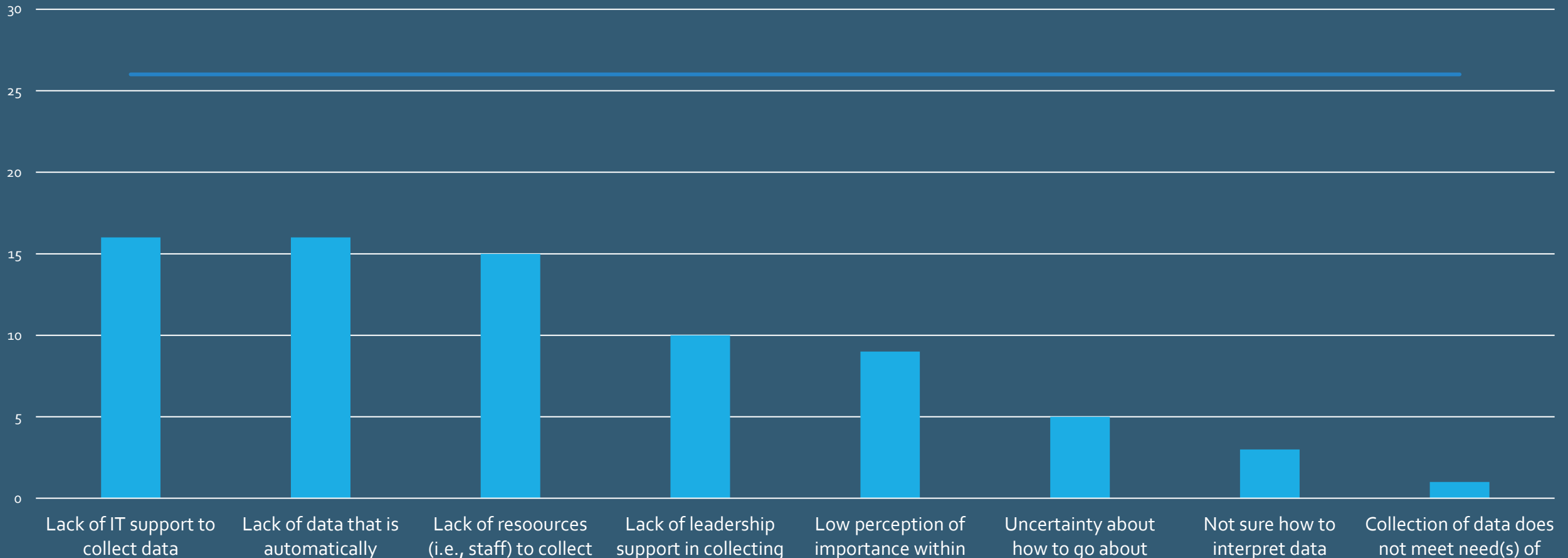
Item	Frequency (Percentage) N=24		
	Yes	No	Unsure
Strategies supporting PrEP implementation			
<i>PrEP Uptake</i>			
Screen HIV-negative individuals for PrEP eligibility and interest	16 (66.7%)	8 (33.3%)	--
Link to PrEP care	21 (87.5%)	3 (12.5%)	--
Encourage providers to prescribe PrEP	16 (66.7%)	8 (33.3%)	--
Initiate PrEP	21 (87.5%)	3 (12.5%)	--
<i>PrEP Persistence</i>			
Improve retention	17 (70.8%)	6 (25.0%)	1 (4.2%)
Improve adherence	15 (62.5%)	8 (33.3%)	1 (4.2%)
PrEP data collection			
PrEP initiation	17 (70.8%)	6 (25.0%)	1 (4.2%)
Either retention or missed visits	11 (45.8%)	13 (54.2%)	--
Retention in care	10 (41.7%)	10 (41.7%)	4 (16.7%)
Missed visits	9 (37.5%)	12 (50.0%)	3 (12.5%)
Adherence and/or prescription refills	9 (37.5%)	12 (50.0%)	3 (12.5%)
PrEP dispensing data from outside pharmacy	9 (37.5%)	14 (58.3%)	1 (4.2%)
Medication toxicity related to PrEP use	5 (20.8%)	14 (58.3%)	5 (20.8%)
HIV positivity among people who have been prescribed PrEP	7 (29.2%)	13 (54.2%)	4 (16.7%)
<i>Use of PrEP data</i>			
Provide feedback to providers	13 (54.2%)	8 (33.3%)	3 (12.5%)
Modify PrEP service delivery	14 (58.3%)	6 (25.0%)	4 (16.7%)

- 70.8% reported collecting data on PrEP initiation
- **41.7% on retention**
- **37.5% on missed visits**
- **37.5% on prescription refills**
- 29.2% on HIV positivity among persons ever prescribed PrEP
- 52.2% documenting reasons for stopping PrEP in EMR
- 20.8% collecting data on PrEP toxicity

RESULTS – BARRIERS IN HEALTH SYSTEMS

What do you perceive to be barriers to collecting data related to PrEP adherence and retention?

of Responses N = 26



NON-RESPONDING ORGANIZATIONS

- Among 50 non-responding organizations
 - 29 (58%) were unable or unwilling to provide an email contact of someone familiar with PrEP services
 - 21 (42%) did not respond to emailed survey
- 32/50 (64%) were contacted for a follow up call
 - 13 (40.6%) reported offering PrEP
 - 10 (31.3%) said they did not offer PrEP
 - 9 (28.1%) declined all questions
- Of 23 organizations that answered questions, almost half (11/23, 47.8%) said that neither PrEP nor HIV prevention services were a priority

SURVEY CONCLUSIONS

- Most respondents offered clients support for PrEP retention and adherence and wanted to expand interventions for PrEP persistence, yet fewer monitored corresponding metrics
- To enhance PrEP implementation, organizations should improve monitoring and evaluation of PrEP metrics along the entire continuum and respond with appropriate services to support clients
 - Requires building capacity
 - What to measure?
 - How to measure?
 - How to respond?

ASSESSING EQUITY

INTERSECTING INEQUITIES IN PREP-TO-NEED

	HIV Diagnoses, No. (%)	Total % on PrEP (No./Total No.)	Indication:HIV	PrEP:Indication	PrEP:HIV
Total	456 (0.99)	15.7 (7 206/45 906)	32.4 (14 788/456)	0.49 (7 206/14 788)	15.8 (7 206/456)
Key populations					
MSM	389 (1.95)	31.4 (6 256/19 941)	23.3 (9 073/389)	0.69 (6 256/9 073)	16.1 (6 256/389)
Non-Hispanic White	131 (1.19)	31.3 (3 449/11 014)	38.0 (4 979/131)	0.69 (3 449/4 979)	26.3 (3 449/131)
Non-Hispanic Black	115 (3.96)	30.8 (895/2 902)	10.5 (1 203/115)	0.74 (895/1 203)	7.8 (895/115)
Latino	112 (2.93)	34.4 (1 313/3 822)	16.2 (1 818/112)	0.72 (1 313/1 818)	11.7 (1 313/112)
Non-Hispanic Asian	19 (1.77)	31.2 (334/1 071)	27.5 (523/19)	0.64 (334/523)	17.6 (334/19)
Young (< 30 y)	200 (2.28)	37.0 (3 245/8 767)	22.5 (4 491/200)	0.72 (3 245/4 491)	16.2 (3 245/200)
Transwomen	43 (1.41)	14.1 (430/3 052)	7.2 (311/43)	1.38 (430/311)	10.0 (430/43)
Non-Hispanic White	7 (0.40)	7.8 (136/1 754)	10.4 (73/7)	1.86 (136/73)	19.4 (136/7)
Non-Hispanic Black	28 (5.82)	26.6 (128/481)	4.1 (114/28)	1.12 (128/114)	4.6 (128/28)
Latina	7 (1.36)	24.8 (127/513)	12.6 (88/7)	1.44 (127/88)	18.1 (127/7)
Non-Hispanic Asian	1 (0.87)	16.5 (19/115)	22.0 (22/1)	0.86 (19/22)	19.0 (19/1)
Young (< 30 y)	30 (1.69)	16.1 (285/1 774)	7.5 (226/30)	1.26 (285/226)	9.5 (285/30)

Note. MSM = men who have sex with men; PrEP = preexposure prophylaxis.

PREP USE AMONG RACIAL/ETHNIC MINORITIES

Table 3. Examples of preexposure prophylaxis use measures, by race/ethnicity among MSM, Chicago 2011–2019.

	Measures over total duration			
	Black, <i>n</i> = 812	Latinx, <i>n</i> = 1131	White, <i>n</i> = 2878	Total, <i>n</i> = 5247
Mean total PrEP time (SD) ^a	18.0 (13.7)	19.3 (14.1)	20.6 (14.3)	19.8 (14.2)
On PrEP at 6 m ^a	75% (605)	77% (871)	81% (2333)	79% (4131)
Mean MRxR (SD) ^a	86% (23)	89% (21)	90% (19)	89% (20)
MRxR ≥ 85% on PrEP ^a	68% (553)	77% (866)	79% (2265)	77% (4016)
MRxR ≥ 57% on PrEP ^a	86% (702)	89% (1001)	91% (2633)	90% (4721)
Mean quarterly retention (SD) ^a	70% (23)	72% (23)	70% (22)	71% (23)
	Measures at specific time points			
	Black, <i>n</i> = 812	Latinx, <i>n</i> = 1131	White, <i>n</i> = 2878	Total, <i>n</i> = 5247
Early PDC ≥ 85% ^a	40% (325)	50% (568)	57% (1651)	53% (2758)
Late PDC ≥ 85% ^a	23% (183)	31% (345)	36% (1039)	32% (1681)
Early PDC ≥ 57% ^a	45% (362)	55% (626)	62% (1783)	57% (3008)
Late PDC ≥ 57% ^a	26% (210)	35% (401)	41% (1185)	37% (1939)
Mean early PDC (SD) ^a	75% (28)	79% (27)	84% (25)	81% (26)
Mean late PDC (SD) ^a	62% (32)	68% (32)	74% (30)	70% (31)
Early quarterly retention ^a	51% (418)	60% (678)	62% (1793)	59% (3114)
Late quarterly retention ^a	24% (195)	31% (352)	32% (923)	30% (1585)

MRxR, medication prescription ratio; PDC, proportion of days covered; PrEP, preexposure prophylaxis.

^aDifferences between Black, Latinx and White MSM were significant ($P < 0.05$) by chi square tests (for binary measures) and Wilcoxon rank sum tests (for continuous measures).

PERSISTENCE AMONG RACIAL/ETHNIC MINORITIES

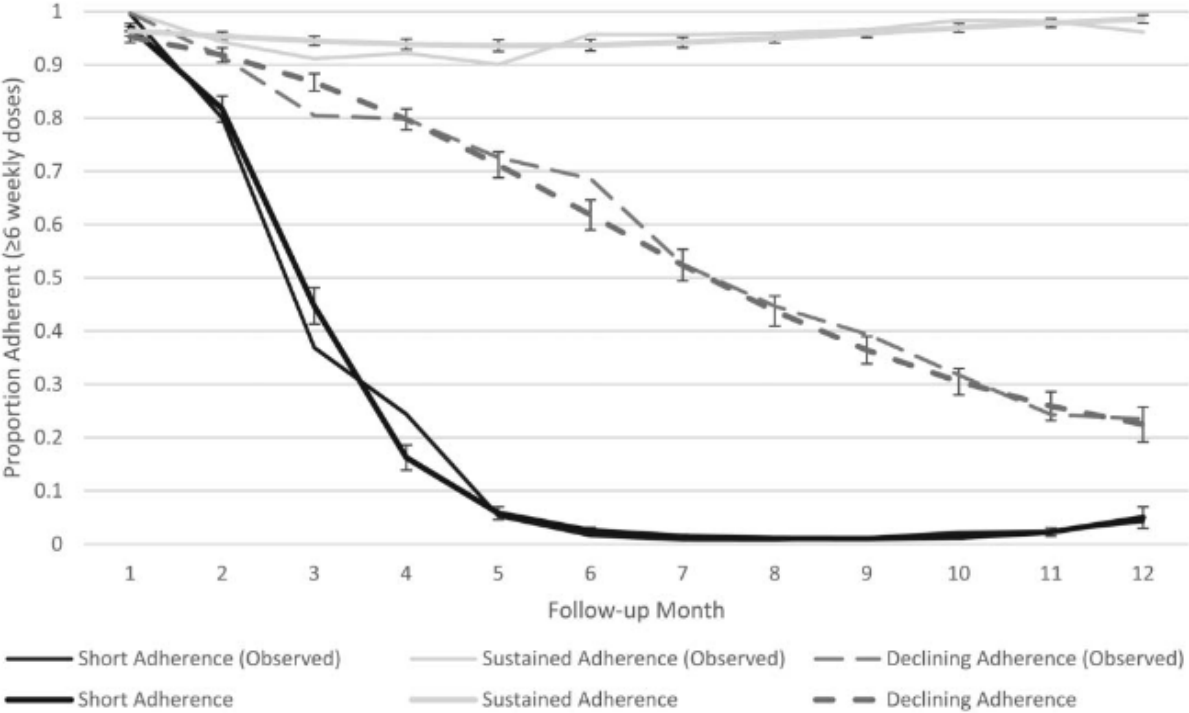


FIGURE 1. Observed and predicted adherence by assigned PrEP use trajectory (95% CI).

TABLE 3. Adjusted Associations With Assigned PrEP Use Trajectories

	Short Use (n = 648) aOR (95% CI)	Declining Use (n = 624) aOR (95% CI)	Sustained Use (n = 891) aOR (95% CI)
Baseline*			
Age 18–25	2.07 (1.63 to 2.53) to $P < 0.001$	1.60 (1.25 to 2.05) to $P < 0.001$	Ref
Black race	1.48 (1.15 to 1.90) to $P = 0.002$	1.38 (1.08 to 1.78) to $P = 0.01$	Ref
Cisman	0.71 (0.49 to 1.05) to $P = 0.08$	0.66 (0.44 to 0.98) to $P = 0.04$	Ref
Bisexual	1.94 (1.36 to 2.78) to $P < 0.001$	1.34 (0.91 to 1.96) to $P = 0.14$	Ref
Straight	3.86 (2.40 to 6.21) to $P < 0.001$	1.66 (0.97 to 2.83) to $P = 0.06$	Ref
Insurance			
Public	1.65 (1.20 to 2.26) to $P = 0.002$	1.20 (0.87 to 1.67) to $P = 0.23$	Ref
Self-pay	2.67 (2.06 to 3.47) to $P < 0.001$	1.72 (1.33 to 2.23) to $P < 0.001$	Ref
West Chicago	1.73 (1.29 to 2.32) to $P < 0.001$	1.65 (1.24 to 2.20) to $P < 0.001$	Ref
South Chicago	1.79 (1.33 to 2.42) to $P < 0.001$	1.34 (0.98 to 1.83) to $P = 0.06$	Ref

APPLICATION TO ADMINISTRATIVE CLAIMS

- Illinois Medicaid claims data from 2015-2016
 - Research identifiable files (RIF) provided to the University of Chicago through CMS
- PrEP care continuum
- Calculated metrics of PrEP prescription coverage and persistence
 - PrEP-to-Need ratio in Chicago
 - PrEP prescriptions: new HIV diagnoses by zip code
 - Percent days covered (PDC)
 - Coverage with PrEP medication in first 6 months on PrEP, based on filled PrEP prescriptions

EARLY PREP CONTINUUM

Medicaid Enrollees Indicated and Prescribed PrEP in Illinois, 2015 & 2016		
	2015	2016
Indication for PrEP	N=24,333	N=35,315
STI Diagnosis	10,793 (44.4%)	12,535 (35.5%)
Other*	13,540 (56.6%)	22,780 (64.5%)
Screened for HIV	10,792 (44.4%)	15,474 (43.8%)
Prescribed PrEP	534 (2.3%)	1,001 (2.8%)

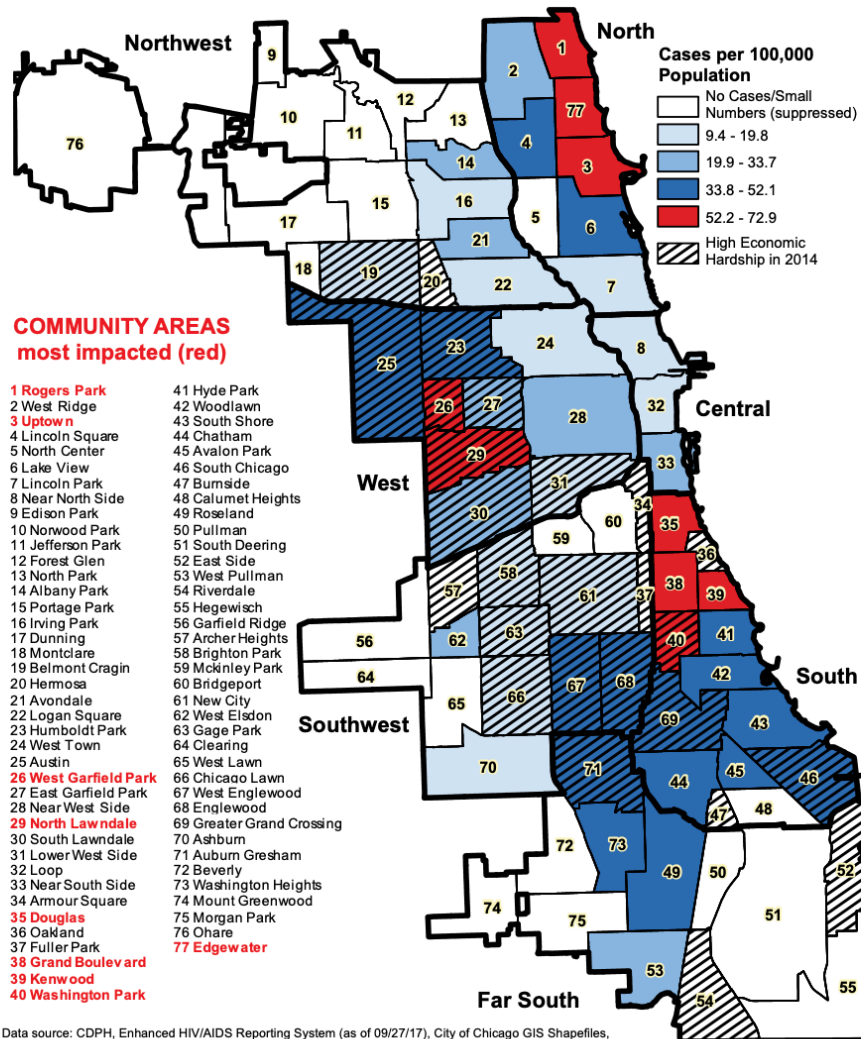
*ICD code for risky sexual behavior or needle stick injury

WHO'S INDICATED & GETTING PREP?

Demographics - Indicated		2015 N=24,333	2016 N=35,315
Age	13 to 24	11,129 (45.74%)	15,317 (43.47%)
	25 to 34	6,583 (27.05%)	10,700 (30.30%)
	35 to 44	2,924 (12.02%)	4,499 (12.74%)
	45 to 54	2,001 (8.22%)	2,665 (7.55%)
	>= 55	1,597 (6.56%)	2,013 (5.70%)
	Unknown	99 (0.41%)	121 (0.34%)
Sex	Female	16,569 (68.09%)	23,342 (66.01%)
	Male	7,665 (31.50%)	11,852 (33.56%)
	Unknown	99 (0.41%)	121 (0.34%)
Race/Ethnicity	Black	13,210 (54.29%)	19,173 (54.29%)
	White	6,239 (25.64%)	10,239 (28.99%)
	Hispanic	3,301 (13.57%)	4,271 (12.09%)
	Multiracial/Other	373 (1.54%)	428 (1.21%)
	Unknown	1,210 (4.97%)	1,204 (3.41%)
County	Cook (Chicago)	14,001 (57.5%)	18,119 (51.3%)
	Other	10,232 (42.0%)	17,075 (48.4%)
	Missing	100 (0.4%)	121 (0.3%)

Demographics - Prescribed		2015 N = 534	2016 N = 1,001
Age	13 to 24	95 (17.79%)	209 (20.88%)
	25 to 34	240 (44.94%)	406 (40.56%)
	35 to 44	115 (21.54%)	218 (21.78%)
	45 to 54	62 (11.61%)	126 (12.59%)
	>= 55	22 (4.12%)	42 (4.20%)
	Unknown		
Sex	Female	105 (19.66%)	172 (17.18%)
	Male	429 (80.34%)	829 (82.82%)
Race/Ethnicity	Black	162 (30.34%)	358 (35.76%)
	White	226 (42.32%)	372 (37.16%)
	Hispanic	86 (16.10%)	169 (16.88%)
	Multiracial/Other	20 (3.75%)	37 (3.70%)
	Unknown	40 (7.49%)	65 (6.49%)
County	Cook	443 (82.96%)	798 (79.72%)
	Other	91 (17.04%)	203 (20.28%)

2016 HIV INCIDENCE MAP CITY OF CHICAGO



- Incidence by community area

- Most impacted:

- North Side: Rogers Park, Uptown, Edgewater

- West Side: West Garfield Park, North Lawndale

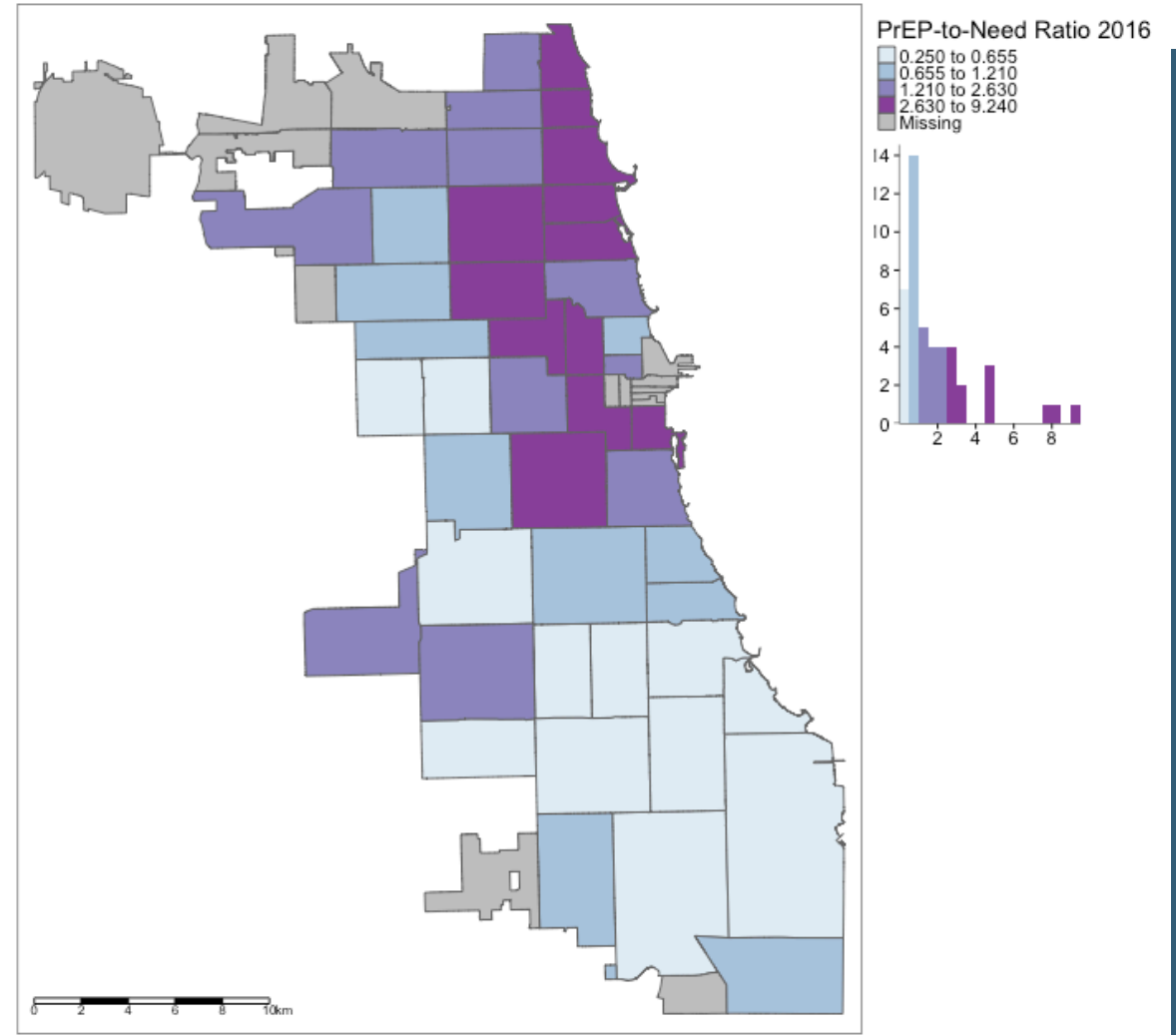
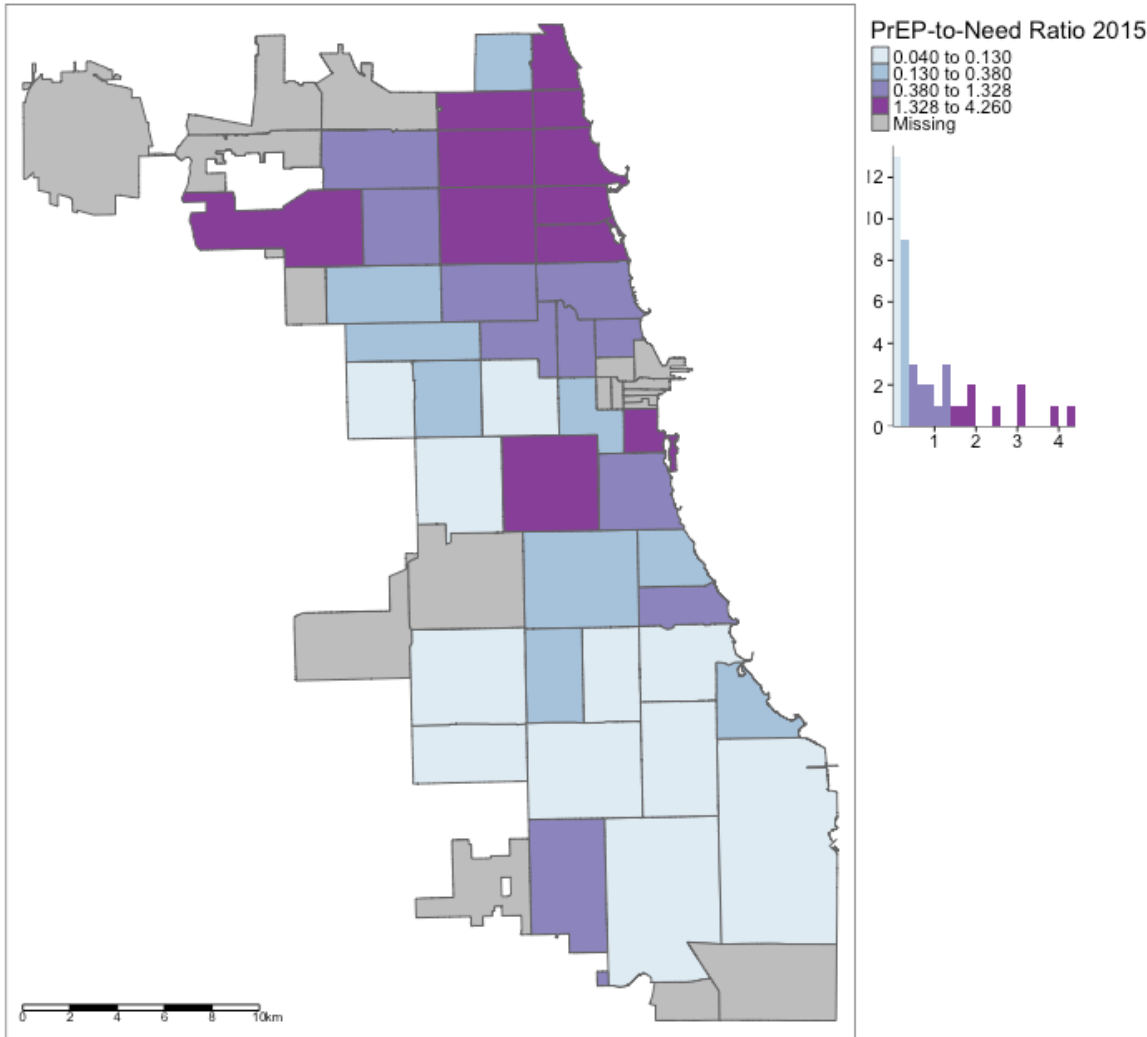
- South Side: Douglas, Grand Boulevard, Kenwood, Washington Park

2017 City of Chicago HIV/STI Surveillance Report

https://www.chicago.gov/content/dam/city/depts/cdph/HIV_STI/HIV_STISurveillanceReport2016_12012017.pdf

Data source: CDPH, Enhanced HIV/AIDS Reporting System (as of 09/27/17), City of Chicago GIS Shapefiles, and U.S. Census. This map represents 88% (738/839) of total new HIV infection diagnoses. The economic hardship index utilizes multiple indicators to measure economic conditions of Chicago Community Areas. High hardship index scores indicate worse economic conditions.

MEDICAID PREP-TO-NEED RATIO HEAT MAP IN CHICAGO, IL



ILLINOIS PREP COVERAGE – PERCENT DAYS COVERED

PDC Number of days covered by PrEP prescriptions over the 1st 6 months, divided by 180 days^a Adherence

Year	Mean	SD	Q1	Median	Q3
2015	76.2%	31.6%	56.0%	95.9%	100%
2016	72.3%	32.0%	44.4%	89.0%	100%

Sex	2015 Median (Q1 – Q3)	P-value	2016 Median (Q1 – Q3)	P-value
Female	49.3% (16.4% – 100%)	< 0.001	65.7% (20.6% – 100%)	< 0.001
Male	100% (76.3% – 100%)		100% (49.3% – 100%)	

Race/Ethnicity	2015 Median (Q1 – Q3)	P-value
Black	98.6% (49.3% – 100%)	0.139
White	100% (65.7% – 100%)	
Hispanic	100% (65.7% – 100%)	
Multiracial/Other	100% (100% – 100%)	
Unknown	100% (62.2% – 100%)	
Race/Ethnicity	2016 Median (Q1 – Q3)	P-value
Black	82.1% (37.1% – 100%)	0.00153
White	100% (49.3% – 100%)	
Hispanic	100% (65.7% – 100%)	
Multiracial/Other	82.1% (48.4% – 100%)	
Unknown	100% (49.3% – 100%)	

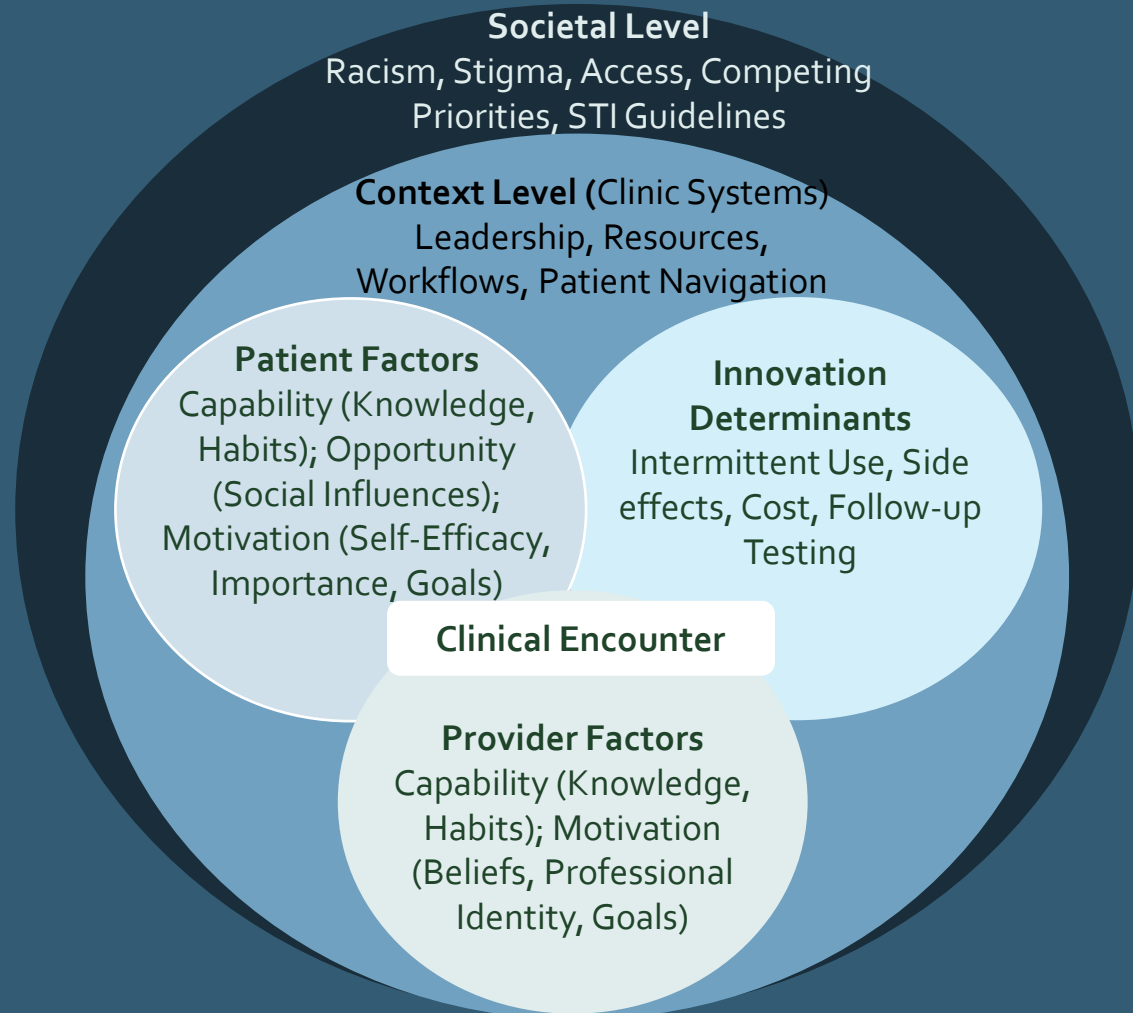
APPLICATION TO ADMINISTRATIVE CLAIMS

- Challenges
 - Lag in release research-identifiable files by CMS
 - In states that have not expanded Medicaid, will be less informative
 - Lack of sexual orientation and gender identity
 - Partnerships across government agencies

- Advantages
 - All states can theoretically use own Medicaid claims data
 - Can be used to assess more granular geographic areas to inform service delivery by healthcare systems and identify deserts of PrEP care
 - Can add to surveillance data on understanding PrEP use and making progress towards HIV elimination goals

SUMMARY & CONCLUSIONS

WHAT ARE BARRIERS TO EQUITABLE SUSTAINED PREP USE?



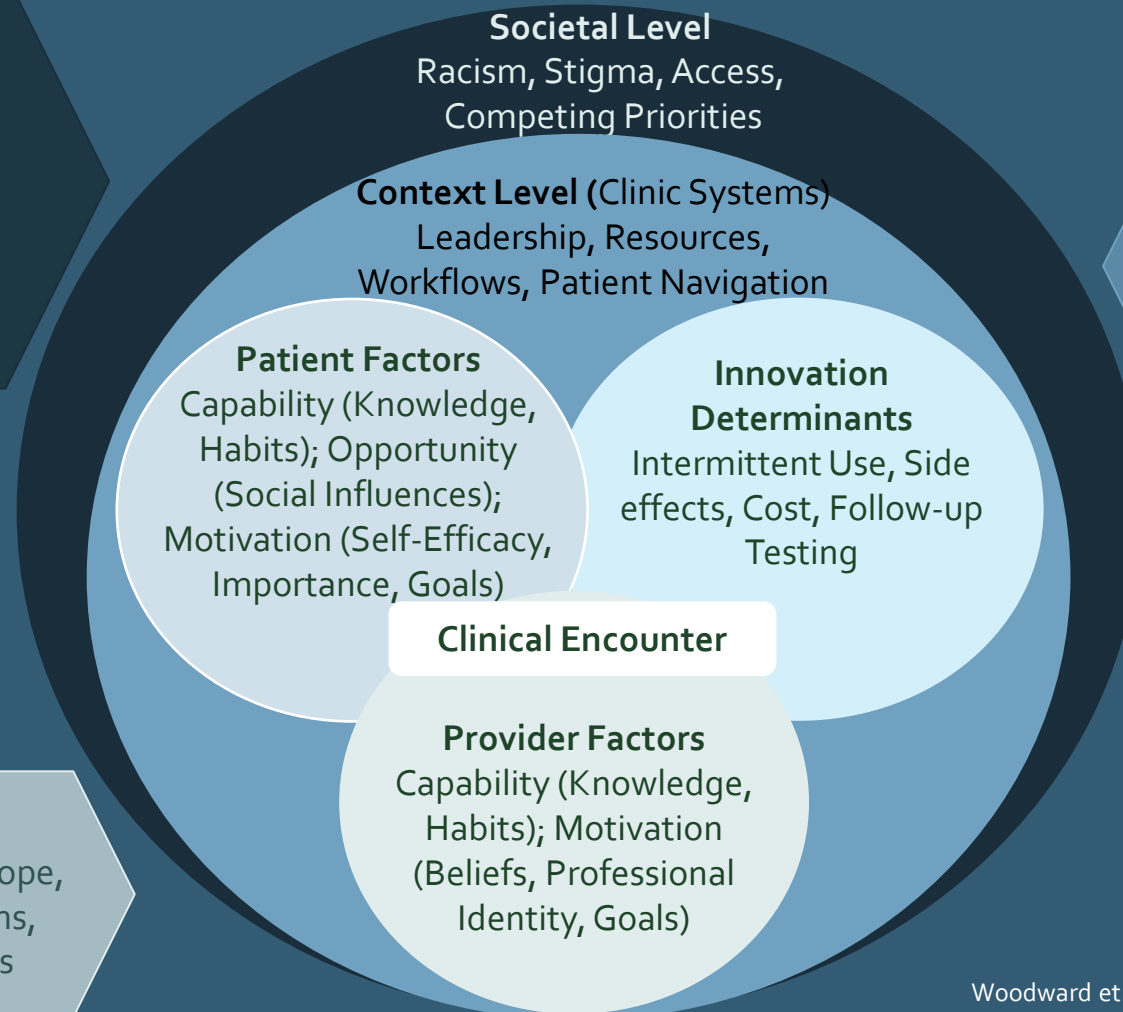
Health Equity Implementation Framework
adapted to PrEP

WHAT ARE STRATEGIES TO EQUITABLE SUSTAINED PREP USE?

Inclusive, Non-stigmatizing Guidelines & Trainings, Culturally Appropriate, Non-stigmatizing Outreach, Pharmacy PrEP, Mobile PrEP, Rapid Prep, Nurse-led Prep, OTC PrEP, Status Neutral Approaches, Low Barrier Care, Wrap-around Services, Universal Health Care, Community Health Workers

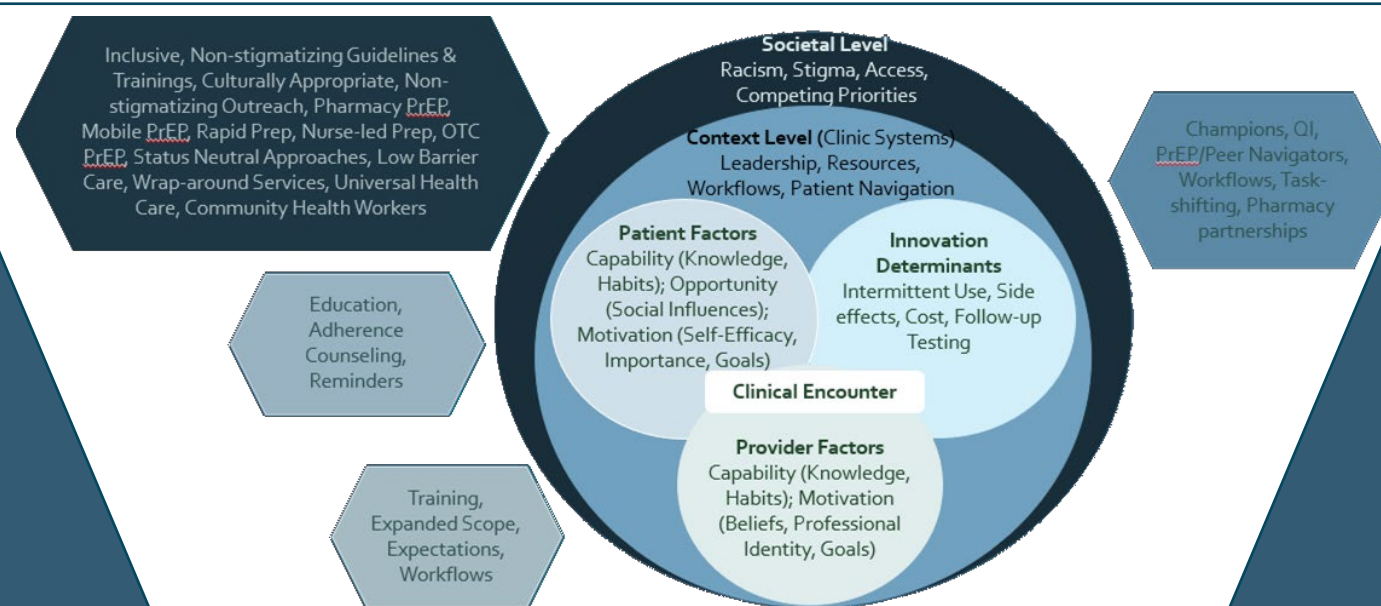
Education, Adherence Counseling, Reminders

Training, Expanded Scope, Expectations, Workflows



Champions, QI, PrEP/Peer Navigators, Workflows, Task-shifting, Pharmacy partnerships

WHAT ARE STRATEGIES TO EQUITABLE SUSTAINED PREP USE?



PrEP Metrics

IMPACT!

CONCLUSIONS & NEXT STEPS

- Still work to be done in defining persistence on PrEP that is universally accepted and understanding how best to measure across different settings and levels
- Build capacity to measure PrEP continuum points across a wider range of healthcare settings to inform service delivery and intervention development
- Understand how metrics can be applied to understand population-level trends

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