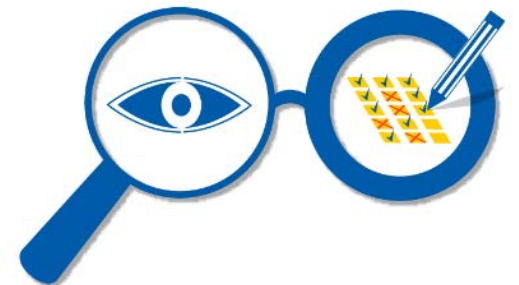# PrEP and Electronic Medical Records: Examples from New York City

Zoe Edelstein, PhD MS

Biomedical Summit

December 4, 2017

PrEP Measurement and Program Evaluation

What?

- Key measures: PrEP prescription or referral, PrEP candidacy/eligibility, PrEP-related medical services, retention (follow-up visits), medication adherence

- Other information of interest: sociodemographic factors, STIs, referral for services

- Analyses: trends; associations; programmatic reach and patient outcomes

How?

- A few decision points:
  - Retrospective vs. prospective
  - Current record system vs. new system
  - Individual program vs. system-wide vs. multi-site vs. jurisdictional (public health)
  - Parsimonious vs. exhaustive
  - Patient care vs. program evaluation

NYC Health

Road Map of Whirlwind Tour

	Current Record System	Modification to Record System
Retrospective		
Prospective		

NYC
Health

Road Map of Whirlwind Tour

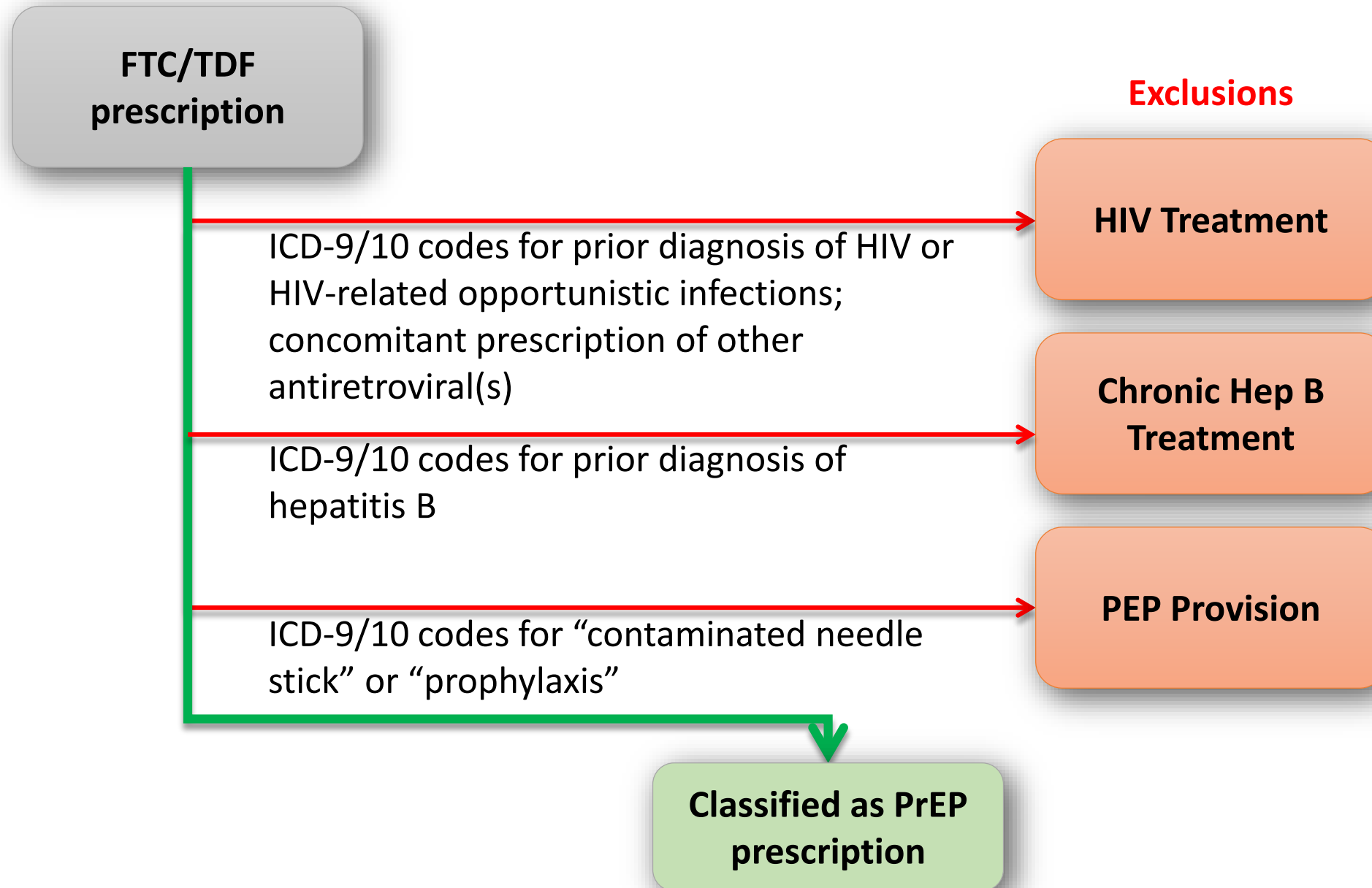|	Current Record System	Modification to Record System
Retrospective		
Prospective		

NYC Health

PrEP Trends and Associations
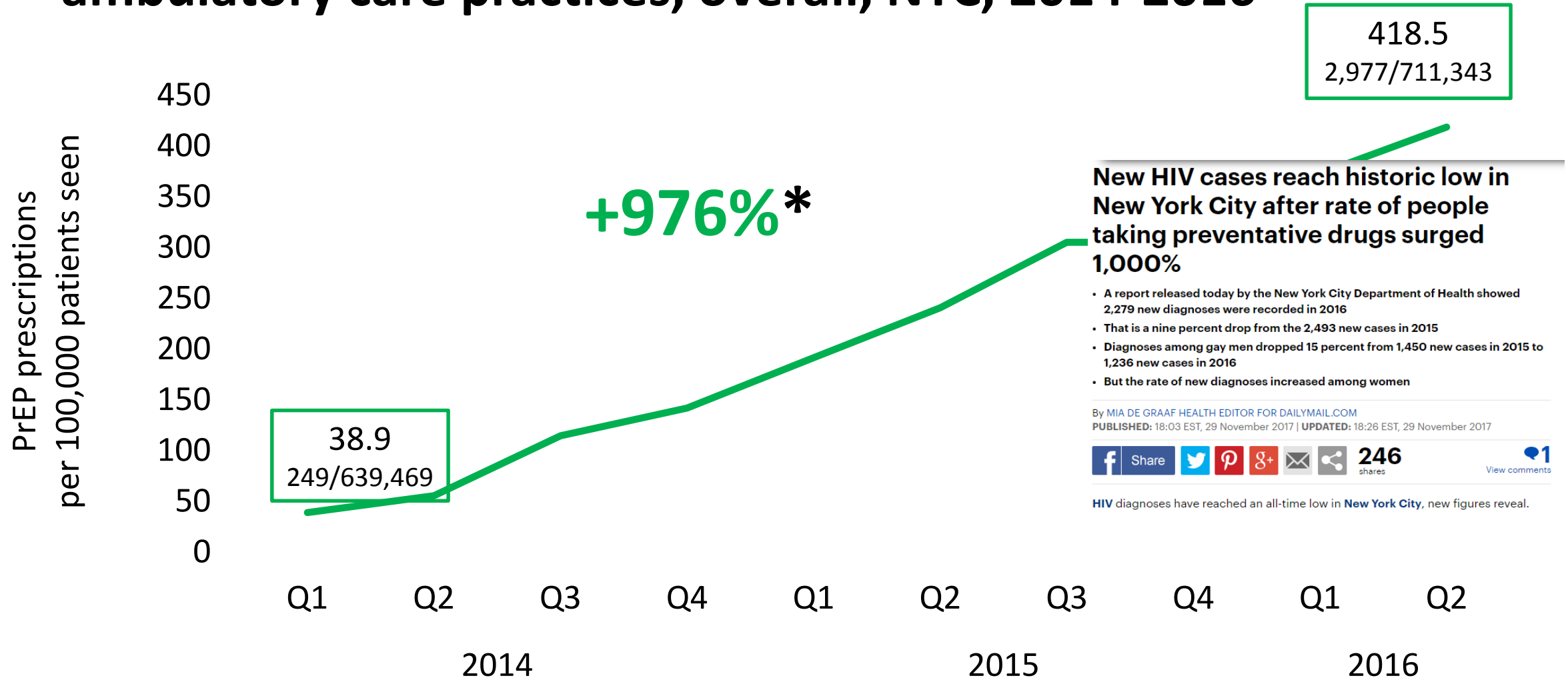# NYC DOHMH Primary Care Information Project "Hub"

- The "hub" is an innovative system that connects to electronic health records (EHRs) of providers using EHR vendor eClinicalWorks

- Citywide practice reach and patient coverage
  - 720 practices
  - 2,645 providers active in 2016
  - 2.0M patients with visits in 2016

- **Extracts EHR data in aggregate** form
  - Secure and confidential

- **Applied an algorithm** to identify PrEP prescribing

- **Outcome:** PrEP prescription rates
  - Calculated per 100,000 patients seen
  - Stratified by select patient- and practice-level factors
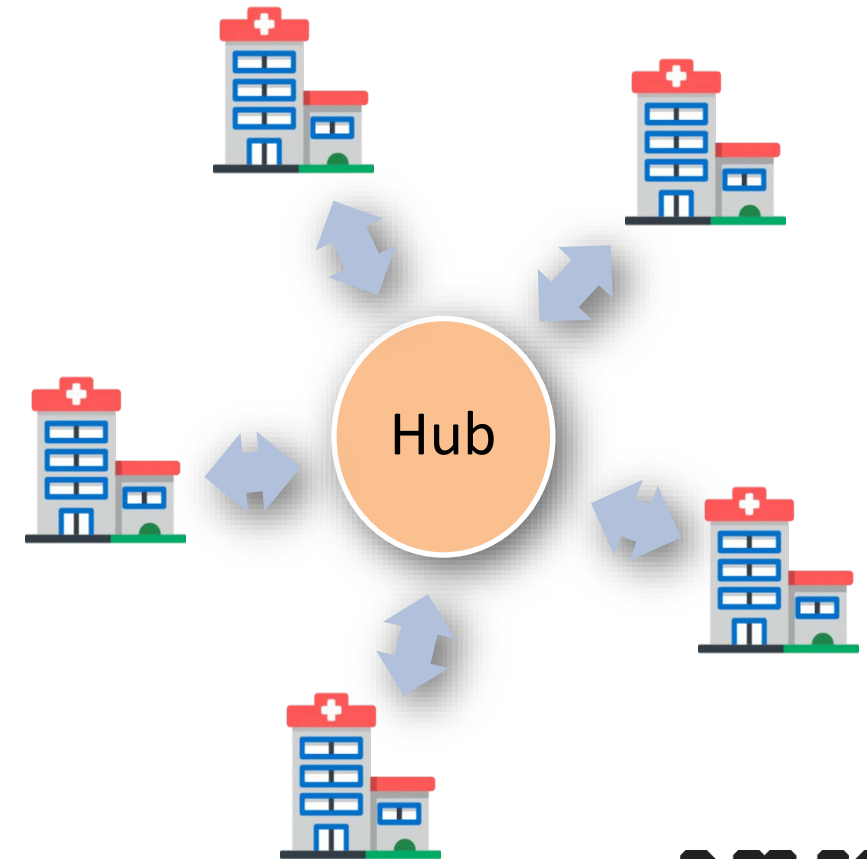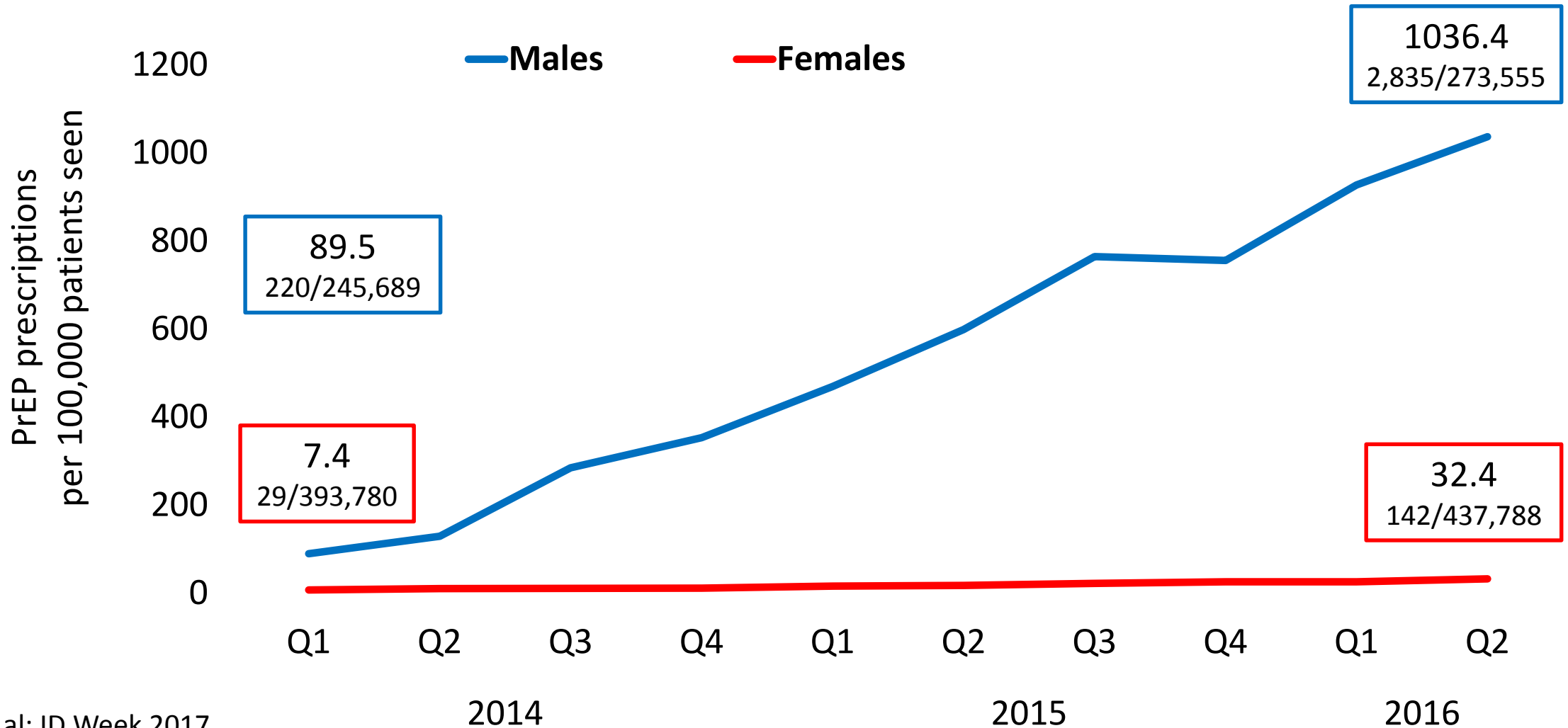
PrEP prescription algorithm

FTC/TDF prescription

Exclusions

ICD-9/10 codes for prior diagnosis of HIV or HIV-related opportunistic infections; concomitant prescription of other antiretroviral(s)

HIV Treatment

ICD-9/10 codes for prior diagnosis of hepatitis B

Chronic Hep B Treatment

ICD-9/10 codes for "contaminated needle stick" or "prophylaxis"

PEP Provision

Classified as PrEP prescription

NYC Health

PrEP prescription rates per 100,000 patients seen in 602 ambulatory care practices, overall, NYC, 2014-2016

418.5
2,977/711,343

+976%*

New HIV cases reach historic low in New York City after rate of people taking preventative drugs surged 1,000%

- A report released today by the New York City Department of Health showed 2,279 new diagnoses were recorded in 2016
- That is a nine percent drop from the 2,493 new cases in 2015
- Diagnoses among gay men dropped 15 percent from 1,450 new cases in 2015 to 1,236 new cases in 2016
- But the rate of new diagnoses increased among women

By MIA DE GRAAF HEALTH EDITOR FOR DAILYMAIL.COM
PUBLISHED: 18:03 EST, 29 November 2017 | UPDATED: 18:26 EST, 29 November 2017

246 shares   💬 1 View comments

HIV diagnoses have reached an all-time low in **New York City**, new figures reveal.

38.9
249/639,469

PrEP prescriptions per 100,000 patients seen

450
400
350
300
250
200
150
100
50
0

Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2

2014   2015   2016

Salcuni P., Smolen J., Jain S., Myers J., Edelstein Z., ID Week 2017

*Increase is statistically significant (p<0.05).

PrEP prescription rates per 100,000 patients seen in 602 ambulatory care practices, by sex, NYC, 2014-2016

Males **Females**

1200

1000

800

600

400

200

0

PrEP prescriptions per 100,000 patients seen

1036.4
2,835/273,555

89.5
220/245,689

7.4
29/393,780

32.4
142/437,788

Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2

2014 2015 2016

Salcuni et al; ID Week 2017.

*Increases across all strata are statistically significant (p<0.05), after adjusting for patient age and race/ethnicity, practice location and type, proportion of practice's patients living in high poverty ZIPs, and number of ID specialists.

NYC Health

PrEP prescription rates per 100,000 males seen in 602 ambulatory care practices, by race/ethnicity, NYC, 2014-2016
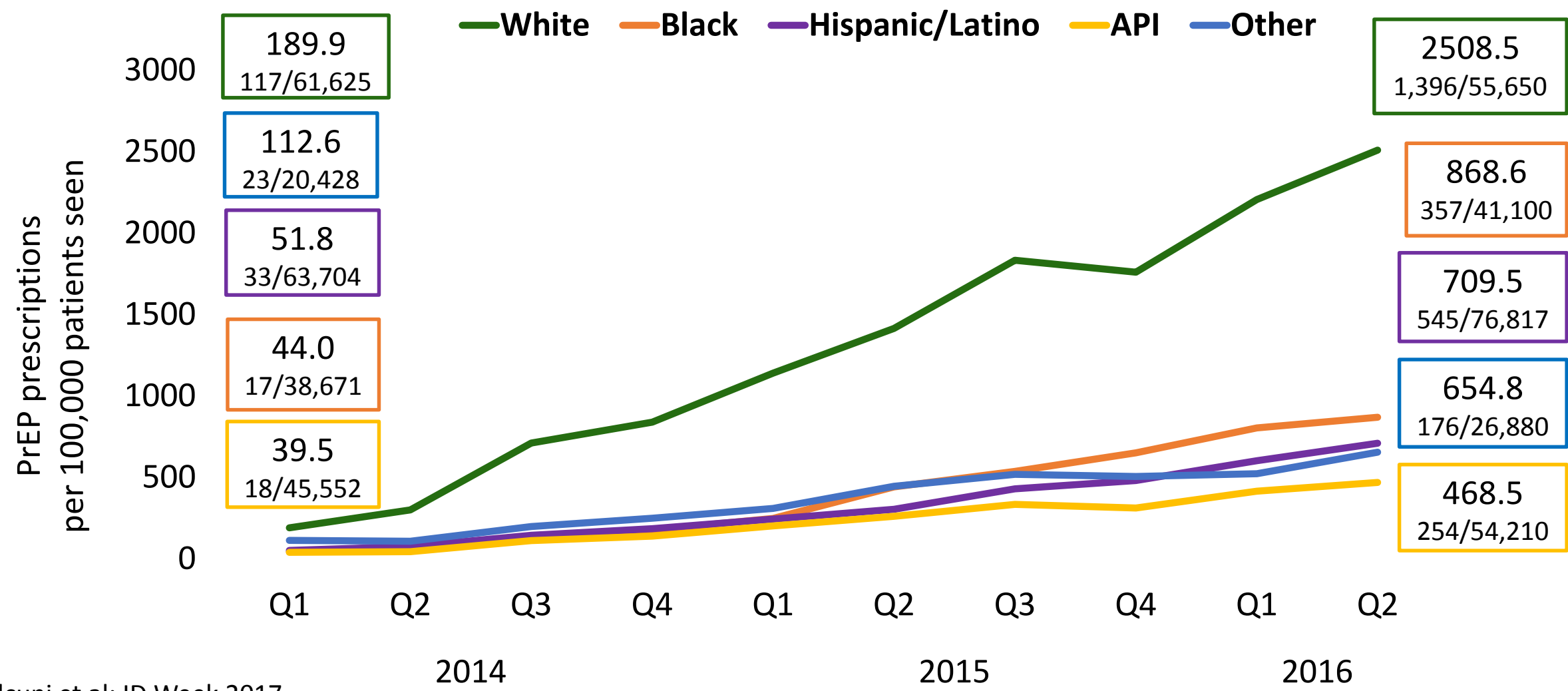
White **Black** **Hispanic/Latino** **API** **Other**

2014 Q1 values:
- 189.9 (117/61,625) — White
- 112.6 (23/20,428) — Other
- 51.8 (33/63,704) — Hispanic/Latino
- 44.0 (17/38,671) — Black
- 39.5 (18/45,552) — API

2016 Q2 values:
- 2508.5 (1,396/55,650) — White
- 868.6 (357/41,100) — Black
- 709.5 (545/76,817) — Hispanic/Latino
- 654.8 (176/26,880) — Other
- 468.5 (254/54,210) — API

Y-axis: PrEP prescriptions per 100,000 patients seen (0, 500, 1000, 1500, 2000, 2500, 3000)

X-axis: Q1 Q2 Q3 Q4 (2014) Q1 Q2 Q3 Q4 (2015) Q1 Q2 (2016)

Salcuni et al; ID Week 2017.

*Increases across all strata are statistically significant (p<0.05), after adjusting for patient age, practice location and type, proportion of practice's patients living in high poverty ZIPs, and number of ID specialists.

NYC Health

Measuring Reach in Large Urban Health Care System Montefiore Medical Center, Bronx NY

- Largest health care system in the Bronx

- Data **extracted** includes all HIV tests (2011-2015)

- Among those with negative HIV test and FTC-TDF prescription, conducted a **medical chart review** to confirm PrEP prescription

- Used **standardized data dictionary and chart abstraction tool**

- **Result:** 177,525 with HIV neg test; 2064 prescribed FTC-TDF; **108 prescribed FTC-TDF for PrEP**

Table 1 Characteristics of individuals prescribed PrEP (N = 108)

Age group	Total (%)
Gender	
Cisgender female	31 (29%)
Cisgender male	74 (69%)
Transgender male-to-female	3 (3%)
Race/ethnicity	
Black or African American, Non-Hispanic	31 (29%)
Hispanic	39 (36%)
White	11 (10%)
Other or unspecified	27 (25%)
Sexual orientation	
Heterosexual	39 (36%)
MSM[1]	61 (56%)
MTF[2] sex with men	2 (2%)
WSW[3]	1 (1%)
Unspecified	5 (5%)

Bien C., Patel V., Blackstock O., Felsen U.; AIDS Behav (2017). 21:1309-1314

Map of Whirlwind Tour

	Current Record System	Modification to Record System
Retrospective		
Prospective		

Measuring PrEP by Influencing Input into Current EHR
New York Presbyterian Hospitals

- Identified billing codes that will work within system for PrEP and PEP, to measure uptake and related measures

- Influencing use through directly reaching out (one-on-one discussions), trainings on PrEP/PEP and data feedback loop

Personal Communication. Caroline Carnevale.

Road Map of Whirlwind Tour

	Current Record System	Modification to Record System
Retrospective		
Prospective		

Modification to EMR for New PrEP Services and Protocols
Sexual Health Clinics, NYC DOHMH Bureau of STD Control

- 8 Sexual Health Clinics throughout NYC

- Custom EMR system
  - Updated to meet program needs
  - Clinic staff enter data in real time
  - Links to laboratory and patient portal
  - Analysts generate reports and analyses

- EMR modified as PrEP services added
  - PrEP navigation, launched Oct 2016
  - PrEP initiation, roll out began Dec 2016

New boo?

We've got You COVERED!

NO MATTER WHO YOU ARE OR WHAT YOU'RE INTO
NYC **SEXUAL HEALTH CLINICS** are here for you, with confidential services like

| HIV and STI Testing | PrEP Initiation | Condoms | and more |

Anyone 12 years and older can walk in, regardless of immigration status or insurance coverage.
To find a Sexual Health Clinic, call **311** or visit **nyc.gov/health/clinics**.

NYC Health — Office of the Mayor, Mary T. Bassett, MD, MPH Commissioner

Personal Communication. Trevor Hedberg, Preeti Pathela, Christine Borges.

NYC Health

Modules Support Each Step in PrEP Patient Clinic Flow Sexual Health Clinics, NYC DOHMH Bureau of STD Control

- Patient/test information collected at each step entered into EMR
- Programmed algorithms dictate clinic workflows
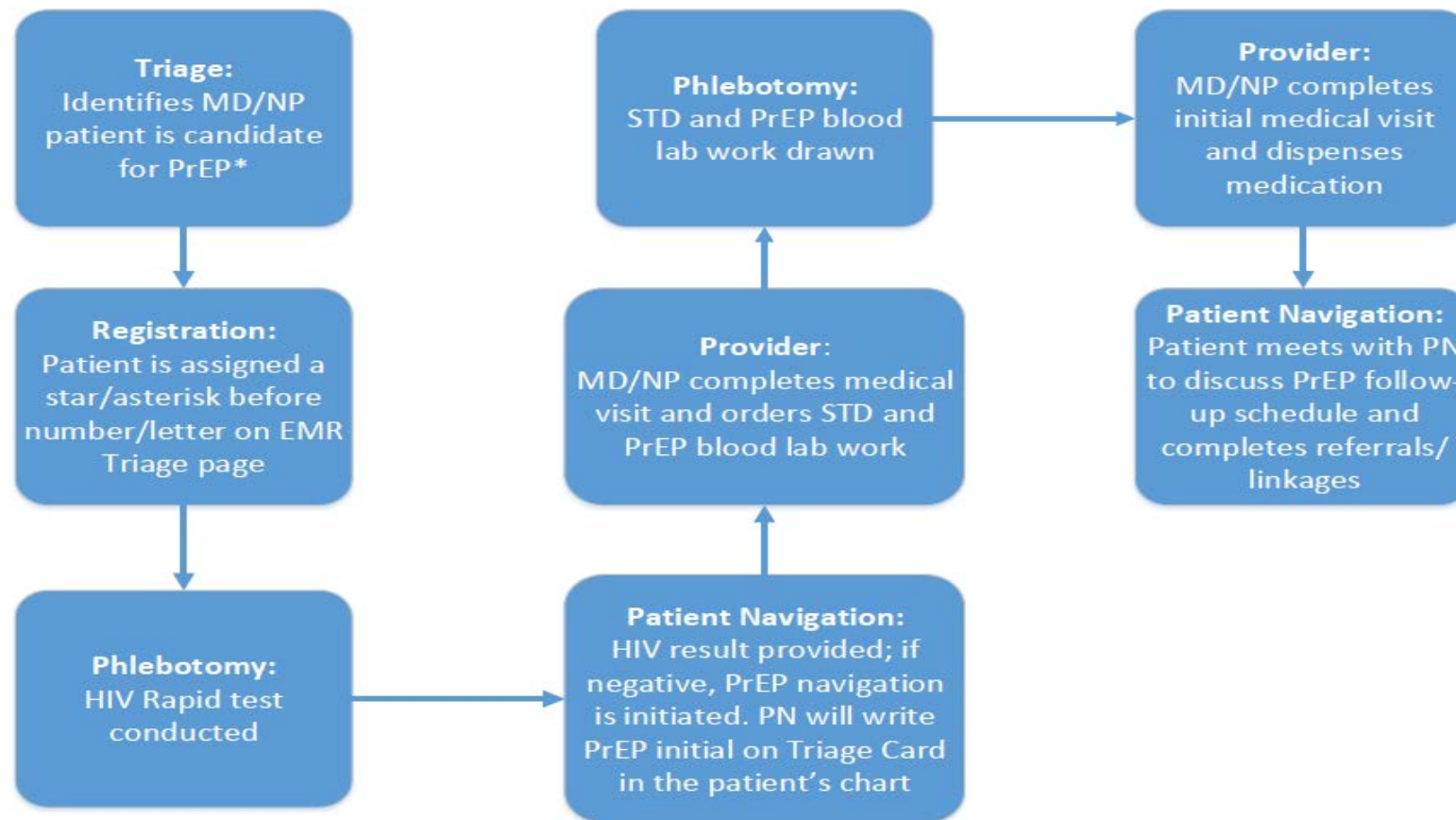
* Patients contacted by DOHMH to come to clinic must be seen by EPI staff before receiving PrEP navigation

PrEP Modules Support Objectives
NYC DOHMH Sexual Health Clinics

PrEP Metrics Derived from EMR
Sexual Health Clinics, NYC DOHMH Bureau of STD Control

- Volume, by step; number of:
  - Patients eligible at triage, by eligibility group
  - Patients offered, accepted, refused, received navigation
  - Patients initiated PrEP medication
  - Visits that include PrEP navigation
  - Visits with documented PrEP referral

- PrEP referral outcomes:
  - Number of patients referred
    - Overall and PrEP initiates vs. referrals only
  - Number and % attended appointment

PrEP Navigation

IN ALL 8 CLINICS

> 4,700 Encounters

PrEP Initiation

NOW AT 5 CLINICS
641 PrEP Starts
58% Black/Latinx

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Other NYC Examples of EHR Modification
Montefoire (EPIC) and Ryan Network (eClinical Works)

Montefiore- Screening Tool, SmartSets

Ryan Network- Note Template, Autopopulation, Order Sets

Personal Communication. Viraj Patel and Carly Skinner.

Road Map of Whirlwind Tour

	Current Record System	Modification to Record System
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Map of Whirlwind Tour

|	Current Record System	Modification to Record System
Retrospective		
Prospective		

PrEP Program Data Collection Outside of EHR

- Many PrEP programs use a separate data entry system – especially common at program initiation – e.g., Access database, REDCap

<u>Example of EHR/Separate System hybrid from NYP</u>

- Multi-site PrEP program (5 sites;~1500 clients)

- Dashboard combines automated extraction of EHR data and manually entered data

- Extracts data on last HIV test for record of follow-up (overdue for visit if >3 months ago)

- Real-time monitoring of PrEP program and also serves as workflow for navigators
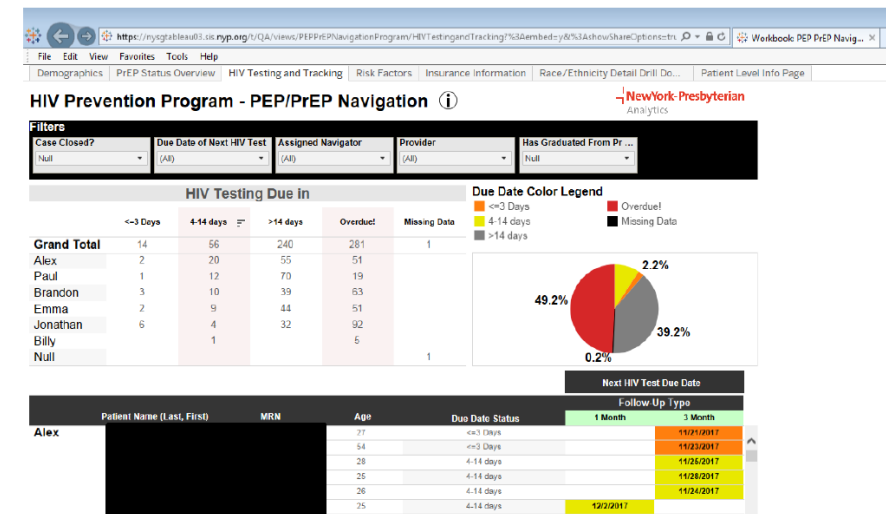
Personal Communication: Sarit Golub and Caroline Carnevale.

Summary - Lessons Learned (1)

- No one perfect system for evaluation of PrEP through EHR

- Retrospective
  - Data are available
  - Limited by analyst time/capability and by what was recorded and where

- Prospective
  - Many PrEP programs have developed monitoring tools
  - Most still rely on some data collection outside EHR
  - Adding modules may have operational challenges, and
  - Use more likely among PrEP programs/champions than others

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Summary - Lessons Learned (2)

- For new record systems, wherever possible:
    - Automate/auto-populate
    - Marry patient care data collection with program evaluation data collection
    - Be thoughtful (look ahead) and parsimonious
- Share results with clinical stakeholders to motivate use of data collection tools, to drive quality improvement and to improve patient/program outcomes

Physician Time Distribution During Office Hours, by Task Category

Task Category, by Activity During Office Hours	Time Spent (95% CI), %	
	Total*	By Task Category
Direct clinical face time	33.1 (31.9-34.5)	
With patient	-	27.0 (25.8-28.3)
With staff and others (patient not present)	-	6.1 (5.7-6.5)
EHR and desk work	49.2 (47.8-50.6)	
Documentation and review	-	38.5 (37.3-39.8)
Test result	-	6.3 (5.8-6.8)
Medication order	-	2.4 (2.2-2.5)
Other order	-	2.0 (1.9-2.2)

Sinksy et al. Annals of Internal Medicine. 2016;165(11):753-760;

NYC Health

Acknowledgements

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Carly Skinner

Sarit Golub

Thank you!
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NYC DOHMH Capacity Building Assistance
Contact: Melanie Graham, mgraham6@health.nyc.gov

CBA
NYC Capacity Building Assistance Project

NYC Health

PrEP Supplemental Triage Card
NYC DOHMH Sexual Health Clinics

- Triage card information entered into EMR
- Used to determine subsequent clinic flow

NYC Health

Triage/Registration Card: PrEP supplement

PrEP (pre-exposure prophylaxis) medication can be used to prevent HIV. Please answer these questions to see if you **might** be a candidate for this service. During your visit, our patient navigators and clinicians will help make sure this method of prevention is right for you.

Triage Staff

Number

Please check all that apply:

Yes No

1. I am interested in speaking to someone about HIV PrEP. ☐ ☐
2. I have had sex with someone who has HIV in the past 12 months. ☐ ☐
3. I have shared needles with someone who has HIV in the past 12 months. ☐ ☐
4. I have taken HIV post-exposure prophylaxis (PEP) in the previous 12 months. ☐ ☐
5. I have been diagnosed with syphilis in the past 12 months. ☐ ☐
6. I have been diagnosed with rectal chlamydia or gonorrhea in the past 12 months. ☐ ☐
7. I am a woman who has been diagnosed with gonorrhea in the last 12 months. ☐ ☐
8. I have had sex with someone in exchange for money or drugs in the last 12 months. ☐ ☐

FOR STAFF USE ONLY:
☐ Offered PrEP navigation?

☐ Accepted PrEP navigation

If no, main reason:
☐ Navigator not available
☐ No time during today's visit
☐ Not interested
☐ Already taking PrEP

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