



PrEP DEPLOYMENT USING A CLOUD-BASED MODEL

Meredith Lora, MD

SAETC Webcast Wednesday

May 20th, 2020



EMORY
UNIVERSITY



LEARNING OBJECTIVES

01

BARRIERS

Review barriers to PrEP uptake and persistence in the Southern US and Atlanta

02

“PREP CLOUD”

Describe deployment of an integrated “PrEP-Cloud” program in a large public health system

03

SOLUTIONS TO BARRIERS

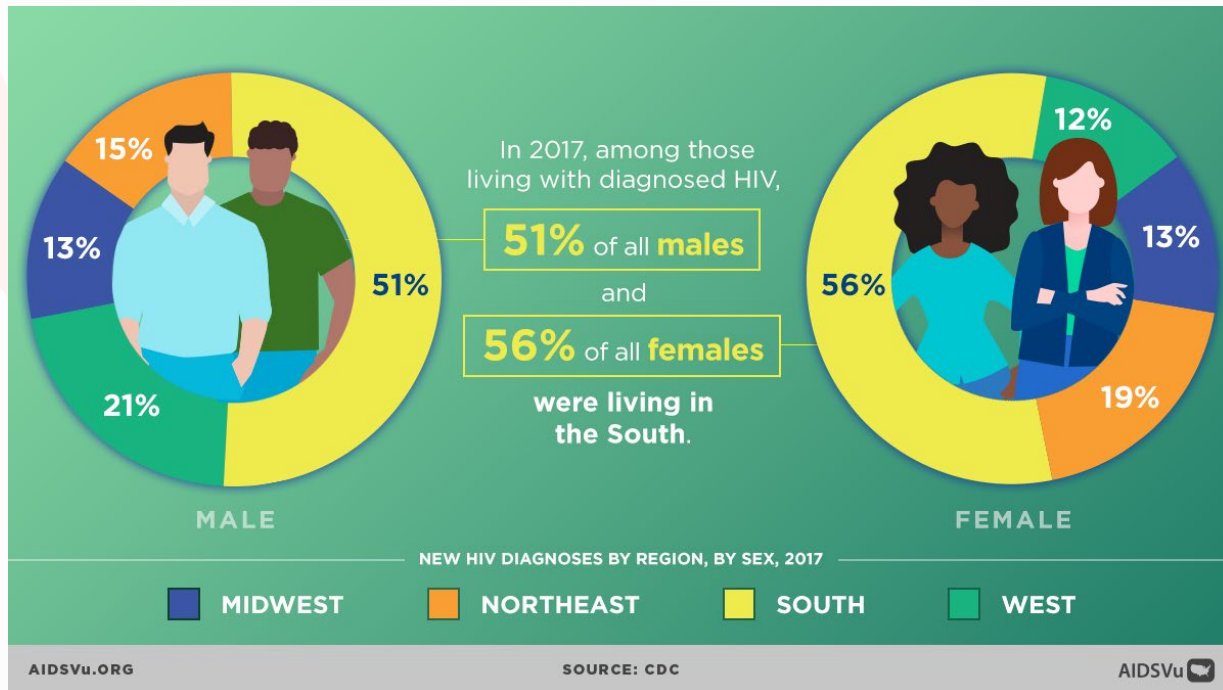
Explore development of an integrated p mission and actions to address multilevel barriers

04

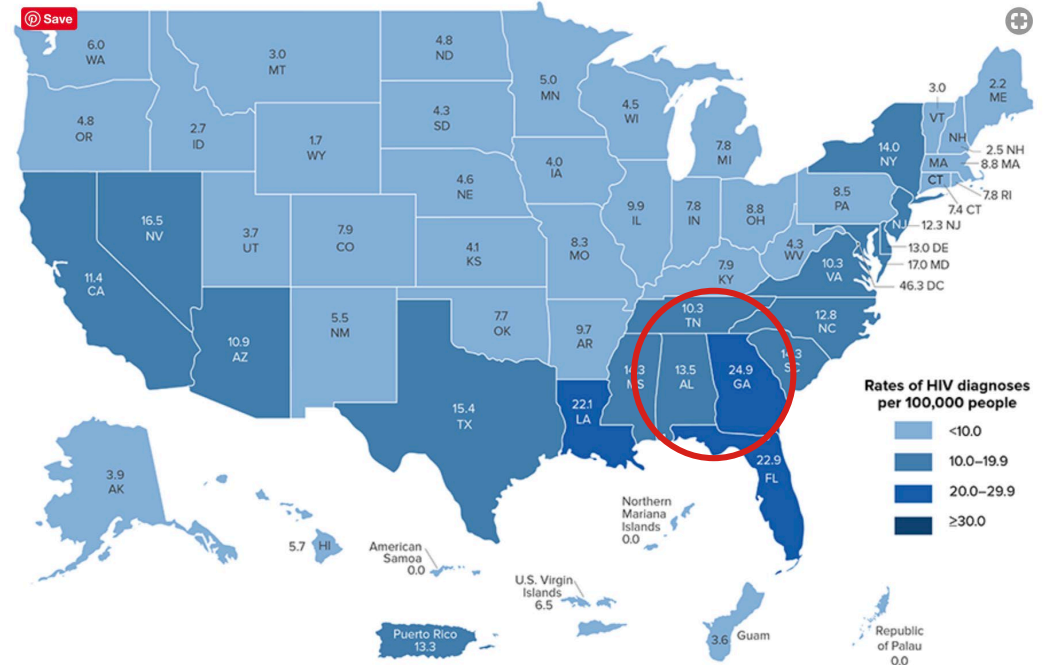
EXPERIENCE AND NEXT STEPS

Discuss deployment experience, lessons learned, and next steps for broader impact

HIV IN THE SOUTHERN US



Rates of HIV Diagnoses in the US, 2017

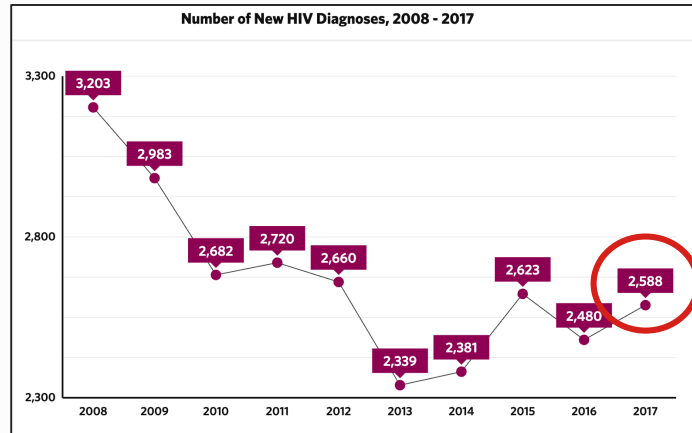


Source: CDC. [Diagnoses of HIV infection in the United States and dependent areas, 2017](#) [PDF – 6 MB] *HIV Surveillance Report* 2018;29.

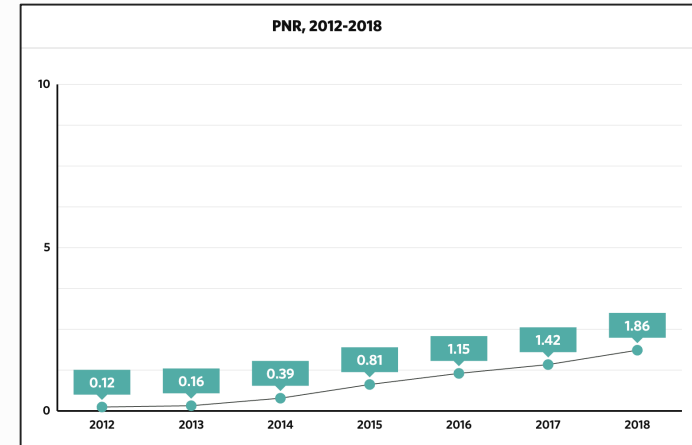
HIV in Georgia

New HIV Diagnoses 2008-2017

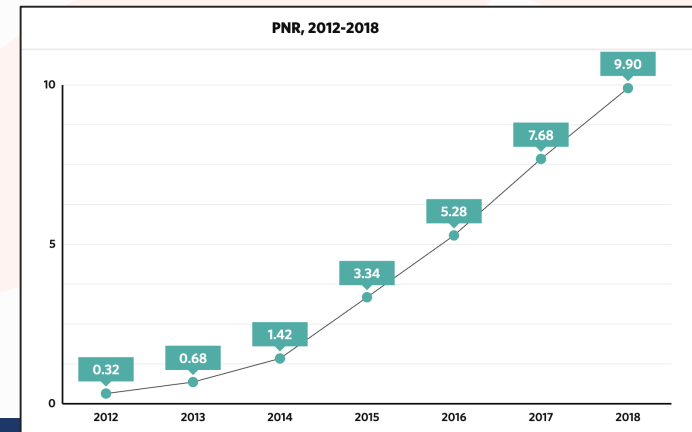
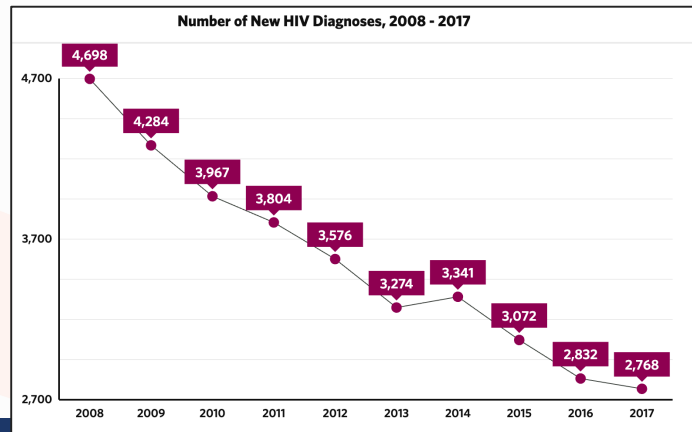
Georgia



PrEP to Need Ratio 2012-2018

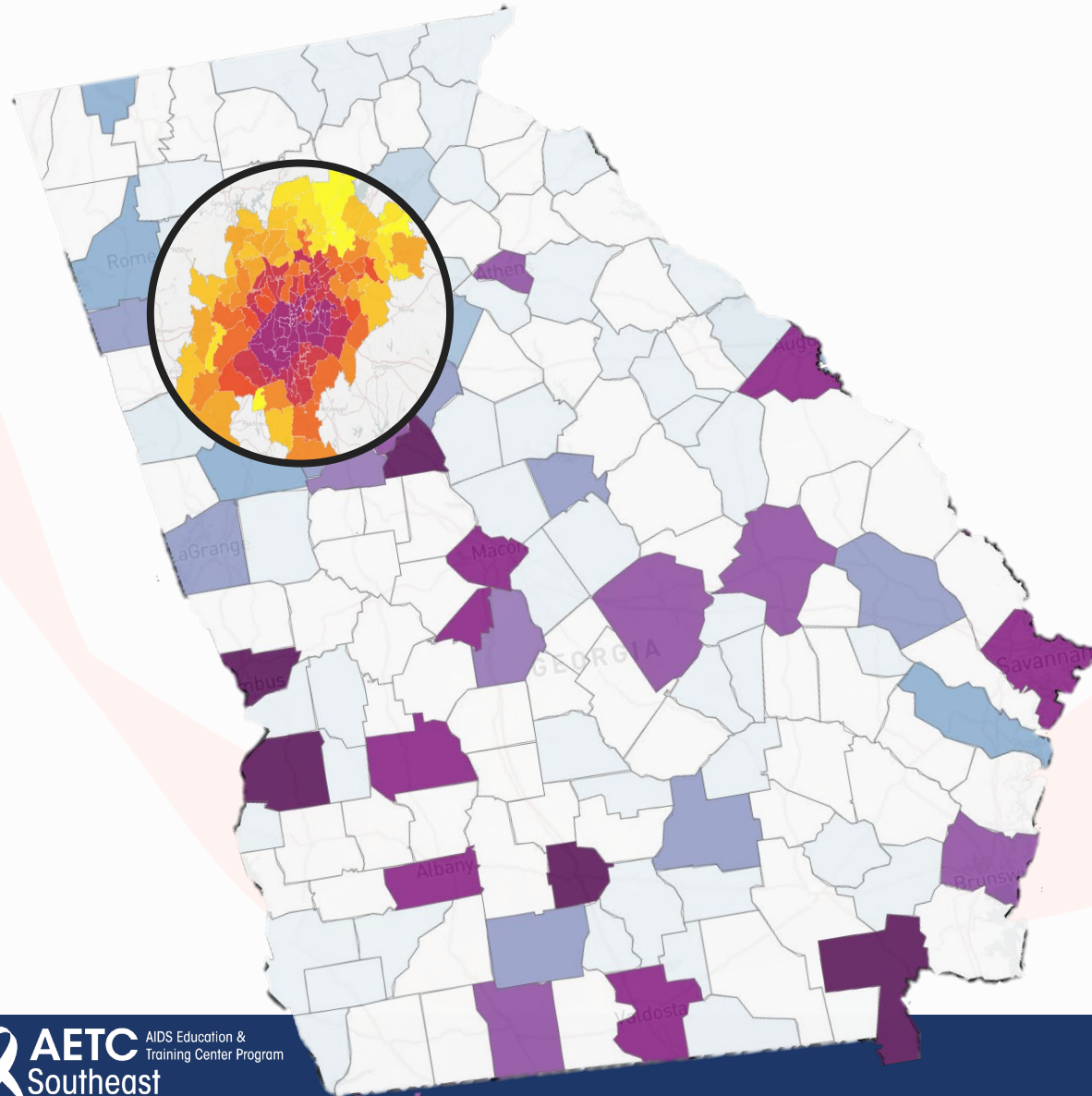


New York State



AIDSVu.org

HIV in Atlanta

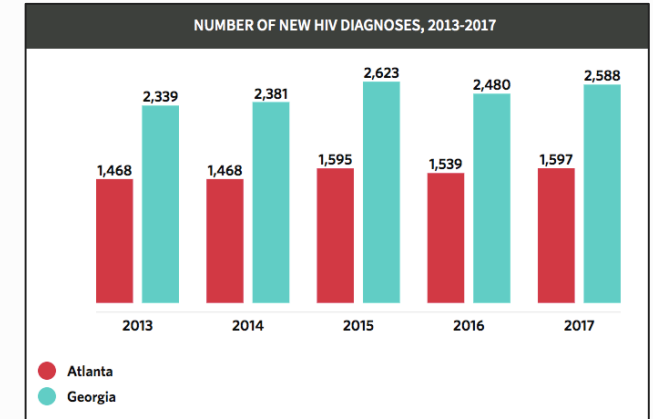


New Diagnoses

Number of new HIV diagnoses in 2017
1,597

Number of new HIV diagnoses in 2013-2017, by Sex
♂ 83.2% male
♀ 16.8% female

Number of new HIV diagnoses in 2013-2017, by Race
73.8% Black | 8.1% Hispanic/Latinx | 14.4% White



HIV rates are affected by many factors beyond race/ethnicity, sex, and age. Learn how your ZIP Code can impact your risk at [AIDSvu.org](https://www.aidsvu.org).

Poverty

PERCENT OF POPULATION LIVING IN POVERTY, 2017

0 - 7.0	7.1 - 13.0
13.1 - 21.0	21.1+

High School Education

PERCENT OF POPULATION WITH A HIGH SCHOOL EDUCATION, 2017

0 - 81.0	81.1 - 90.0
90.1 - 95.0	95.1+

HIV Prevalence

ATLANTA RATES OF PERSONS LIVING WITH HIV PER 100,000, 2017

0 - 180	181 - 200	201 - 250	251 - 350	351 - 450
451 - 600	601 - 800	801 - 1,100	1,101 - 1,400	1,401+

Household Income

MEDIAN HOUSEHOLD INCOME, 2017

0 - 45,000	45,001 - 61,000
61,001 - 83,000	83,001+

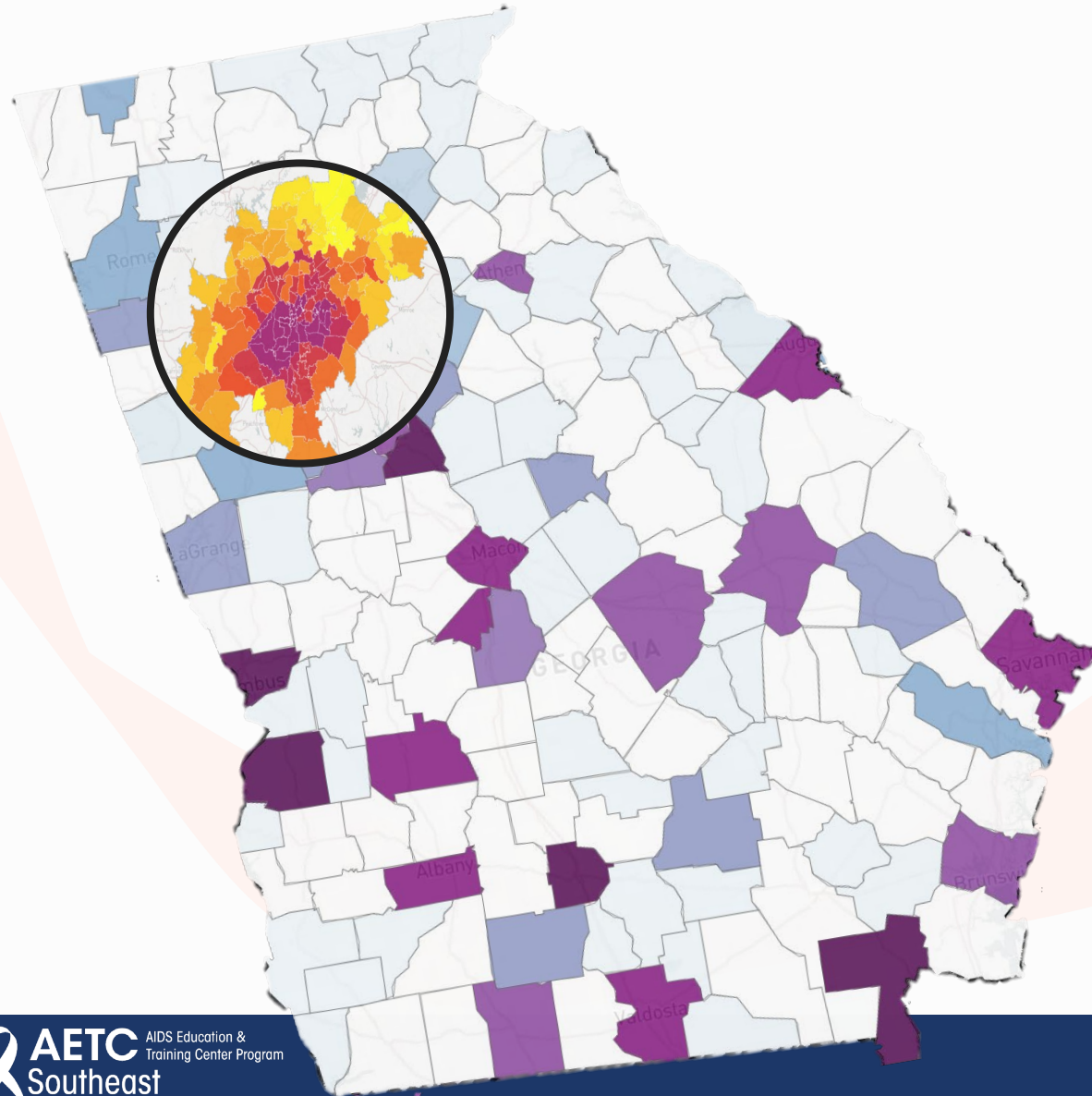
Income Inequality

INCOME INEQUALITY (GINI COEFFICIENT), 2017

0 - 0.400	0.401 - 0.440
0.441 - 0.480	0.481+

AIDSvu.org SOURCE: GEORGIA DEPARTMENT OF PUBLIC HEALTH AIDSvu

HIV in Atlanta

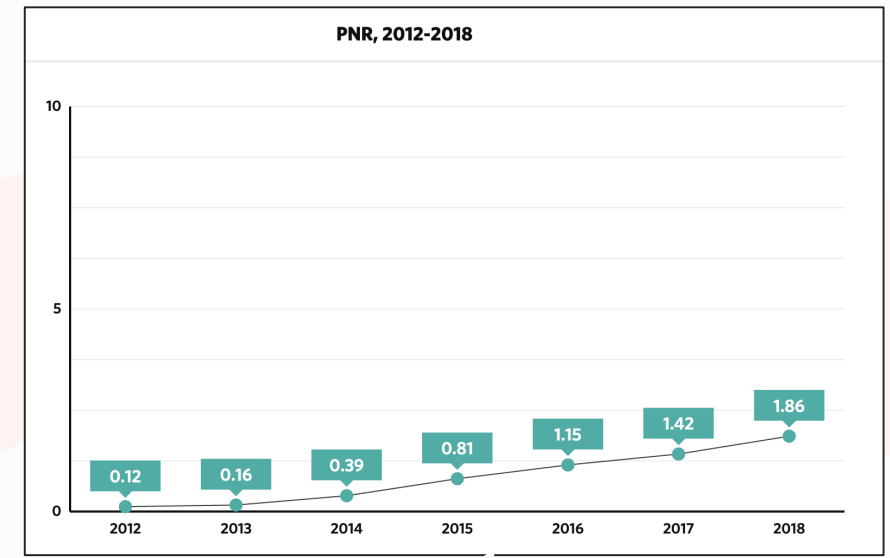
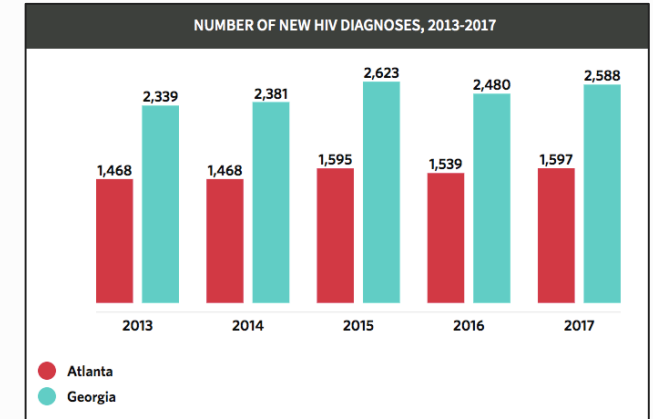


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AIDSVu.org



Barriers to PrEP

INDIVIDUAL LEVEL

SIDE
EFFECTS

STIGMA

ADHERENCE

LOW RISK
PERCEPTION



Barriers to PrEP

PROVIDER AND CLINIC LEVEL

VISIT BURDEN

TRUST

KNOWLEDGE
and BIASES

STIGMA



Barriers to PrEP

SYSTEMS LEVEL

COST

LACK OF CLINICS OR PROVIDERS

ACCESSIBILITY

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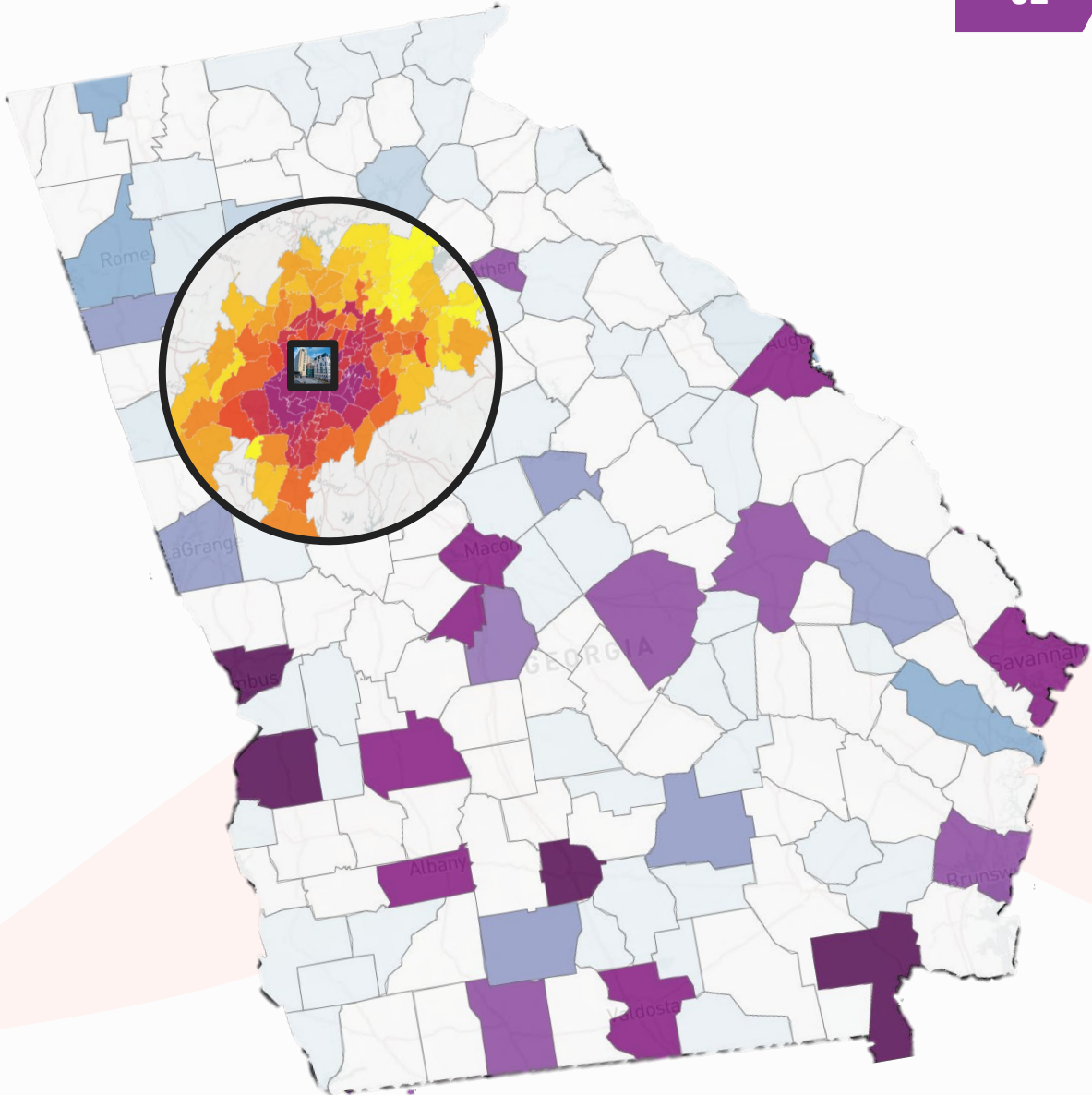
EXPERIENCE AND NEXT STEPS

Discuss deployment experience, lessons learned, and next steps for broader impact



PrEP at Grady - Overview

Grady



PrEP at Grady

A TIMELINE

02

“PREP CLOUD”



June 2016

PrEP at Grady Discussion

- Discussion between Emory faculty and Fulton County about lack of PrEP
- Junior faculty volunteered to look into solutions



August 2016

PrEP in Grady Clinics

- Encountered multiple barriers:
- Provider knowledge
 - Medication access
 - Structural barriers
 - Scalability and impact issues

PrEP at Grady

A TIMELINE

02

“PREP CLOUD”

Grady E-Consult/
Provider Support



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January 2017

Pharmacy Collaboration

- Specialty pharmacy model proposed by HIV pharmacist

GHS Pharmacy

Part time
Provider

Navigator



Pharmacist

Patient access
analyst (PAA)

Primary PrEP
provision



PrEP at Grady

A TIMELINE

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January 2017

Pharmacy Collaboration

Specialty pharmacy model proposed by HIV pharmacist



April 2017

Stakeholders involved

- Grady leadership involvement
- Proposed pilot PrEP program



October 2017

PrEP Team Formation

- Pilot program planning
 - Volunteer MD
 - PharmD 0.2 FTE
 - PAA 0.4 FTE
- Blood, sweat, tears

GHS PrEP Program Mission

03

SOLUTION TO
BARRIERS

COST

Provide all PrEP services at no cost

STIGMA

Personal choice and personal wellness oriented

LOW RISK
PERCEPTION

Gain-framed approach

TRUST

Everybody knows your name

ACCESSIBILITY

Eliminate structural barriers
“No wrong door”

PrEP at Grady – Eliminating Cost

03

SOLUTION TO
BARRIERS

COST

Provide all PrEP services at no cost

JAMA | US Preventive Services Task Force | **RECOMMENDATION STATEMENT**

Preexposure Prophylaxis for the Prevention of HIV Infection US Preventive Services Task Force Recommendation Statement

CONCLUSIONS AND RECOMMENDATION The USPSTF recommends offering PrEP with effective antiretroviral therapy to persons at high risk of HIV acquisition. (A recommendation)

JAMA. 2019;321(22):2203-2213. doi:10.1001/jama.2019.6390

What about the
monitoring costs?

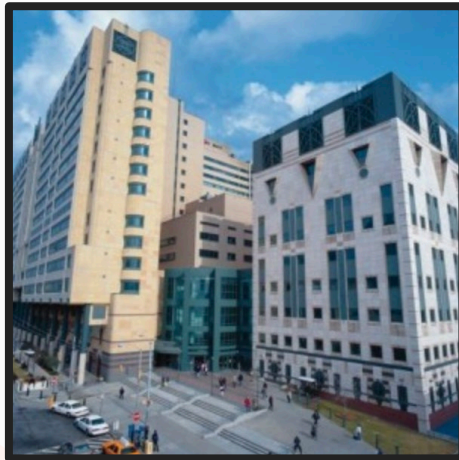
READY, SET, PrEP

The U.S. Department of Health and Human Services (HHS) Ready, Set, PrEP program makes PrEP medications available to people who qualify at no cost.

PrEP at Grady – Eliminating Cost

COST

Provide all PrEP services at no cost



Grady Financial Assistance Program
Fulton or DeKalb County
Income < 400% FPL

The screenshot shows the HRSA website header with the logo and navigation menu. The main content area displays the breadcrumb trail 'Home > 340B Drug Pricing Program' and the title '340B Drug Pricing Program' in large red font.

GHS PrEP Program Mission

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SOLUTION TO
BARRIERS

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LOW RISK
PERCEPTION

Gain-framed approach

PrEP at Grady

Addressing Stigma and Low Risk Perception

MIDDLE

LOW

HIGH

HIV RISK

You're at high risk for HIV....

You will get HIV if you don't protect yourself...

...high risk sexual behavior....

Golub S, HIVR4P, 2018.



PrEP at Grady

Addressing Stigma and Low Risk Perception

STIGMA

Personal choice and personal wellness oriented

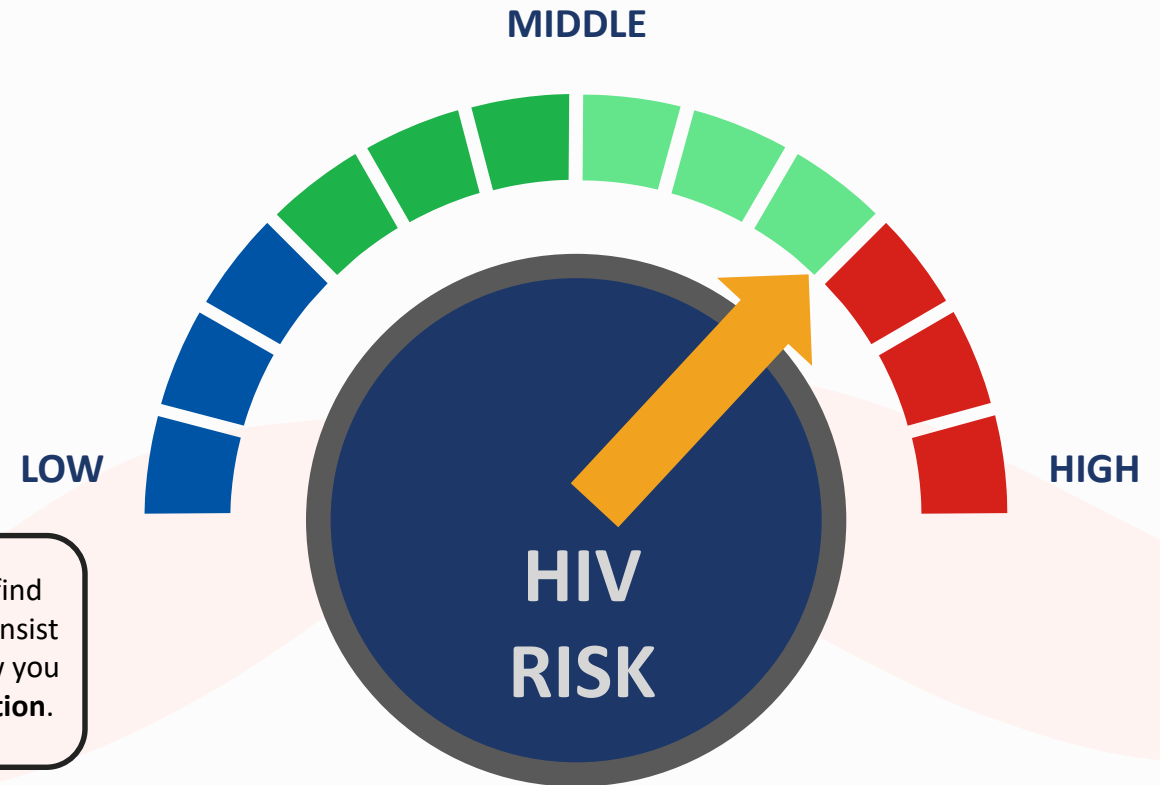
LOW RISK PERCEPTION

Gain-framed approach

PrEP helps you **feel safe and healthy and can decrease worrying** about getting HIV

There's so much HIV in Atlanta. **PrEP puts you in control of staying HIV negative.**

No matter the situation you find yourself in, whether you can insist on condoms or not, you know you have an **extra layer of protection.**



Golub S, HIVR4P, 2018.

GHS PrEP Program Mission

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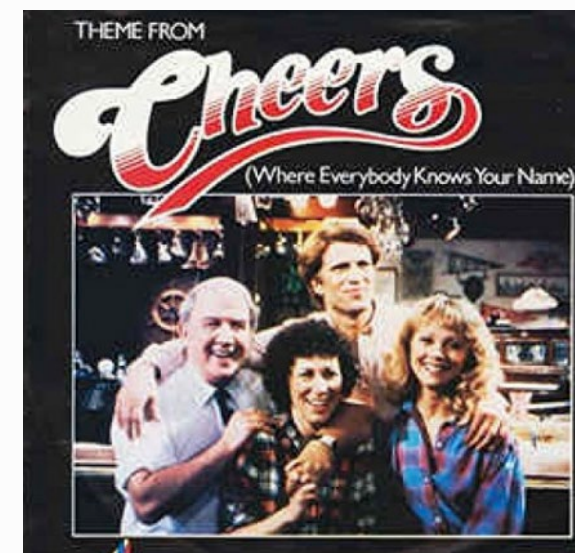
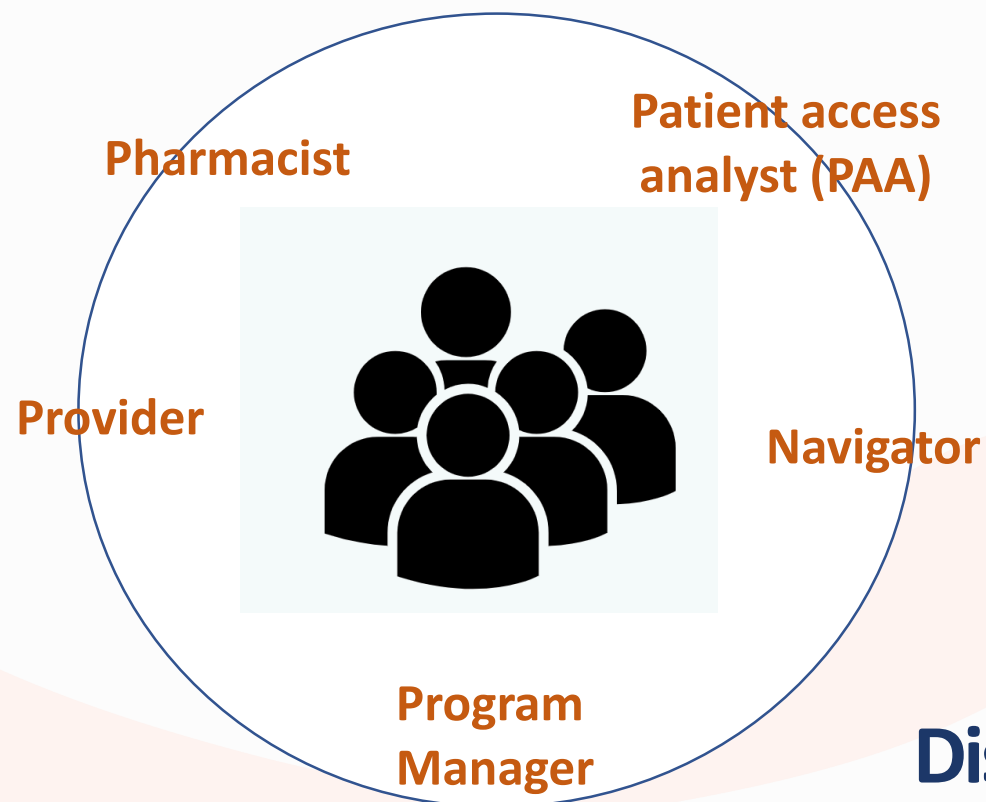
TRUST

Everybody knows your name

PrEP at Grady – Gaining Trust

TRUST

“Everybody knows your name”



“Everybody knows your name”

Distrust of healthcare providers



PrEP AT GRADY – INCREASING ACCESSIBILITY

ACCESSIBILITY

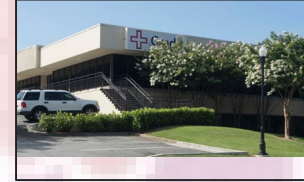
Eliminate structural barriers. “No wrong door”



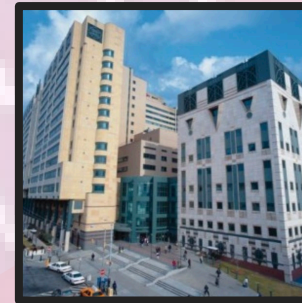
Grady



Brookhaven NHC



ASA Yancey NHC



Main Grady:

- 4 Primary Care Clinics
- Emergency Department
- Urgent Care Center
- Gender Center
- Women's Center
- Teen clinic



HS CHOA

Camp Creek CHC



East Point NHC



Kirkwood NHC



PrEP AT GRADY – INCREASING ACCESSIBILITY

ACCESSIBILITY

Eliminate structural barriers. “No wrong door”

- **Provider Knowledge and Biases**

Centralized knowledgeable PrEP team

- **Adherence**

Gain framed pharmacy-based adherence counseling

- **Lack of Providers**

Dissemination model within Grady

- **Visit Burden**

Telehealth follow up with flexible lab monitoring

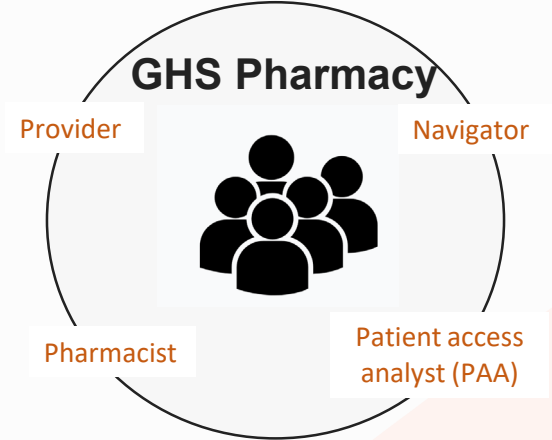
- **Accessibility**

PREP AT GRADY – INCREASING ACCESSIBILITY

ACCESSIBILITY *Eliminate structural barriers.*

Centralized PrEP Program

Core PrEP Team



Collaboration with GHS Clinics

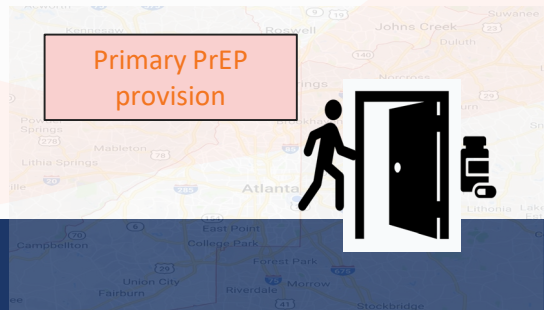
Dissemination model

Program-driven GHS provider and staff education



Adherence and medication access support

Medication delivery

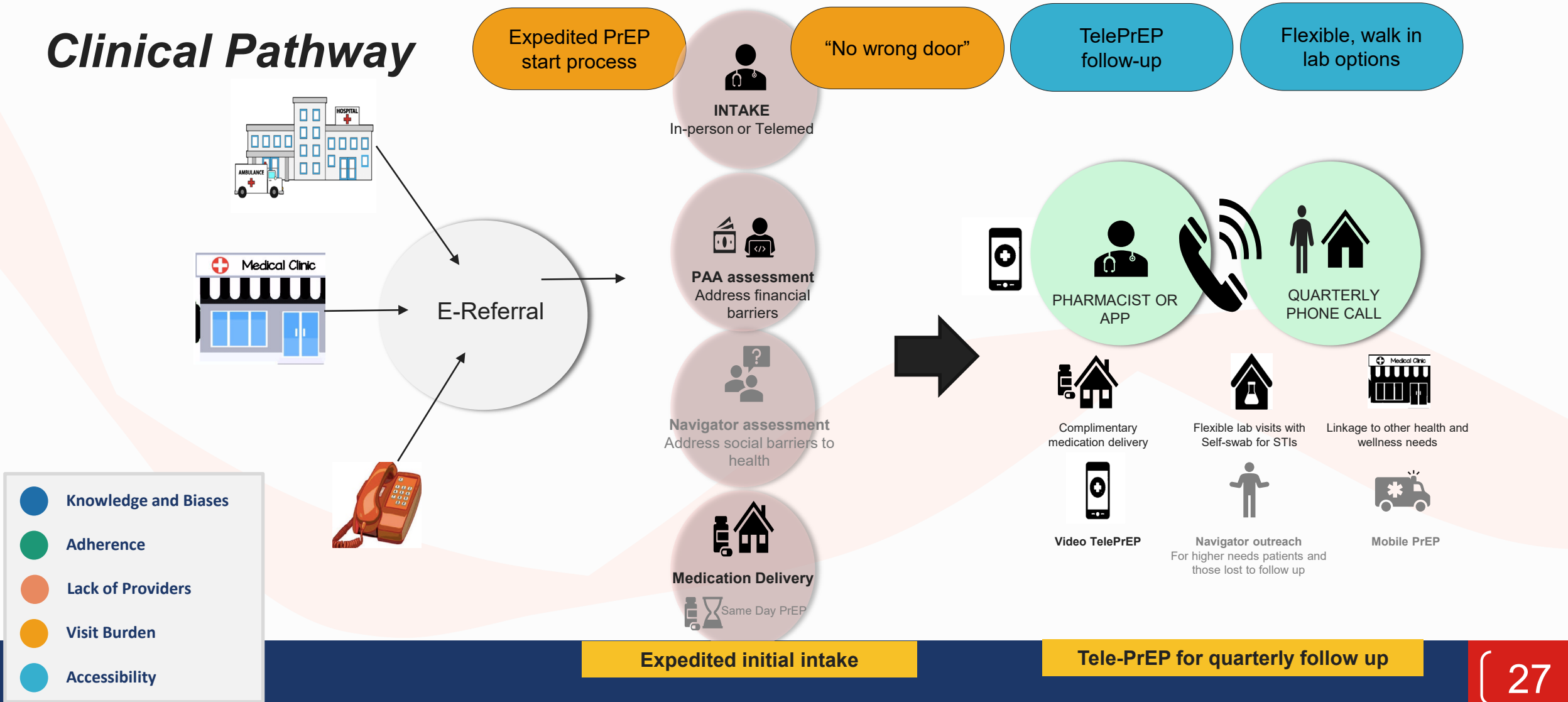


- Knowledge and Biases
- Adherence
- Lack of Providers
- Visit Burden
- Accessibility

PREP AT GRADY – INCREASING ACCESSIBILITY

ACCESSIBILITY Eliminate structural barriers. “No wrong door”

Clinical Pathway



PATIENT ENGAGEMENT OPTIONS

GHS PrEP Program

03

SOLUTION TO
BARRIERS

TRADITIONAL



VS



FLEXIBLE

In-person

Visits

Virtual

Provider interview and counseling

Intake

Intake questionnaire + provider counseling

Pickup

Medications

Delivery

Main Grady lab

Monitoring

Satellite labs*

Phone

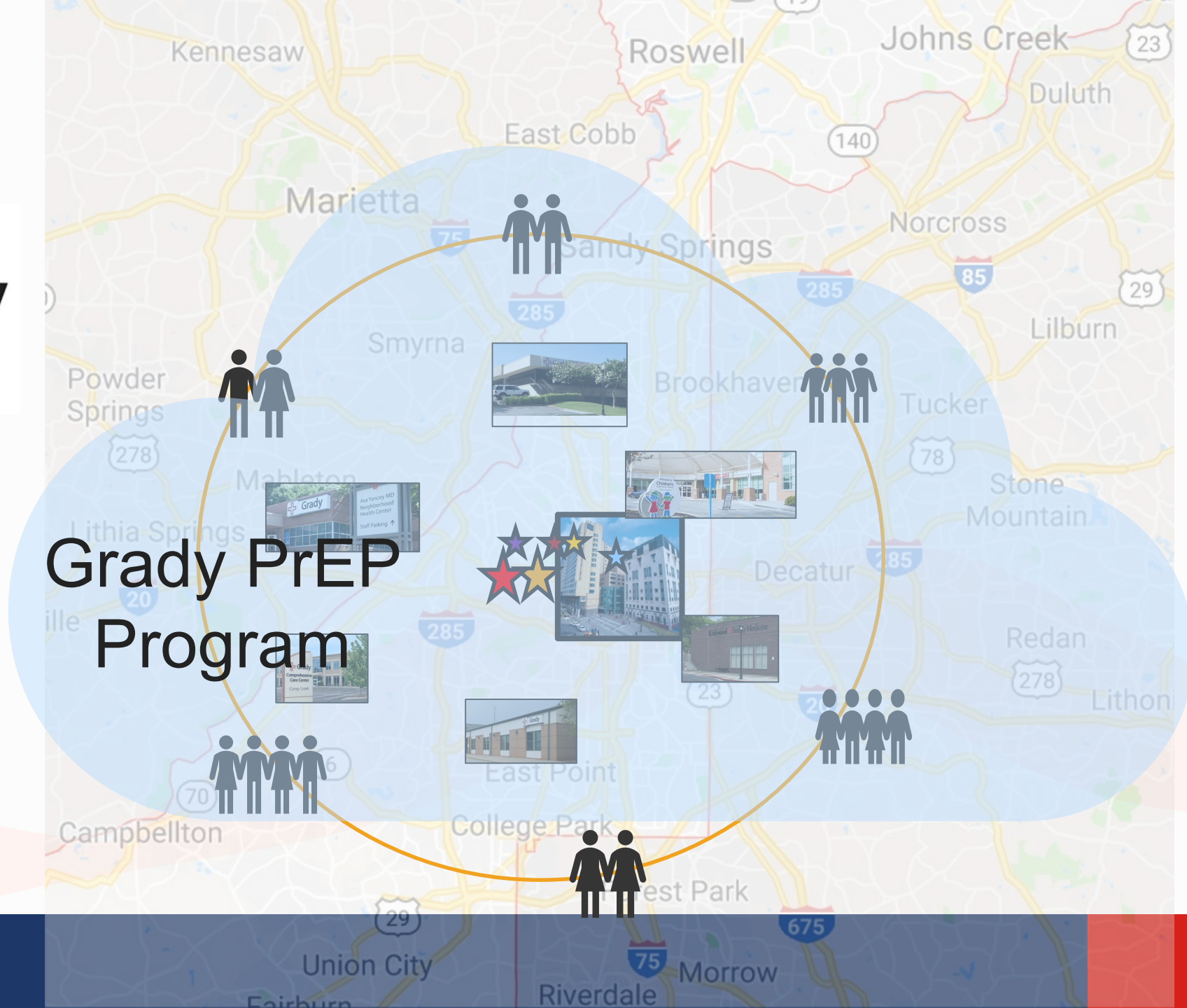
Communication

Messaging

Grady

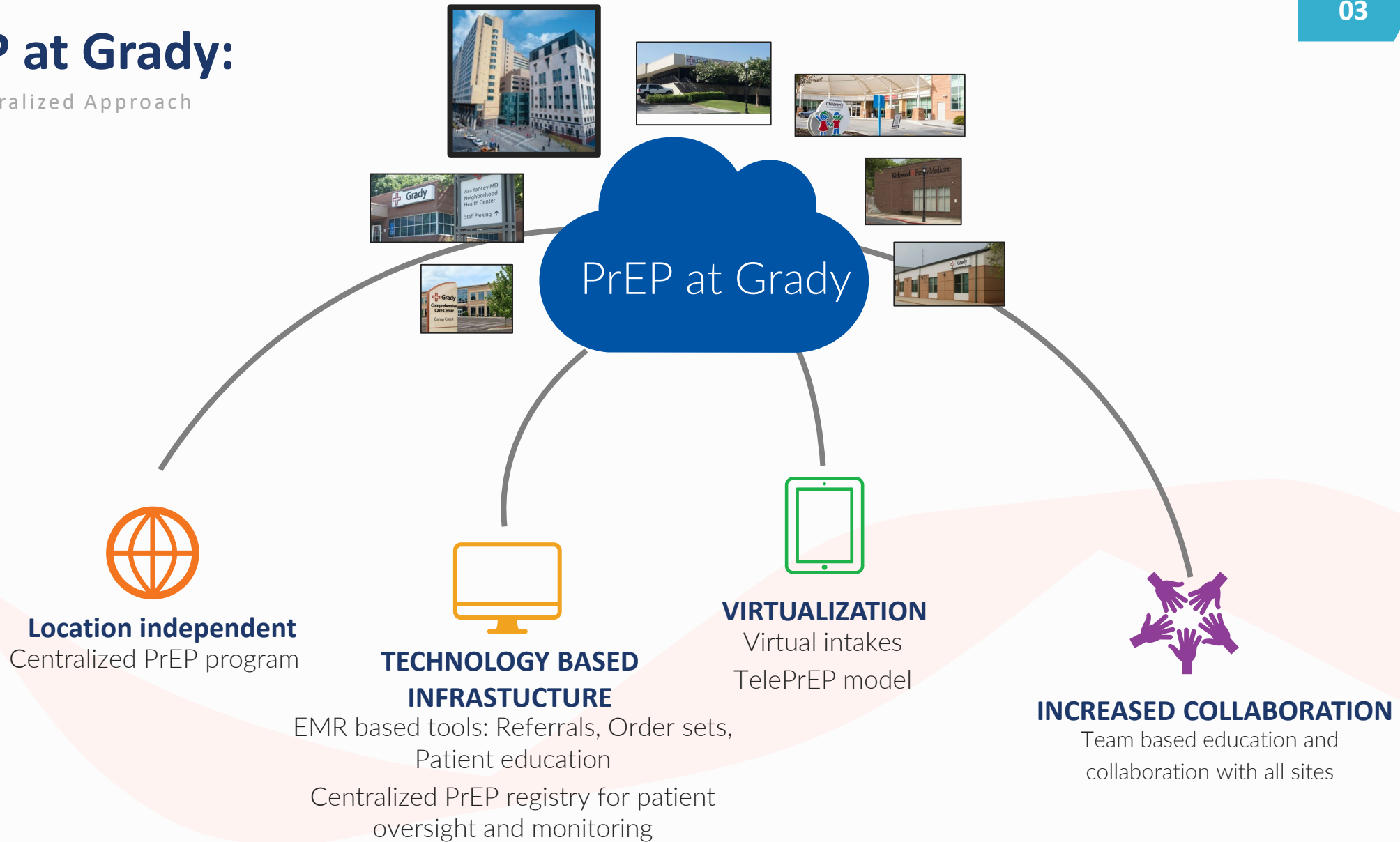


Grady PrEP Program



PREP at Grady:

Centralized Approach



Referral and lab Smart-sets

Diagnoses

Diagnosis

[Click for more](#)

✓ Possible exposure to STD [Z20.2]

✓ Therapeutic drug monitoring [Z51.81]

Referral Order

Referral for HIV Pre-exposure prophylaxis

✓ AMB Referral to PrEp

ⓘ Internal Referral, Routine, Routine, Internal Medicine, Specialty Services Required

PrEP Labs for biological men

Biological Male/Transgender Woman

✓ HCV AB with Reflex to HCV RNA-QUANT, PCR

ⓘ Routine, Lab Collect, Expires: 5/18/2021

✓ GC / Chlam Detection - Anal - "Patient may self-collect"

ⓘ Routine, Lab Collect, Expires: 5/18/2021

✓ GC / Chlam Detection - Throat - "Patient may self-collect"

ⓘ Routine, Lab Collect, Expires: 5/18/2021

Initial Labs (Baseline)

PrEP with Truvada screening labs

✓ Chem 8, Metabolic Panel

ⓘ Routine, Lab Collect, Expires: 5/18/2021

✓ Focus:HIV-1/2 AB Screen

ⓘ If the patient is incapacitated and no surrogate available, consult Ethics Committee.

✓ GC / Chlam Detection - Urine - "Patient may self-collect"

ⓘ Routine, Lab Collect, Expires: 5/18/2021

✓ HBV Core Antibody

ⓘ Routine, Lab Collect, Expires: 5/18/2021

✓ RPR (Qual) - serum

ⓘ Routine, Lab Collect, Expires: 5/18/2021

✓ HBV Surface Antibody "If nonimmune to HBV, please consider HBV vaccination"

ⓘ Routine, Lab Collect, Expires: 5/18/2021

✓ HBV Surface Antigen

ⓘ Routine, Lab Collect, Expires: 5/18/2021

PORTAL

REFERRALS

ORDER SETS

DOCUMENTATION

PATIENT EDUCATION

PROVIDER TOOLS

- Referrals
- Order sets
- Documentation
- Patient education

Self-swab instructions

Rectal Self-Swab Collection Instructions



Step 1

- Open kit and remove tube and swabs.
- Discard the swab labeled "for cleaning".
- Open the other swab wrapper. The swab should have a **BLUE** shaft.
- **USE THE BLUE SHAFT SWAB ONLY.**



Step 2

- Gently insert swab about one inch into the anus and twist the swab a few times.
- If needed, before inserting swab, wet swab with water.



Step 3

- **DO NOT** puncture the foil cap
- Untwist cap from test tube without spilling the liquid inside
- Break the swab shaft at the score mark and place inside the test tube



Step 4

- Twist cap back on tightly on test tube to prevent any leaking.
- Try not to spill the liquid in the tube.



Step 5

- Place sticker labeled "anal" on the tube.
- Wash your hands.
- Return the tube to your health provider or to the lab staff.



Patient After Visit Summary the PrEP pill

What is it?

Pre-exposure prophylaxis (PrEP) is a safe and effective daily pill that can reduce your risk of HIV infection by over 90%.

You have to be HIV negative and have healthy kidneys to start PrEP.

PrEP puts you in control of staying negative, and can help decrease worries about contracting HIV.

How can I get it?

Getting PrEP through Grady is free, with free (or affordable) monitoring. Visit us on Mondays at the Grady Orange Pod and Fridays at the Grady East Point clinic.

Who can take it?

PrEP would likely benefit anyone who is worried about their own HIV risk. Some specific scenarios are...

If you:

- Do not always use condoms during sex
- Recently had a sexually transmitted infection
 - Inject drugs
- Have two or more sexual partners
- Are trying to conceive with a partner who has HIV
- Have sex for money, drugs, or a place to stay

If one of your partners:

- Has sex with other partners
- Has HIV and a detectable or unknown viral load
 - Refuses to get a HIV test
 - Injects drugs



1
Talk to your doctor
or call our PrEP

2
Get a blood test

3
Take one PrEP pill
daily for maximum

4
Follow up with a
phone call and

Write your own story with PrEP.

GRADY PREP PROGRAM

PROVIDER TOOLS

- Referrals
- Order sets
- Documentation
- Patient education

PrEP PROGRAM DIGITAL INFRASTRUCTURE

Status									
Overall Status	Name	Preferred Name	MRN	Referral Location	Insurance Status	MyChart Status	Age at Referral (years)	Age (years)	Date
00-Pending start				IDP					
00-Pending start				HPTN-083		Never Sent	26.0	26.2	5
00-Pending start				HPTN-083		Never Sent	27.0	27.5	11
00-Pending start				Teen Clinic	Commercial	Active	17.0	17.4	12
00-Pending start				HPTN-083	Uninsured	Pending	34.0	34.8	7
00-Pending start				IDP			21.0	21.2	2
02-Active				Camp Creek	Commercial		51.0	51.5	1
02-Active				Self	Uninsured	Active	27.0	28.0	
02-Active				Walk-in Center	Medicaid		23.0	23.9	
02-Active				ED	Uninsured		35.0	35.6	10
02-Active				HPTN-083	Uninsured	Pending	32.0	33.0	5
02-Active				Orange Pod	Uninsured		36.0	37.1	
02-Active				ED	Commercial		23.0	23.3	1
02-Active				Hughes Spalding	Uninsured		17.0	17.4	12
02-Active				Walk-in Center	Commercial	Pending	27.0	27.9	6
02-Active				HPTN-083	Commercial		25.0	25.9	6
02-Active				Gender Clinic	Uninsured		28.0	31.1	3
02-Active				ED	Medicaid		26.0	26.5	11

PATIENT PORTAL

- Referrals
- Prescriptions
- Test Results
- MyChart

PrEP PATIENT REGISTRY

- Comprehensive
- Includes all patient and clinical data

PROVIDER TOOLS

- Referrals
- Order sets
- Documentation
- Patient education



PrEP PATIENT REGISTRY

- Comprehensive
- Integrates all patient and clinical data

PATIENT ACCESS TECHNOLOGY

- External video telemedicine apps
- PrEPline at Grady

PROVIDER TOOLS

- Referrals
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PrEP CASCADE OF PILOT PROGRAM

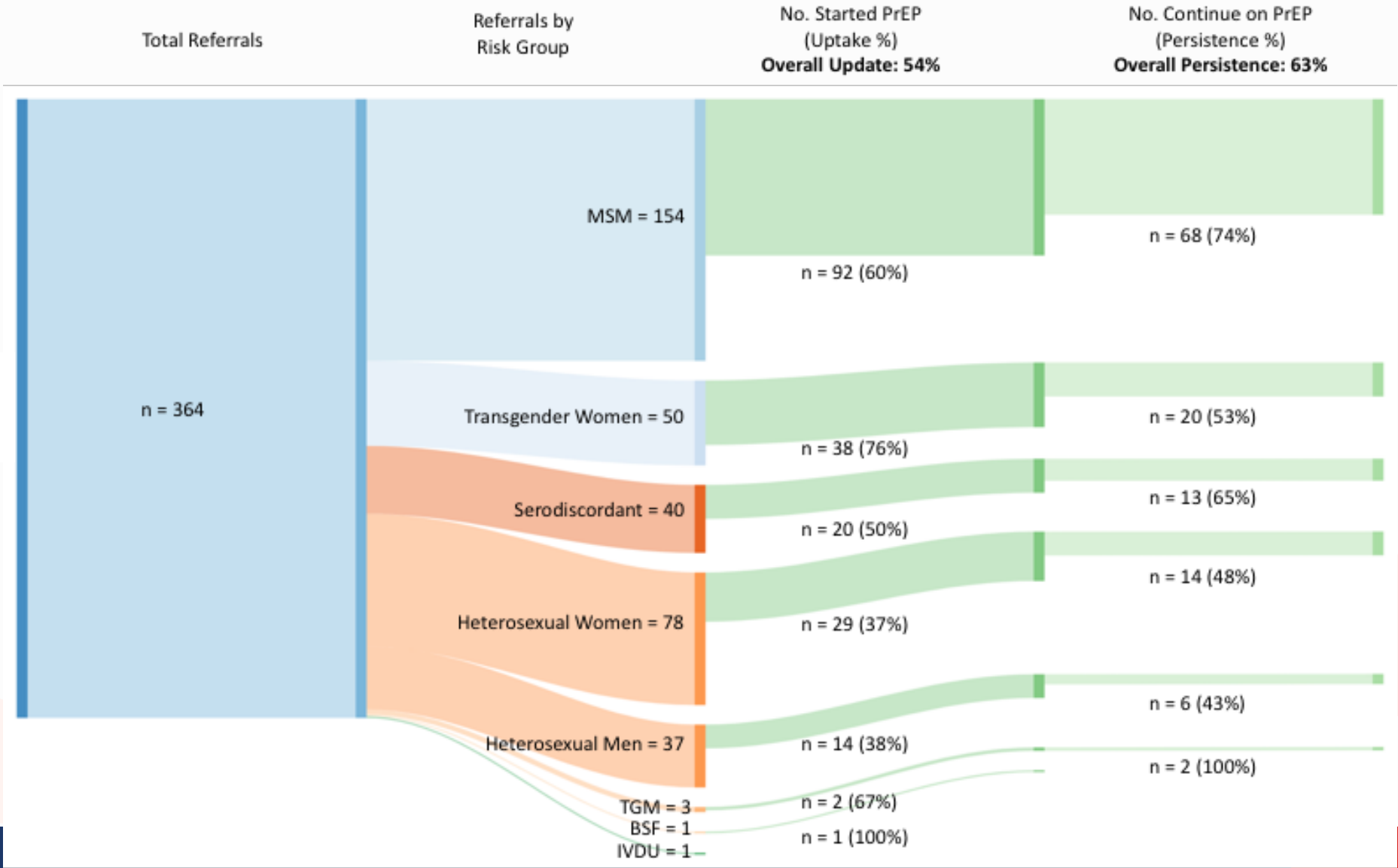
GHS Pharmacy 



Pharmacist 30% Time

Part time Provider 20% Time

Patient access analyst (PAA) 50% Time



EXPERIENCE AND LESSONS LEARNED FROM PILOT PROGRAM

- Team is everything
- Pharmacy-*integrated*
- **One size does not fit all**
 - Automated and digital solutions ***combined with*** a more personal approach for patients with higher needs
 - Virtualization frees up human resources to focus on the people who need it most
- More flexible monitoring options are needed
- More robust collaboration with GHS clinics to improve uptake and persistence
- While program model is likely more efficient than traditional, digital infrastructure requires automation and integration to be scalable for a large population

- **Full program go-live**
 - Full time provider, program manager and navigator
 - Community facing
 - Marketing
 - GHS Provider and Staff education
- Mixed methods **evaluation of implementation**
- **Scalable** digital program infrastructure

SCALABLE DIGITAL PROGRAM INFRASTRUCTURE

04

EXPERIENCE
AND
NEXT STEPS

Senior Health - ACO High Risk Patients [139521] as of Wed 4/9/2014 8:07 AM

Search Summary
Find Patients in Disease Registries with
Disease Registry:
CARE COORDINATOR REGISTRY AND
WELLNESS REGISTRY-ADULT

Patient	DOB	Age	Sex	Current PCP	Comorbidity (Metric)	Payor	Num of ED Visits	Num of IP Admissions	No-show rate (metric)	Last Visit Date	Virtual Medical
		65 year old	Male	SANDERS, CRISTINA	1	MEDICARE	0	4	35		MEDICAL CLINIC
		55 year old	Female	KHAN, YASMIN	1	MEDICARE	2	0	69		MEDICAL CLINIC
		55 year old	Male	EL-KHOURY, GABY S.	0	MEDICAID	2	0	55		BROADWAY
		74 year old	Female	KEA, KAREN E.	5	MEDICARE	2	16	45		BUCKEYE
		53 year old	Female	COX, DIETHRA	2	MEDICARE	0	0	50		BUCKEYE
		54 year old	Male	NG, RANIER	3	MEDICARE	7	0	62		FAMILY PRACTI
		53 year old	Male	NASH, KEVIN	3	MEDICARE	2	0	51		BROADWAY
		58 year old	Male	GIFFORD, SUSAN A.	0	MEDICARE	3	0	67		MEDICAL CLINIC
		62 year old	Female	SCHROEDER, REBECCA L.	9	MEDICARE	9	6	25		BROADWAY
		50 year old	Male	KUMAR, NILIMA	9	MEDICARE	6	11	32		MEDICAL CLINIC
		59 year old	Female	BEACHY, ROCHELE M.	3	MEDICARE	0	0	54		LEE HARVARD
		71 year old	Female	HADDAD, MARYANNE	11	MEDICARE	0	3	5		MEDICAL CLINIC
		67 year old	Female	CAMPBELL, PATRICIA D.	2	MEDICARE	2	3	2		SENIOR HEALT
		52 year old	Female	GELLES, ELLEN J.	2	MEDICAID	0	0	50		MEDICAL CLINIC
		49 year old	Male	WHITE, PAUL	1	MEDICARE	0	0	58		MEDICAL CLINIC
		67 year old	Female	FALCK-YTTER, CORINNA D.	3	MEDICARE	6	0	8		MEDICAL CLINIC

- Referral triggers inclusion in the registry
- Easy to track patients through the continuum, opportunities for outreach

PrEP PATIENT REGISTRY

- Comprehensive
- Integrates all patient and clinical data

PROVIDER TOOLS

- Referrals
- Order sets
- Documentation
- Patient education

SCALABLE DIGITAL PROGRAM INFRASTRUCTURE

04

EXPERIENCE
AND
NEXT STEPS

Population Health approach to managing large group of patients

Primary Care Population Management Reports - Care Team

- My Department's Panel Patients Reports
 - My Department's Panel Patients reports return patients attributed to the department based on utilization.
 - My Department's Panel Patients with Diabetes
 - My Department's Panel Patients with Heart Failure
 - My Department's Panel Patients with Hypertension
 - My Department's Panel Patients Lost to Follow Up
- My Patients Reports
 - My Patients reports return patients currently on y previous month.
 - My Patients with Diabetes
 - My Patients with Heart Failure
 - My Patients with Hypertension
- My Care Team Reports
 - My Care Team reports return patients currently on
 - My Current Care Team Patients

Chronic Care Management (CCM)

- Reporting Workbench Reports
 - My Department's Panel Chronic Care Management: All Enrolled Patients
 - My Department's Panel Chronic Care Management: Patients Needing Appts to

PrEP patients awaiting quarterly follow up
PrEP patients awaiting early follow up
phone call

PrEP TEAM DASHBOARDS

- Reports generated by registry
- Task and team member specific

PrEP PATIENT REGISTRY

- Comprehensive
- Integrates all patient and clinical data


PROVIDER TOOLS

- Referrals
- Order sets
- Documentation
- Patient education

SCALABLE DIGITAL PROGRAM INFRASTRUCTURE

04

EXPERIENCE
AND
NEXT STEPS

 **Schedule an Appointment Now**
Existing patients may also schedule an appointment using [MyChart](#).

**Physical Medicine and Rehabilitation (Frisco)
at UT Southwestern Frisco**
12500 Dallas Parkway, 1st Floor, Frisco, Texas 75033

Wednesday, FEB 19

Thursday, FEB 20
 [More...](#)

Friday, FEB 21

[More Options](#)

PATIENT PORTAL

- Messaging
- Results
- Scheduling
- Sexual and personal history questionnaires

PrEP TEAM DASHBOARDS

- Reports generated by registry
- Task and team member specific

PrEP Questionnaire

Attached to a message from **Jason P** received 5/19/2020

* Indicates a required field.

DEMOGRAPHICS

* What sex were you assigned at birth?

If you answered other on previous question, please specify:

* What is your current gender identity?

If you answered other on the previous question, please specify:

* What is your current sexual orientation?

PrEP PATIENT REGISTRY

- Comprehensive
- Integrates all patient and clinical data

PROVIDER TOOLS

- Referrals
- Order sets
- Documentation
- Patient education

Patient	DOB	Age	Sex	Current PCP	Comorbidity (Metric)	Payor	Num of ED Visits	Num of IP Admissions
65 year old		Male	SANDERS, CRISTINA	1	MEDICARE	0	4	
55 year old		Female	KHAN, YASMIN	1	MEDICARE	2	0	
55 year old		Male	EL-KHOURY, GABY S.	0	MEDICAID	2	0	
74 year old		Female	KEA, KAREN E.	5	MEDICARE	2	16	
53 year old		Female	COX, DIETHRA	2	MEDICARE	0	0	
54 year old		Male	NG, RANIER	3	MEDICARE	7	0	
53 year old		Male	NASH, KEVIN	3	MEDICARE	2	0	
58 year old		Male	GIFFORD, SUSANA	0	MEDICARE	3	0	
62 year old		Female	SCHROEDER, REBECCA L.	9	MEDICARE	9	6	
50 year old		Male	KUMAR, NILIMA	9	MEDICARE	6	11	
59 year old		Female	BEACHY, ROCHELE M.	3	MEDICARE	0	0	
71 year old		Female	HADDAD, MARYANNE	11	MEDICARE	0	3	
67 year old		Female	CAMPBELL, PATRICIA D.	2	MEDICARE	2	3	
52 year old		Female	GELLES, ELLEN J.	2	MEDICAID	0	0	
49 year old		Male	WHITE, PAUL	1	MEDICARE	0	0	
67 year old		Female	FALCK-YTTER, CORINNA D.	3	MEDICARE	6	0	

PATIENT PORTAL

- Messaging
- Results
- Scheduling
- Sexual and personal history questionnaires

PrEP PATIENT REGISTRY

- Comprehensive
- Integrates all patient and clinical data

INTEGRATION OF REGISTRY AND PATIENT PORTAL

- Allows for bulk outreach, messaging, and education

PrEP TEAM DASHBOARDS

- Reports generated by registry
- Task and team member specific

PROVIDER TOOLS

- Referrals
- Order sets
- Documentation
- Patient education

RISK PREDICTION MODEL

THE LANCET HIV

ARTICLES | [VOLUME 6, ISSUE 10, E688-E695, OCTOBER 01, 2019](#)

Use of electronic health record data and machine learning to identify candidates for HIV pre-exposure prophylaxis: a modelling study

[Julia L Marcus, PhD](#)   • [Leo B Hurley, MPH](#) • [Douglas S Krakower, MD](#) • [Stacey Alexeeff, PhD](#) •

[Michael J Silverberg, PhD](#) • [Jonathan E Volk, MD](#)

Published: July 05, 2019 • DOI: [https://doi.org/10.1016/S2352-3018\(19\)30137-7](https://doi.org/10.1016/S2352-3018(19)30137-7) •



REFLECTION

- What barriers to PrEP uptake or persistence have you realized in your own setting?
- Could a centralization of PrEP services benefit your health center?
- How could you optimize your current PrEP program to be more accessible?

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 - *Val Hallman*
 - *Kelley Carroll*
 - *Colleen Kelley*
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QUESTIONS?

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