

# High Impact Prevention: Science, Practice, and the Future of HIV

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# Disclosures

No financial interest to disclose.



# Learning Objectives

At the conclusion of this activity, the participant will be able to:

1. Understand top level issues of HIV prevention today
2. Appreciate current epidemiologic situation and opportunities in future

# Why are we here when these are 100% effective?



Sero-Sorting 101  
[POZ] | [NEG]

## Prevention with Positives

HIV testing, linkage to care and  
prevention services

Antiretroviral therapy

Retention in care and adherence

Partner services

Risk reduction interventions  
and condoms

STD screening and treatment

Perinatal transmission

## Prevention with Negatives

Behavioral risk reduction

Interventions and condoms

Pre-exposure prophylaxis (PrEP)

Syringe services

Male circumcision

STD screening and treatment

Post-exposure prophylaxis

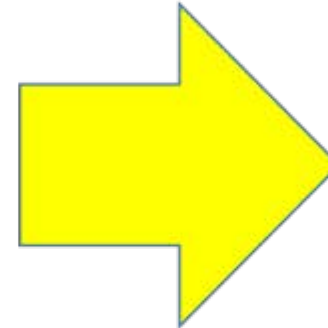
## Not focused on HIV status

Sexual health education and social mobilization

Condom availability

Substance use, mental health, and social support

# High Impact Prevention

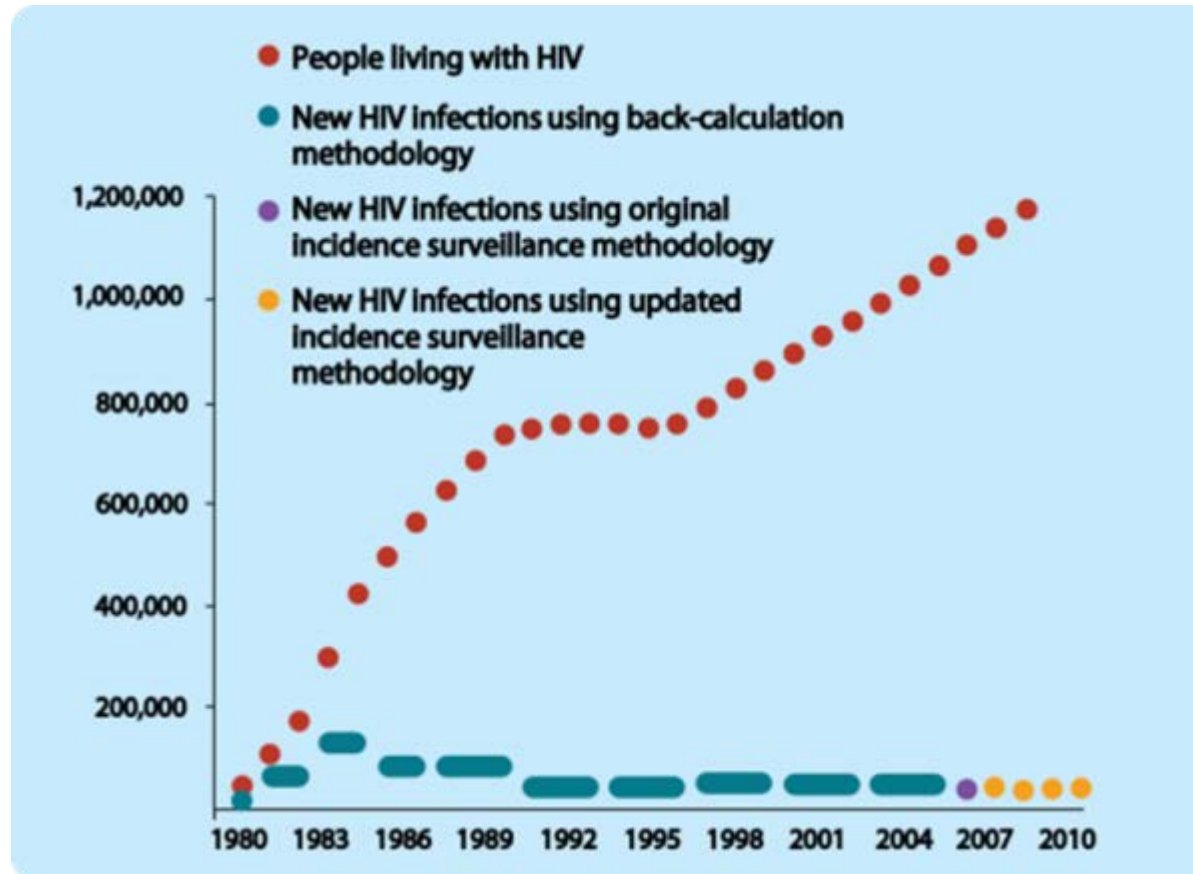


Combining interventions is not enough

All interventions are not effective

All effective interventions are not equal

# HIV Prevalence and Incidence United States

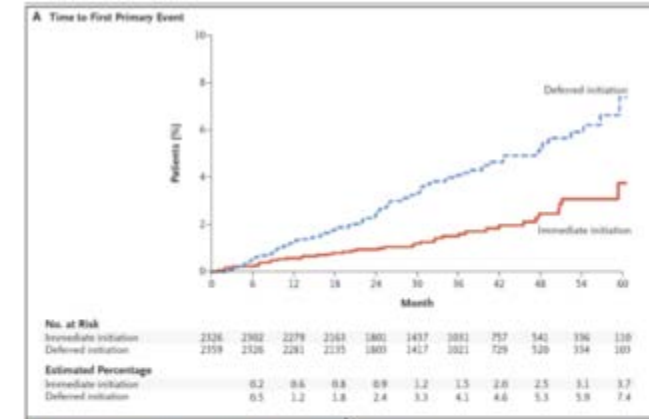


Hall HI et al. *JAMA* 2008 Aug 6;300(5):520-9; Prejean J et al *PLoS One* 2011;6(8):e17502; MMWR 2012 Mar 2;61(8):133-8

# Antiretroviral treatment works

- START trial
  - ART at CD4 count >500 fewer severe adverse events and mortality than delaying therapy
  - 68% of primary endpoints occurred in persons with CD4>500
- Viral suppression reduces transmission of HIV by >96%

NEJM, August 27, 2015

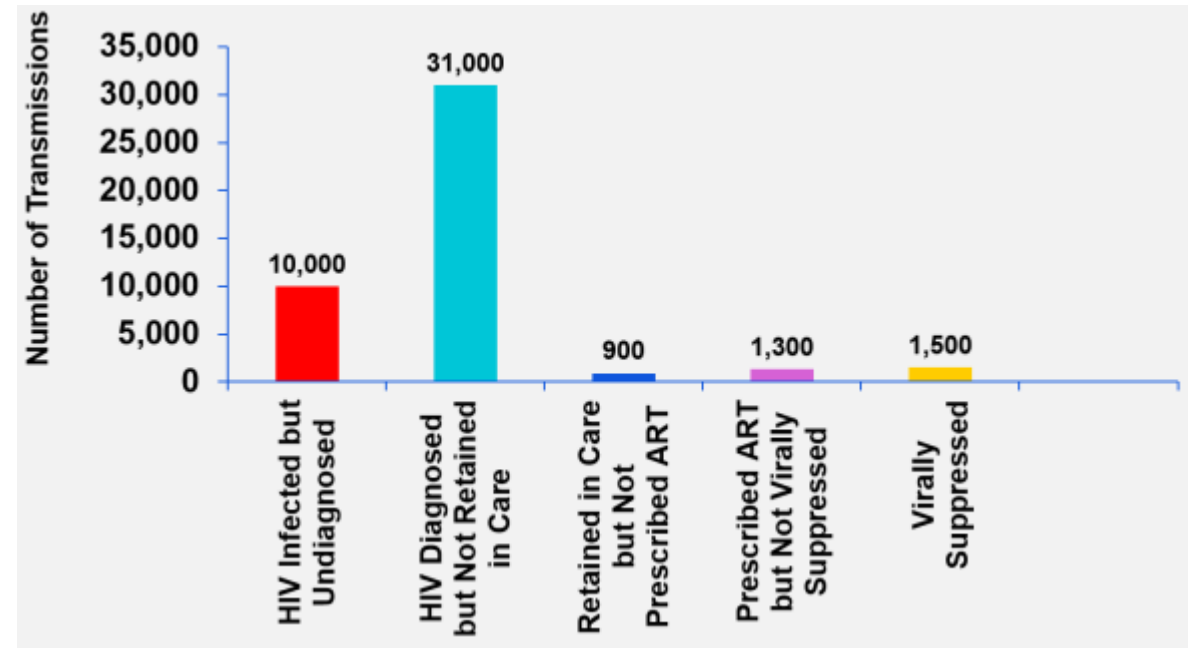




# HIV transmission at each step of care continuum, United States

- 9 of 10 new infections transmitted by HIV-infected people who are undiagnosed or diagnosed but not in medical care

Frieden *NEJM* 2015



# Good care saves lives and money

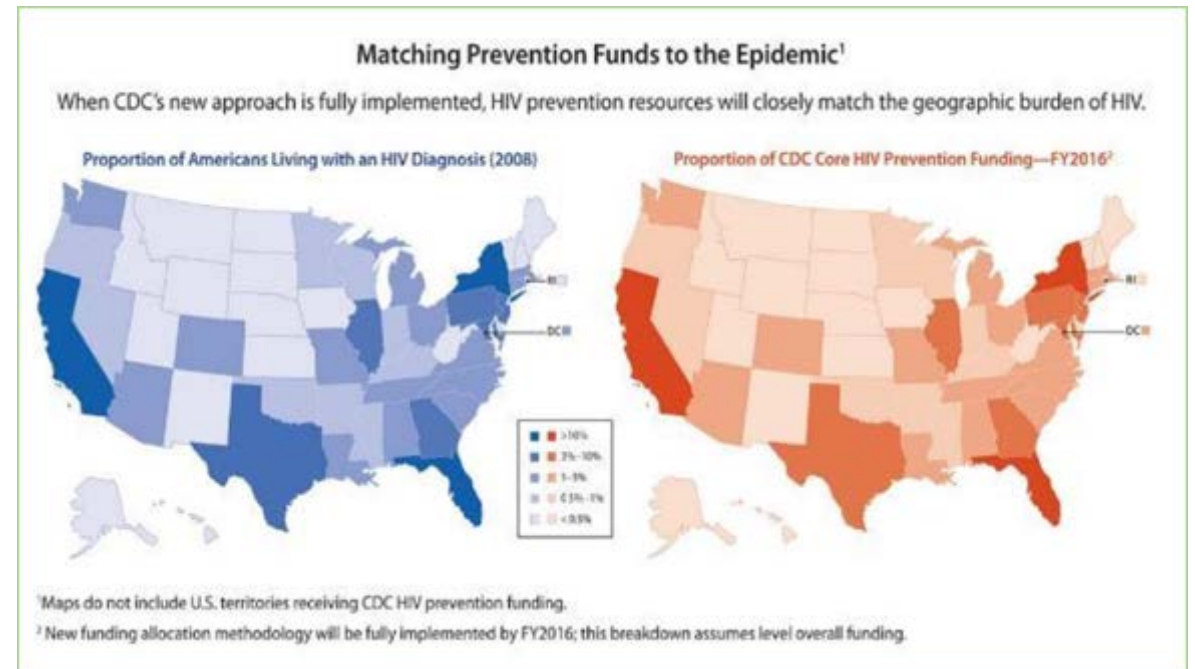
Intervention	Cost per QALY Saved
Continuum of Care: Testing in clinical settings	Cost Saving
Continuum of Care: Linkage to care	Cost Saving
Continuum of Care: Adherence to ART	Cost Saving
Continuum of Care: Retention in care	\$13,460
Other Interventions: Partner services	Cost saving
Other Interventions: PrEP MSM	\$59,000

Lin, et al., *Am J Prev Med* 2016

# Aligning resources with the epidemic

## CDC funding of state and local health departments

- Jurisdictions must spend 75% of budget on 4 key strategies:
- HIV testing
- Linkage to and reengagement in care
- Policy and structural interventions
- Condom distribution



[www.cdc.gov/hiv/strategy/hihp/healthDepartments/](http://www.cdc.gov/hiv/strategy/hihp/healthDepartments/)

# Implementation of High Impact Prevention

Program shifts:

- Most activities focus on priority interventions
- Doubling of jurisdictions with integrated HIV prevention and care planning between HRSA and CDC-supported activities
- Increased activities with people living with HIV and MSM, especially black MSM
- Focus on use of ACA and billing capacity

About 50% of jurisdictions receive no state HIV prevention resources

NASTAD National HIV Prevention Inventories, 2013, 2014

# Reducing disparities is good public health

## Care and Prevention in U.S. (CAPUS)

- Partnership with CDC, HRSA, HHS offices, SAMHSA
- \$45M total funding over 3 years to 8 states
- Eligible states had highest HIV/AIDS burden among African Americans and Latinos
- Overcome social determinants that prevent reaching suppressed viral load

## YMSM and Transgender Persons of Color

- \$11 million annually to 34 CBOs to improve care and prevention
- >3,000 new HIV diagnoses anticipated

## Partnerships for Care (P4CP)

- 3-year collaboration with HRSA
- Partners with 4 state health departments and 22 HRSA-funded health centers



# Has it worked?

# Selected program outcomes

- States requiring reporting CD4 counts and viral loads increased from 19 in 2011 to 42 in 2015
- Proportion of persons with HIV who know status highest ever at 87%
- Viral suppression among persons receiving care increased from 72% in 2009 to 80% in 2013
- 61 health departments conducted over 2.8 million HIV tests with CDC resources in 2014, diagnosing 10,800 persons with HIV

Krueger NHPC 2015; Hayek S *J Public Health Manag Pract* 2015 (epub); National HIV Prevention Progress Report, 2013; *MMWR*, June 26, 2015; CDC, Monitoring and Evaluation Report 2016

# Surveillance Indicators

**2010-14, annual new HIV diagnoses decreased 9%**

- **6% reduction in men; 21% in women**
- **2% decrease in young black MSM, following 114% increase during prior 5 years**

**Proportion of persons with HIV aware of status increased, so decreases not due to less testing**

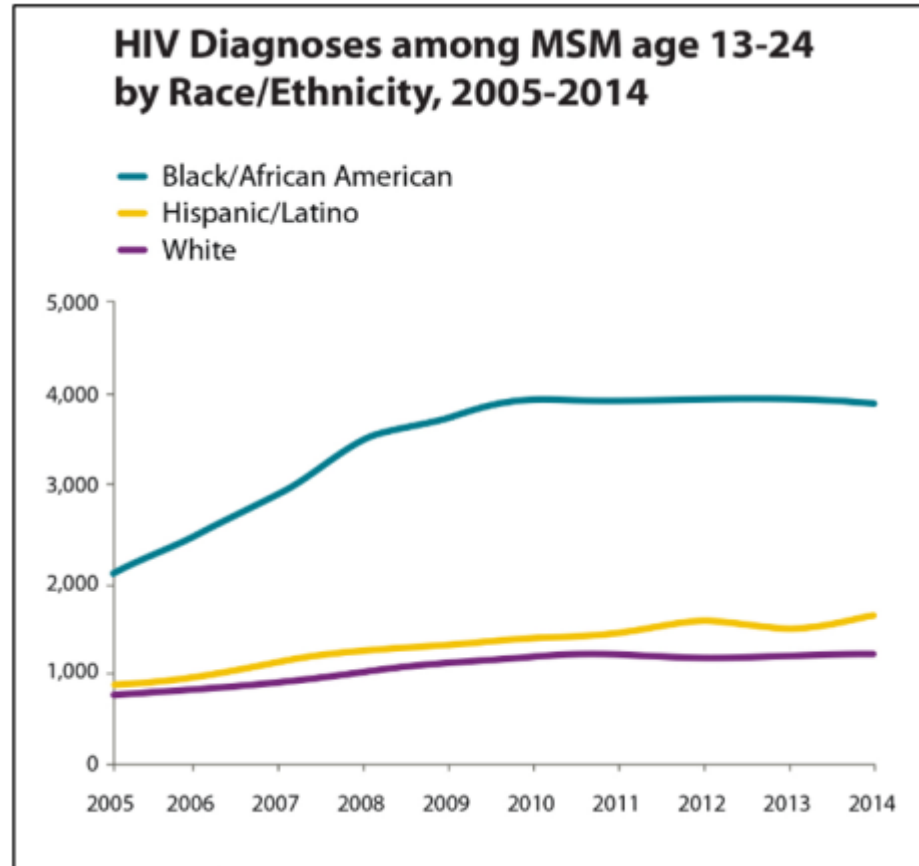
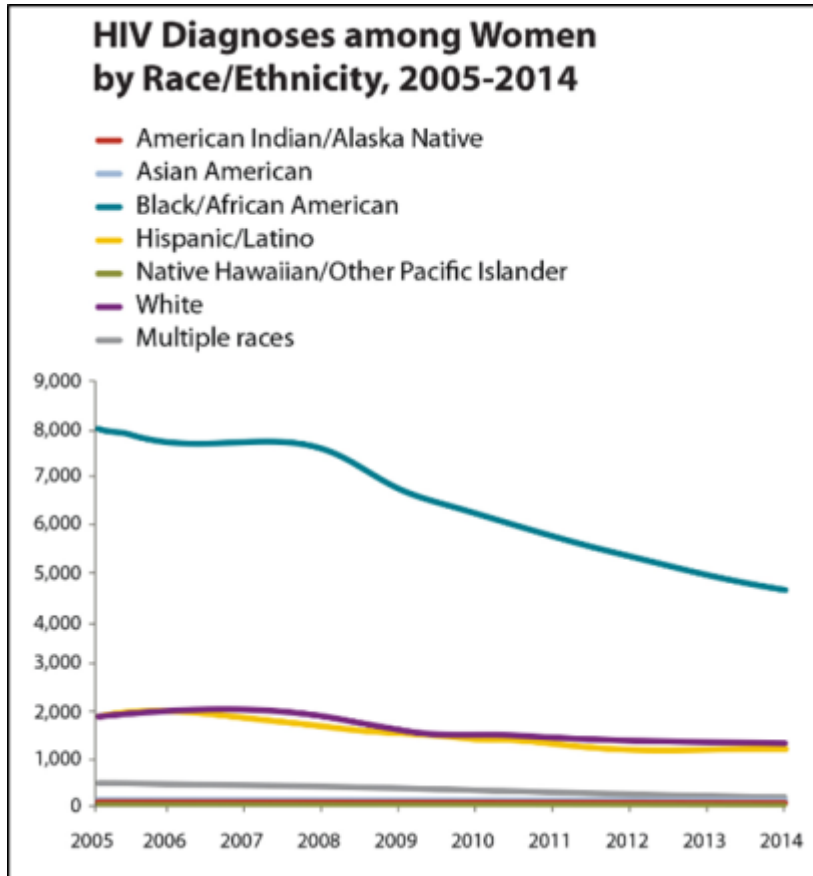
**2010-2013, 9% less mortality--seen in all race/ethnic groups**

- **2008-12, mortality among African Americans with HIV decreased 28%**
- **Hispanic/Latinos have lowest mortality among PLWH**

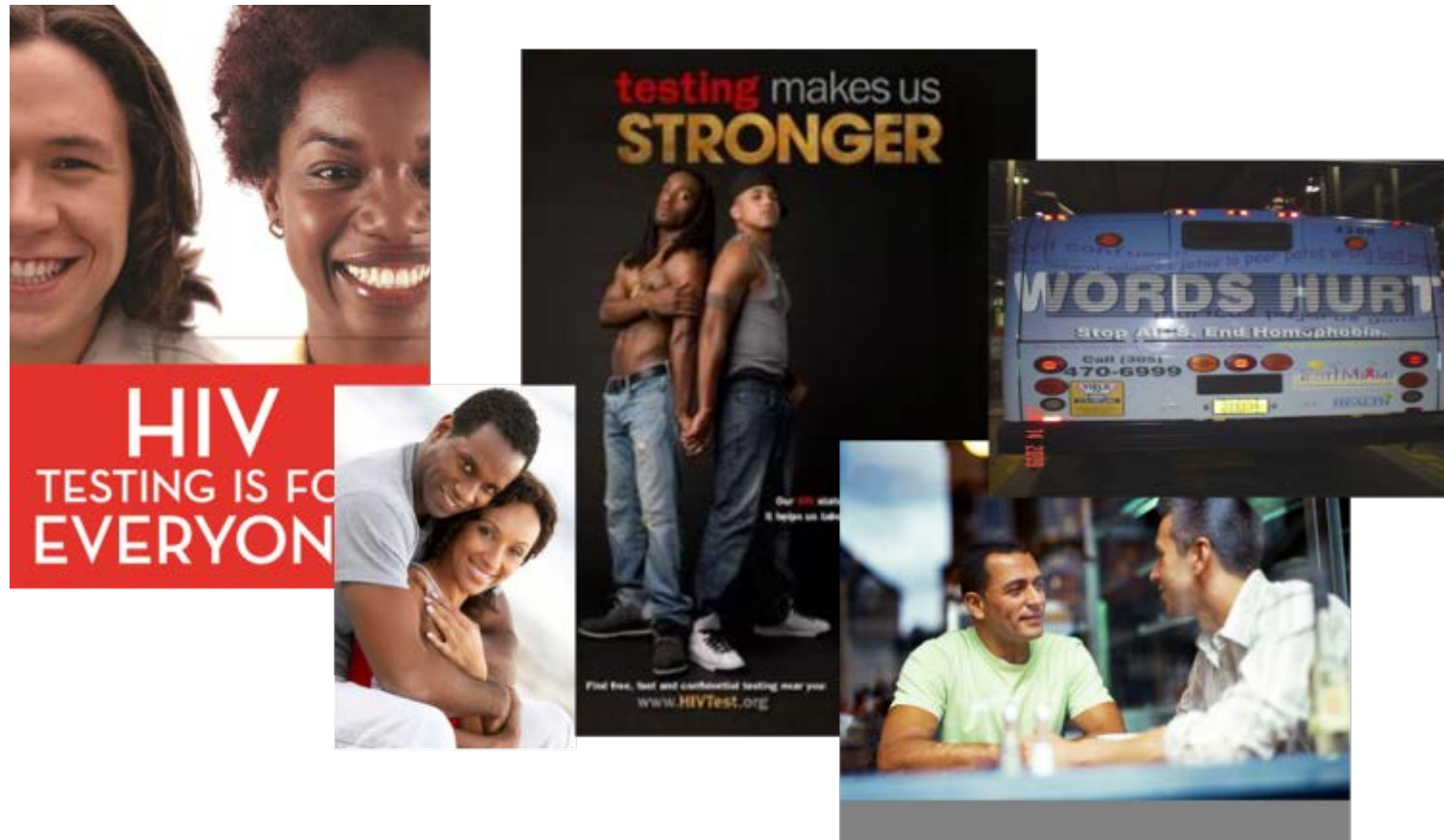
*HIV Surveillance Report, Volume 26, 2014, CDC*



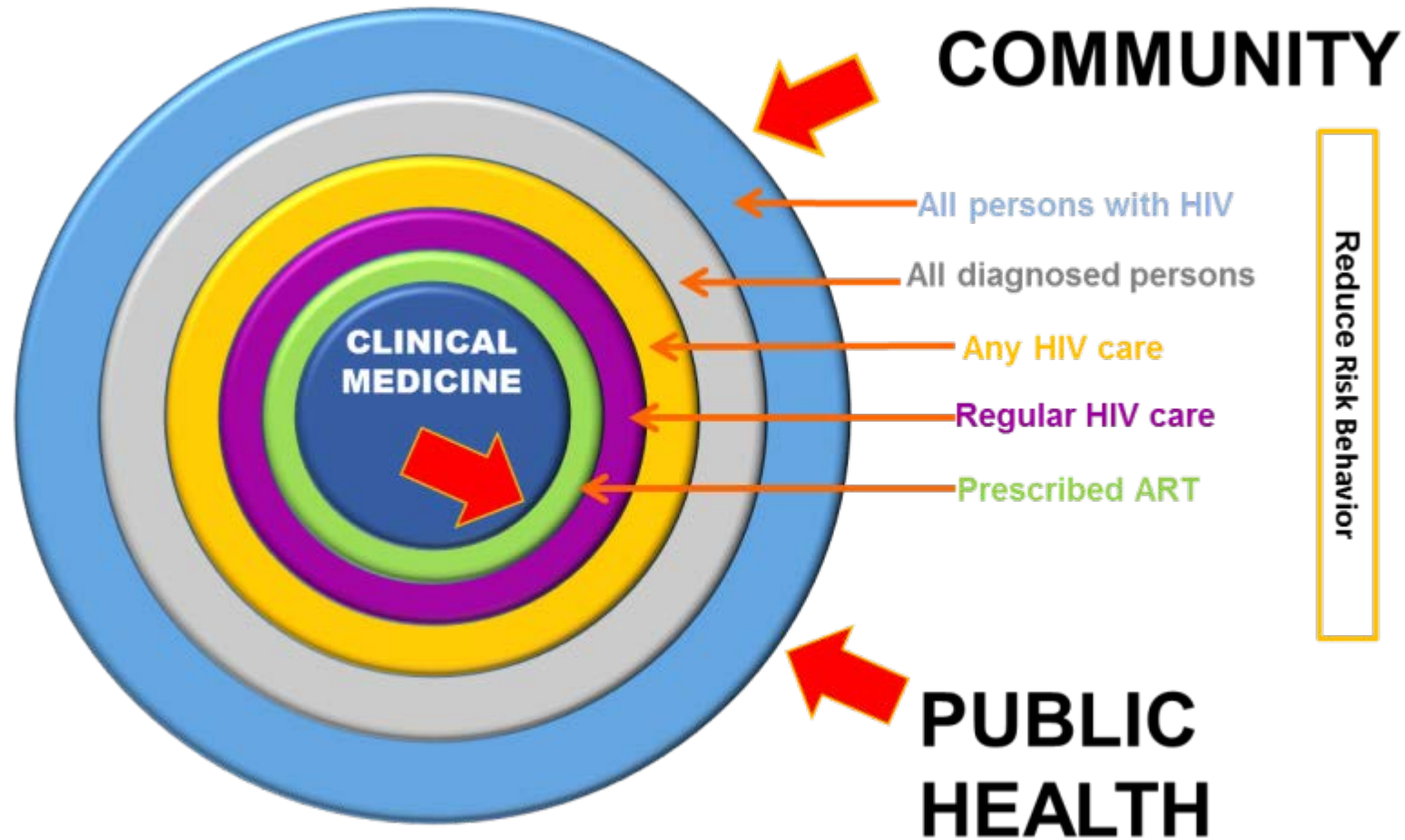
# Trends in HIV disparities



# High Impact Prevention 2.0



# Clinical Medicine, Community, and Public Health



# Data to Care Strategy

- Using CD4 count and viral load surveillance data to identify people who are not engaged in care or not achieving optimal results
  - Never linked to care, dropped out of care
  - Persistently low CD4 count or detectable viral load
- Data are used for public health follow up
  - Continuum of Care uses aggregate data for monitoring
  - Data to Care helps people with HIV get the care, prevention, mental health, behavioral health, and social services they need

- Sweeney P et al Milbank Quarterly 2013



# PrEP in practice

## Randomized trials

- When taken as directed, PrEP prevents >90% of sexually transmitted HIV

## PrEP Demonstration Project

- 2 HIV infections with moderate adherence among MSM and transgender women

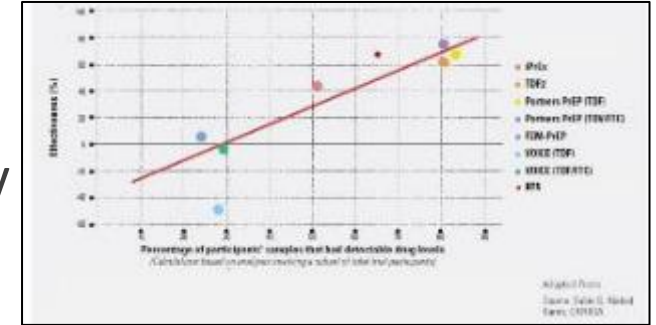
## PrEP Use, Kaiser Permanente, San Francisco

- No HIV infections despite high rates of STIs, risk behavior

## HIV PrEP demonstration project for YMSM

- 56% of participants had protective drug level at first visit, but adherence declined
- 4 HIV infections; all undetectable drug levels

## PrEP empowers



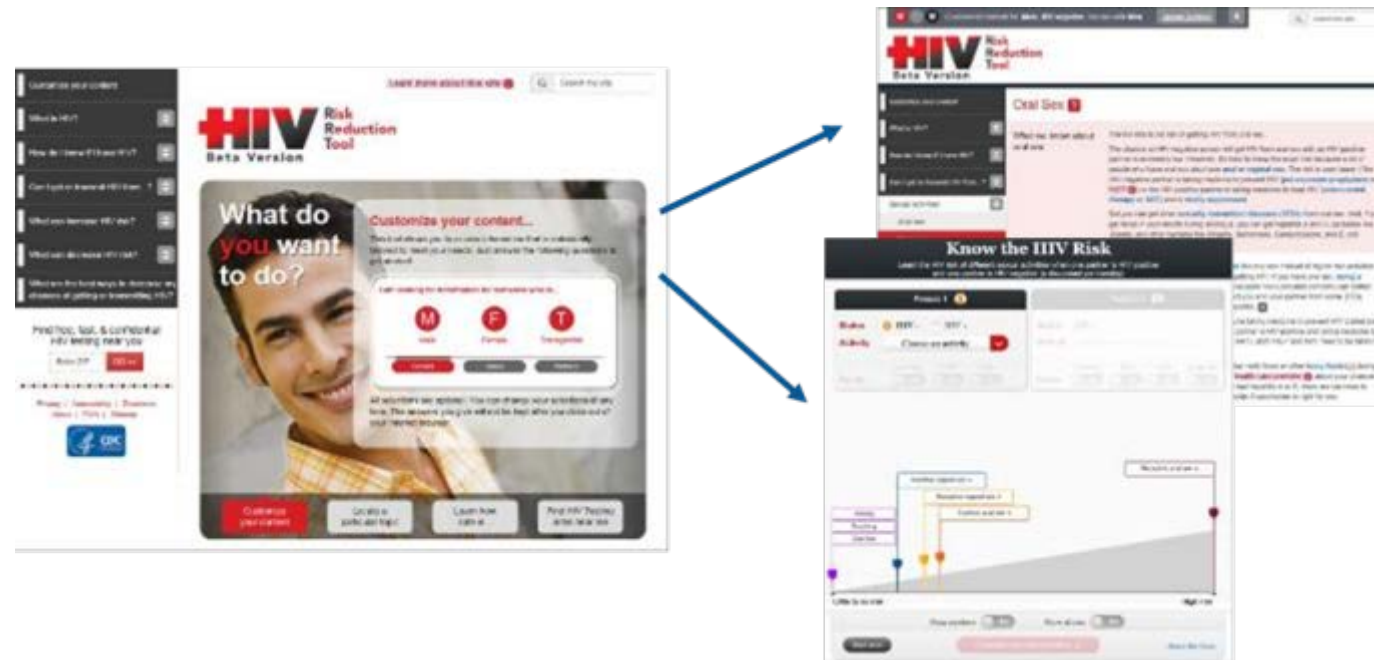
# Prevention as health care-Health care as prevention

- How do we make HIV prevention services, including PrEP, normative part of health care?
- HIV testing as routine as cholesterol screening
- Risk reduction as common as nutrition counseling, foot care for people with diabetes
- Ensure reimbursement systems support routine HIV prevention services within clinics



# HIV Risk Reduction Tool

- User-friendly tool for different audiences of risk estimates and HIV prevention messages incorporating ART, PrEP and new prevention tools



# Condom Use

- In national sample, >70% of adolescents reported condom use during last sex
- However, 22% of women and 25% of men of all ages reported condom use
- Use more than twice as likely with casual than “relationship” partner
- Couples stop using condoms over time
- Men and women >5 times less likely to use condom if had sex >10 times previously
- Among MSM, 68% of HIV transmission from main partner
- Higher number of sex acts, more frequent receptive role, and lower condom use





# Molecular epidemiology

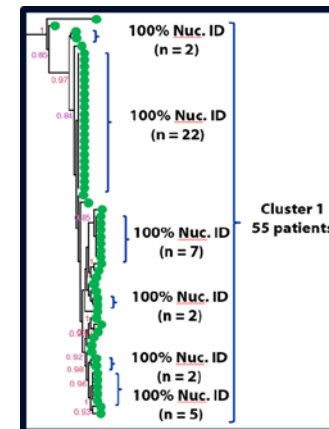
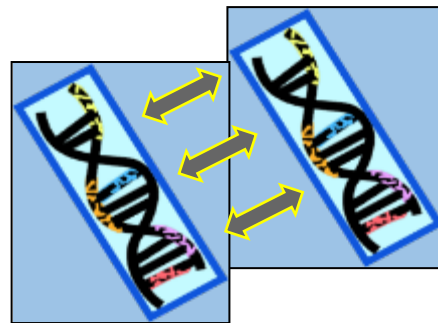
## Helping with the basics

ART resistance testing routinely performed for new diagnoses

Reporting by 27 jurisdictions

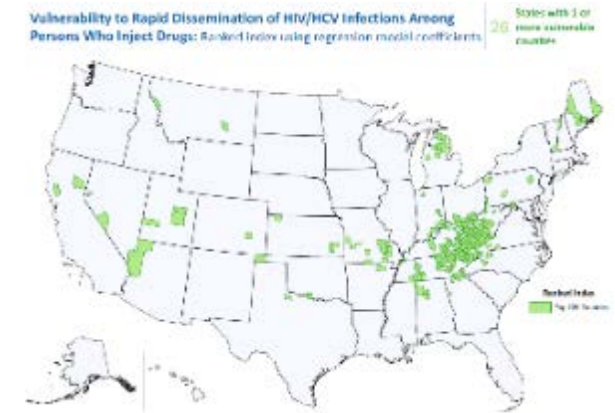
Allows for rapid response to outbreaks and clusters including providing needed social, prevention, treatment services to sexual and drug using networks

Precedent with TB where 95% of all TB isolates tested and outbreaks rapidly identified



# HIV and HCV in persons who inject drugs

- Indiana community of 4,300
- 184 persons with HIV
- Injecting oxymorphone
- Majority of HIV infections recently acquired; all but 2 linked
- Rapid response with contact tracing and testing, one-stop-shop for social services, syringe service program, HIV and HCV testing and treatment, medication-assisted therapy, educational campaign

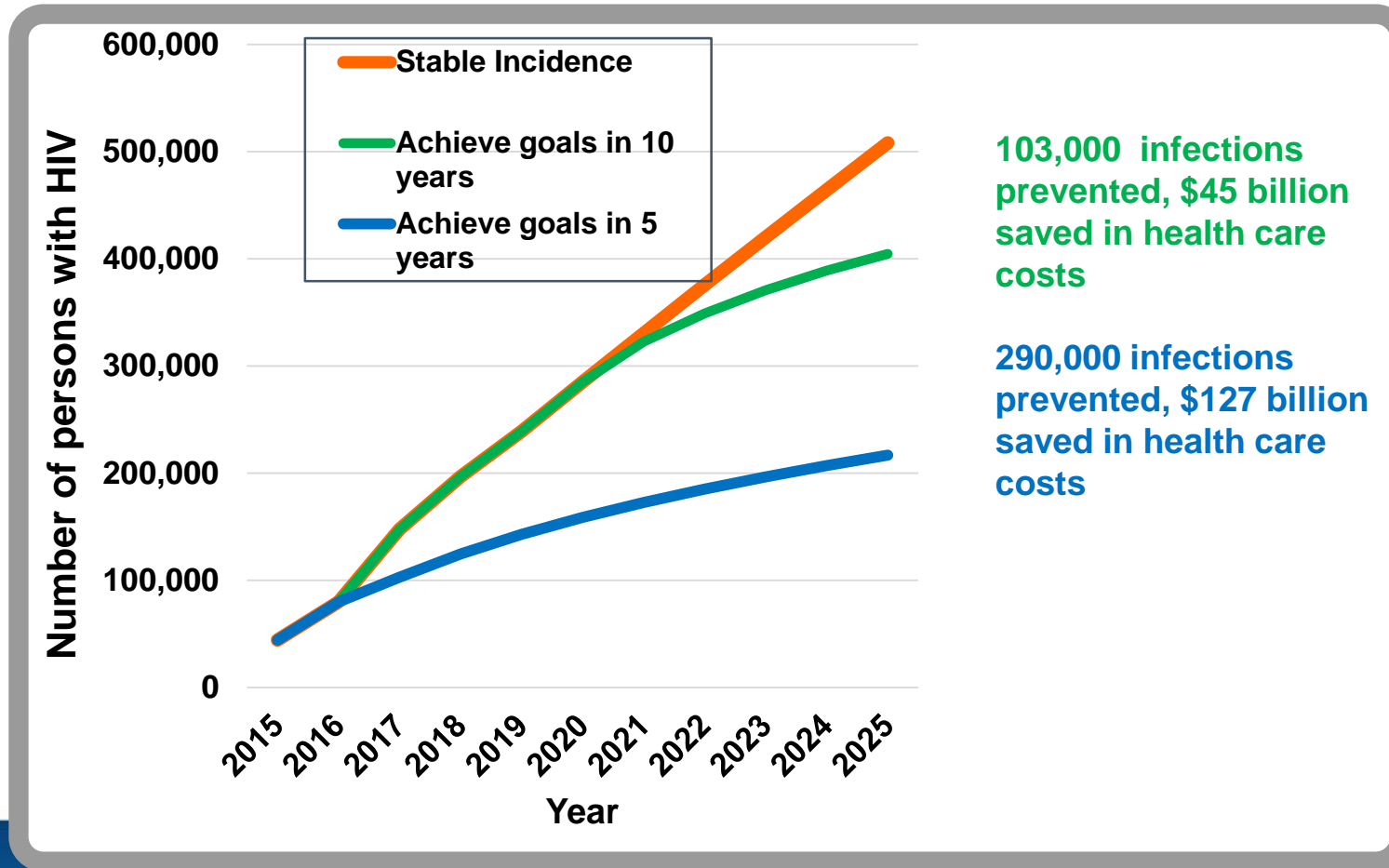


Syringe Services Program Coverage, June 2014



# Think bigger, act faster

Achieving the goals of National HIV/AIDS Strategy would avert tens of thousands of new infections and save billions of dollars



# Conclusions

- We have turned the corner on HIV, but far from achieving success
- Prioritizing is essential
- New science, education, policy, and innovative programs can make easier, more effective choices
- Future includes treatment, PrEP, molecular epidemiology, and use of data to improve outcomes
- Think bigger, act faster

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**The findings and conclusions in this presentation do not necessarily represent official position of CDC**