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

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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?
**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

- Biomedical interventions
- HIV testing and linkage to care
- Structural interventions
- Community interventions
- Individual and small group interventions

Combining interventions is not enough
All interventions are not effective
All effective interventions are not equal
HIV Prevalence and Incidence United States

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

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Cost per QALY Saved</th>
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<tbody>
<tr>
<td>Continuum of Care: Testing in clinical settings</td>
<td>Cost Saving</td>
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<tr>
<td>Continuum of Care: Linkage to care</td>
<td>Cost Saving</td>
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<tr>
<td>Continuum of Care: Adherence to ART</td>
<td>Cost Saving</td>
</tr>
<tr>
<td>Continuum of Care: Retention in care</td>
<td>$13,460</td>
</tr>
<tr>
<td>Other Interventions: Partner services</td>
<td>Cost saving</td>
</tr>
<tr>
<td>Other Interventions: PrEP MSM</td>
<td>$59,000</td>
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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/
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

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

HIV Diagnoses among Women by Race/Ethnicity, 2005-2014

HIV Diagnoses among MSM age 13-24 by Race/Ethnicity, 2005-2014
High Impact Prevention 2.0
Clinical Medicine, Community, and Public Health

- All persons with HIV
- All diagnosed persons
- Any HIV care
- Regular HIV care
- Prescribed ART

Reduce Risk Behavior
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
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.

- Stable Incidence
- Achieve goals in 10 years
- Achieve goals in 5 years

103,000 infections prevented, $45 billion saved in health care costs

290,000 infections prevented, $127 billion saved in health care costs
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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