Biomedical Interventions for HIV Prevention

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September 27th, 2013
HIV Prevention Interventions

Decrease source of Infection
- Barrier protection
- Blood screening
- IDU harm reduction
- Antiretroviral therapy (PMTCT, treat infected partners)
- STI treatment

Decrease Host Susceptibility
- Barrier protection
- Infection control
- Circumcision
- PEP, PrEP
- Topical microbicides
- Vaccines
- STI treatment

Alter Behavior
- Condom and HIV testing promotion
- Individual interventions
- Couples interventions
- Community-based interventions
- Structural interventions
Multifactorial Nature of MSM Risk

- **Individual behavior**: number of partners/time
- **Biology**
  - Specific sex acts associated with different STD
  - Particularly, anal intercourse ↑susceptibility to HIV, other STD
  - Role versatility: receptive can be insertive
- **Networks**
  - HIV/STD per contact risk ↑in high prevalence settings
  - Assortative mixing in sub-groups, e.g. racial/ethnic minorities
  - Sexualized venues, e.g. bathhouses, social media, sex work
- **Structural/Societal**
  - Homophobia, bullying leads to early developmental stress, depression, lack of self-efficacy and subsequent risk
  - Criminalization and discrimination in health care settings impede disclosure and receipt of timely health services
HPTN 052: HIV Transmission Reduced by 96% in Serodiscordant Couples

Total HIV-1 Transmission Events: 39
(4 in immediate arm and 35 in delayed arm; $P < .0001$)

Linked Transmissions: 28
Delayed Arm: 27
Immediate Arm: 1

Unlinked or TBD Transmissions: 11

96% reduction in risk of HIV transmission within the partnership (95% CI: 73% to 99%)

Why Chemoprophylaxis Post-HPTN 052?

• Only few MSM and IDU in HPTN 052, so effectiveness of TasP not fully understood
• 2 Observational MSM studies underway
• HIV incidence has not ↓ in England and Denmark, despite access (Birrell, 2013; Audelin, 2013)
• <1/3\textsuperscript{rd} of PLHIV globally are now on treatment; full access will take years
• Not all PLHIV want to start meds with high CD4 counts, and virologic suppression rates vary
• Serostatus awareness is limited among many
• HIV stigma limits willingness to disclose
• Not either/or; models suggest some synergy
Challenges to Treatment as Prevention

- CDC study shows that only ~25% of US patients with HIV have suppressed HIV-1 RNA

Post-Exposure Prophylaxis (PEP): Chemoprophylaxis after Sexual Exposure

- No efficacy data
  - Impossible to do RCT given low per contact risk
  - Placebo not considered ethical
- Animal data show no or limited protection against rectal SHIV challenge if started too late (>24 hours)
  - Better protection if drug is available before exposure
- Some MSM and others fail to timely recognize high-risk exposure, even when NPEP is available
- Repeat NPEP users well-described
- Optimal regimen not defined

Fenway Health NPEP Experience

- Over 15 years’ experience, referral center
- Secular trend towards TDF/FTC regimens
- Problem with 3\textsuperscript{rd} drug, ritonavir with boosted PI, can’t use NNRTI
- TDF/FTC/RAL very well-tolerated, but >25\% missed pm dose
- TDF/FTC/ATV/r significant hyperbilirubinemia→d/c
- Quad Pill (TDF/FTC/ELV/cobicistat) underway

PrEP works, but adherence is critical

<table>
<thead>
<tr>
<th>Study</th>
<th>Efficacy overall</th>
<th>Drug detected overall</th>
<th>Estimated Risk reduction with drug detection</th>
</tr>
</thead>
<tbody>
<tr>
<td>iPrEx</td>
<td>42%</td>
<td>~50%</td>
<td>92%</td>
</tr>
<tr>
<td>Partners PrEP</td>
<td>67-75%</td>
<td>82%</td>
<td>86% (TDF) 90% (FTC/TDF)</td>
</tr>
<tr>
<td>TDF-2</td>
<td>62%</td>
<td>80%</td>
<td>78%</td>
</tr>
<tr>
<td>Fem-PrEP</td>
<td>No efficacy</td>
<td>26%</td>
<td>“adherence too low to assess efficacy”</td>
</tr>
<tr>
<td>VOICE</td>
<td>No efficacy</td>
<td>29%</td>
<td>“ ”</td>
</tr>
</tbody>
</table>
PrEP Concerns

- **Risk Compensation:** not seen in trials
- **Renal insufficiency:** rare, reversible
  - but pts had to have normal function for trials
- **Bone demineralization:** statistically significant, not clinically significant at 18 months, needs f/u
- **Transmission of resistance**
  - Only in pts started on PrEP with acute HIV
  - All but 1 case 184V (XTC R, less fit virus)

*But it is early, and ongoing monitoring needed*
Relative risk reduction in acquiring HIV infection (compared with placebo) based on plasma TFV concentrations (Partners PrEP)
Improving Adherence Results in Exceedingly High Levels of Protection

• Partners PrEP adherence sub-study

• 1,147 couples in Uganda: those whose three-month pill use dropped below 80% received enhanced counseling which included problem-solving

• Sub-study also included unannounced home visits; pill use measurement by MEMSCAP

• At the end of the study, 14 participants became HIV-infected, none randomized to TDF/FTC

(Haberer, PLoS Medicine, 2013)
Correlates of Drug Detectability in iPrEx

- 179 samples from 7 sites were evaluated after Wk 24 visit
- Overall detection rate
  - TFV-DP: 50%
  - FTC-TP: 62%

<table>
<thead>
<tr>
<th>Parameter</th>
<th>n</th>
<th>Drug Detected, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>US vs non-US</td>
<td></td>
<td></td>
</tr>
<tr>
<td>US</td>
<td>34</td>
<td>97</td>
</tr>
<tr>
<td>Non-US</td>
<td>145</td>
<td>50</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 25 yrs</td>
<td>101</td>
<td>73</td>
</tr>
<tr>
<td>&lt; 25 yrs</td>
<td>78</td>
<td>44</td>
</tr>
<tr>
<td>Recent reported sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>URAI</td>
<td>49</td>
<td>76</td>
</tr>
<tr>
<td>Sex, not URAI</td>
<td>107</td>
<td>59</td>
</tr>
<tr>
<td>No sex</td>
<td>23</td>
<td>35</td>
</tr>
</tbody>
</table>

PrEP: An Overview

**Advantages**
- An additional HIV prevention option
- Separates prevention from risk exposure
- Women and men empowerment
- Overcomes negotiations around HIV prevention
- Increased VCT uptake

**Formulation**
- Tablet
- Slow release formulation
- ARV-Microbicides

**Eligibility**
- HIV Negative
  - Sex workers
  - MSM
  - IDU
  - Serodiscordant couples
  - Concurrent relationship
  - For all over a certain age (?)

**When?**
- Daily/Weekly
- Intermittently
- When at risk
  - PMTCT

**Challenges**
- ARV
  - Availability for PrEP
  - Half life
  - Drug Resistance
  - Side effects & Long term effects
  - Effects on other viral infections (Hep B/C)
  - Interactions with other drugs (inc. recreational)

- ARV-related
  - Adherence
  - Prioritization of available ARV

- Ethics
  - PrEP vs other prevention options
  - Treating uninfected people

- Requires regular HIV testing
- Behaviour changes/Disinhibition/Condom migration
- Impact on public health
  - Cost (Resources & Drugs)
  - Implementation & Monitoring
- Provides narrower protection than condom
- Addresses acquisition rather than transmission
PrEP Cascade
(D. Smith, CDC and Al Liu, SFDPH)

Patients
1. At risk for HIV infection
2. Identified as PrEP candidate
3. Interested in PrEP
4. Linked to PrEP program
5. Initiated PrEP
6. Retained in PrEP program
7. Achieve and maintain medication adherence

Providers
1. Providing health care to high risk populations
2. Educated about PrEP
3. Willing to provide PrEP
<table>
<thead>
<tr>
<th>Trial/project</th>
<th>Sponsor/funder</th>
<th>Type/Category</th>
<th>Location</th>
<th>Population</th>
<th>Design/Key questions</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partners Demonstration Project</td>
<td>Led by a team of scientists from Kenya, Uganda and the US; funded by NIMH/NIH, USAID and BMGF</td>
<td>Demonstration Project</td>
<td>Kenya, Uganda</td>
<td>Serodiscordant couples</td>
<td>Evaluates HIV prevention preferences among approximately 1,000 HIV serodiscordant couples, adherence to PrEP and ART and interface of reproductive health priorities and ART-based prevention. Will implement PrEP as &quot;bridge&quot; to ART, providing PrEP to HIV-negative partner when HIV-positive partner is not yet on ART due to ineligibility based on country guidelines or personal decision.</td>
<td>All four sites open and enrolling as of August 2013; results expected in 2016.</td>
</tr>
<tr>
<td>LVCT and SWOP</td>
<td>Implemented by national partners in each country in collaboration with the World Health Organization, UNAIDS, O’Neill Institute of Georgetown University, London School of Hygiene and Tropical Medicine, Imperial College London; funded by Bill &amp; Melinda Gates Foundation</td>
<td>Demonstration Project</td>
<td>Kenya</td>
<td>Young women, female sex workers and MSM</td>
<td>Aims to introduce PrEP into combination prevention interventions targeting young women, female sex workers and MSM. Formative research underway to assess consumer perceptions and identify potential barriers and opportunities related to introduction. Outcomes include criteria for PrEP indication among young women and a menu of interventions for target populations, including PrEP and feasible delivery options.</td>
<td>Formative research in planning phase; feasibility study report results likely in December 2013.</td>
</tr>
<tr>
<td>Nigerian National Agency for the Control of AIDS</td>
<td>Implemented by national partners in each country in collaboration with the World Health Organization, UNAIDS, O’Neill Institute of Georgetown University, London School of Hygiene and Tropical Medicine, Imperial College London; funded by Bill &amp; Melinda Gates Foundation</td>
<td>Demonstration Project</td>
<td>Nigeria</td>
<td>Serodiscordant couples</td>
<td>Evaluates the effectiveness of various models for the delivery of PrEP and TasP as part of a combination prevention strategy for 1,200 heterosexual, serodiscordant couples. Couples will be recruited from facilities that provide intervention of vertical transmission, ART and other services. Study sites include Plateau, Edo and Cross River State. Study findings will be used to inform the scale-up of PrEP and TasP as part of a comprehensive national HIV-prevention package.</td>
<td>Formative discussions underway. No start date for demonstration project.</td>
</tr>
<tr>
<td>Wits Reproductive Health and HIV Institute</td>
<td></td>
<td>Demonstration Project</td>
<td>South Africa</td>
<td>Female sex workers</td>
<td>Aims to assess whether oral PrEP and TasP can be rolled out within a combination prevention and care approach tailored to the needs of 605, both HIV-positive and negative, female sex workers age 18 and older. Study sites include Hillbrow and Waterfall Boven.</td>
<td>Expected start date of February 2014, with expected completion September 2016.</td>
</tr>
<tr>
<td>Durbar (DMSC) and Ashodaya Samithi</td>
<td></td>
<td>Demonstration Project</td>
<td>India</td>
<td>Female and transgender sex workers</td>
<td>Aims to assess the potential introduction of PrEP among female and transgender sex workers. The project includes sex workers part of the Durbar Mahila Samanwaya Committee (DMSC), a brothel-based sex work project in Sonagachi, and also the Ashodaya Samithi project, a CBO for street-based sex workers based in Mysore.</td>
<td>Feasibility study underway from May to September 2013, with results expected in October 2013.</td>
</tr>
<tr>
<td>The Demo Project</td>
<td>National Institute of Allergy and Infectious Diseases of the NIH</td>
<td>Demonstration Project</td>
<td>US (Miami, Florida; San Francisco, California; and Washington, DC)</td>
<td>MSM and transgender women</td>
<td>Aims to enroll 300 HIV-negative MSM and transgender women at City Clinic, while a sister project in Miami will enroll 200 participants in a PrEP regimen. Whittman Walker Clinic in Washington, DC, will also be a site, aiming to enroll approximately 100 participants.</td>
<td>Started October 2012. Expected completion by August 2014.</td>
</tr>
<tr>
<td>East Bay Consortium/CRUSH (Connecting Resources for Urban Sexual Health)</td>
<td>California HIV/AIDS Research Program of the University of California</td>
<td>Demonstration Project</td>
<td>US (East Bay, California)</td>
<td>Young MSM of color</td>
<td>Aims to test and link young MSM of color to sexual health services; enhance and evaluate engagement and retention strategies for HIV-positive young MSM of color; and engage and retain HIV-negative young MSM of color in sexual health services, including PrEP.</td>
<td>Started in December 2012.</td>
</tr>
</tbody>
</table>
## PrEP Demo Projects in the US

<table>
<thead>
<tr>
<th>Study</th>
<th>Population (N)</th>
<th>Study design</th>
<th>Sites</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>iPrEx OLE (Open Label Extension)</td>
<td>300 MSM/trans women enrolled in iPrEx RCT</td>
<td>Open-label daily FTC/TDF for 72 weeks</td>
<td>San Francisco Boston Chicago</td>
<td>Full enrolled; results 2014</td>
</tr>
<tr>
<td>Demo Project</td>
<td>600 MSM/trans women</td>
<td>Open-label daily FTC/TDF for 48 weeks</td>
<td>San Francisco Miami Washington DC</td>
<td>Enrollment Q3 2013, results 2015</td>
</tr>
<tr>
<td>CCTG 595</td>
<td>700 MSM/trans women</td>
<td>Open-label daily FTC/TDF for 48 weeks; Randomized to SMS support vs. SOC</td>
<td>San Diego Long Beach, LA Torrance</td>
<td>Enrollment Q2 2013, results 2016</td>
</tr>
<tr>
<td>PATH-PrEP</td>
<td>375 MSM/trans women</td>
<td>Open-label daily FTC/TDF for 48 weeks for high risk; PEP for low risk</td>
<td>Los Angeles</td>
<td>Enrollment April 2013, results 2017</td>
</tr>
<tr>
<td>CRUSH</td>
<td>150 young MSM of color, high risk women</td>
<td>Open-label daily FTC/TDF</td>
<td>Oakland</td>
<td>Pilot phase: Q1 2013; expanded phase: Q4 2013</td>
</tr>
<tr>
<td>ATN 110 and 113</td>
<td>300 young MSM age 15-22</td>
<td>Open-label daily FTC/TDF for 48 weeks</td>
<td>All 14 ATN sites in US</td>
<td>Enrollment Dec 12, results Q4 2014</td>
</tr>
<tr>
<td>HPTN 073</td>
<td>225 Black MSM</td>
<td>Open-label daily FTC/TDF for 48 weeks</td>
<td>Washington DC, LA, Chapel Hill</td>
<td>Enrollment June 2013, results 2017</td>
</tr>
<tr>
<td>SPARK</td>
<td>~300 MSM and trans women</td>
<td>Open-label daily FTC/TDF; will evaluate PrEP messages and SMS</td>
<td>New York</td>
<td>Enrollment Q4 2013</td>
</tr>
</tbody>
</table>
Strategies to improve PrEP delivery and adherence

New PrEP drugs and dosing strategies

Rectal Microbicides:
- MTN-017 (TFV rectal gel)

Alternative delivery systems and formulations

Intra-vaginal rings:
- ASPIRE (Dapivirine)

Injectable PrEP:
- HPTN 076 (TMC278LA)

Novel adherence strategies
TFV-DP Concentrations in IPrEx and STRAND

Regression analysis in iPrEx: 90% reduction in HIV acquisition when TFV-DP > 16 fmol/10^6 cells

Predicted risk reduction:
- 76% with 2 pills / week
- 96% with 4 pills / week
- 99% with 7 pills / week

Anderson et al, Science Translational Medicine 2012 4:151ra125

* Visit when HIV was first discovered
Phase II, Randomized, Open-Label, Pharmacokinetic and Behavioral Study of the Use of Intermittent Oral PrEP with TDF/FTC

- Daily Truvada 1 tablet/d
  - Regardless of sexual activity
  - (n = 180)

- Time driven Truvada: 1 tablet 2 days/week
  - + 1 post-exposure dose within 2 hours after sex
  - (n = 180)

- Event driven Truvada: 1 tablet prior to sex
  - + 1 post-exposure dose within 2 hours after sex
  - (n = 180)

Primary Objective: Is intermittent vs. daily dosing associated with equivalent coverage of sex events, lower number of pills used and decreased side effects

R. Grant, F. Van Griensven, et al.
IPERGAY
Study Design

Effectiveness of “on demand” PrEP
Randomized placebo-controlled trial

- High risk MSM
- Condomless anal sex with ≥ 2 partners

Full prevention services*
TDF/FTC before and after sex (n=950)

Full prevention services*
placebo before and after sex (n=950)

- Counseling, testing for STI, condoms, vaccination, PEP
- Primary endpoint: HIV infection, 64 events expected
- Incidence of HIV-infection: 3%PY, 50% efficacy, ~2000 pts
Partners Demonstration Project: Status

- Enrollment has been ongoing since November 2012 – 4th site (Kabwohe, Uganda) started enrolling in August 2013
  - 313 couples enrolled as of Sep 2013
- High interest and uptake of PrEP at enrollment: >90% of participants
- ART willingness is high among eligible participants at enrollment: >70% accept a referral or onsite prescription
- Retention rates: ~90% for HIV uninfected partners, ~88% for HIV infected partners
Adolescent PrEP

- ATN 082 enrolled 68 young MSM
- 70% agreed to take PrEP
- Of PrEP users, blood levels indicate about 50% adherence, comparable to self-report
- Lots of psychosocial issues reported
- ATN 110 and 113: open label TDF-FTC plus either group (Many Men, Many Voices) or individual intervention (Personal Cognitive Counseling)
- ATN 110: 18-12 yo; ATN 113: 15-17 yo
Volunteers

Why take part?

The study will give us more information about how PrEP could be used to prevent new HIV infections amongst gay men.

By taking part, you could reduce your own risk of catching HIV.

Our team will help and support you to be healthy.

You can take part in the study if you:

- Are HIV negative
- Are 18 or older
- Have had anal sex without a condom in the last three months.
- Are likely to do this again in the next three months.
- Can visit the clinic for blood tests every three months.
PROUD Pilot

MSM reporting UAI
Willing to take a pill now or in 12M

Randomize 500 HIV negative eligible MSM
(exclude if on treatment for hepB)

Risk reduction includes Truvada NOW
Risk reduction includes Truvada in 12M

Follow 3 monthly for up to 24 months (+1m after start truvada)
Online daily diary and monthly questionnaires
The SFDPH Demo Project

- NIAID-funded PrEP Demonstration Project in 600 MSM and transgender women
  - STD clinics in SF, Miami; CHC in DC
- Key objectives:
  - Assess PrEP uptake, adherence, resistance, and sexual behaviors in real-world setting
  - Determine staff and space needed for PrEP delivery
- Study procedures:
  - Provide TDF/FTC PrEP for 48 weeks
  - Study visits at 1 month, then quarterly
  - Safety monitoring (HIV, Cr) at each visit
  - Integrated risk reduction and adherence counseling
  - Adherence measures: Self-report, pill counts, drug levels (DBS, hair)
Education about pill use
People who use PrEP more consistently have higher levels of protection against HIV
Potential side-effects
  - Bloating, soft/more frequent stools, nausea
Missed Doses
Developing a routine
Discussing PrEP with others
Stopping and restarting PrEP
Some preliminary impressions (Al Liu)...

Social benefits
• Decreased anxiety
• Increased communication/disclosure
• Increased intimacy / trust
• Increased sense of community / self-efficacy
• Increased sexual pleasure

Social harms
• Stigma – HIV / risky behavior
• Negative health provider encounters

• Anxiety about accessing PrEP after Demo Project
Social Cognitive Model

- Disease prevention
- Pleasure reduction
- Self efficacy
- Safer Sex Adherence
- Depression, anxiety, mental health problems, substance use

Wulfert, Safren, et al., 1999; Journal of Applied Social Psychology
Project PrEPare (Fenway)

- Modeled after “Life-Steps,” (Safren et al)
- ART adherence intervention
- Modular intervention: 4 weekly visits with nurse and 2 booster sessions.
- Intervention content:
  - CBT-oriented adherence problem-solving
  - Brief motivational interviewing
  - Identification of barriers and solutions
  - Sexual risk-reduction strategies
- Optional modules:
  - Mental health and substance use issues

Adherence to PrEP was measured daily via Wisepill, and sexual risk taking was assessed by text messages (Lester, 2010)
All participants will receive “Opt-in” adherence challenges discussion.

Adherence assessed by:
- 4-day participant recall/pill count
- Real-time serum levels of TFV/FTC
- DBS for intra-erythocytic TFV levels

If serum TFV < 10 ng/mL, Next-Step Counseling Intervention (NSC)

Repeat TFV levels <10 ng/mL, “PrEP-STEP” program

Southern California: Path-PrEP: Staged Adherence (R Landovitz)
Diffusion of Innovations
(Everett Rogers, 1962)
Innovation, Communication Channels, Time, Social System
Uptake of ZDV for perinatal prevention
(in 18 states with HIV surveillance)

Source: Lindegren et al., JAMA 1999; 282:531-38
PrEP Attitudes and Uptake

- Manhunt survey pre/post iPrEX
  - 4,825 MSM: 46 states and 5 Canadian provinces
  - Less than 20% heard of PrEP
  - Less than 1% had used PrEP
  - Majority were interested, depending.....

- Massachusetts MD survey post-CAPRISA
  - Most had heard of CAPRISA 004
  - Some knew that PrEP studies were underway
  - Many concerns about risk compensation, resistance, cost

Krakower et al, PLoS ONE, 2012; White et al, AIDS Pt Care and STDs, 2012
How to increase appropriate uptake of PrEP?

Developing video testimonials from PrEP users

• Brief video testimonials developed regarding PrEP users’ decisions and motivations to take PrEP and experiences taking PrEP

• Also: www.myprepexperience.blogspot.com AIDS Foundation of Chicago
PrEP Use in the US, 2013
(Mera et al, ICAAC, 2013)

- Pharmacy record review (55% of US pharmacies)
- 1,774 pts on PrEP between 1/11 and 3/13
- 53% in 1st half of 2013: increase utilization?
- Median age: 37 y.o. 13.6% <25 y.o.
- Women 47.7% of users
- 49 states; 700 cities; largest N in the South
- Only 37% of PrEP providers also prescribed HAART
- Only 12% of prescribers were ID docs
- Did not capture those in trials (more MSM)
PrEP Among MSM in Spanish and Portuguese Speaking Countries (Mimiaga et al)

- Design: An anonymous, online survey of members of a social networking site for MSM
- Sample: An email in Spanish or Portuguese with a link to the survey was sent to nearly 643,000 active members living in one of the Spanish- and Portuguese-speaking countries/territories in Latin America/Caribbean, or in Spain or Portugal
  - 246,620 emails were opened and 56,584 clicked on the link
  - 37,264 consented (66%) and 36,447 (64%) initiated the survey
  - Excluded:
    1. individuals who responded that they did not currently live in the included countries/territories
    2. individuals who reported being HIV-infected
  - The final sample was 33,101.
Current country of residence by awareness of PrEP, prior use of PrEP and interest in participating in a PrEP trial

<table>
<thead>
<tr>
<th>Country</th>
<th>Aware of PrEP (11.2%)</th>
<th>Prior Use of PrEP (0.9%)</th>
<th>Interest in PrEP Trial (69.4%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>8.8</td>
<td>0.8</td>
<td>53.8</td>
</tr>
<tr>
<td>Portugal</td>
<td>10.2</td>
<td>0.6</td>
<td>52.3</td>
</tr>
<tr>
<td>Argentina</td>
<td>9.8</td>
<td>0.9</td>
<td>59.5</td>
</tr>
<tr>
<td>Brazil</td>
<td>19.3</td>
<td>0.8</td>
<td>62.0</td>
</tr>
<tr>
<td>Chile</td>
<td>8.3</td>
<td>0.8</td>
<td>72.4</td>
</tr>
<tr>
<td>Colombia</td>
<td>8.1</td>
<td>1.1</td>
<td>76.5</td>
</tr>
<tr>
<td>Mexico</td>
<td>10.5</td>
<td>1.0</td>
<td>79.9</td>
</tr>
<tr>
<td>Peru</td>
<td>16.5</td>
<td>0.3</td>
<td>79.2</td>
</tr>
<tr>
<td>Venezuela</td>
<td>9.1</td>
<td>0.9</td>
<td>70.8</td>
</tr>
</tbody>
</table>

p-value: <0.0001 0.302 <0.0001
To implement PrEP successfully, it will be essential to engage practicing clinicians.
HIV providers’ perceived facilitators and barriers to prescribing PrEP

- Qualitative study of Boston HIV providers over past year
- 6 Focus groups (4 hospital-based clinics, 2 community health centers)
- Semi-structured discussion guide
- Perceptions about prescribing PrEP
- Inductive approach to data analysis

(Krakower, NIMH-IAPAC, 2013)
Well you know I think the PrEP data regardless of the gender study that was performed, I think really show that PrEP works, when it’s used correctly.
-Male, Hospital-based

I would prescribe it. It obviously works.
-Male, Hospital-based
Practical issue number one is that the people who are going to be prescribing these drugs in theory, who are going to be in the best position, are going to be primary care providers with little or no HIV experience.

—Male, Hospital-based

I think that the idea of adding to what I just did this morning and adding a discussion with my patients about what is their likelihood of having sexual encounters with patients who are HIV-infected, and then on top of that trying to prescribe and get approved medication like Truvada or some other pre-exposure prophylaxis... I just can’t imagine it working in the hands of a primary care doctor.

—Female, Hospital-based
## Emerging Infections Network

- 1290 ID docs, 44.4% response (6/15/13 – 7/7/13)
- 74% supported concept of PrEP
- 9% have provided PrEP (N=51)
- 43% would provide PrEP if they had the right opportunity
- 14% have not provided PrEP because of:
  - Concerns about compliance and future resistance (77%)
  - Concerns about cost/payor issues (57%)
  - Concerns about toxicities (53%)
  - Insufficient evidence of “real world” efficacy (53%)
PrEP 2013

• Proof of Concept established
• Scientific and implementation science questions remain
• Next steps: Develop and test interventions to optimize PrEP delivery
  ➢ Prioritize PrEP to maximize population level impact
  ➢ Increase appropriate uptake
  ➢ Develop tools to support PrEP users (adherence, risk reduction)
  ➢ Develop tools to support PrEP providers (identifying PrEP candidates, providing adherence / risk reduction support, decision making on starting/stopping PrEP)
  ➢ Use technology to enhance scalability and sustainability

But PrEP drugs, dosing intervals and delivery systems may change
Combination Antiretroviral Prevention

Interventions to Increase Testing

Test
- HIV Negative
  - Risk Assessment
    - PrEP, Adherence Counseling
- HIV Positive
  - Linkage To Care
    - Positive Prevention
      - Address concomitant concerns, e.g. depression, substance use, relationship dynamics

Enroll in Care
- ART Initiation
  - Treat
    - Adherence to ART
      - Maintain Viral Suppression

Decrease in HIV Transmission
Thank You

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