Prevention

Dr. Mark Nelson
Chelsea & Westminster Hospital
Executive Committee of the British HIV Association (BHIVA)
“Support needing populations through medical assistance and the transfer of knowledge to local medical practitioners.”

Our vision for the
Medical Assistance & Medical Education (MAME) Programs
Adults and children estimated to be living with HIV | 2011

North America 1.4 million
[1.1 million – 2.0 million]

Western & Central Europe 900 000
[830 000 – 1.0 million]

Eastern Europe & Central Asia 1.4 million
[1.1 million – 1.8 million]

Caribbean 230 000
[200 000 – 250 000]

Middle East & North Africa 300 000
[250 000 – 360 000]

East Asia 830 000
[590 000 – 1.2 million]

Latin America 1.4 million
[1.1 million – 1.7 million]

Sub-Saharan Africa 23.5 million
[22.1 million – 24.8 million]

South & South-East Asia 4.0 million
[3.1 million – 5.2 million]

Oceania 83 000
[47 000 – 60 000]

Total: 34.0 million [31.4 million – 35.9 million]
Estimated adult and child deaths from AIDS | 2011

Total: 1.7 million [1.5 million – 1.9 million]
Estimated number of adults and children newly infected with HIV | 2011

North America: 51,000 (19,000 - 123,000)
Caribbean: 13,000 (9,000 - 16,000)
Latin America: 83,000 (51,000 - 140,000)
Western & Central Europe: 30,000 (21,000 - 40,000)
Eastern Europe & Central Asia: 140,000 (91,000 - 230,000)
Middle East & North Africa: 37,000 (29,000 - 46,000)
Sub-Saharan Africa: 1.8 million (1.6 million - 2.0 million)
East Asia: 89,000 (44,000 - 120,000)
South & South-East Asia: 280,000 (170,000 - 460,000)
Oceania: 2,900 (2,200 - 3,800)

Total: 2.5 million (2.2 million - 2.8 million)
THE SEVEN RULES OF HEALTH

You and your family will stand a better chance of avoiding colds, influenza and other common ailments—as well as more serious diseases such as tuberculosis—if you follow these simple rules. The rules offer the best guidance on how to improve your health and increase your vitality.

- Rule 1: Fresh Air
- Rule 2: Exercise
- Rule 3: Sleep
- Rule 4: A Guide to Your Child's Sleep
- Rule 5: About Clothing
- Rule 6: Keeping Clean
- Rule 7: Concerning Food
- Rule 8: Handling Food
- Rule 9: Milk for Children
- Rule 10: Leisure—enrich your life with spare time interests

PREVENTION IS BETTER THAN CURE — LET THE RULES BECOME HABITS
Safety First!

www.PREVAIDS.org
Why are Condoms Not Enough?
Why condoms are not enough
HSV-2 Suppressive therapy
Management of genital infections (STIs)
Microbicides
Cervical Barriers
Male circumcision
Condoms
Behavioral Counseling and Testing
Vaccines
HIV PREVENTION
Chemoprophylaxis
MTCT
PEP
PrEP
ART
Strategies Based on Action by Uninfected Individual to Prevent Infection

1. Education/behavior change
2. Condoms
3. Male circumcision
4. Microbicides
5. PrEP
6. PEP
7. Vaccines
## Biomedical Research Approaches to Prevention of HIV/AIDS

### (1) No ARV

<table>
<thead>
<tr>
<th>Category</th>
<th>Results</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccine</td>
<td>Generally poor</td>
<td>One recent design gave borderline efficacy; highly efficacious vaccine unlikely for at least a decade.</td>
</tr>
<tr>
<td>Treatment of venereal Herpes</td>
<td>No benefit</td>
<td>Control of Herpes replication in coinfected individuals gave no benefit in reducing transmission of HIV.</td>
</tr>
<tr>
<td>Male circumcision</td>
<td>50–60% protection</td>
<td>Randomized controlled trials showed clear efficacy. Inexpensive.</td>
</tr>
<tr>
<td>Microbicides-broad spectrum disinfectants</td>
<td>No benefit</td>
<td>Some even showed increased risk for infection, presumably through damage to mucosal surfaces.</td>
</tr>
</tbody>
</table>
Strategies Based on Action by Uninfected Individual to Prevent Infection

1. Education/behavior change
2. Condoms
3. Male circumcision
4. Microbicides
5. PrEP
6. PEP
7. Vaccines
Strategies Based on Action by Infected Individual to Prevent Infection

1. Treatment as Prevention
HPTN 052: Immediate vs Delayed ART for HIV Prevention in Serodiscordant Couples

HIV-infected, sexually active serodiscordant couples; CD4+ cell count of the infected partner: 350-550 cells/mm³ (N = 1763 couples)

Immediate HAART
Initiate HAART at CD4+ cell count 350-550 cells/mm³ (n = 886 couples)

Delayed HAART
Initiate HAART at CD4+ cell count ≤ 250 cells/mm³* (n = 877 couples)

- Primary efficacy endpoint: virologically linked HIV transmission
- Primary clinical endpoints: WHO stage 4 events, pulmonary TB, severe bacterial infection and/or death
- Couples received intensive counseling on risk reduction and use of condoms

HPTN052: HIV-1 Transmissions
PARTNER Study

Condomless Sex Acts and Rate of HIV Transmission by Sexual Behaviour

Suppressive ART resulted in zero linked transmissions to HIV-negative partners with condomless sex, despite a substantial number of sex acts. Unlinked transmissions did occur. Additional follow-up in MSM is forthcoming in the PARTNER2 study.

Rodger A, et al. CROI 2014; Boston. #153LB
WE WANT TO LIVE OUR LIVES TO THE FULLEST. WE’RE GREEDY THAT WAY.

WWW.ITSDIFFERENTNOW.ORG
Treatment as Prevention: who wants it?

- Poster 1038 Rodger, A et al ASTRA UK
- Attitudes to early ART among 286 ART naïve individuals
Challenges in Linkage to Care and Successful Treatment

Estimated that only 19% of HIV-infected individuals in the US have undetectable HIV viral load.
Extending ART to all MSM with CD4 counts <500 cells/mm³ would reduce infectivity from an estimated 35% to 29% and, in combination with halving the undiagnosed, to 21%.
Source of new HIV Infections

• Phillips, UK, 2010 transmissions in MSM

• Source of new infections:
  – 49% undiagnosed in PHI
  – 34% undiagnosed in established infection
  – 10% diagnosed, ART naïve
  – 7% diagnosed, ART experienced

• Condom use more effective than ART in reducing incidence; combination of condom use AND ART most effective
Viral RNA Dynamics in Primary HIV-1 Subtype C Infection
(n=75, pre-HAART data)
Strategies Based on Action by Uninfected Individual to Prevent Infection

1. Education/behavior change
2. Condoms
3. Male circumcision
4. Microbicides
5. PrEP
6. PEP
7. Vaccines
CAPRISA 004: 1% TFV Vaginal Gel for Prevention of HIV in Women

- Randomized, placebo-controlled, double-blind, proof-of-concept study conducted at 2 sites in South Africa

HIV-uninfected women, at high risk of HIV, ≥ 2 vaginal sex acts within 30 days of screening
(N = 889)

1% Tenofovir Gel*
(n = 445)

Placebo Gel*
(n = 444)

Study continued until 92 HIV infections observed

HIV Incidence in CAPRISA 004

- No K65R resistance mutations among seroconverters

iPrEx: Phase 3 Efficacy Study of Truvada

Can a pill a day prevent HIV?
Help us find out.

415-554.8888
preparesf.org

prepare
san francisco

photo: steartLKphotography.com
iPrEx: Enrollment and Follow-up

4905 screened

2499 enrolled

1251 (50%) FTC/TDF
2 HIV infections
48 HIV infections
4 HIV infections
54 HIV infections

Before PrEP

During PrEP

After PrEP

Total infections

1248 (50%) placebo
8 HIV infections
83 HIV infections
2 HIV infections
93 HIV infections

iPrEx: Efficacy

- Efficacy through study end (mITT): 42% (95% CI: 18% to 60%)

Partners PrEP: TDF vs TDF/FTC vs Placebo in HIV-Serodiscordant Couples

Oral Tenofovir QD (n = 1584)
Oral Tenofovir/Emtricitabine QD (n = 1579)
Oral Placebo* (n = 1584)

*Placebo arm terminated early on July 10, 2011, by data and safety monitoring board.

Follow-up: 36 mos

HIV-negative partners in HIV-serodiscordant heterosexual couples (N = 4747)

Partners PrEP: Both PrEP Strategies Significantly Reduce HIV Acquisition

- Both PrEP strategies associated with significant reduction in HIV acquisition vs placebo in both men and women
  - TDF efficacy: 71% in women, 63% in men
  - TDF/FTC efficacy: 66% in women, 84% in men

<table>
<thead>
<tr>
<th>Primary Efficacy Outcome, mITT Analysis</th>
<th>TDF (n = 1584)</th>
<th>TDF/FTC (n = 1579)</th>
<th>Placebo (n = 1584)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV acquisitions, n</td>
<td>17</td>
<td>13</td>
<td>52</td>
</tr>
<tr>
<td>HIV incidence/100 PY</td>
<td>0.65</td>
<td>0.50</td>
<td>1.99</td>
</tr>
<tr>
<td>Efficacy vs placebo, % (95% CI)</td>
<td>67 (44-81)</td>
<td>75 (55-87)</td>
<td>--</td>
</tr>
<tr>
<td>▪ P value</td>
<td>&lt; .0001</td>
<td>&lt; .0001</td>
<td>--</td>
</tr>
</tbody>
</table>

TDF2: PrEP With TDF/FTC in HIV-Negative Heterosexuals in Botswana

HIV-uninfected adults, heterosexually active, aged 18-39 yrs
(N = 1219)*

≥ 12-mo follow-up

Oral Tenofovir/Emtricitabine (n = 601)

Oral Placebo (n = 599)

*n = 19 patients excluded for failure to start study medication or HIV infection.

TDF2: PrEP With TDF/FTC Significantly Reduces HIV Acquisition

- 9 vs 24 patients seroconverted in TDF/FTC vs placebo arms, respectively
- Overall protective efficacy of TDF/FTC: 62.2% (95% CI: 21.5-83.4; P = 0.03)
- Reduction in HIV acquisition with TDF/FTC observed in both men and women but study underpowered to demonstrate sex-based differences in outcomes
this is what concerns me

Write Autors by John Day
Does it Work?
VOICE Design

5,029 HIV- women

- Vaginal sex in prior 3 months
- Not pregnant or breastfeeding
- Willing to use effective contraception

Randomized to once daily use

- Oral TDF
- Oral FTC/TDF
- Oral Placebo
- Vaginal TFV
- Vaginal placebo

Monthly visits

Comprehensive HIV prevention counseling, condoms, contraception, pregnancy test, STI evaluation & treatment, provision of study product

1° endpoints: HIV infection, safety
Primary Efficacy Results (mITT)

<table>
<thead>
<tr>
<th></th>
<th>TDF*</th>
<th>Oral Placebo*</th>
<th>FTC/TDF</th>
<th>Oral Placebo</th>
<th>TFV Gel</th>
<th>Gel Placebo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person-years</td>
<td>823</td>
<td>837</td>
<td>1285</td>
<td>1306</td>
<td>1026</td>
<td>1030</td>
</tr>
<tr>
<td>No. of HIV infections</td>
<td>52</td>
<td>35</td>
<td>61</td>
<td>60</td>
<td>61</td>
<td>70</td>
</tr>
<tr>
<td>HIV incidence per 100 p-y</td>
<td><strong>6.3</strong> (4.7, 8.3)</td>
<td><strong>4.2</strong> (2.9, 5.8)</td>
<td><strong>4.7</strong> (3.6, 6.1)</td>
<td><strong>4.6</strong> (3.5, 5.9)</td>
<td><strong>5.9</strong> (4.5, 7.6)</td>
<td><strong>6.8</strong> (5.3, 8.6)</td>
</tr>
</tbody>
</table>

*Censored on date when sites were asked to take women off of TDF and TDF placebo pills*
# Primary Efficacy Results (mITT)

<table>
<thead>
<tr>
<th></th>
<th>TDF*</th>
<th>FTC/TDF</th>
<th>TFV Gel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HIV protection efficacy vs. placebo</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HR</td>
<td>1.49</td>
<td>1.04</td>
<td>0.85</td>
</tr>
<tr>
<td>95% CI</td>
<td>(0.97, 2.3)</td>
<td>(0.7, 1.5)</td>
<td>(0.6, 1.2)</td>
</tr>
<tr>
<td>P-value</td>
<td>0.07</td>
<td>&gt;0.2</td>
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</tr>
</tbody>
</table>

*Censored on date when sites were informed to take women off of TDF and TDF placebo pills*
36 week delay
And what was happening before.......
Sexual Partners in iPrEx
And what was happening before......
IF HEP C WAS ATTACKING YOUR FACE INSTEAD OF YOUR LIVER, YOU’D DO SOMETHING ABOUT IT.

READY TO FIGHT BACK?

YOU’LL NEVER BE STRONGER THAN YOU ARE TODAY TO STOP THE DAMAGE HEP C IS DOING TO YOUR LIVER.

Talk to your doctor now about prescription treatment. Patients in clinical studies overall had a better than 50% chance of reducing the Hep C virus to undetectable levels. Response to treatment may vary based on individual factors.

So log on or call, then talk to your doctor to find out if treatment is right for you. And help put Hep C behind you.

HepCSource.com  866-HepCSource  866-437-2768
## Acute HCV among HIV+ MSM

<table>
<thead>
<tr>
<th>Country</th>
<th>Cases</th>
<th>Prevalence Chronic HCV/HIV</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>55</td>
<td>19%: 11,200</td>
<td>1,2</td>
</tr>
<tr>
<td>Canada</td>
<td>~30</td>
<td>19%: 11,200</td>
<td>23</td>
</tr>
<tr>
<td>Lebanon</td>
<td>1</td>
<td>49%: 1,500</td>
<td>22</td>
</tr>
<tr>
<td>Taiwan</td>
<td>28</td>
<td>55%: 8,800</td>
<td>28</td>
</tr>
<tr>
<td>Australia</td>
<td>47</td>
<td>&lt; 1%: 1,000</td>
<td>11</td>
</tr>
<tr>
<td>Europe</td>
<td>1,068</td>
<td>25%: 185,500</td>
<td>12-14</td>
</tr>
<tr>
<td>USA</td>
<td>55</td>
<td>15 – 30%: 180,000 – 360,000</td>
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References:
Number of diagnoses of gonorrhoea by sex, GUM clinics, England and Wales*: 1925 – 2010

* Scotland & Northern Ireland data are excluded as they are incomplete from 1925 - 2003

Routine GUM clinic returns
Number of diagnoses of syphilis (primary, secondary and early latent) by sex, GUM clinics, England, Wales and Scotland*: 1931-2010

*Equivalent Scottish data are not available prior to 1945. Northern Ireland data from 1931-2003 are incomplete, therefore, have been excluded.

Routine GUM clinic returns
Drug Resistance
iPrEX: Resistance

• No resistance in those who acquired HIV after enrollment
• 3 cases of resistance in 10 seroconverters at entry

8 on placebo arm

2 on FTC/TDF arm

1 with transmitted multi-resistant HIV

M184V & M184I (indeterminate)
iPrEX: Resistance

• No resistance in those who acquired HIV after enrollment
• 3 cases of resistance in 10 seroconverters at entry

↓ ↓
Reduction in BMD

Fall by 5% BMD from Baseline

- Truvada: 14%
- Placebo: 6%

%
• Prior to starting measure renal function and serum phosphorus
• Assess risk factors for renal and bone toxicity
• Consider supplementing vitamin D and calcium
• Monitor renal function frequently
• Consider DEXA scans
Who will prescribe?

Before initiating PrEP

Determine eligibility
- Document negative HIV antibody test(s) immediately before starting PrEP medication.
- Test for acute HIV infection if patient has symptoms consistent with acute HIV infection.
- Confirm that patient is at substantial, ongoing, high risk for acquiring HIV infection.
- Confirm that calculated creatinine clearance is ≥ 60 mL per minute (via Cockcroft-Gault formula).

Other recommended actions
- Screen for hepatitis B infection; vaccinate against hepatitis B if susceptible, or treat if active infection exists, regardless of decision about prescribing PrEP.
- Screen and treat as needed for STIs.

Beginning PrEP medication regimen
- Prescribe 1 tablet of Truvada* (TDF [300 mg] plus FTC [200 mg]) daily.
- In general, prescribe no more than a 90-day supply; renewable only after HIV testing confirms that patient remains HIV-uninfected.
- If active hepatitis B infection is diagnosed, consider using TDF/FTC for both treatment of active hepatitis B infection and HIV prevention.
- Provide risk-reduction and PrEP medication adherence counseling and condoms.

Follow-up while PrEP medication is being taken
- Every 2–3 months, perform an HIV antibody test; document negative result.
- Evaluate and support PrEP medication adherence at each follow-up visit, more often if inconsistent adherence is identified.
- Every 2–3 months, assess risk behaviors and provide risk-reduction counseling and condoms. Assess STI symptoms and, if present, test and treat for STI as needed.
- Every 6 months, test for STI even if patient is asymptomatic, and treat as needed.
- 3 months after initiation, then yearly while on PrEP medication, check blood urea nitrogen and serum creatinine.

On discontinuing PrEP (at patient request, for safety concerns, or if HIV infection is acquired)
- Perform HIV test(s) to confirm whether HIV infection has occurred.
- If HIV positive, order and document results of resistance testing and establish linkage to HIV care.
- If HIV negative, establish linkage to risk-reduction support services as indicated.
- If active hepatitis B is diagnosed at initiation of PrEP, consider appropriate medication for continued treatment of hepatitis B.
Who will prescribe?
Who will prescribe?
Who will prescribe?
Sharing what’s private is caring.
AIDS pill as party drug?

Some HIV-negative men are using tenofovir instead of condoms, hoping it provides protection. Physicians say the practice could lead to more infections.

By Daniel Costello
Times Staff Writer

"Taking a T." That's what HIV-negative gay men call the growing practice of downing the AIDS drug tenofovir and, with fingers crossed, hoping it protects them from the virus during unprotected sex.

It's being sold in packets along with Viagra and Ecstasy in gay dance clubs — and even prescribed by physicians, say doctors and AIDS prevention experts. The trend has alarmed
I Can't Put Drug Dealer On My Resume

better opportunities are in REACH
leadyourlife.ca

GANG PREVENTION | CAREER GUIDANCE | ADDICTION COUNSELLING | HOUSING SUPPORT | RECREATION
• 75 billion dollars increase in health care related costs

![Cost per QALY](image_url)

- **Coverage at risk MSM**
  - 100%
  - 50%
  - 20%

- **Cost per QALY**
  - 0
  - 50,000
  - 100,000
  - 150,000
  - 200,000
  - 250,000
To reduce below $100,000 per QALY

- Daily cost less than $15
- Efficacy greater than 75%
“Do a double-blind test. Give the new drug to rich patients and a placebo to the poor. No sense getting their hopes up. They couldn’t afford it even if it works.”
Can a pill prevent HIV?

Antiretroviral medication, Uganda
## The Reality: PrEP Efficacy Trial Results, March 2012

<table>
<thead>
<tr>
<th>Study</th>
<th>Population</th>
<th>N</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CAPRISA 004</strong></td>
<td>Women</td>
<td>889</td>
<td>39% efficacy vaginal TFV gel</td>
</tr>
<tr>
<td>South Africa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>iPrEx</strong></td>
<td>MSM</td>
<td>2499</td>
<td>44% efficacy FTC/TDF</td>
</tr>
<tr>
<td>Brazil, Ecuador, Peru, S Africa, Thailand, US</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TDF2 Study</strong></td>
<td>Young men women</td>
<td>1200</td>
<td>62% efficacy FTC/TDF</td>
</tr>
<tr>
<td>Botswana</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Partners PrEP Study</strong></td>
<td>Heterosexual couples</td>
<td>4758</td>
<td>67% efficacy TDF 75% efficacy FTC/TDF</td>
</tr>
<tr>
<td>Kenya, Uganda</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FEM-PrEP</strong></td>
<td>Women</td>
<td>1950</td>
<td>FTC/TDF = futility</td>
</tr>
<tr>
<td>Kenya, S Africa, Tanzania</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>VOICE</strong></td>
<td>Women</td>
<td>5029</td>
<td>TDF = futility Vaginal TFV gel = futility FTC/TDF =futility</td>
</tr>
<tr>
<td>S Africa, Uganda, Zimbabwe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bangkok Tenofovir Study</strong></td>
<td>IDUs</td>
<td>2400</td>
<td>TDF ongoing</td>
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<tr>
<td>Thailand</td>
<td></td>
<td></td>
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<tr>
<td><strong>FACTS001</strong></td>
<td>Women</td>
<td>2200</td>
<td>TFV gel enrolling</td>
</tr>
<tr>
<td>South Africa</td>
<td></td>
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</tbody>
</table>
The Five Dimensions of Adherence

1. Social & Economic
2. Health Care System
3. Condition-Related
4. Therapy-Related
5. Patient-Related
CAPRISA: Impact of Adherence on Effectiveness of 1% TFV Vaginal Gel

<table>
<thead>
<tr>
<th>Adherence Group</th>
<th>HIV Infections, n</th>
<th>HIV Incidence</th>
<th>Effect, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>High (&gt; 80% adherence) (n = 336)</td>
<td>36</td>
<td>4.2</td>
<td>9.3</td>
</tr>
<tr>
<td>Intermediate (50% to 80% adherence) (n = 181)</td>
<td>20</td>
<td>6.3</td>
<td>10.0</td>
</tr>
<tr>
<td>Low (&lt; 50% adherence) (n = 367)</td>
<td>41</td>
<td>6.2</td>
<td>8.6</td>
</tr>
</tbody>
</table>

Adherence and HIV protection in oral PrEP trials

<table>
<thead>
<tr>
<th></th>
<th>% of blood samples with tenofovir detected</th>
<th>HIV protection efficacy in randomized comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Partners PrEP</strong></td>
<td>81%</td>
<td>75%</td>
</tr>
<tr>
<td>FTC/TDF arm</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TDF2</strong></td>
<td>79%</td>
<td>62%</td>
</tr>
<tr>
<td><strong>iPrEx</strong></td>
<td>51%</td>
<td>44%</td>
</tr>
<tr>
<td><strong>FEM-PrEP</strong></td>
<td>26%</td>
<td>6%</td>
</tr>
</tbody>
</table>

Clear dose-response relationship between evidence of PrEP use & efficacy

Grant et al N Engl J Med 2010
Plasma Tenofovir Detection in Random Cohort Sample

Level of TFV detection ≥ 0.3 ng / ml
### Tenofovir Detection During Study Participation*

<table>
<thead>
<tr>
<th></th>
<th>TDF</th>
<th>FTC/TDF</th>
<th>TFV Gel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of <em>samples</em> with TFV detected averaged across women (mean)</td>
<td>30%</td>
<td>29%</td>
<td>25%</td>
</tr>
<tr>
<td>Percent of <em>women</em> with TFV not detected in <em>any</em> samples</td>
<td>58%</td>
<td>50%</td>
<td>55%</td>
</tr>
</tbody>
</table>

* At routine quarterly visits among participants in the random sample of active arms
iPrEX: Adherence is Critical

- High (> 90%) adherence
  **73% effective**

- Intermediate (50%-90%) adherence
  **50% effective**

- Low (< 50%) adherence
  **32% effective**

Tenofovir levels and HIV protection

- When PrEP was taken (detectable blood levels), high protective efficacy

<table>
<thead>
<tr>
<th></th>
<th>% of non-seroconverters with tenofovir detected in blood</th>
<th>HIV relative risk reduction: detection vs. no detection of tenofovir</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>iPrEx</strong></td>
<td>51%</td>
<td>92%</td>
</tr>
<tr>
<td><strong>p-value</strong></td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td><strong>Partners PrEP</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FTC/TDF arm</strong></td>
<td>81%</td>
<td>90%</td>
</tr>
<tr>
<td><strong>p-value</strong></td>
<td>0.002</td>
<td></td>
</tr>
</tbody>
</table>

Grant et al N Engl J Med 2010

Slide courtesy of J. Baeten
How much adherence is necessary?

iPrEx: imperfect adherence might still provide substantial HIV protection

<table>
<thead>
<tr>
<th></th>
<th>Estimated HIV risk reduction (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 doses/week</td>
<td>76% (56-96%)</td>
</tr>
<tr>
<td>4 doses/week</td>
<td>96% (90-99%)</td>
</tr>
<tr>
<td>7 doses/week</td>
<td>99% (96-99%)</td>
</tr>
</tbody>
</table>

Anderson et al. CROI 2012
Risk behavior and pill taking in iPrEx

- Men who practiced unprotected receptive anal intercourse (URAI) had higher PrEP use than other men.
- Men not having sex were least likely to take PrEP.

<table>
<thead>
<tr>
<th>Sexual Behavior</th>
<th>No Sex</th>
<th>Sex No URAI</th>
<th>URAI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time points with tenofovir detected (%)</td>
<td>38%</td>
<td>42%</td>
<td>54%</td>
</tr>
</tbody>
</table>

Grant et al. IAS 2011, FDA 2012
“Drugs don’t work if people don’t take them”

Former US Surgeon
General C. Everett Koop
• "Drugs do work if people do take them"

Mark R. Nelson
UK Surgeon General
The Good News: Unprecedented momentum in the HIV prevention field

MICROBICIDES
- Microbicide gel (CAPRISA 004) reduces HIV infections in women

PRE-EXPOSURE PROPHYLAXIS
- Oral PrEP reduces HIV infections among MSM and transgendered women

VACCINES
- AIDS vaccine shows first efficacy in clinical trials
- Replicating viral vector effective in controlling SIV in animal studies
- Multiple new antibodies and targets on HIV discovered
New prevention technologies will reduce HIV incidence…

**but only a vaccine will end the epidemic**

Source: Imperial College and BMGF
I’m negative. What about you?

Talk to your partner. Use condoms. Get tested...together.

For free, confidential HIV testing and counseling contact the Baltimore City Health Department at...
Thank you

For further information please contact:

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