There's a Wonder Drug That Prevents HIV Infection. Why Haven't You Heard of It?

Follow the Science to the End of the AIDS Epidemic

A Resisted Pill to Prevent H.I.V.

Is This the New Condom?

At AIDS conference, debate rises over prescribing expensive HIV preventative to high-risk patients

There Is a Daily Pill That Prevents HIV. Gay Men Should Take It.

WHY IS NO ONE ON THE FIRST TREATMENT TO PREVENT H.I.V.?
Prescribing Pre-Exposure Prophylaxis for HIV Prevention: Barriers and Biases Among Healthcare Providers

Sarah K. Calabrese, PhD
Talk Outline

1. PrEP Background
   - What it is
   - How and how \textit{well} it works
   - Why we need it
   - Community reactions

2. Barriers to PrEP Prescription
   - Current CDC Rx guidance
   - Provider perspectives
3. Patient Race & Provider Bias

- Why discrimination is likely to occur in PrEP Rx
- Why this is a particular problem for HIV prevention
- Preliminary evidence (pilot study)
PrEP Background
What Is PrEP?

- **PrEP** = HIV pre-exposure prophylaxis
- Same antiretroviral medication used to treat HIV is being used to prevent HIV
- Daily pill forms (TDF and TDF-FTC) have shown particular promise in clinical trials\(^1\)-\(^4\)
- U.S. FDA approved TDF-FTC (Truvada®) for Rx as PrEP in July of 2012

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\(^1\) Grant et al., 2010  
\(^2\) Thigpen et al., 2012  
\(^3\) Baeten et al., 2012  
\(^4\) Choopanya et al., 2013
How Does PrEP Work?

- PrEP interferes with replication of the HIV virus.
How Well Does PrEP Work?

- Evidence from double-blind, placebo-controlled clinical trials
- Participant received PrEP or placebo in daily pill form and were monitored monthly
How Well Does PrEP Work?

- iPrEx Trial¹ (2007-2010)
  - 2499 MSM and Trans WSM
  - TDF/FTC
  - 1.2 years of patient follow-up (median)
  - ≥89% adherence
  - 44% efficacy (overall)
  - 92% estimated risk reduction based on blood detection

¹ Grant et al., 2010
How Well Does PrEP Work?

- **TDF2 Trial**\(^2\) (2007-2010)
  - 1219 heterosexual men and women
  - TDF/FTC
  - 62% efficacy (overall)

2 Thigpen et al., 2012
How Well Does PrEP Work?

- **Partners PrEP Trial³ (2008-2011)**
  - 4,747 serodiscordant heterosexual couples
  - TDF/FTC and TDF alone
  - **TDF/FTC**
    - 75% efficacy (overall)
    - 90% estimated risk reduction based on blood detection
  - **TDF alone**
    - 67% efficacy (overall)
    - 86% estimated risk reduction based on blood detection

3 Baeten et al., 2012
How Well Does PrEP Work?

- **Bangkok Tenofovir Trial** (2005-2012)
  - 2413 men and women who inject drugs
  - TDF only
  - 49% efficacy (overall)
  - 70% estimated risk reduction based on blood detection

4 Choopanya et al., 2013
How Well Does PrEP Work?

% Efficacy

0 0.2 0.4 0.6 0.8 1

- MSM and Trans WSM\(^1\) 44%
- Heterosexual M and W\(^2\) 62%
- Heterosexual M and W with HIV+ Partners\(^3\) 67%
- M and W Who Inject Drugs\(^4\) 49%

Note: Two trials with heterosexual women that had non-significant findings not pictured

1 Grant et al., 2010  2 Thigpen et al., 2012  3 Baeten et al., 2012  4 Choopanya et al., 2013
Why Do We Need PrEP?

- No silver bullet for prevention
  - Abstinence
  - Condoms
  - Testing/monogamy
  - Treatment as prevention
  - Circumcision
  - Clean injection drug equipment
  - Post-exposure prophylaxis (PEP)
  - **PrEP**

Combination prevention advocated

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5 CDC, 2014
What Are The Benefits Of PrEP?

- **Empowers** receptive partner
- **Covert** method of HIV prevention
- Could allow for **conception with protection**
- **Does not interrupt** “heat of the moment”
- **Not a physical barrier** to pleasure, functioning, perceived intimacy, etc.
- **May protect against sexual and non-sexual HIV transmission**
Community Support for PrEP

We need new tools to fight this epidemic… PrEP is certainly not for everyone, but it may have a role in bringing HIV-infection rates down.

Chris Collins, Vice President of AMFAR

Before PrEP became available, I was taking a calculated risk with my partner… PrEP didn’t make me stop using condoms. Instead, PrEP provided me with protection that I would use consistently, rather than protection I was already rejecting.

Nick Literski, PrEP User and Advocate
For many of us living with HIV, that’s what the FDA’s approval of Truvada for use as PrEP means—hope. Hope that one day we can let our guard down, be less than perfectly vigilant and love without fear.
Community Resistance to PrEP

The guys these sensible health care folks are trying to reach [by offering them PrEP and PEP] are not sensible. They are self-identified idiots who can only be saved by a vaccine.

The applause for this approach shows just how disposable we consider the lives of gay men.

Dan Savage, sex advice columnist and LGBT rights advocate

Michael Weinstein, President of AIDS Healthcare Foundation
Barriers to PrEP Rx
If you asked me… what I thought the biggest obstacles facing PrEP would be, it would not have immediately occurred to me to add doctors to the list... I would have expected doctors to be an easy sell…the reality is precisely the opposite of what I expected.
“The Unexpected Struggle to Make Doctors Allies in PrEP”

In a 2013 survey of 573 infectious disease doctors in the U.S. and Canada:
- 74% supported PrEP
- 9% had actually provided PrEP
- 34% believed PrEP was irrelevant to their practice

6 Karris et al., 2013
Before initiating:
- Confirm HIV-
- Confirm at “ongoing, very high risk for acquiring HIV infection”

Rx ≤90-day supply daily TDF-FTC

At follow-up visits every 2-3 months:
- Test for HIV, other STIs, pregnancy
- Evaluate & support adherence
- Assess risk & provide risk-reduction counseling + condoms
Provider Concerns About PrEP Rx$^{10-18}$

- Risk compensation
- Other STIs
- Adherence
  - Viral resistance
- Cost/reimbursement
- Drug toxicity/side effects
- Safety/efficacy/lack of real-world evidence
- Personal knowledge
- Resources
  - Time/support
  - PrEP vs. HAART
- Need
  - Availability of alternatives
  - Risk level

10 Arnold et al., 2012  11 Krakower & Mayer, 2012  12 Maile et al., 2013
13 Maznavi et al., 2011  14 Mimiaga et al., 2013  15 Puro et al., 2013
16 Senn et al., 2013  17 Tripathi et al., 2012  18 White et al., 2012
Patient Race & Provider Bias
The Impact of Patient Race on Clinical Decisions Related to Prescribing HIV Pre-Exposure Prophylaxis (PrEP): Assumptions About Sexual Risk Compensation and Implications for Access

Sarah K. Calabrese · Valerie A. Earnshaw · Kristen Underhill · Nathan B. Hansen · John F. Dowdio

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Abstract Antiretroviral pre-exposure prophylaxis (PrEP) has received increasing recognition as a viable prevention-based intervention for people at risk for HIV acquisition. However, little is known about racial biases affecting healthcare providers’ willingness to prescribe PrEP. This investigation sought to explore medical students’ stereotypes about sexual risk compensation among Black versus White men who have sex with men seeking PrEP, and the impact of such stereotypes on willingness to prescribe PrEP. A novel survey presented participants (n = 102) with a vignette of a PrEP-seeking, HIV-negative man with an HIV-positive male partner. Participant race was systematically manipulated. Participants reported predictions about patient sexual risk compensation, willingness to prescribe PrEP, and other clinical judgments. Bootstrapping analyses revealed that the Black patient was rated as more likely than the White patient to engage in increased unprotected sex if prescribed PrEP, which, in turn, was associated with reduced willingness to prescribe PrEP to the patient.

Resumen La profilaxis pre-exposición con antirretrovirales (PrEP) ha recibido cada vez más reconocimiento como intervención viable a base de medicación para personas en riesgo de contraer el VIH. Sin embargo, se conoce poco acerca de los prejuicios raciales que afectan a la disposición de los proveedores de salud a prescribir PrEP. Esta investigación buscó explorar los estereotipos de los estudiantes de medicina sobre la compensación del riesgo sexual entre hombres negros versus hombres blancos que tienen sexo con hombres que solicitan la PrEP, y el impacto de esos estereotipos sobre la voluntad de prescribir PrEP. Una encuesta presenta a los participantes (n = 102) una escena clínica de una petición de PrEP; un hombre sin VIH con pareja masculina zona opositiva. La raza del paciente fue manipulada sistemáticamente. Los participantes informaron de las predicciones de la compensación del riesgo del paciente, de la disposición de prescribir PrEP, y de decisiones clínicas. Analizamos de nuestro estudio revelan que el paciente negro fué clasificado como más propenso que el paciente blanco a participar en el aumento de relaciones sexuales sin protección si la PrEP se prescribía, lo cual, a su vez, fué asociado con una reducción de la disposición para prescribir PrEP al paciente.

Keywords Race/ethnicity · Men who have sex with men (MSM) · Pre-exposure prophylaxis (PrEP) · Risk compensation · Healthcare provider

Introduction Antiretroviral pre-exposure prophylaxis (PrEP) has gained momentum as a promising biomedical prevention strategy...
The Impact of Patient Race on Clinical Decisions Related to Prescribing HIV Pre-Exposure Prophylaxis (PrEP): Assumptions About Sexual Risk Compensation and Implications for Access

Sarah K. Calabrese, Valerie A. Earnshaw, Kristen Underhill, Nathan B. Hansen, & John F. Dovidio
Potential Benefit of PrEP for Minority Communities

- Social disparities in HIV prevalence persist\textsuperscript{19}
  - Race (Black and Latino)
  - Gender/Sexual Orientation (MSM)
- Establishing effective HIV prevention strategies for communities of high prevalence is a national health priority\textsuperscript{20,21}

\textsuperscript{19} CDC, 2013
\textsuperscript{20} Office of National AIDS Policy, 2010
\textsuperscript{21} Division of AIDS Research, NIMH, 2012
Potential for Racial Discrimination in PrEP Rx

1. Racial disparities occur across healthcare\(^{22}\)
   - Evident in HIV treatment practices\(^{23,24}\)
   - Greater reliance on provider discretion increases risk of discrimination\(^{25,26}\)
   - Specific clinical guidelines and precedents lacking
   - Provider opinions about hypothetical cases and standards are conflicting\(^{27,28}\)

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22 Institute of Medicine, 2003  
23 Shapiro et al., 1999  
24 Stone, 2005  
25 Geiger, 2003  
26 Dovidio et al., 2008  
27 Arnold et al., 2012  
28 Puro et al, 2013
Sexual Risk Compensation & Racial Stereotypes

- Health care providers are concerned that PrEP Rx will lead to increased risk-taking.
- To date, there is no evidence for racial disparities in PrEP-related sexual risk compensation.
- (Unfounded) sexual stereotypes of Black MSM\textsuperscript{29,30} may bias providers’ clinical judgment.

\textsuperscript{29} Ford et al., 2007 \hspace{1cm} \textsuperscript{30} Saleh & Operario, 2009
Overall Research Goals

1. Identify disparities in clinical judgments about PrEP based on patient race and other characteristics
   - Predictions about sexual risk compensation
   - Willingness to prescribe PrEP

2. Understand psychological mechanisms underlying disparities in judgment

3. Address identified disparities through provider-targeted educational interventions
Specific Aims of Pilot Study

1. Examine predictions about sexual risk compensation for Black vs. White MSM patients seeking PrEP

2. Test the indirect effect of patient race on PrEP Rx willingness via sexual risk compensation
Study Design

- Anonymous online clinical vignette-based survey
- Patient race systematically manipulated
  - Participants randomized to read a vignette about a Black patient or a White patient
Participants

- Invited to participate through mass email to all 435 students attending a single medical school
- Final $n = 102$ medical students
Survey Procedures

1. Background information about FTC-TDF (Truvada) for PrEP provided

2. Quotes representing popular arguments supporting and opposing PrEP Rx shown

3. Clinical vignette presented

4. Clinical judgments and other info solicited (survey measures administered)
Mr. J is a 31-year-old, Black (White) man who is HIV-negative. He presents to you, his primary care physician, requesting a prescription for Truvada, stating that he wants to take the medication to help prevent himself from getting HIV. He has insurance that would cover the prescription.

Adapted from Bogart et al, 2001
Mr. J currently has one male sex partner who has been diagnosed as HIV-positive and with whom he is monogamous. During previous appointments, you have discussed HIV risk with him and encouraged him to use condoms. However, he does not always use them, resulting in repeated episodes of unprotected sex with his partner.
HIV antibody and RNA lab tests confirm that Mr. J is HIV-negative. He has never had any STDs. He has no physical complaints. He has never had surgery or been hospitalized. His medical history is otherwise unremarkable. Mr. J does not use alcohol, tobacco, or other drugs. He has no known drug allergies. He does not currently take any medications.
Self-Report Survey Measures

- Predicted sexual risk compensation

“How likely would this patient be to have MORE unprotected sex if he started taking Truvada as PrEP?”

- Not at all likely
- A little bit likely
- Somewhat likely
- Very likely
- Extremely likely
Self-Report Survey Measures

- Predicted sexual risk compensation
- PrEP Rx willingness

“Would you prescribe Truvada as PrEP to this patient?”
- Definitely not
- Probably not
- Maybe
- Probably yes
- Definitely yes
Self-Report Survey Measures

- Predicted sexual risk compensation
- PrEP Rx willingness
- Other clinical judgments
  - Predicted adherence
  - Risk of HIV infection without PrEP
  - Risk reduction associated with PrEP
- Racial bias
  - Perceived importance of patient request
  - General feelings towards Black vs. White patients
- Background characteristics
Analytic Strategy

- Between-Group Comparisons
  - Univariate analysis of covariance

- Prediction of Rx Willingness
  - Hierarchical linear regression analysis

- Test for Indirect Effect
  - Bootstrapping
RESULTS
Sample Characteristics ($n = 102$)

- **Gender**
  - 50% male
  - 50% female

- **Race**
  - 48% White
  - 40% Asian
  - 4% Latino
  - 3% Black
  - 5% Other

- **Sexual Orientation**
  - 94% heterosexual
  - 5% gay/lesbian
  - 1% bisexual

- **Year of Medical School**
  - 49% 1$^{\text{st}}$ - 2$^{\text{nd}}$
  - 38% 3$^{\text{rd}}$ - 4$^{\text{th}}$
  - 13% Other
Patient Race ➔ Predicted Patient Sexual Risk Compensation ➔ PrEP Rx Willingness
### Between-Group Means Comparisons

<table>
<thead>
<tr>
<th></th>
<th>Patient sexual risk compensation</th>
<th>Condition 1 Black Patient Group ( (n = 64) )</th>
<th>Condition 2 White Patient Group ( (n = 38) )</th>
<th>Condition 1 vs. Condition 2(^a)</th>
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<tbody>
<tr>
<td>1</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
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<td>2</td>
<td>Patient adherence</td>
<td>3.30</td>
<td>1.05</td>
<td>2.87</td>
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<td>3</td>
<td>Patient risk without PrEP</td>
<td>4.23</td>
<td>0.71</td>
<td>4.05</td>
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<td>4</td>
<td>PrEP risk reduction</td>
<td>1.41</td>
<td>0.75</td>
<td>1.32</td>
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<td>5</td>
<td>PrEP Rx willingness</td>
<td>3.80</td>
<td>0.78</td>
<td>3.68</td>
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</table>

\(^a\)Participant race controlled in all analyses

*\( p < .05 \)    **\( p < .01 \)
# Prediction of PrEP Rx Willingness

<table>
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<th>Variable</th>
<th>Unstandardized Coefficients</th>
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<tr>
<td></td>
<td>B</td>
<td>SE</td>
<td>p</td>
</tr>
<tr>
<td>Gender (Female)</td>
<td>0.37</td>
<td>0.14</td>
<td>0.01*</td>
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<tr>
<td>Race (Black)</td>
<td>-0.19</td>
<td>0.40</td>
<td>0.64</td>
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<tr>
<td>Race (White)</td>
<td>0.02</td>
<td>0.17</td>
<td>0.93</td>
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<td>Sexual orientation (straight)</td>
<td>-0.44</td>
<td>0.30</td>
<td>0.15</td>
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<tr>
<td>Age</td>
<td>0.03</td>
<td>0.03</td>
<td>0.34</td>
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<tr>
<td>Social class</td>
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<td>0.10</td>
<td>0.39</td>
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<tr>
<td>Year of med school</td>
<td>0.02</td>
<td>0.08</td>
<td>0.83</td>
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<tr>
<td>Past HIV clinical experience</td>
<td>-0.07</td>
<td>0.09</td>
<td>0.47</td>
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<tr>
<td>Condition (White patient)</td>
<td>-0.06</td>
<td>0.14</td>
<td>0.68</td>
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<tr>
<td>Predicted patient adherence</td>
<td>0.14</td>
<td>0.10</td>
<td>0.15</td>
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<tr>
<td>Patient risk without PrEP</td>
<td>0.18</td>
<td>0.11</td>
<td>0.09</td>
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<tr>
<td>PrEP risk reduction</td>
<td>0.11</td>
<td>0.11</td>
<td>0.34</td>
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<tr>
<td>Racial bias: patient importance</td>
<td>0.22</td>
<td>0.13</td>
<td>0.10</td>
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<tr>
<td>Racial bias: general feelings</td>
<td>-0.26</td>
<td>0.13</td>
<td>0.05*</td>
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<tr>
<td>Predicted patient sexual risk</td>
<td>-0.25</td>
<td>0.07</td>
<td>&lt;0.001***</td>
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## Prediction of PrEP Rx Willingness

### Model Summary

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<tr>
<th></th>
<th>F</th>
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<th>$R^2$</th>
<th>Adj. $R^2$</th>
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<td>3.75</td>
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<td>0.44</td>
<td>0.32</td>
<td>0.60</td>
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### Change Statistics

<table>
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<th>$R^2$ Change</th>
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<td>0.11</td>
<td>14.50</td>
<td>1, 73</td>
<td>&lt;0.001***</td>
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### Unstandardized Coefficients

<table>
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<th>Variable</th>
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<td>Predicted patient sexual risk compensation</td>
<td>-0.25</td>
<td>0.07</td>
<td>&lt;0.001***</td>
</tr>
</tbody>
</table>
Test for Indirect Effect

Bias-corrected and accelerated 95% bootstrapped CI of indirect effect: [-0.29, -0.02]
Summary of Study Findings

- The Black patient was judged as more likely to engage in sexual risk compensation than the White patient.
- Predicted patient sexual risk compensation was strongly associated with PrEP Rx willingness.
- Patient race was indirectly related to PrEP Rx:

  Black $\rightarrow$ Predicted Sexual Risk $\rightarrow$ Rx Willingness
Future Research

- Other healthcare provider samples
  - Actively practicing providers
  - Diverse clinical and geographic settings
- Moderators
  - Provider characteristics
  - Other patient characteristics
- Psychological mechanisms
- Real-world Rx behavior
Future Intervention

- Targeted interventions with providers to:
  - Increase awareness about PrEP
  - Prevent stereotypes from adversely affecting clinical judgment\(^{31,32,33}\)
    - Emphasize individuation vs. social categorization
    - Build sense of partnership
    - Inform about vulnerability to stereotyping and discrimination

\(^{31}\) Dovidio & Fiske, 2012  \(^{32}\) Burgess et al., 2007  \(^{33}\) Penner et al., 2013
Closing Remarks

- PrEP is a promising prevention strategy
- Black MSM comprise one of many socially marginalized groups who stand to benefit from PrEP
- Need to consider and address all barriers to equitable access, not just structural
- Timing is critical for increasing awareness about stereotypes and potential impact on PrEP-related clinical judgments
Acknowledgements

- Co-Authors: Valerie A. Earnshaw, Kristen Underhill, Nathan B. Hansen, & John F. Dovidio
- Yale University Interdisciplinary HIV Prevention Training Program [T32MH020031]
- Yale Center for Interdisciplinary Research on AIDS [P30MH062294]
- Dr. Jaimie Meyer
- Dr. Nancy Angoff
- New Haven restaurant owners
- Medical student participants
Yale’s PrEP Interest Group

- Dr. Margaret Weeks is heading a group dedicated to discussion and collaboration around PrEP research and implementation
- Contact: mweeks@icrweb.org
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Why Is No One on the First Treatment to Prevent H.I.V.?
Denying antiretroviral provision for prevention efforts is unethical and a transgression of human rights."

—J. A. Singh, 2013