Challenges and Opportunities in HIV Prevention

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Know the Epidemic in the Community
Opportunities for Preventing HIV Infection

Unexposed
- Behavioral, structural
- Male circumcision, condoms

Exposed (precoital/coital)
- Vaccine, topical microbicides, PrEP

Exposed (postcoital)
- Vaccine, Pep

Infected
- Treatment of HIV, reduced infectivity

- Reducing HIV incidence
- Increasing access to care and optimizing health outcomes
- Reducing HIV-related health disparities
HIV Prevention Research: Guiding Principles

- Multiple strategies needed to assemble a well-rounded “prevention toolkit.”

- No one prevention strategy will be 100% effective, appropriate to or accepted by everyone.
Approaches to HIV Prevention

Validated Approaches

• Clean syringes (i.e. needle exchange programs)
• Condoms, and other barrier methods
• Education and behavior adaptation
• Treatment/prevention of drug/alcohol abuse
• Interruption of mother-to-child transmission
• Circumcision
• HIV/STI Testing

Research Needed

• Topical microbicides
• Pre-exposure prophylaxis
• Vaccines
• Antiretroviral treatment as prevention (Test and Treat)
• Integrated combination prevention strategies
Selected HIV Prevention Strategies Under Development

- ARVs as Prevention
  - Microbicides
  - Pre-Exposure Prophylaxis (PrEP)
  - “Test and Treat” / TLC +
Next Steps
Topical Microbicides: Future Directions

- Complete VOICE – move 1% Tenofovir gel to licensure
- Expand efforts to develop rectal microbicides
- Devise more acceptable, less behaviorally sensitive delivery methods
- Explore combinations
  - Alternative microbicide strategies e.g., modulation of female reproductive tract (FRT) homeostasis
  - Vaccines and microbicides?
- Evaluate novel clinical trial methodologies
PrEP Future Directions

- Now that the concept is proven – complete VOICE!
- Engage partners to define adherence strategies and approaches to social marketing
- Develop and test combinations – pills and gels?
- Devise means of incorporation of ARVs as prevention into combination packages
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Years

Hours

72h - 28d

Years

Selected Research Issues Related to the Voluntary “Test and Treat” Approach

- Universal testing
- Relationship of the stage of HIV infection to efficiency of transmission
- Efficacy of ART in preventing HIV transmission
- Drug resistance
- Behavioral “disinhibition”
- Benefit to the individual
- Cost-effectiveness for society
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ART Reduces the Risk of Heterosexual HIV-1 Transmission in HIV-1 Sero-discordant African Couple Study (Abstract #136)

Deborah Donnell, Fred Hutchinson Cancer Research Center

<table>
<thead>
<tr>
<th>ART in HIV-infected partner</th>
<th>Linked Transmissions</th>
<th>Person-years of follow-up</th>
<th>HIV Seroincidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post ART initiation</td>
<td>1</td>
<td>256</td>
<td>0.39 (95%CI 0.09 to 2.18)</td>
</tr>
<tr>
<td>No ART</td>
<td>102</td>
<td>4851</td>
<td>2.23 (95%CI 1.84 to 2.70)</td>
</tr>
</tbody>
</table>
HIV Transmission Risk Among Serodiscordant Couples: A Retrospective Study of Former Plasma Donors in Henan, China

Lu Wang, MD, PhD,* Zeng Ge, BS,*† Jing Luo, BS,**‡ Duo Shan, BS,**‡ Xing Gao, MD, PhD,* Guo-wei Ding, MD,* Jian-ping Zhou, BS,§ Wen-sheng He, BS,§ and Ning Wang, MD, PhD*

HIV Treatment as Prevention: To be or not to be?

Myron S. Cohen, MD

“Second, and perhaps most important, transmission events occurred with equal frequency in couples regardless of whether the partner was provided free ART.”
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Starting Antiretroviral Therapy Earlier Yields Better Clinical Outcomes

Interim Review Leads to Early End of Clinical Trial in Haiti

- ~4-fold increased risk of death for patients deferring ART until CD4 count dropped below 200 vs. initiating ART at CD4 count between 200-350 (n=816)
HIV-infected individuals who are ART-naïve with CD4+ count > 500 cells/mm³

- Early ART Group: Initiate ART immediately following randomization
- Deferred ART Group: Defer ART until the CD4+ count declines to < 350 cells/mm³ or AIDS develops

START
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Aware HIV+ 79%

Linked to care 60%

Viral Load suppressed 55%

100 HIV+ persons

Achieved

Not Achieved

Not Virally Suppressed

Objective

Interestingly, 79% of HIV+ persons were aware of their status. 60% of those aware were linked to care, and 55% of those linked had viral load suppressed.

Overall: ~26% of HIV+ persons were in care and estimated to have a viral load <500 copies/ml.
HPTN 065 update

- HPTN 065 (TLC-Plus): A study to evaluate the feasibility of an enhanced test, link to care, plus treat approach for HIV prevention in the US
  - Study open to accrual: September 2010
  - Enrolling: March 2011
  - Anticipated results: 1Q 2014
Our Common Goal:
Controlling and Ultimately Ending the HIV/AIDS Pandemic