Combination HIV Prevention

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AWACC-AIDS 2011, Durban October 2011
What works for HIV prevention: Results from RCTs - 2009

- Review: 37 HIV prevention RCTs on 39 interventions:
  - PrEP: 1
  - Behavioural: 7
  - Microbicides: 12
  - Microfinance: 1
  - Diaphragm: 1
  - STI treatment: 9
  - Vaccines: 4
  - Male circumcision: 4

Study

<table>
<thead>
<tr>
<th>HIV Vaccine (Thai RV144)</th>
<th>Effect size (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td>STD treatment (Mwanza)</td>
<td>31% (1; 51)</td>
</tr>
<tr>
<td>Circumcision (Orange Farm, Rakai, Kisumu)</td>
<td>42% (21; 58)</td>
</tr>
<tr>
<td></td>
<td>57% (42; 68) : M-A</td>
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</table>

HIV prevalence in South Africa
The urgent need for new prevention: 
Age & gender profile of HIV infection: South Africa

<table>
<thead>
<tr>
<th>Age Group (Years)</th>
<th>HIV Prevalence (N=1237)</th>
</tr>
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<tbody>
<tr>
<td>≤16</td>
<td>10.6%</td>
</tr>
<tr>
<td>17-18</td>
<td>21.3%</td>
</tr>
<tr>
<td>19-20</td>
<td>33.0%</td>
</tr>
<tr>
<td>21-22</td>
<td>44.3%</td>
</tr>
<tr>
<td>23-24</td>
<td>51.1%</td>
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Preventing sexual spread of HIV:

- Existing accepted proven HIV prevention strategies - ABCCC:
  - Abstinence
  - Behaviour (Be faithful)
  - Condoms (Male & Female)
  - Counselling and Testing
  - Circumcision (Medical Male)

Which of these are prevention tools for young women?
Clinical trial evidence for preventing sexual HIV transmission – June 2011

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<tr>
<td>Treatment for prevention (Africa, Asia, America’s)</td>
<td>96% (73; 99)</td>
</tr>
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<td>Medical male circumcision (Orange Farm, Rakai, Kisumu)</td>
<td>54% (38; 66)</td>
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<td>PrEP for MSMs (America’s, Thailand, South Africa)</td>
<td>44% (15; 63)</td>
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<tr>
<td>Microbicide (CAPRISA 004 tenofovir gel)</td>
<td>39% (6; 60)</td>
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<td>HIV Vaccine (Thai RV144)</td>
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Reducing HIV in Women with Tenofovir Gel—Next Steps

- Regulatory
- Access
- Implementation
- Enhancing effectiveness of tenofovir gel
HIV prevention interventions shown to be effective in reducing HIV incidence in RCTs – July 2011

**Study**

**Antiretroviral treatment for prevention**
(HPTN 052 - Africa, Asia, Americas)\(^3\)

**PrEP for discordant couples**
(PartnersPrEP - Uganda, Kenya)\(^2\)

**PrEP for heterosexuals**
(TDF2 - Botswana)\(^3\)

**Medical male circumcision**
(Orange Farm\(^4\), Rakai\(^5\), Kisumu\(^6\))\(^7\)

**PrEP for MSMs**
(iPrEX - Americas, Thailand, South Africa)\(^6\)

**STD treatment**
(Mwanza - Tanzania)\(^9\)

**Microbicide**
(CAPRISA 004 – South Africa)\(^10\)

**HIV Vaccine**
(RV144 - Thailand)\(^11\)

**Effect size (CI)**

- **96% (73; 99)**
- **73% (49; 85)**
- **63% (21; 48)**
- **54% (38; 66)**
- **44% (15; 63)**
- **42% (21; 58)**
- **39% (6; 60)**
- **31% (1; 51)**

**Convergence around ARVS**

Abdool Karim SS, Abdool Karim Q, Lancet, July 2011
The 4 key changes in HIV prevention in the last 12 months

• There is new hope in HIV prevention…
  ▪ Until 2010, skepticism in HIV prevention…lots of negative results
  ▪ Little evidence that prevention can change the epidemic

• The new technologies provide new hope for women
  ▪ Gender dynamic is key to controlling HIV in Africa
  ▪ TFV gel - new target population: women & health services

• New HIV prevention is fundamentally dependent on HIV status
  ▪ Pre-circumcision, HIV messages were generic – same message for HIV-ve & HIV+ve ie. safe sex
  ▪ HIV testing now a key to HIV prevention

• Combination prevention now offers hope
  ▪ Always had combination prevention - now targeted combinations
  ▪ Key is – can now reduce HIV in young women
HCT & Linkage to Prevention and Treatment Services – an opportunity for strengthening access to health services

- Opportunity during VCT to enhance sexual reproductive health – pregnancy & STI prevention
- Opportunity for community to access VCT, prevention & treatment services
- Opportunity to increase awareness of other prevention options eg MMC, microbide gel, PrEP
- Opportunities to understand transmission networks and risk to inform targeted prevention efforts
- Link to positive/secondary prevention
- Opportunity to alter epidemic trajectory
Key points to ponder in intervening to reduce HIV Infection Rates

1. Who is at highest risk?
2. What are the key reasons for this risk?
3. Are these reasons for risk amenable to change?
4. If amenable to change, what is the catalyst for change?
5. Is change at a sufficient level to impact overall risk?
6. Is the catalyst of sufficient intensity to lead to change?
7. Is there sufficient change in overall risk to lead to a reduction of HIV infection?
Hope for altering epidemic?

• Knowledge of HIV Status important gateway
  ▪ For Prevention &
  ▪ Care and Treatment

• Scaling up prevention and treatment
  ▪ Coverage
  ▪ Optimal combinations

• Measure impact on HIV incidence rates

• Continue to invest in better prevention technologies

• Address structural causes

• Better formulations, dosages and drug delivery mechanisms

• Prudent, effective and efficient use of resources

• Shared responsibilities and accountability
  ▪ HIV risk, funding, responses
Amended approach to counselling and care

- **Level 1 - Basic package**: HIV education, male & female condoms, STD treatment and couple counselling, MMC

- **Level 2 – ART for prevention**: If couple counselling accepted – provision of ART at any CD4 for HIV +ve partner if in a stable long-term relationship (anticipate low uptake of this)

- **Level 3 – PrEP**: Provision of both daily TDF and BAT24 tenofovir gel for 2 months after which she selects her preferred PrEP formulation. From month 3 onwards, the selected PrEP option is only provided
What is Appropriate Dosing for Adolescents?

- CAP004 – 18 - 40yrs, predictable sex acts, migrant stable partners hence BAT24

- What do we know about coital activity in adolescents in rural KwaZulu-Natal
  - Sexual debut around 15 yrs
  - Unplanned and unprepared
  - Partner 4 – 6 years older
  - Usually on weekends, frequency: 2 – 4 times a month
  - Majority of the girls are monogamous

- ? Morning after gel - advised to use asap after unprotected sex together with Emergency Contraception
Does tenofovir prevent HIV in women with & without raised cytokines?

<table>
<thead>
<tr>
<th>No ↑ cytokines</th>
<th>Elevated Cytokines</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLD tenofovir</td>
<td>Detectable tenofovir</td>
</tr>
<tr>
<td># HIV infections</td>
<td>5</td>
</tr>
<tr>
<td>Women-years</td>
<td>24.5</td>
</tr>
<tr>
<td>HIV Incidence (per 100 women-yrs)</td>
<td>20.4</td>
</tr>
<tr>
<td>RR (95% CI)</td>
<td>-</td>
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<tr>
<td>p-value</td>
<td>0.05</td>
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Conclusions

1. Women, and young women in particular, bear the brunt of the HIV epidemic in Africa

2. Tenofovir gel and Truvada pills potentially adds a new approach to HIV prevention for women and MSM

3. Oral Truvada does not look promising for women

4. Altering the epidemic trajectory is now within our grasp with a combination of HIV prevention interventions which include ART for treatment and prevention

5. Success will depend upon, at least:
   - Knowledge of the epidemiology and ability to chose efficacious combinations for synergy against specific risks
   - Ability to enrol, retain and maintain adherence (?>90%)