hiv prevention menu

social & behavioural change
safer sexual practices, needle exchange, building next gen

barrier methods
condoms – male, female

testing
voluntary counselling and testing

circumcision
male medical circumcision

sti treatment
treating sexually transmitted infections

antiretroviral drugs
for infected patients: HAART (TasP), PMTCT
for uninfected patients: PEP, PreP

under study
vaccines, rings, microbicides
WHY ANOTHER "C"?
- Circumcision oldest and most common surgery performed. 20-25% of men circumcised.

- Religious, cultural

A relief on the tomb of Ankh-Mahor
Biological Rationale

- **Biological plausibility**
  - Inner mucosa of foreskin is rich in HIV target cells (9x)
  - External foreskin/shaft keratinized and not vulnerable
  - After circumcision, only vulnerable mucosa is meatus

- **Foreskin is retracted over shaft during intercourse**
  - Large surface area - inner mucosal surface exposure
  - Micro-tears, especially of frenulum

- **Intact foreskin associated with infections**
  - GUD
  - Balanitis/phimosis
  - Possible increase HIV entry or shedding
Keratinised outer surface of Human Foreskin

External Surface

Mucosal Surface

Patterson et al. Am J Pathol 2002
Higher HIV Prevalence linked with uncircumcised males

- > 75% males uncircumcised = 16.4% HIV prevalence
- 90% males circumcised = 0.9% HIV prevalence

Does not prove a cause and effect relationship.

Bongaarts AIDS 1989
Male Circumcision And HIV In Asia

Sources: UNAIDS, 2004
The Circumcision Trials

Randomized, Controlled Intervention Trial of Male Circumcision for Reduction of HIV Infection Risk: The ANRS 1265 Trial

Kenya

Male circumcision for HIV prevention in young men in Kisumu, Kenya: a randomised controlled trial

South Africa

Male circumcision for HIV prevention in men in Rakai, Uganda: a randomised trial

Uganda
MMC Scale-UP

• Medical Male Circumcision shown to reduce the risk of acquiring HIV

• 2007: WHO recommended the scale-up of VMMC for the prevention of HIV

• 80% coverage target

• SA: 2.4 million VMMC in 2012-2016 (NSP 2017-2022)

• SA Target 2017-2022: 2.5 million VMMC(NSP 2017-2022)
VMMC Costs

$130

Fixed Only

$139

Fixed with Outreach

$132

Total

Direct Labor
Consumables
CQI
Indirect Labor
Overhead
Training
Equipment
Vehicles

Tchuenene, 2016
## VMMC cost-effective

### CEA of MMC, health provider perspective

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>Uganda</td>
<td>South Africa</td>
<td>SSA</td>
<td>Mozambique</td>
<td>Botswana</td>
</tr>
<tr>
<td>Time Horizon (years)</td>
<td>10</td>
<td>20</td>
<td>10-20</td>
<td>20</td>
<td>17</td>
</tr>
<tr>
<td>Cost per HIA</td>
<td>2808</td>
<td>193</td>
<td>174</td>
<td>390</td>
<td>642</td>
</tr>
</tbody>
</table>

*Uthman, 2010*
Early Infant MMC not cost-effective

Proportion of men by age group

Total circumcisions: 45 264

Majority under 25 years - 65% (29 620/45 264)
Seasonal Demand of VMMC
Number of circumcisions by month per site
### Overall HIV Prevalence by age

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Proportion HIV +</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-14 years</td>
<td>1.6%</td>
</tr>
<tr>
<td>15-19 years</td>
<td>1.5%</td>
</tr>
<tr>
<td>20-24 years</td>
<td>2.1%</td>
</tr>
<tr>
<td>25-29 years</td>
<td>5.0%</td>
</tr>
<tr>
<td>30-34 years</td>
<td>10.0%</td>
</tr>
<tr>
<td>35-39 years</td>
<td>16.1%</td>
</tr>
<tr>
<td>40-44 years</td>
<td>20.4%</td>
</tr>
<tr>
<td>45+ years</td>
<td>16.1%</td>
</tr>
</tbody>
</table>
Surveillance Opportunity?

HSRC Report, 2012

VMMC Program Data
Circumcision as a platform for HIV Testing

Lebina, 2015

<table>
<thead>
<tr>
<th>Age Groups</th>
<th>Zazi HCT Clinic (N=8,736)</th>
<th>Khula Ndoda VMMC Clinic (N=13,801)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HIV-positive Males</td>
<td>% (CI)</td>
</tr>
<tr>
<td>0-14 yrs</td>
<td>1</td>
<td>0,1 (-0.1-0.3)</td>
</tr>
<tr>
<td>15-19 yrs</td>
<td>24</td>
<td>3,4 (2.1-4.7)</td>
</tr>
<tr>
<td>20-24 yrs</td>
<td>38</td>
<td>5,3 (3.7-6.9)</td>
</tr>
<tr>
<td>25-34 yrs</td>
<td>265</td>
<td>37,1 (33.6-40.6)</td>
</tr>
<tr>
<td>35-49 yrs</td>
<td>349</td>
<td>48,8 (45.1-52.5)</td>
</tr>
<tr>
<td>50+ yrs</td>
<td>38</td>
<td>5,3 (3.7-6.9)</td>
</tr>
<tr>
<td>Total</td>
<td>715</td>
<td>100,0</td>
</tr>
</tbody>
</table>
COMBINATION PREVENTION
Methodology

Design: Cross sectional study

Study procedure: Screen men and adolescents aged 10-34 years.

Clinic procedure: Counselling and HIV testing following site SOP. HIV+: above ART eligible CD4 threshold.

Clinic procedure: MMC following site SOP.

Study procedure completed.
Total Enrolled: 2464
## Alcohol and Condom Use

<table>
<thead>
<tr>
<th>Variable</th>
<th>Overall</th>
<th>10-14 years</th>
<th>15-19 years</th>
<th>20-24 years</th>
<th>25-34 years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Drink Too Much Alcohol Until You Forget</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>378 (37.3)</td>
<td>2 (22.2)</td>
<td>48 (33.8)</td>
<td>104 (33.7)</td>
<td>224 (40.4)</td>
</tr>
<tr>
<td><strong>Condom Use After Drinking Alcohol</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never use a condom</td>
<td>110 (12.9)</td>
<td>1 (25.0)</td>
<td>8 (7.9)</td>
<td>34 (13.0)</td>
<td>67 (13.7)</td>
</tr>
<tr>
<td>No</td>
<td>301 (35.2)</td>
<td>2 (50.0)</td>
<td>36 (35.6)</td>
<td>72 (27.5)</td>
<td>191 (39.1)</td>
</tr>
</tbody>
</table>
### THC factors

<table>
<thead>
<tr>
<th>Variable</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever Smoked Dagga/Marijuana</td>
<td>644 (26.2)</td>
</tr>
<tr>
<td>Median (IQR) Age of Dagga debut</td>
<td>17.0 (16.0-19.0)</td>
</tr>
<tr>
<td>Are You a Current Dagga Smoker</td>
<td>300 (46.7)</td>
</tr>
<tr>
<td>Are You a Past Dagga Smoker</td>
<td>328 (97.3)</td>
</tr>
<tr>
<td>Do You Mix Tobacco with Dagga</td>
<td>327 (61.8)</td>
</tr>
<tr>
<td>Do You Mix Any Other Substance with Dagga</td>
<td>29 (5.5)</td>
</tr>
</tbody>
</table>

However, only 484 (20%) tested positive for Tetraydrocannabinol (THC).

Crack/cocaine, crystal meth, mandrax, heroin, nyope
DEVICE CIRCUMCISION
Increase in Research on Device Circumcision
Safe and clean

Many opted for PrePex as they did not like injections or blades

Challenges: Odour and pain

Those who refused: Do not like to be part of research

“Its still a study and its new and more risky” (W302, 31 years)
Easy, Faster, and Not Bloody: Providers’ Perceptions on PrePex™ in South Africa

Minja Milovanovic, MA*
Noah Taruberekera, PhD
Karin Hatzold, MD, MPH
Neil Martinson, MBBCh, MPH, MFGP
Limakatso Lebina, MBChB, MPH

• Simple,
• faster,
• convenient,
• reduces risk of needle stick injuries
• can be incorporated into MMC Programs

Milovanovic, 2016
Piloting PrePex for Adult and Adolescent Male Circumcision in South Africa – Pain Is an Issue

Limakatso Lebina1*, Noah Taruberekera2, Minja Milovanovic1, Karin Hatzold3.

2b. Pain of Removal

<table>
<thead>
<tr>
<th></th>
<th>Adolescent</th>
<th>Adult</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very happy no hurt</td>
<td>1%</td>
<td>7%</td>
</tr>
<tr>
<td>Hurts just a little</td>
<td>11%</td>
<td>13%</td>
</tr>
<tr>
<td>Hurts a little more</td>
<td>21%</td>
<td>17%</td>
</tr>
<tr>
<td>Hurts even more</td>
<td>21%</td>
<td>36%</td>
</tr>
<tr>
<td>Hurts a whole lot</td>
<td>26%</td>
<td>18%</td>
</tr>
<tr>
<td>Hurts as much as you can imagine</td>
<td>21%</td>
<td>9%</td>
</tr>
</tbody>
</table>

2c. Pain 30 minutes after Removal

<table>
<thead>
<tr>
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</tr>
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<td>19%</td>
<td>23%</td>
</tr>
<tr>
<td>Hurts even more</td>
<td>5%</td>
<td>9%</td>
</tr>
<tr>
<td>Hurts a whole lot</td>
<td>6%</td>
<td>2%</td>
</tr>
<tr>
<td>Hurts as much as you can imagine</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
### PrePex Device MMC AEs

<table>
<thead>
<tr>
<th>TYPE OF AE</th>
<th>MODERATE</th>
<th>SEVERE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bleeding</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Displacement</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Infection</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Insufficient Skin Removal</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pain</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Problems Voiding</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>7 (0.69%)</strong></td>
<td><strong>5 (0.49%)</strong></td>
<td><strong>12 (1.18%)</strong></td>
</tr>
</tbody>
</table>

- Comparable to surgical circumcision
- Similar in other countries and studies
Increased risk of acquiring HIV if resumes sexual activities prior to complete healing.

Delayed Healing with PrePex Device MMC

Adolescents vs Adults: HR=0.861 (95% CI:0.655-1.130; p-value=0.2800)
Analgesia for PrePex device removal

Published: March 26, 2018

PrePex circumcision surveillance: Adverse events and analgesia for device removal

Lebina, 2018
Evaluating the cost of adult voluntary medical male circumcision in a mixed (surgical and PrePex) site compared to a hypothetical PrePex-only site in South Africa

Hae-Young Kim¹, Limakatso Lebina², Minhaj Milovanovic², Noah Taruberekera³, David W. Dowdy¹ and Neil A. Martinson²

Kim, 2016
VMMC & Tetanus

“a higher risk of tetanus following circumcision with the elastic collar compression device compared with other circumcision methods that removed the foreskin at the time of the procedure”, WHO 2016

- 9 cases reported, 6 resulted in death
  - Recommendations
    - Clean care
    - Tetanus vaccination
• 32% of males aged 15-64 years medically circumcised

• 43% of males 15-24 years medically circumcised

2012: 15-19yrs = 33%; 20-24yrs = 47%; 25-49yrs = 50%
Summary

• MMC is a recommended cost-effective HIV prevention strategy
• Scale-up of MMC has increased access for HIV testing for men
• Combination prevention implementation challenged
• Increase in research on device based circumcisions
• PrePex device acceptable to South Africans, however pain on removal was an issue, but common analgesia alleviates some of it
• Mixed (device and surgical) sites does not reduce cost of MMC
• Need to do more circumcisions to achieve the 80% coverage
Acknowledgements

• Provincial Departments of Health

• Funders of the VMMC sites

• Site staff

• Colleagues: N. Martinson, K. Otwombe, M. Milovanovic