Cascade of HIV prevention: A powerful tool to improve the implementation of multi-level HIV prevention in rural South Africa

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Outline

• Background

• Methods

• Key findings around cascade of multi-level prevention

• Participatory methods to improve the prevention cascade
Background
Insufficient progress on prevention

Number of new HIV infections, global, 1990-2017 and 2020 target

Source: UNAIDS 2018 estimates.

- New HIV infections
- Target
## Multilevel HIV prevention intervention

### Community
- Gender based violence
- Safe spaces
- School based interventions
- Community mobilisation

### Household/family
- Family care intervention
- Social asset building
- Financial literacy

### Individual
- Condoms (70%)
- Universal Test Treat, (100%)
- Pre-Exposure Prophylaxis (>96%)
- SRH
- VMMC (60%)
Aim

To show how cascades of prevention can be used to iteratively co-create community-led interventions to improve demand, reach, and uptake of effective multilevel HIV prevention interventions
Setting
Africa Health Research Institute

HIV Demographic Surveillance Site
Started in 2000 in KwaZulu-Natal
Pop: 125,000
1.5 million person years of follow up
Rural and high levels of unemployment
HIV prevalence at study location
Methods

• Mixed method impact and process evaluation data collected as part of the DREAMS and MTV Shuga impact evaluation between 1/2016 and 6/2019.

1. Longitudinal cohorts of a representative sample of 13-35-year-old-females and males (n~5000): Measure population awareness and uptake of each of different components of multilevel HIV prevention interventions.

2. (a) rapid ethnographic community mapping (b) provider and user interviews and (c) group discussion. All qualitative interviews were audio-recorded, transcribed and analysed using a thematic content analysis.

• Thetha Nami participatory co-creation with youth aged 18-30 a peer led intervention
Results
Population

- 4918 males and females aged 13-35
- Rapid ethnographic community mapping (one urban, one semi urban and two deep rural)
- Qualitative cohorts with girls and women aged 10-24 years and boys and men aged 12 -35 years (n=58).
- Group discussions 29 group discussions with participants were aged between 13-26 years.
- Key informant interviews (n=60)
- Participatory co-creation (n=100)
Random Sample of women aged 13-22

Flow chart showing participation in the AGYW cohort at baseline and after 12 months (2017-2018)

3013 randomly selected

- 458 No longer eligible
  - 418 emigrated
  - 5 Died
  - 14 not capable
  - 9 Over/under age
  - 32 Identified as males

2555 Eligible

- 66 Refused participation
- 285 Not found after 3 attempts

2184 (85.5%) enrolled at baseline

- 222 Loss to follow-up
  - 220 migrated
  - 1 died
  - 1 not capable

1853 (86.5%) 12 months follow-up

- 36 Refused participation
- 72 Not found after 3 attempts
4762 randomly selected
3840 males
922 females

2826 males
644 females

3065 enrolled (88%)
2488 males
577 females

187 Refused participation
155 males
32 females

218 Not found after 3 attempts
183 males
35 females

1292 No longer eligible
(1014 males, 278 females)
1069 out-migrated
16 Died
38 not capable
169 other reasons

3470 Eligible
2826 males
644 females

1292 No longer eligible
(1014 males, 278 females)
1069 out-migrated
16 Died
38 not capable
169 other reasons

## Characteristics of young men (aged 13-30) and women (aged 13-35)

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4918</td>
<td>2488</td>
<td>2430</td>
</tr>
<tr>
<td><strong>Age group, 2018</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-17</td>
<td>1886</td>
<td>940</td>
<td>37.8</td>
</tr>
<tr>
<td>18-24</td>
<td>1800</td>
<td>838</td>
<td>33.7</td>
</tr>
<tr>
<td>25-29</td>
<td>851</td>
<td>329</td>
<td>13.2</td>
</tr>
<tr>
<td>30-35</td>
<td>381</td>
<td>381</td>
<td>15.3</td>
</tr>
<tr>
<td><strong>Rural</strong></td>
<td>3039</td>
<td>1494</td>
<td>60.4</td>
</tr>
<tr>
<td><strong>Migration</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>3453</td>
<td>1745</td>
<td>70.4</td>
</tr>
<tr>
<td>Within PIPSA</td>
<td>479</td>
<td>216</td>
<td>8.7</td>
</tr>
<tr>
<td>External migration</td>
<td>975</td>
<td>518</td>
<td>20.9</td>
</tr>
<tr>
<td>Ever had sex</td>
<td>2644</td>
<td>1368</td>
<td>55</td>
</tr>
<tr>
<td>Ever been pregnant</td>
<td>1044</td>
<td>1044</td>
<td>43</td>
</tr>
<tr>
<td>Food insecurity</td>
<td>31%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Uptake of HIV prevention.

Implementation of combination (multi-level) prevention through Determined Resilient Empowered AIDS Free and Safe (DREAMS) and She Conquers
Multi-level (DREAMS) HIV prevention intervention

*28 implementing partners across 3 sectors*

<table>
<thead>
<tr>
<th>Community</th>
<th>Household/family</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender based violence/community mobilization</td>
<td>Family care intervention</td>
<td>Condoms</td>
</tr>
<tr>
<td>Safe spaces /social protection</td>
<td>Social asset building</td>
<td>HIV test,</td>
</tr>
<tr>
<td>School based interventions</td>
<td>Financial literacy</td>
<td><em>Pre-Exposure Prophylaxis (FSWs)</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Universal Test Treat,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SRH and VMMC (through DoH services)</td>
</tr>
</tbody>
</table>
Use of any multilevel intervention 2017

Mthiyane, & Harling
Use of any multi-level intervention 2018

Mthiyane, & Harling
No. services received in last 12 months:
by age & invitation to participate in DREAMS (AGYW cohorts)

High proportion of AGYW invited to participate in DREAMS have accessed ≥3 services

Gourlay, Mthiyane, & Birdthistle submitted
Uptake* of categorised interventions of the DREAMS Core Package** in South Africa in 13-17 year olds overall (panel A), and by invitation to participate in DREAMS (panel B)

Panel A

South Africa (13-17, n=946)

Panel B

Invited, n=457
Not invited, n=596

*Participated in the last 12 months (dataset from 2018); Uptake regardless whether or not the intervention was identified as a ‘DREAMS programme’

**Interventions aligned with PEPFAR Core Package outlined to countries in 2015

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**Interventions aligned with PEPFAR Core Package outlined to countries in 2015

Gourlay, Mthiyane, & Birdthistle submitted
Groups less likely to access interventions

Mthiyane, & Harling
Mass media campaigns and edu-dramas

Exposure was low in this rural setting

8% had seen any of the episodes
# Uptake of interventions at population level in 2018

<table>
<thead>
<tr>
<th></th>
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<th>Females</th>
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<tbody>
<tr>
<td></td>
<td>N</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4918</td>
<td>2488</td>
<td>2430</td>
</tr>
<tr>
<td>Aware of HIV status</td>
<td>2716</td>
<td>1252</td>
<td>50.4</td>
</tr>
<tr>
<td>Ever had sex</td>
<td>2644</td>
<td>1368</td>
<td>55</td>
</tr>
<tr>
<td>Ever been pregnant</td>
<td>1044</td>
<td>1044</td>
<td>43</td>
</tr>
<tr>
<td>Condom use at last sex</td>
<td>1463</td>
<td>775</td>
<td>56.7</td>
</tr>
<tr>
<td>Currently using contraceptives</td>
<td>924</td>
<td>924</td>
<td>39.9</td>
</tr>
<tr>
<td>Ever participated in VMMC</td>
<td>1417</td>
<td>1417</td>
<td>57.1</td>
</tr>
<tr>
<td>Participated in VMMC in the last 12 months</td>
<td>643</td>
<td>643</td>
<td>45.4</td>
</tr>
</tbody>
</table>
HIV prevention cascade for PrEP eligible adolescent girls and young women n=194

- Total eligible for PrEP: 100%
- Aware of HIV status: 86%
- Estimated HIV negative: 74%
- Aware of PrEP: 13%
- On PrEP: 1%

Adolescent girls and young women involved in transactional sex and eligible for PrEP n=194

Chimbindi
Contraception uptake and DREAMS

![Graph showing the percentage of AGYW using contraceptives against the number of DREAMS categories received. The x-axis represents the number of DREAMS categories received (0 to 5), and the y-axis represents the percentage of AGYW using contraceptives (0 to 100). Bars with error bars indicate the variability.]
Contraception use by HIV prevention uptake

### 13-17

<table>
<thead>
<tr>
<th>Year</th>
<th>Overall</th>
<th>No DREAMS</th>
<th>DREAMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>54.7</td>
<td>46.4</td>
<td>57.3</td>
</tr>
<tr>
<td>2018</td>
<td>38.7</td>
<td>16.7</td>
<td>40.6</td>
</tr>
</tbody>
</table>

**Difference:** 10.95 (-6.14, 27.72)

### 18-22

<table>
<thead>
<tr>
<th>Year</th>
<th>Overall</th>
<th>No DREAMS</th>
<th>DREAMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>64.3</td>
<td>61.1</td>
<td>68.7</td>
</tr>
<tr>
<td>2018</td>
<td>56.4</td>
<td>56.2</td>
<td>56.6</td>
</tr>
</tbody>
</table>

Mthiyane, & Carter
What are the challenges to multi-level prevention?

There are other health and psychosocial issues that matter more and are not seen to be incorporated in the DREAMS intervention.
# Unmet sexual and reproductive health need

<table>
<thead>
<tr>
<th></th>
<th>Women aged 15-24 - % (95% CI)</th>
<th>Men aged 15-24 - % (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlamydia*</td>
<td>11 (7-16)</td>
<td>5 (3-9)</td>
</tr>
<tr>
<td>Gonorrhoea*</td>
<td>3 (1-8)</td>
<td>2 (1-5)</td>
</tr>
<tr>
<td>Trichomonas*</td>
<td>5 (3-8)</td>
<td>0.6 (0.1-4)</td>
</tr>
<tr>
<td>HSV2</td>
<td>30 (23-35)</td>
<td>17 (11-24)</td>
</tr>
<tr>
<td>Bacterial vaginosis</td>
<td>42 (35-49)</td>
<td>NA</td>
</tr>
</tbody>
</table>

*One in five any treatable STI

Francis et al (Plos med 2018)

<table>
<thead>
<tr>
<th></th>
<th>Cases</th>
<th>Follow-up months</th>
<th>Incidence Rate / person year (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSV 2</td>
<td>70</td>
<td>7450</td>
<td>11.3 (8.9-14.3)</td>
</tr>
<tr>
<td>Teenage pregnancy</td>
<td>43</td>
<td>8076</td>
<td>6.4 (4.7-8.6)</td>
</tr>
</tbody>
</table>

N= 2184 females aged 13-22 median follow-up time=6 months, IQR (5 - 7)

73% were asymptomatic and so wouldn’t be treated through syndromic approach to sexual health
Unmet mental health need

![Bar chart showing percentage of AGYW with CMD & 95% CI by age of respondent (years).](attachment:image.jpg)
Factors associated with CMD

Adjusted for Age, migration, education, SES, pregnancy history and uptake of DREAMS individual & community-based interventions
Can we optimize implementation of combination (multi-level) prevention?
Theta Nami

Iterative use of prevention cascade data to co-develop and pilot innovative and tailored HIV prevention interventions with young people to reduce infectious HIV
**Thetha Nami** peer navigator intervention

- Community recruitment was good (n=100)
  - Program was seen to be beneficial
  - Challenge to get men and younger women

- 12 weeks of training and two participatory workshops

- Young people were able to engage creatively with the evidence and develop interventions

- Intersection of socioeconomic, gender and age inequity
Building a Theory of Change

Based on the cascade of care
Thetha Nami underlying drivers

**Community**
- Stigma
- Unemployment & Mobility
- Lack of social cohesion
- Low uptake of community interventions

**Individual**
- Poor mental health
- Low uptake contraception/condoms
- Low SRH knowledge (but fertility matters)
- Alcohol and transactional sex normative

**Biological**
- High community viral load in young men and women
- Low condom use
- High burden of STIs and BV
Thetha Nami HIV prevention pathways to change

**Community**
- *Increase demand and support for accessible prevention*

**Enabling environment**
- Group efficacy (Social resilience and cohesion)
- Adapt intervention to context

**Individual**
- *Increase demand for prevention*

**HIV status neutral interventions**
- Increase SRH knowledge
- Address wider health concerns
- Increase self efficacy

**Biological**
- *Improve accessibility of biomedical interventions*

**Reduce STIs**
- Increase uptake and retention in biomedical interventions
## Thetha Nami HIV prevention intervention

<table>
<thead>
<tr>
<th>Community</th>
<th>Individual</th>
<th>Biological</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Increase demand and support for accessible prevention</strong></td>
<td><strong>Promote mental and sexual health</strong></td>
<td><strong>Peer-led community healthcare delivery</strong></td>
</tr>
<tr>
<td>Identify youth champions</td>
<td>HIV status neutral care/ U=U promotion</td>
<td>Embed in sexual health care</td>
</tr>
<tr>
<td>Map and navigate health and social welfare</td>
<td>Condom promotion</td>
<td>STI self sample, test and treat</td>
</tr>
<tr>
<td>Mentoring</td>
<td>HIV self test</td>
<td></td>
</tr>
<tr>
<td>Self help youth groups and activities</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Biological**

**Improve accessibility of biomedical interventions**
Thetha Nami peer navigator intervention

57 peer navigators recruited and trained
24 area based peer navigators
100% retention at six months

Peer navigator activities – 3 months
5000 encounters
70 encounters/ per peer navigator working month

4511/ 4957 (91%) agree to engage
30000 condoms and 2389 HIV-ST distributed
3230 referrals made
300 people aged 18-30 attend sexual health and HIV care or prevention
Men > women
70% prefer mobile clinic
Conclusions

- Scaling up a complex multilevel intervention for adolescents and young women was feasible despite the short time scale.
- Intensity of exposure to multiple levels increased over time.
- Older adolescents and those out of school and mobile were less likely to receive the community level interventions.
- Social and individual level factors effect youth resilience and vulnerability.
- The cascade of prevention was a useful framework to monitor reach of this complex interventions at a population level.
- Empowering youth to engage with the evidence and formulate a community-led response was feasible and acceptable.
Acknowledgements


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