Which Scale Up Strategies/Programmatic Mixes are most Cost-Effective?

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UNAIDS
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Outline

• Scaling up for Impact
• Critical Point of the Response
• Choices of strategies
• Accelerating Implementation
• Conclusions
Impact

NEW HIV INFECTIONS, 2000–2016

AIDS-RELATED DEATHS, 2000–2016
The platform: investing strategically to maximize impact

SYNERGIES WITH DEVELOPMENT SECTORS: Social protection, education, legal reform, gender equality, GBV, health and community systems, employer practices

Critical Enablers
Social:
- Political commitment and advocacy
  - Laws, legal policies, and practices
  - Community mobilisation
  - Stigma reduction
  - Mass media
  - Local responses to change risk environment

Programme enablers:
- Community centred design and delivery
  - Programme communication
  - Management and incentives
  - Procurement and distribution
  - Research and innovation

BASIC PROGRAMME ACTIVITIES

- Behaviour change
- Condoms
- Treatment & care
- Child infections & maternal mortality
- Key populations
- Male circumcision

OBJECTIVES

- Stopping new infections
- Keeping people alive
- Cash Transfer?

PrEP?


http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0154893
Investing for Impact: Fast Track the Response

Fast-Track: Scale up of all interventions to reach Fast-Track targets by 2020 (90-90-90 for ART, PMTCT, VMMC, condoms, key populations, PrEP, social enabling programs, opioid substitution therapy and cash transfers for girls).
# Increasing Evidence on What Works

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Effect</th>
<th>Effect size</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ART:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Community adherence</td>
<td>Increase adherence</td>
<td>50% reduction</td>
<td></td>
</tr>
<tr>
<td>• Home-based ART</td>
<td>Increase ART uptake</td>
<td>RR = 2.75</td>
<td></td>
</tr>
<tr>
<td>• Adherence clubs</td>
<td>Reduce drop-outs</td>
<td>HR = 0.43</td>
<td></td>
</tr>
<tr>
<td>• Adherence clubs</td>
<td>Increase adherence</td>
<td>HR = 0.33</td>
<td></td>
</tr>
<tr>
<td>• CHW promote adherence</td>
<td>Increase adherence</td>
<td>OR = 1.22</td>
<td></td>
</tr>
<tr>
<td>• mHealth</td>
<td>Increase adherence</td>
<td>RR = 0.77</td>
<td>$20/p/y</td>
</tr>
<tr>
<td><strong>HTC:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Partner testing</td>
<td>Increase uptake</td>
<td>Double</td>
<td></td>
</tr>
<tr>
<td>• Community testing</td>
<td>Increase uptake</td>
<td>Triple</td>
<td></td>
</tr>
<tr>
<td>• Workplace testing</td>
<td>Increase uptake</td>
<td>RR = 2.8</td>
<td>$8-$33 per person</td>
</tr>
<tr>
<td><strong>Sex workers:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Community empowerment</td>
<td>Increase condom use</td>
<td>OR = 3.27</td>
<td>$80/p/y for community empowerment</td>
</tr>
<tr>
<td>• Violence prevention</td>
<td>Increase condom use</td>
<td>OR = 1.49</td>
<td></td>
</tr>
<tr>
<td><strong>PMTCT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Option B+</td>
<td>Reduce MTCT rate</td>
<td>Reduce from 8.6% to 4.9%</td>
<td></td>
</tr>
<tr>
<td><strong>Critical enablers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Cash transfers</td>
<td>Reduce number of partners</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>• Mass media</td>
<td>Delay sexual debut</td>
<td>1 year delay</td>
<td></td>
</tr>
<tr>
<td>• School AIDS education</td>
<td>Increase condom use</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>• Community mobilization</td>
<td>Delay sexual debut</td>
<td>1 year delay</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increase condom use</td>
<td>20%</td>
<td>$2/student/year</td>
</tr>
<tr>
<td></td>
<td>Increase condom use</td>
<td>11%</td>
<td>$5/person/year</td>
</tr>
</tbody>
</table>
2016 Namibia Investment Case: Invest on HIV response for better health

• Investments on HIV response have improved health outcomes

• Cost – Effective: HIV response prevents a death at a cost of about US$ 20,000, or a cost per life year saved at about US$ 1,000 - one-sixth of GDP per capita

• Behavior change and the public ART program has been an investment in social equity: providing access to those who would have not benefited if public investments on HIV response were not made

Source: MOH, 2016 Namibia HIV Investment Case
What combination of interventions will give the highest impact?
## South Africa Investment Case: Rigorous Selection of Interventions

### Intervention

<table>
<thead>
<tr>
<th>Intervention</th>
<th>AFFORDABLE UNDER CURRENT BUDGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condom availability (90%)</td>
<td></td>
</tr>
<tr>
<td>MMC (90%)</td>
<td></td>
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<tr>
<td>SBCC campaign 1 (90%)</td>
<td></td>
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<tr>
<td>MMC age group targeting</td>
<td></td>
</tr>
<tr>
<td>Testing at 6 weeks (90%)</td>
<td></td>
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<tr>
<td>ART at current guidelines (85%)</td>
<td></td>
</tr>
<tr>
<td>PMTCT B+ (60%)</td>
<td>Budget in 2016/17 ZAR 21.7 billion</td>
</tr>
<tr>
<td>HCT (90%)</td>
<td></td>
</tr>
<tr>
<td>SBCC campaign 3 (90%)</td>
<td></td>
</tr>
<tr>
<td>Universal test and treat (90%)</td>
<td>90/90/90 TARGETS</td>
</tr>
</tbody>
</table>

### Critical enablers

- Community-based GBV intervention (SASA!)
- HIV prevention for alcohol and drug users
- Alcohol counselling in STI clinics
- Parental monitoring
- School feeding
- Positive parenting
- Teacher support

### Synergies

- Pharmacovigilance
- Supply chain reforms
- Supporting orphan girls to stay in school
- School based HIV/STI risk reduction
- State-provided child-focused cash transfers
- Vocational training for adolescent girls

### Enablers that are part of baseline

- NIMART (80% coverage by 2016/17)
- Defaulter tracers, SMS systems
- Community mobilisation/demand creation for almost all interventions (MMC, HCT, PrEP, microbicides)
- Included SBCC as interventions

### ART efficiency factors

- Adherence clubs
- Home-based ART
- Point-of-care CD4
- GP down referral
- Community-based adherence supporters

### HCT efficiency factors

- Mobile HCT
- Home-based HCT
- Workplace HCT
- PICT
- HCT invitations to pregnancy partners

Source: South Africa HIV and TB Investment Case
Government Policy is already efficient but it can be improved:

- Increase condom availability
- Increase access to male medical circumcision
- Implement social behavior change as part of the program interventions
- Increase HIV testing uptake for adolescent
- Use the money saved to scale up ART
Impact on HIV Epidemic: 2016 Namibia Investment Case

5.1. HIV Incidence (Ages 15-49), 2015-2030 (Percent)

6.1. AIDS-related mortality, 2015-2030 (Percent of people living with HIV, all ages)

Figure 10.1. HIV/AIDS Spending per HIV Infection Averted, 2016-2030 (US$), Relative to "Constant Coverage"
Critical Point of the Response
REDUCTIONS IN NEW INFECTIONS ARE OFF TARGET

Source: UNAIDS 2017 estimates
TREATMENT CASCADE PROGRESS VARIES AMONG REGIONS

Comparison of HIV testing and treatment cascades by region reveals different patterns of progress. Western and central Europe and North America are approaching global targets. Latin America and eastern and southern Africa show high levels of achievement across the cascade. Eastern Europe and central Asia, the Middle East and North Africa, and western and central Africa are clearly on track.

Source: UNAIDS special analysis, 2017; see annex on methods for more details.

1 Cascade for the western and central Europe and North America region is for 2015.
Focus on Young People

Progress to 90/90/90 in 15 to 24 year olds

Adolescent Girls and Young Women

Swaziland Trends: HIV Prevalence Among Women 18-49 Years by Age, SHIMS 1 (2011) vs. SHIMS 2 (2016-17)

Note: Results based on self-report of HIV awareness and ART status (plus ARV testing in Malawi and Zambia), and on viral load testing.

Source: PEPFAR PHIA

Source: Swaziland PHIA
DISTRIBUTION OF NEW HIV INFECTIONS, BY POPULATION, GLOBAL, SUB-SAHARAN AFRICA AND COUNTRIES OUTSIDE OF SUB-SAHARAN AFRICA, 2015


*Only reflects Asia and the Pacific, Latin America and Caribbean regions.
Stigma

• A major barrier to access services across countries

• Key Elements of stigma identified along the prevention and the treatment cascade

• Stigma in the healthcare setting is pervasive
Scaling up for Impact?

• We are at a critical point of the response – a people centred approach

• The Investment Approach application is relevant: it is a combination of programme package with interventions that address barriers that will have the highest impact

• Data: Mapping the gaps will require granular analysis of who is left behind, why is left behind

• Geography and Population: young people, key populations, men

• Combination of interventions that will give the highest impact for that particular gap to be developed and implemented with communities

• Accelerate Quality Implementation: policies that remove barriers to services, resources and adapt quickly to epidemic dynamic and response
Combination prevention targets for 5 pillars by 2020

1. Young women and adolescent girls and their male partners
2. Key populations
3. Condoms
4. Voluntary medical male circumcision
5. Pre-exposure prophylaxis
VMMC

- Cost-effective
- Targeted to young men
- 14 countries
350,000 New Infections among girls & young women, 15-24 years, in 2015

More than two/third occur in Eastern and Southern Africa
A response targeted to the cycle of transmission

**Men 25-40 years (N=79)**
- Knew HIV status: 21.5%
- VL > 50,000: 37.1%

**Community HIV prevalence: 40.3%**

- Most men & women 25-40 years acquire HIV from similarly aged partners (Mean age difference = 1.1 years)

**Young women <25 years (N=43)**
- Knew HIV status: 23.3%
- 62% of male partners are 25-40 years

**Community HIV prevalence: 22.3%**

- Most young women <25 years acquire HIV from older men (Mean age difference = 8.7 years)

**Women 25-40 years (N=56)**
- Knew HIV status: 42.6%
- 63% of male partners are 25-40 years

**Community HIV prevalence: 59.8%**

- 39% of the men linked to a woman < 25 are simultaneously also linked to a woman 25-40 years

When young women reach >25 years they continue the cycle.
Empower the young women and girls

- Early sexual debut and sexual violence are associated with each other and with risk for HIV
- Address Gender-based violence
- Education has positive impact

15 million adolescent girls have experienced sexual violence
Community-mobilization approaches work

• SASA! - “NOW” – Kampala, Uganda

Community mobilization intervention to reduce:
• attitudes towards gender roles and norms
• levels of intimate-partner violence (IPV)
• HIV-related behaviours
• community responses to violence against women.

• The primary trial outcome: experience of physical IPV with an estimated 1201 cases averted (90% CI: 97–2307 cases averted).

• The estimated cost per case of past year IPV averted was US$460.

Source: Strive Consortium
**PrEP**

- **Targeted**: Since 2015, PrEP is recommended by the WHO for populations at ‘substantial risk’ of HIV.
- From efficacy trials to implementation requires to adapt interventions.

<table>
<thead>
<tr>
<th>STUDY AND POPULATION</th>
<th>PROTECTIVE EFFECT OF PREP-ALL STUDY PARTICIPANTS</th>
<th>PROTECTIVE EFFECT AMONG PARTICIPANTS WITH HIGHER ADHERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heterosexual men and women (Partners PrEP®; TDF-2 study®): Botswana, Kenya and Uganda</td>
<td>62% – 76%</td>
<td>Up to 90%</td>
</tr>
<tr>
<td>Gay men and other men who have sex with men (PrEPX study®): Brazil, Ecuador, Peru, South Africa, Thailand and the United States</td>
<td>44%</td>
<td>90%</td>
</tr>
<tr>
<td>People who inject drugs (Bangkok Tenofovir Study®)</td>
<td>49%</td>
<td>75%</td>
</tr>
<tr>
<td>FEM-PrEP®: heterosexual women in Kenya, South Africa and the United Republic of Tanzania</td>
<td>&lt;30% adherence, no effect</td>
<td>&lt;30% adherence, no effect</td>
</tr>
<tr>
<td>VOICE® heterosexual women in South Africa, Uganda and Zimbabwe</td>
<td>&lt;30% adherence, no effect</td>
<td>&lt;30% adherence, no effect</td>
</tr>
</tbody>
</table>

The number of people using PrEP to prevent HIV is now thought to have risen to around 120,000 people, the majority in the United States of America.
PrEP

- Rolling out oral PrEP progressively to broader sub-populations based on risk and geography affect the impact, cost-effectiveness, and total cost of the programme
- The impact, cost, and cost-effectiveness vary by risk group (FSW, SDCs, MSM, PWID, AGYW, AM)
- Varying unit cost of oral PrEP by risk group affect the impact and cost-effectiveness of oral PrEP
- Level of adherence by risk group would affect the impact and CEA of oral PrEP

Illustrative Modelling in a high prevalence country – assume that the country achieves 90-90-90

Source: HP+/Project SOAROral PrEP Modeling, January 2018
Policies: Availability of pre-exposure prophylaxis, by country, 2017
Policies Matter: The negative Impact of User Fees

Barrier: Illness

Barrier: Lack of Funds

Barrier: Lack of Support

Barrier: Fear

Barrier: Healthcare Errors

Barrier: Lack of Information

Coverage of pregnant women who receive ARV for PMTCT - by region

Source: UNAIDS Estimates 2017; Global AIDS Monitoring 2017
Testing – achieving the first ’90

**Botswana**

1 in 5 people in community not on ART had advanced HIV disease
Testing – achieving the first ’90

• Several testing modalities that need to be targeted/selected and implemented driven by specific epidemiology and barriers to access – who is not tested

• Traditionally fragmented HTC models vs an integrated HTS model

• Ensure quality rapid HIV testing service delivery with accurate results

• Develop tools to support testing for partners and family of index patients

• Testing for key populations is part of the package tailored to their needs

• Explore innovative approaches for reaching young people, and men with HIV self-testing, multi-disease campaigns, and targeting male-friendly venues
Linkages: HIV self-testing and PrEP

Effect of HIV self-testing on sexual partner numbers for Zambian female sex workers*

- No effect (increase or decrease) on condom use.
- Evidence was based on self-report, but findings similar to previous findings that HIVST does not increase sexual risk behaviours
- Suggests that HIVST may have additional benefits – esp with regular partners.

Better testing in ANC - & maybe reaching out men?

Female HIV acquisition per sex act is elevated in late pregnancy/postpartum

<table>
<thead>
<tr>
<th>Reproductive Stage</th>
<th>Base Model*</th>
<th>Adjusted Model**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RR (95% CI)</td>
<td>p-value</td>
</tr>
<tr>
<td>Non-pregnant / postpartum</td>
<td>1.00</td>
<td>--</td>
</tr>
<tr>
<td>Early pregnancy through postpartum</td>
<td>4.97 (2.95, 8.38)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Early pregnancy</td>
<td>3.20 (1.24, 8.25)</td>
<td>0.02</td>
</tr>
<tr>
<td>Late pregnancy</td>
<td>5.54 (2.62, 11.69)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Postpartum</td>
<td>7.80 (3.04, 20.02)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Repeat HIV testing during pregnancy in Kenya: an economic evaluation

- Late pregnancy repeat HIV testing cost effective in Kenyan $1,098/QALY - 757 averted perinatal HIV transmissions and 208 reduced maternal and child deaths.
- Model did not consider potential horizontal HIV transmissions averted, use of additional interventions during labour to reduce transmission. These omissions possibly rendered estimates conservative.

In higher incidence settings greater benefit likely
Community-based approaches work

Impact of community-based HIVST distribution on demand for ART in Zimbabwe

Data from 144 ART clinics

- 40 serving the 38 HIVST communities (3,138 initiations)
- 124 comparison (9,670 initiations)

Difference-in-differences in rate of ART initiation by HIVST in catchment area

During HIVST: Adj. RR 1.27 (1.14-1.43)
After HIVST: Adj. RR 1.00 (0.87-1.15)

Sibanda et al abstract #150LB
Key Populations
Proven Approaches for Key Populations

Target by 2020
90% Access to Tailored Prevention and Treatment Services

Acceptability of services is a key element for effectiveness innovative,

Tailored, community-led approaches
Scale Matters

National trends in HIV prevalence in 3 KP in Ukraine

Pooled analysis of 4 nationally-representative IBBS surveys confirmed the decreasing trend in HIV prevalence in PWID and FSW, suggesting:

- ↓PWID HIV due to "massive harm reduction program" supported by GF covering >60% of est PWID nationally
- ↓ in FSW HIV also due to prevention coverage
- recent increase in MSM, esp younger subgroup, may indicate a new wave of non-injection related transmission

Systematic scale up: India Sex Worker program

- National leadership
- More than 150 implementing Community Based Organizations
- Supportive monthly supervision and mentoring;
- Intensive 3-days onsite visits each month to review implementation
- Quarterly grading of implementers
PrEP and early ART for female sex workers in South Africa

PrEP for HIV-negative SWs; early ART for HIV-positive SWs.

- 947 SWs seen in clinic → 692 were HIV tested → HIV prevalence 49%.
- Among those returning to clinic after testing and confirmed clinical eligibility
  - 98% took PrEP (219/224) – 22% seen at 12m
  - 94% (139/148) early ART - 60% seen at 12m
- Little change in consistent condom use or # sex partners (high levels condom use with clients; low use with main partners)
- No seroconversions on PrEP; 7 virological failures on early ART
- Total cost of service delivery $126 for PrEP and $406 for early ART per person-year
TREAT ALL

High Coverage of ART Associated with Decline in Risk of HIV Acquisition in Rural KwaZulu-Natal, South Africa

Frank Tanser,1* Till Bärnighausen,1,2 Erofili Grapsa,3 Jaffer Zaidi,3 Marie-Louise Newell1,3

Use of antiretroviral therapy in households and risk of HIV acquisition in rural KwaZulu-Natal, South Africa, 2004–12: a prospective cohort study

Alain Vandormael, Marie-Louise Newell, Till Bärnighausen, Frank Tanser

Antiretroviral Therapy to Prevent HIV Acquisition in Serodiscordant Couples in a Hyperendemic Community in Rural South Africa

Test and Treat all

Test and treat in Uganda

<table>
<thead>
<tr>
<th>Year</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>80,000</td>
<td>84,000</td>
</tr>
<tr>
<td>2017</td>
<td>160,000</td>
<td>168,000</td>
</tr>
</tbody>
</table>

Test and treat quarterly trend in Zambia

Source: www.unaids.org

The number of people newly initiating HIV treatment increased from 23,000 in the first quarter of 2016 to 45,000 in the final quarter of 2017.
Combination of Interventions will make the greater impact


Countries adopting the Treat All Policy
Human Rights

• The cornerstone of removing legal barriers

• Important and essential at any context of the epidemic

• Broad options to explore the legal barriers (human right assessment) and tools to address in a tailored way adapted to country context
Resource Availability Falling Short of Needs
Investing for Impact

- We are at a critical point and smart investments and rapid quality implementation are urgently needed
- Adult new infections declining too slowly

- **Investment Approach**: a combination of programme interventions combined with those that address the barriers, in particular stigma and human rights, delivered in partnership with communities

- Data and targeted combination of interventions + treat all
- Accelerate implementation: from pilots to scale
- The core policies are adopted quick and continuously evolving
- The response should be dynamic and leverage synergies at multiple level synergistically on multiple levels – individual, family and society
- Flexible – adapts to changing epidemic patterns and can rapidly deploy innovations
Invest for a People Centered Approach

Accelerate
Scaled focused
Prevention and
Treat All

Leave no one
Behind

Invest resources to fast track the response

Use real-time data to adapt quickly