Optimizing HIV/AIDS prevention programs: towards multidimensional allocative efficiency

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HIV/AIDS Prevention Resources

• Consensus about the importance of increasing investment in prevention
• How?
  – Which interventions?
  – For whom?
  – Implemented how?
Today

• Until now, the discussion regarding optimal resource allocation for HIV prevention has focused on two dimensions:
  – Allocation among interventions
  – Allocation among subpopulations
Dimension 1: Allocation among interventions

• To interventions that produce the greatest “value for money”
  
  – Cost-effectiveness Analysis (CEA)
  
  – 1993, World Development Report *Investing in Health*
  
  – *Disease Control Priorities in Developing Countries* (1993)
  
  – *Disease Control Priorities in Developing Countries* (2006)
HIV/AIDS Prevention and Care

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Dimension 1: Allocation among interventions

Comparison of two different interventions in the same subpopulation

Intervention VCT
Intervention IEC

Benefit

Investment
Dimension 2: Allocation among subpopulations

- To subpopulations at greatest risk of acquiring and/or transmitting HIV infection
Subpopulations: “Unified Prevention Theory”

Prevention Interventions

Low Level Concentrated Generalized Low Generalized High

Low HIV PREVALENCE High

Key Populations

General Population
Dimension 2: Allocation among subpopulations

Comparison of the same intervention in two different subpopulations

Street-based Sex Workers

Brothel-based Sex Workers
Evidence of performance in these two dimensions?
## Information for Dimension 1

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Low-level epidemic</th>
<th>Concentrated epidemic</th>
<th>Generalized low-level</th>
<th>Generalized high-level</th>
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<tbody>
<tr>
<td><strong>3 Blood safety</strong></td>
<td>1 study found</td>
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<td>4 studies found</td>
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<td><strong>ART to reduce MTCT</strong></td>
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<td>2 studies found</td>
<td>3 studies found</td>
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<td><strong>Sterile injection</strong></td>
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<td><strong>3 VCT</strong></td>
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<td><strong>Peer-based programs</strong></td>
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<td><strong>STI treatment</strong></td>
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<td><strong>School-based education</strong></td>
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<td><strong>Harm reduction for IDU</strong></td>
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<td><strong>ART for prevention and postexposure prophylaxis</strong></td>
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<td><strong>Condom promotion, distribution and IEC</strong></td>
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<td><strong>Condom social marketing</strong></td>
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<td><strong>Surveillance</strong></td>
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<td><strong>IEC</strong></td>
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<td><strong>Abstinence education</strong></td>
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<td><strong>MTCT, feeding substitution</strong></td>
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<tr>
<td><strong>Drug substitution for IDU</strong></td>
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<td><strong>Universal precautions</strong></td>
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<td><strong>Vaccines</strong></td>
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<td><strong>Behavior change those HIV+</strong></td>
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</table>

No cost-effectiveness studies found

Dimension 1: Example
Allocation of resources to interventions

Information needs for Dimension 2

- Epidemiological surveillance
- Behavioral surveillance
- Country specific
Dimension 2: Example


- Less than 20% of coverage: IDU, SW, MSM
Interventions (1)

Subpopulations (2)
There are different combinations of allocative efficiency that produce the same health result.
Dimension 3: Management of service delivery

- Optimal combination of inputs used to produce a given intervention
  - Cost-effectiveness analysis typically assumes constant (optimal?) efficiency of implementation across sites
  - A cost-effective intervention may turn out to be very cost-ineffective if implemented inefficiently
Management of service delivery
Dimension 3: Management of service delivery

Not all implementations of VCT intervention are at its efficiency frontier.
Information needs for Dimension 3

- Monitoring performance at the level of the facility
- Characteristics of best performers
  - Technological
  - Organizational
Scale and Average Unit Cost of VCT programs in 5 countries

Source: Preliminary analysis of PANCEA data. Unpublished data. 2006
Scale and Average Unit Cost of VCT programs in 5 countries

US$ Average Unit Costs vs. Annual clients receiving VCT

Source: Preliminary analysis of PANCEA data. Unpublished data. 2006
Scale and Average Unit Cost of VCT programs in 5 countries

Source: Preliminary analysis of PANCEA data. Unpublished data. 2006
Optimal Allocation Framework

Inputs (3)

Subpopulations (2)

Interventions (1)

Optimal allocation

A

B

C

0

100

100

100
Allocation Costs -- Subpopulations

Cost of Allocation

Allocation efficiency among subpopulations

Cultural costs

Information costs
Allocation Costs -- Interventions

Cost of Allocation

Allocation efficiency among interventions

Cultural costs

Information costs

0

100 %
Allocation Costs -- Inputs

- Cost of Allocation
- Cultural costs
- Information costs

Allocation efficiency among inputs

0 100 %
Summary

• Three dimensions to achieve allocative efficiency in prevention:
  – Allocation among interventions
  – Allocation among subpopulations
  – Allocation for efficient service delivery

• Not independent

• In combination determine the level of effectiveness of an allocation decision
Summary

• The 3rd has been largely ignored – and it may well be the one where the marginal return to investment in improving efficiency is greatest
  – Importance of Strategic plans that are well linked to operational plans and effective program management

• Improving overall efficiency is possible by improving efficiency in one dimension
  – Consideration of relative costs of improving efficiency in each of the dimensions