Feasibility of Scaling-up Interventions: The Role of Intervention Design

Christian Gericke$^{1,2}$, Christoph Kurowski$^3$, Kent Ranson$^1$, Anne Mills$^1$

$^1$Health Policy Unit, London School of Hygiene and Tropical Medicine
$^2$Dept of Health Care Management, Technische Universität Berlin
$^3$World Bank, Washington, DC
• Why develop a framework for intervention complexity?

• The conceptual framework

• Application of the framework: Trachoma surgery

• Potential usefulness of the framework

• Conclusions
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WHY DEVELOP A FRAMEWORK FOR INTERVENTION COMPLEXITY?

To understand the role of intervention design in expanding access

– Is intervention complexity a useful criterion to complement burden of disease, cost-effectiveness, and affordability considerations?

To indicate R&D priorities for simplifying interventions

– Are there particular interventions that are easy to scale up?
– How can existing interventions be simplified to relax constraints?

To guide decisions on how to implement interventions in a specific setting

– Which characteristics of an intervention can we change to implement it here?
INTERVENTION COMPLEXITY AND SCALING-UP: THE GLOBAL FUND EXAMPLE

• $170 m or 45%* of total funding are used for HAART purchases from pharmaceutical industry

• HAART is difficult to use, requires extensive infrastructure & human resources

• HAART is unlikely to be pro-poor: Socially advantaged groups having access to specialist care will benefit most

• In Thailand, HAART purchases led to decreased HIV prevention budgets and increased infection rates

*Assuming an equal share of resources allocated per country
Source: Potts & Walsh, BMJ 2003;326:1389
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CONCEPTUAL FRAMEWORK FOR CATEGORISING INTERVENTIONS BY THEIR DEGREE OF COMPLEXITY

- **Intervention characteristics**
  - Basic product design
  - Supplies
  - Equipment

- **Delivery characteristics**
  - Facilities
  - Human resources
  - Communication & transport

- **Government capacity requirements**
  - Regulation/legislation
  - Management systems
  - Collaborative action

- **Usage characteristics**
  - Ease of usage
  - Pre-existing demand
  - Black market risk

- Comprehensive enough to capture important constraints
- General enough to apply to different types of interventions
- Policy-relevant in identifying constraints and opportunities
CONCEPTUAL FRAMEWORK: THIRD LEVEL CRITERIA

Intervention characteristics

- Basic product design
  - Stability
  - Standardisability
  - Safety profile
  - Ease of storage
  - Ease of transport

- Supplies
  - Need for regular supplies

- Equipment
  - High-tech equipment & infrastructure needed
  - Different equipments needed
  - Maintenance needed
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TRACHOMA PREVENTION/TREATMENT 4000 B.C. WITH EYE SHADOW

Source: www.mrcophth.com
TRACHOMA IS STILL WORLD’S LEADING CAUSE OF PREVENTABLE BLINDNESS

Epidemiology and pathophysiology
- 6 million people are blind due to trachoma - 15% of world blindness.
- Trachoma is endemic in dry, rural areas of poorest countries.
- Repeated infection leads to inflammation, lid scarring and shortening, in-turning of eyelashes (trichiasis), that rub on the cornea and cause blindness.

WHO SAFE Strategy (1997)
- Surgery, Antibiotics, Facial cleanliness, Environmental improvement.

Trachoma surgery
- Top priority of SAFE strategy as it prevents imminent blindness.
- Standard procedure (bilamellar tarsal rotation) has 80% success rate.
- Ophthalmic nurses can safely perform the procedure in communities.
1. INTERVENTION CHARACTERISTICS: TRACHOMA SURGERY

- Manuals can standardise operation to certain extent. Some variation will persist, as training of operators and equipment will vary.

- Surgical procedures are relatively simple. Good safety profile. Trichiasis recurrence in 20%.

- Storage is no problem. Equipment needed can be carried by the nurse on a motorcycle.

**Basic Product Design**

**Supplies**

- Need for regular supplies with standard surgical material.

**Equipment**

- Only basic equipment for extra-ocular surgery needed.

- Sterilisation of equipment is only maintenance needed - can pose logistical problems for community-based programs.
2. DELIVERY CHARACTERISTICS: TRACHOMA SURGERY

- **Facilities**
  - Surgery can be provided by outreach services in communities or at first level care centres.

- **Human Resources**
  - Minimum requirement: ophthalmic nurses (1 year ophthalmic training), who can learn the procedure in two weeks.

- **Communications & Transport**
  - Low dependency of delivery on communication and transport infrastructure. Access with motorcycle is sufficient.
3. GOVERNMENT CAPACITY REQUIREMENTS: TRACHOMA SURGERY

**Regulation/Legislation**
- No need for specific regulation.

**Management Systems**
- No need for sophisticated management systems.
- No need for intersectoral action within government.

**Collaborative Action**
- In many settings, need for partnership between government and NGOs who employ and train ophthalmic nurses or assistants, or send expatriate ophthalmic surgeons.
- Coordination between government sector, NGOs, and donors required.
4. USAGE CHARACTERISTICS: TRACHOMA SURGERY

Ease of Usage
- Not applicable.

Pre-existing Demand
- Substantial need for information/education campaigns on benefits and safety profile of surgery, as acceptance rates are a particular problem with trachoma surgery. Uptake rates as low as 18% (Tanzania) and 35% (Malawi) in affected communities have been reported.

Black Market Risk
- None.
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INTERVENTION COMPLEXITY CAN COMPLEMENT OTHER CRITERIA FOR PRIORITY SETTING

- Burden of disease
- Cost-effectiveness
- Affordability
- Intervention complexity

<table>
<thead>
<tr>
<th>Cost</th>
<th>Intervention complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td>low</td>
<td>ORT</td>
</tr>
<tr>
<td>high</td>
<td>Trachoma surgery</td>
</tr>
<tr>
<td>low</td>
<td>New antibiotics</td>
</tr>
<tr>
<td>high</td>
<td>HAART</td>
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Highly feasible interventions
INTERVENTION COMPLEXITY ANALYSIS CAN HELP IDENTIFY POTENTIAL FOR SIMPLIFICATION: TRACHOMA SURGERY EXAMPLE

Innovative treatment with sticking-plasters relaxes human resources and usage constraints of trachoma surgery

**Intervention characteristics**
- Sticking-plasters with glue on both sides and standard surgical tape replaced weekly for 3 months. Adherence to regimen was 100% in RCT (Graz et al. 1999).
- No other supplies or equipment needed

**Delivery characteristics**
- Home-based delivery through 1° health staff, community health workers, traditional eye-lash pickers, or relatives

**Government capacity**
- No special requirements on government capacity

**Usage characteristics**
- Easy to use, immediate relief of discomfort
- Circumvenes main reason for low uptake of surgery - fear of the operation.
NON-CONVENTIONAL WAYS TO SCALE-UP INTERVENTIONS IDENTIFIED IN LITERATURE REVIEW

➤ **Simplified technology**

- Medical abortion replacing surgical abortion
- Long-lasting insecticide treated nets

➤ **Different delivery/distribution channels**

- Social marketing for condoms or insecticide-treated nets
- Use of NGOs where government capacity is weak

➤ **Pushing down human resources requirements**

- Midwifery training of traditional birth attendants
- Sticking-plaster treatment replacing trachoma surgery

➤ **Simplified usage**

- Solar water disinfection at point of consumption
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CONCLUSIONS

– Intervention complexity is a useful way to think about feasibility

– It complements burden of disease, cost-effectiveness, and affordability considerations

– It can help to identify R&D priorities to simplify interventions

– It can guide decisions on how to implement interventions in specific settings

Intervention complexity is a useful additional criterion for decision making on scaling-up health interventions