Implementation Science to End the HIV Epidemic in Kenya

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From Implementing Science to a Science of Implementation

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Outline

• Efficacious biomedical tools and investments in HIV programs exist, but gaps remain
• Implementation science can help close this gap
  – More effective, sustainable, efficient, accountable, responsive policies
• Key tension in implementation science: balance relevance and rigor
• Applications in HIV treatment and prevention
• NACC and Kenya can lead the way in Africa and beyond
Efficacious Interventions and Investments to Address the HIV Epidemic

- Of normal lifespan expected with ART
  
  Helleberg CID 2013 Mar;56(5):727-34.

- Transmission reduction with ART
  
  Cohen NEJM 2011; 365:493-505

- Reduction in vertical transmission
  
  Mofeson MMWR 2013 Mar;56(5):727-34.

- Transmission reduction with ART
  
  96%
  
  Cohen NEJM 2011; 365:493-505

- Reduction in HIV transmission with Pre-exposure prophylaxis
  
  Grant N Engl J Med 2010; 363:2587-2599

- 44%-95%

- 94%
  Of normal lifespan expected with ART
  
  Helleberg CID 2013 Mar;56(5):727-34.
...But Gaps in Impact Remain
How Can We Close The Gaps?

• Many potential strategies to promote use of efficacious interventions
  – HIV testing (mobile testing, social networks, incentives)
  – Retention (SMS, community adherence groups, male involvement)
• Which ones work in diverse implementing settings *in Kenya* (and specific regions of Kenya)?
• How do they compare? How much do they cost?
• Should invest in one or more of these strategies?
  – Which combination or package? How to choose?
Implementation science is a multidisciplinary specialty that seeks generalisable knowledge about the behaviour of stakeholders, organisations, communities, and individuals in order to understand the scale of, reasons for, and strategies to close the gap between evidence and routine practice for health in real-world contexts.

Deeply rooted in the implementing context

Odeny Lancet HIV 2015
The Implementation Science Multiplier Effect

Impact = $B_0 + B_1(IS) + B_2(IH) + B_3(ET) + B_4(IS*IH*ET)$

- Implementation science
- Efficacious biomedical tools (e.g., medications)
- Investments in health (both donor and national)
- Magnification effect: implementation science magnifies the effect of investments and tools
The 4 P’s for Implementation Science – Relevance and Rigor

- Puerile
- Pedantic
- Pragmatic
- Populist

Relevance in Diverse Real World Practice Contexts
Relevance: the Right Questions

• Who is asking the questions?
• Right partnerships
  – Policy makers
  – Researchers
  – Community
  – Stakeholders
• Country driven
• Locally driven
# Relevance: the Right Outcomes

<table>
<thead>
<tr>
<th>RE-AIM ELEMENT</th>
<th>Definition</th>
<th>Questions</th>
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<tbody>
<tr>
<td><strong>REACH</strong></td>
<td>Individual-level measure (e.g., patient or employee) of participation.</td>
<td>Can the practice attract large and representative percent of target population?</td>
</tr>
<tr>
<td><strong>EFFECTIVENESS</strong></td>
<td>Magnitude of effect among those successfully treated</td>
<td>Does the practice improve retention / VL suppression?</td>
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<tr>
<td><strong>ADOPTION</strong></td>
<td>The proportion of settings that adopt a given policy or program</td>
<td>Is the practice easily taken up (costs, expertise, time, resources, etc.)?</td>
</tr>
<tr>
<td><strong>IMPLEMENTATION</strong></td>
<td>The extent to which a program is delivered as intended</td>
<td>Can the program be consistently implemented across program elements, different staff, time, etc.?</td>
</tr>
<tr>
<td><strong>MAINTENANCE</strong></td>
<td>Sustainability in a given governance, policy, economic and funding context</td>
<td>Can the settings sustain the program over time without added resources and leadership?</td>
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</tbody>
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Glasgow AJPH 1998
## The Right Outcomes

<table>
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<tr>
<th>RE-AIM ELEMENT</th>
<th>CAGS</th>
<th>Six month refill and clinical review</th>
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<tr>
<td>REACH</td>
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Glasgow AJPH 1998
Relevance: Intervention Conceptualization

• Practice is adaptive
  – Not all patients or clinics need the same intensity of help
  – Patients or clinics who do need help may need different solutions
  – Not possible to tell ahead of time who responds to what
Traditional “Research” Question: A vs. B

Efficacy or Effectiveness

- CAG
- Standard of Care or “Placebo”

Comparative Effectiveness

- CAG
- Six month refills
Pragmatic: Adaptive Strategies

• An adaptive strategy composed of multiple interventions in sequence
• Start with less expensive, and escalate only in those who fail
  – Minimizes expenditures / toxicities for whom the initial intervention is sufficient (optimizing efficiency)
  – Intensifies support for those who need additional or alternative help (optimizing effectiveness)
• Example in differential service delivery
  – Start with six month refill and 6 month clinical review
  – Introduce a CAG for those who fail (assuming social support will help)
Rigor: Case of Loss to Follow-up

July 2013

33 year old woman, CD4 = 313/ul, no symptoms

Starts ART

January 2014

Makes all appointments in the first six months of treatment (monitoring CD4 445), then misses a visit due to attending a burial

Made to wait on return, since not her appointment day -- she completes the visit

July 2014

12 months into treatment, misses visit, a phone call and in person tracing attempt is made, but the patient is not located.
A Sampling-based Solution

All Patients in a Health Unit

Patients who Continue to be Observed

Patients lost to follow-up (B)

Patients sought by tracking (C)

Patients with outcome ascertained by tracking (D)

Patients Lost to Follow-up (B)

Patients Successfully Tracked (D)

$P_w = \text{Patients Lost to Follow-up (B)}$
East Africa IeDEA Network

Dr. T Odeny

Dr. E Bukusi
IeDEA – Revised Retention Estimates
(N=18,081)

Naïve Retention

Sample-revised Retention
Rigor: Policy Evaluation

Girls navigation program for transition between junior and high school

Increase high school completion among girls

Delay sexual debut, increase knowledge and self efficacy

Promote PrEP use through social marketing

PrEP use

Reduced STI/HIV
Rigorous Evaluation: Phased implementation
Randomization – Not Just for Research?
The PROGRESA program in Mexico

314 Communities received intervention

181 Communities did not receive intervention

**Education**
- Secondary school entry increased by 20% for girls and 10% for boys
  - Increased .66 years of schooling total by grade 9

**Health**
- 12% reduction of illness before age 5
  - 17% fewer days in bed and ill among all
    - Increased prenatal visits by 8%
    - Reduced low birthweight by 4%
Program-based Evidence

• “If you want more evidence-based practice, you need more practice-based evidence”
  • Larry W. Green

• “If you want more evidence-based programming, you need more program-based evidence”
  • Larry W. Green (almost)
From “Lab” and “System” Gap to…

Will it be the same?
…Learning Systems for Health
Conclusions

• We have tools to halt the HIV epidemic
• A systematic scientific investment in how to use these tools is needed to reach that goal
• Implementation science is most effective when balances rigor and relevance
• NACC and Kenya can lead the way
  – As consumer and producer of implementation science