“RE-AIMING” Community-based Interventions to Enhance Their Impact

Lisa M. Klesges
University of Memphis
OVERVIEW

- Challenges to moving “evidence to action”
- Background on RE-AIM
- Applications of RE-AIM for Planning Interventions
- Q and A
Designing Translational Research

- Practical Questions: About costs, implementation feasibility

- Contextual: Want to know
  - Does intervention work in particular settings, groups, etc.?
  - Is it broadly applicable? (Generalizable)

- Issues of standardized, fixed vs. adaptive, evolving, inclusive intervention

- Multiple perspectives
RECONCILING DIVERSE PERSPECTIVES—FINDING COMMON GROUND

- Researchers:  
  *Effect size, fidelity*

- Practitioners and Educators:  
  *Feasibility, local applicability*

- Policy Makers and Administrators:  
  *Costs, breadth of application*

- Community:  *Quality of life*
“My question is: Are we making an impact?”

© Cartoonbank.com
“The law of halves” ... 
a story about impact
## ULTIMATE IMPACT OF “MAGIC DIET PILL”

<table>
<thead>
<tr>
<th>Translation Step</th>
<th>Concept</th>
<th>% Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>50% of Clinics Use</td>
<td>Adoption</td>
<td>50%</td>
</tr>
<tr>
<td>50% of Clinicians Prescribe</td>
<td>Adoption</td>
<td>25%</td>
</tr>
<tr>
<td>50% of Patients Accept Medication</td>
<td>Reach</td>
<td>12.5%</td>
</tr>
<tr>
<td>50% Follow Regimen Correctly</td>
<td>Implementation</td>
<td>6.2%</td>
</tr>
<tr>
<td>50% of Those Taking Correctly Benefit</td>
<td>Effectiveness</td>
<td>3.2%</td>
</tr>
<tr>
<td>50% Continue to Benefit After 6 Months</td>
<td>Maintenance</td>
<td>1.6%</td>
</tr>
</tbody>
</table>
In theory, there is no difference between theory and practice. But, in practice, there is.

~Jan L.A. van de Snepscheut

A PROBLEM BY DESIGN??
PURPOSES OF RE-AIM

- To broaden the criteria used to evaluate programs to include elements of external validity
- To evaluate issues relevant to program adoption, implementation, and sustainability
- To help close the gap between research studies and practice by:
  - *Suggesting standard reporting criteria*
  - *Informing design of interventions*
  - *Providing guides for program planners*
RE-AIM TO HELP PLAN, EVALUATE, AND REPORT STUDIES

# RE-AIM Dimensions and Definitions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REACH</strong></td>
<td>1. Participation rate among eligible individuals</td>
</tr>
<tr>
<td></td>
<td>2. Representativeness of participants</td>
</tr>
<tr>
<td><strong>Efficacy/Effectiveness</strong></td>
<td>1. Effects on primary outcome of interest</td>
</tr>
<tr>
<td></td>
<td>2. Impact on quality of life, negative outcomes, costs</td>
</tr>
</tbody>
</table>

[www.re-aim.org](http://www.re-aim.org)
<table>
<thead>
<tr>
<th>Dimension</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADOPTION</strong></td>
<td>1. Participation rate among possible settings</td>
</tr>
<tr>
<td></td>
<td>2. Representativeness of settings participating</td>
</tr>
<tr>
<td><strong>IMPLEMENTATION</strong></td>
<td>1. Extent to which intervention was delivered as intended</td>
</tr>
<tr>
<td></td>
<td>2. Time &amp; costs of intervention</td>
</tr>
<tr>
<td><strong>MAINTENANCE</strong></td>
<td>1. <em>(Individual)</em> Longer-term effects of intervention ≥ 6 months</td>
</tr>
<tr>
<td></td>
<td>2. <em>(Individual)</em> Impact of attrition on outcomes</td>
</tr>
<tr>
<td></td>
<td>3. <em>(Setting)</em> Sustained delivery &amp; modification of intervention</td>
</tr>
</tbody>
</table>
Determine characteristics of interventions that can:

- **Reach** large numbers of people, especially those who can most benefit
- **Be widely adopted** by different settings
- **Be consistently implemented** by staff members with moderate levels of training and expertise
- **Produce replicable and long-lasting effects** (and minimal negative impacts) **at reasonable cost**

Applying RE-AIM to Planning Interventions
Questions For Translation Planning

Who will come? (*Reach and Representativeness*)

What Outcomes will be Produced? (*Effectiveness*)
(Intended and Unintended)

Where will the Program Work? (*Adoption and Representativeness*)

How Consistently will the Program be Delivered? (*Implementation*)

How Long will Effects Last? How Long will Program Remain in Place? (*Maintenance*)
## RE-AIM Planning Questions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Question</th>
<th>Address the Question</th>
</tr>
</thead>
</table>
| **REACH:** Who is intended to benefit? | What percent of your target population will participate in the program? | - Estimate the number and percentage of people in the local population that have the targeted risk factor.  
- Estimate the percent of these people that will be appropriate to be included.  
- Consider if people are being excluded who are in need of the program. |
| | Are participants representative of the targeted population? | - Monitor who participates. Talk with those who decline initially and those who drop out.  
- Examine the characteristics of your participants. Are they similar to those that don’t participate?  
- Track the effectiveness of different recruitment strategies. Determine if targeted materials are needed. |
# RE-AIM Planning Questions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Question</th>
<th>Address the Question</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADOPTION</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| What settings will adopt the program? Where does the program work? | What percent of targeted settings are estimated to participate? | - Estimate the number and percentage of settings or organizations that meet your defined criteria.  
- Record the number of excluded settings and why. Record the percentage that agree to participate and reasons they refuse. |
|                  | Are the participating settings representative of all targeted?            | - Evaluate the representativeness of participating settings. Compare characteristics of those that agree to those that do not agree to be included. Are they similar? E.g., type and size of organization, number of clients, worksite policies? |
Self-rating Quiz

1. How confident are you that you will be able to attract a large proportion of your target population to participate in your program?
   Moderately confident

2. How confident are you that your program will successfully include all members of your target population regardless of race/ethnicity, gender, age, or socio-economic status?
   Moderately confident

3. How confident are you that your program will reach those people in your target population who have the highest need?
   Moderately confident

Score: [ ]

WAYS TO IMPROVE REACH

Next >
RATE (RE-AIM) YOUR PROGRAM

REACH

1. What percent of your target population has received or participated in your program?
   
   _____ %

2. How confident are you that your program is successfully attracting all members of your target population regardless of race/ethnicity, gender, age, or socio-economic status?

   1  2  3  4  5  6  7  8  9  10
   Not at all  Somewhat  Completely
Target population [y]

Those exposed to recruitment [a]

Those responding to recruitment [b]

Those eligible [c]

Those who participate [d]
Calculating Reach

**Target population [y]**

**Those exposed to recruitment [a]**

**Those responding to recruitment [b]**

**Those eligible [c]**

**Those who participate [d]**

Enter your numbers without commas:

Email Address:

Estimated target population [y]

Estimated number exposed to recruitment [a]

Actual number who respond to recruitment [b]

Actual number who are eligible [c]

Actual number who participate [d]

% of target who respond to recruitment 0%

% of eligible who participate 0%

% of REACH into target population 0%

% excluded from study 0%

% participation among eligible 0%

>>> Ideas about finding numbers for estimates

As you tackle REACH issues, there are two important questions to ask:

1) What percent of the target population are you reaching? (Use the calculator to get some answers.)

2) Are your participants the people you need to reach? In other words, are the participants representative of your target population?

>>> New calculators to be added soon!

There are ways to calculate representativeness and we will post calculators when they are available. Please check back!
## RE-AIM Planning Questions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Question</th>
<th>Address the Question</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Implementation</strong></td>
<td>Are different components delivered as intended?</td>
<td>- Provide clear intervention protocols.</td>
</tr>
<tr>
<td></td>
<td>Can a variety of staff deliver the program successfully?</td>
<td>- Provide staff with continuous training and technical assistance.</td>
</tr>
<tr>
<td></td>
<td>What parts of the program are adaptable, without consequence?</td>
<td>- Monitor and assess variability in delivery across staff. Who is having trouble?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Routinely assess whether program is implemented as originally planned, note any adaptations to accommodate delivery.</td>
</tr>
<tr>
<td>Dimension</td>
<td>Question</td>
<td>Address the Question</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Effects</strong></td>
<td><strong>Is the program achieving the outcomes you set?</strong></td>
<td>- Consider multiple outcome measures that are specific, reliable and sensitive to assess change.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Measure retention to document who drops out and when. Learn why.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Track the cost of aspects of the program, e.g., recruitment, staffing, training, equipment, space, and evaluation.</td>
</tr>
<tr>
<td><strong>Will the program be effective?</strong></td>
<td><strong>Is the program producing unintended consequences?</strong></td>
<td>- Evaluate adverse events and try to understand causes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Consider quality of life measurements.</td>
</tr>
</tbody>
</table>
### RE-AIM Planning Questions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Question</th>
<th>Address the Question</th>
</tr>
</thead>
</table>
| **Maintenance**    | **Does the program keep participants engaged?** **Produce long-lasting effects?**             | - Design intervention to reduce barriers.  
- Provide continuing contact with participants and include booster and follow-up sessions.  
- Calculate number and percentage of participants that continue in the program.  
- Conduct long-term assessments to learn why changes are maintained for some participants, but not others. |
| **Sustainability** | **Can organizations sustain the program over time?**                                         | - Integrate program within existing systems and groups.  
- Identify competing demands in the organization.  
- Explore what differentiates organizations who continue program vs those that do not. |
Public health workers, ...deserve to get somewhere by design, not just by perseverance.

McKinlay & Marceau, AJPH, 2000
USING RE-AIM FOR PLANNING AND PERIODIC SELF-EVALUATION


Resources: www.re-aim.org
Decision Making: Which intervention to choose?
 Clinic attracted 50% (vs. 41%) of eligible participants
ADOPTION: WHICH IS BETTER?

Linked approach recruited 47% of practices; in-office delivery approach recruited 6%
RE-AIM for Translation Decisions

- **REACH - % Participation**: 83%
- **EFFECTIVENESS - Outcome ES**: 63%
- **ADOPTION - % Settings**: 78%
- **IMPLEMENTATION - % Intended Tx**: 74%
- **MAINTENANCE - Long-term Change**: 51%

**Efficacy Focus**

- REACH: 24%
- Effectiveness: 20%
- Adoption: 35%
- Implementation: 70%
- Maintenance: 40%
RE-AIM Metrics

Individual-Level Impact

≈ Reach (%participate) x Effect Size (ES)

- Population Focus = .83 x .20 = .17
- Efficacy Focus = .24 x .63 = .15

RE-AIM Metrics

Setting-Level Impact

≈ Adoption (%participate) x Implementation (% protocol delivery)

- Population Focus = 0.78 x 0.70 = 0.55
- Efficacy Focus = 0.35 x 0.74 = 0.26

RE-AIM Metrics

2) Setting Level Impact =

\[ \text{Multi-level Adoption} \times \text{Composite Implementation} \]

3) Efficiency = \text{Cost of Intervention (over control)}

\[ \text{Reach} \times \text{Composite Effectiveness} \]

## Individual Level Impact

<table>
<thead>
<tr>
<th>Index and Formula</th>
<th>Program A</th>
<th>Program B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation Rate</td>
<td>.50</td>
<td>.38</td>
</tr>
<tr>
<td>ES differential participation characteristics</td>
<td>.07</td>
<td>.06</td>
</tr>
<tr>
<td>ES key outcomes</td>
<td>.23</td>
<td>.17</td>
</tr>
<tr>
<td>ES differential impact</td>
<td>.11</td>
<td>.28</td>
</tr>
<tr>
<td>ES quality of life (positive)</td>
<td>.09</td>
<td>.36</td>
</tr>
<tr>
<td><strong>Individual Impact Summary</strong></td>
<td>.09</td>
<td>.08</td>
</tr>
</tbody>
</table>

\[
\text{Impact} \sim (\text{Participation Rate} - \text{Median ES}_{\text{differential characteristics}}) \times (\text{Median ES}_{\text{key outcomes}} - \text{Median ES}_{\text{negative outcomes}} - \text{Median ES}_{\text{differential impact}})
\]
NEW RE-AIM SUMMARY METRICS

- Health disparities – e.g., who participates and who benefits
- Costs and cost-effectiveness
- Compare effects of different interventionists
- Combining different factors to produce composite outcomes

Glasgow et al. *Health Education Research* 2006;21(3):688-694
Recommendations

- Greater transparency in reporting especially on external validity: *adoption, implementation, adaptation, generalizability, sustainability*

- Need to design studies and plan for translation from the outset, for programs and policies

- Comprehensive evaluation, clarify intervention impact metrics, effectiveness and cost-effectiveness for decision-makers

- Estimate and compare potential population impact and cost effectiveness among various programs and policies for decision makers
RE-AIM Group

David Dzewaltowski
Kansas State University

Paul A. Estabrooks
Virginia Tech

Russell E. Glasgow
Kaiser Permanente Colorado

Originally Supported by Robert Wood Johnson Foundation
QUESTIONS?

“In an increasingly complex world, sometimes old questions require new answers.”