Understanding implementation research

Yodi Mahendradhata
What do we mean by ......

Health system research?

Implementation research?

Operational research?

Health policy research?

Health services research?
IR Traditions, Research Questions, and Initial Core Disciplines (Peters et al 2013)

<table>
<thead>
<tr>
<th>Implementation Research Tradition</th>
<th>Typical research questions</th>
<th>Core disciplines at origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dissemination and implementation of evidence-based Medicine</td>
<td>What promotes the integration of research findings and evidence on interventions into healthcare policy and practice?</td>
<td>Epidemiology, behavior change (psychology, sociology, education)</td>
</tr>
<tr>
<td>Participatory action research</td>
<td>How can we (community members as research participants) learn and be empowered to take action?</td>
<td>Social psychology, education, and anthropology</td>
</tr>
<tr>
<td>Management improvement</td>
<td>How are the right services delivered to the right clients while meeting the right standards for quality?</td>
<td>Management, engineering</td>
</tr>
<tr>
<td>Operational research</td>
<td>Which solution provides the most rational basis for a decision concerning the optimal performance of a system?</td>
<td>Management, engineering, math</td>
</tr>
</tbody>
</table>
| Policy implementation                                           | • How was a policy implemented, and what contributed to reaching the objectives or other effects?  
  • Which actors are involved in programme delivery in specific locations, how do they understand the problem of implementation, and what influences their behaviour? | Political science, public policy, public administration                                     |
Implementation science perspective of implementation research?
RESEARCH ARTICLE

Low implementation of Xpert MTB/RIF among HIV/TB co-infected adults in the International epidemiologic Databases to Evaluate AIDS (iDEA) program

Kate Clouse¹,²,³, Meridith Blevins¹,⁴, Mary Lou Lindegren¹,², Marcel Yotiebieng⁵, Dung Thi Nguyen⁶, Alfred Omondi⁷, Denna Michael⁸, Djimon Marcel Zannou⁹, Gabriela Carriquiry¹⁰, April Pettit¹,²,³*, International Epidemiologic Databases to Evaluate AIDS (iDEA) collaboration

¹ Vanderbilt Institute for Global Health, Nashville, Tennessee, United States of America, ² Vanderbilt University Medical Center, Nashville, Tennessee, United States of America, ³ Vanderbilt Tuberculosis Center, Nashville, Tennessee, United States of America, ⁴ Department of Biostatistics, Vanderbilt University Medical Center, Nashville, Tennessee, United States of America, ⁵ College of Public Health, The Ohio State University, Columbus, Ohio, United States of America, ⁶ National Hospital of Tropical Diseases, Hanoi, Vietnam, ⁷ Academic Model Providing Access To Healthcare (AMPATH), Eldoret, Kenya, ⁸ National Institute for Medical Research (NIMR), Mwanza, Tanzania, ⁹ Faculté des Sciences de la Santé, Université d'Abomey-Calavi, Cotonou, Bénin, ¹⁰ Instituto de Medicina Tropical Alexander von Humboldt, Lima, Peru

OPEN ACCESS

Citation: Clouse K, Blevins M, Lindegren ML, Yotiebieng M, Nguyen DT, Omondi A, et al. (2017)

* april.pettit@vanderbilt.edu

† Membership of the International Epidemiologic Databases to Evaluate AIDS (iDEA) collaboration for participating programs is provided in S2 Appendix.
RESEARCH ARTICLE

Improving Coverage and Compliance in Mass Drug Administration for the Elimination of LF in Two ‘Endgame’ Districts in Indonesia Using Micronarrative Surveys

Alison Krentel¹*, Rita Damayanti², Christiana Rialine Tialey², Nugroho Suharno², Mark Bradley³, Timothy Lynam⁴

¹ Department of Infectious and Tropical Diseases, London School of Hygiene and Tropical Medicine, London, United Kingdom, ² Center for Health Research, Faculty of Public Health, Universitas Indonesia, Jakarta, Indonesia, ³ Global Health Programs, GlaxoSmithKline, London, United Kingdom, ⁴ Reflecting Society Pty Ltd, Townsville, Australia

* alison.krentel@lshtm.ac.uk

Abstract
“Implementation research is that subset of HSR that focuses on how to promote the uptake and successful implementation of evidence-based interventions and policies....”

(Sanders & Haines 2006)
In practical terms, implementation science, research and practice in health focuses on:

• identifying common implementation problems;
• understanding the factors that hinder or facilitate access to health interventions;
• developing and testing solutions to tackle implementation barriers;
• determining the best way to introduce potential solutions into a health system, or
• learning how to promote its large scale use and sustainability

Source: Peters, Adams, Alonge et al 2013
## Defining research to improve health systems (Remme et al 2010)

<table>
<thead>
<tr>
<th>Research Domain</th>
<th>Primary characteristics</th>
<th>Users</th>
<th>Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operational</strong></td>
<td>Operational issues of specific health programmes</td>
<td>Health care providers, programme managers</td>
<td>Local</td>
</tr>
<tr>
<td><strong>Implementation</strong></td>
<td>Implementation strategies for specific products or services</td>
<td>Programme managers, R&amp;D managers</td>
<td>Local/Broad</td>
</tr>
<tr>
<td><strong>Health system</strong></td>
<td>Issues affecting some or all of the building blocks of a health system</td>
<td>Health system managers, policy makers</td>
<td>Broad</td>
</tr>
</tbody>
</table>
Examples of research questions for the three research domains (Remme et al 2010)

<table>
<thead>
<tr>
<th>Domain</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational</td>
<td>Which locations should be targeted for delivering HIV prevention services in Kawempe district, Uganda?</td>
</tr>
<tr>
<td></td>
<td>Which of the current ART payment strategies in use in Nairobi should be retained for the new integrated programme?</td>
</tr>
<tr>
<td>Implementation</td>
<td>How to improve access to vaccination among children who are currently not reached by immunisation services?</td>
</tr>
<tr>
<td></td>
<td>How to deliver ivermectin for onchocerciasis control and ensure sustained high treatment coverage in isolated rural communities?</td>
</tr>
<tr>
<td>Health system</td>
<td>How effective are different policies for attracting nurses to rural areas?</td>
</tr>
<tr>
<td></td>
<td>What has been the impact of the rapid scale-up of HIV programmes on fragile health systems?</td>
</tr>
</tbody>
</table>
The Core of Implementation Science

What?
New Dx
New Tx

How?
Implementation Strategies
Implementation Research Methods

Outcomes
Feasibility
Fidelity
Penetration
Acceptability
Sustainability
Uptake
Costs

Outcomes*
Service
Efficiency
Speed
Timeliness

* IOM Standards of Care

The Usual

IRO could also be conceptualized as intermediate outcomes of health outcomes!

CONTEXT

Proctor et al 2009 Admin. & Pol. in Mental Health Services
## Implementation outcome variables
(Peters et al 2013; WHO 2014)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Working definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptability</td>
<td>The perception among stakeholders (for example, consumers, providers, managers, policy makers) that an intervention is agreeable</td>
</tr>
<tr>
<td>Adoption</td>
<td>The intention, initial decision, or action to try to employ a new intervention</td>
</tr>
<tr>
<td>Appropriateness</td>
<td>The perceived fit or relevance of the intervention in a particular setting or for a particular target audience (for example, provider or consumer) or problem</td>
</tr>
<tr>
<td>Feasibility</td>
<td>The extent to which an intervention can be carried out in a particular setting or organization</td>
</tr>
<tr>
<td>Fidelity</td>
<td>The degree to which an intervention was implemented as it was designed in an original protocol, plan, or policy</td>
</tr>
<tr>
<td>Implementation cost</td>
<td>The incremental cost of the implementation strategy (for example, how the services are delivered in a particular setting). The total cost of implementation would also include the cost of the intervention itself</td>
</tr>
<tr>
<td>Coverage</td>
<td>The degree to which the population that is eligible to benefit from an intervention actually receives it.</td>
</tr>
<tr>
<td>Sustainability</td>
<td>The extent to which an intervention is maintained or institutionalized in a given setting.</td>
</tr>
</tbody>
</table>
Theories, models and frameworks used in implementation science (*Nilsen* 2015)

- Process models
- Determinant frameworks
- Classic theories
- Implementation theories
- Evaluation frameworks
Commonly cited frameworks in IR

CFIR

RE-AIM

NIRN Stages of Implementation

ADAPT-ITT

WHO ExpandNet
Consolidated Framework for Implementation Research (CFIR)*

Inner setting

Outer setting

Intervention

Individual

Process

*Source: http://cfirguide.org/constructs.html
Consolidated Framework for Implementation Research (CFIR)*

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Outer setting</th>
<th>Inner setting</th>
<th>Individuals</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention source</td>
<td>Patient needs &amp; resources</td>
<td>Structural characteristics</td>
<td>Knowledge &amp; beliefs</td>
<td>Planning</td>
</tr>
<tr>
<td>Evidence strength &amp; quality</td>
<td>Cosmopolitanism</td>
<td>Networks &amp; communications</td>
<td>Self-efficacy</td>
<td>Engaging</td>
</tr>
<tr>
<td>Relative advantage</td>
<td>Peer pressure</td>
<td>Culture</td>
<td>Individual stage of change</td>
<td>Executing</td>
</tr>
<tr>
<td>Adaptability</td>
<td>External policy &amp; incentive</td>
<td>Implementation climate</td>
<td>Identification with organization</td>
<td>Reflecting &amp; evaluating</td>
</tr>
<tr>
<td>Trialability</td>
<td></td>
<td>Readiness for implementation</td>
<td>Other personal attributes</td>
<td></td>
</tr>
<tr>
<td>Complexity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design quality &amp; packaging</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: http://cfirguide.org/constructs.html
Methods commonly used in IR
(Peters et al 2013)

- Mixed methods
- Participatory action research
- Quality improvement studies
- Effectiveness-implementation hybrid trials
- Pragmatic trials
Characteristics of IR

1. Systematic
2. Multidisciplinary
3. Contextual
4. Complex
5. Real-life situations

*Source: http://adphealth.org/irtoolkit/
### Spectrum of implementation research relevance
(Peters et al 2013)

<table>
<thead>
<tr>
<th></th>
<th>Implementation not relevant</th>
<th>Implementation relevant but not considered</th>
<th>Implementation relevant but effects reduced</th>
<th>Implementation studied as contributing factors</th>
<th>Implementation as primary focus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Context</strong></td>
<td>Controlled</td>
<td>Largely controlled</td>
<td>Real world &amp; partial control</td>
<td>Real world &amp; population</td>
<td>Real world &amp; population</td>
</tr>
<tr>
<td><strong>IR Variables</strong></td>
<td>Not relevant</td>
<td>Assumed to be controlled or not relevant</td>
<td>Controlled</td>
<td>Independent variables</td>
<td>Primary outcome/ determinants</td>
</tr>
<tr>
<td><strong>Examples</strong></td>
<td>Basic science, Phase I and II clinical trials</td>
<td>Efficacy study, Phase III RCT</td>
<td>Pragmatic trials, Quasi experimental study with comparison</td>
<td>Participatory research, Observational studies assessing implementation</td>
<td>Mixed method to determine acceptability</td>
</tr>
</tbody>
</table>
Key questions to assess research designs or reports on implementation research (Peters et al 2013)

- Does the research clearly aim to answer a question concerning implementation?
- Does the research clearly identify the primary audiences for the research and how they would use the research?
- Is there a clear description of what is being implemented (for example, details of the practice, programme, or policy)?
- Does the research involve an implementation strategy? If so, is it described and examined in its fullness?
- Is the research conducted in a “real world” setting? If so, is the context and sample population described in sufficient detail?
- Does the research appropriately consider implementation outcome variables?
- Does the research appropriately consider context and other factors that influence implementation?
- Does the research appropriately consider changes over time and the level of complexity of the system, including unintended consequences?
Policy implementation research?
Policy implementation?

“Implementation is no longer solely about getting what you once wanted but, instead, it is about what you have since learned to prefer until, of course, you change your mind again”

Browne & Wildavsky (1984)
Policy implementation (Mazmanian & Sabatier 1983)

• Implementation is the carrying out of policy decision, usually incorporated in a statute but which can also take the form of important executive orders or court decisions

• Ideally, that decision identifies the problem(s) to be addressed, stipulates the objective(s) to be pursued, and, in a variety of ways, “structures” the implementation process

• The process normally runs through a number of stages beginning with passage of the basic statute, followed by the policy outputs (decisions) of the implementing agencies, the compliance of target groups with those decisions, the actual impact of agency decisions, and finally, important revisions (or attempted revisions) of the basic statute
Policy implementation?

- What happens between policy expectations and (perceived) policy results (Ferman 1990)

- Policy implementation is what develops between the establishment of an apparent intention on the part of government to do something, or to stop doing something, and the ultimate impact in the world of action (O’Toole 2000)
### Three generations of policy implementation research
(Nilsen et al 2013; Saetren 2014)

| 1\textsuperscript{st} generation research | • Dominated by explorative a-theoretical single case-studies based primarily on qualitative data  
• Primarily seeking to position implementation within a policy cycle divided into a series of stages  
• Implementation failure was described using a top-down approach, which identified factors to explain an implementation gap from the perspective of central government policy makers |
| 2\textsuperscript{nd} generation research | • Moving beyond a success or failure perspective towards improved analysis of variables that could explain the impact of the implementation process  
• More comparative and theoretical-deductive oriented implementation research and hypotheses testing on quantitative data  
• Construction of new analytical frameworks accompanied by a debate between top-down and bottom-up perspectives |
| 3\textsuperscript{rd} generation research | • Reconcile the two approaches by developing synthesized models and frameworks  
• Importance of rigorous research methodology was emphasized, with more prominence given to longitudinal study designs and comparative multiple case studies to increase the number of observations |
“The study of policy implementation has reached an intellectual dead end”

*Peter deLeon (1997)*
Theories of policy change and implementation
(Cerna 2013)

**Policy change**
- Path dependence
- Advocacy coalition framework
- Policy learning
- Policy diffusion
- Punctuated equilibrium
- Institutional change
- Multi-level governance
- Policy networks
- Disruptive innovation

**Policy implementation**
- Top-down vs bottom up
  - Top down approach
  - Bottom up approach
  - Combined approach
- Rational choice
  - Game theory
  - Agency theory
Policy implementation research

• Policy implementation research is founded in social science
• The implementation object in policy implementation research ranges from the relatively concrete and easily defined to broader and longer-term policy development such as the influence of political coalitions on political development over decades
• The implementation process often involves many interdependent actors, sometimes spanning many years.
• The outputs and outcomes of the implementation endeavor can be very heterogeneous
• Policy implementation researchers have to a greater extent stressed the inherent interdependency between various factors as well as the crucial importance of the context, which makes it difficult to generalize findings on the relative importance of individual determinants
An implementation evaluation of a policy aiming to improve financial access to maternal health care in Djibo district, Burkina Faso

Loubna Belaid1* and Valéry Ridde1,2

Abstract

Background: To bring down its high maternal mortality ratio, Burkina Faso adopted a national health policy in 2007 that designed to boost the assisted delivery rate and improving quality of emergency obstetrical and neonatal care. The cost of transportation from health centres to district hospitals is paid by the policy. The worst-off are exempted from all fees.

Methods: The objectives of this paper are to analyze perceptions of this policy by health workers, assess how this health policy was implemented at the district level, identify difficulties faced during implementation, and highlight interactional factors that have an influence on the implementation process. A multiple site case study was conducted at 6 health centres in the district of Djibo in Burkina Faso. The following sources of data were used: 1) district documents (n = 23); 2) key interviews with district health managers (n = 10), health workers (n = 16), traditional birth attendants (n = 7), and community management committees (n = 11); 3) non-participant observations in health centres; 4) focus groups in communities (n = 62); 5) a feedback session on the findings with 20 health staff members.
Characteristics of research

Policy implementation

• Policymaking is usually treated as too complex to attract a general theory.
• concern naturally occurring circumstances, meaning that the investigator is not able to control or manipulate different variables.
• The case study method is commonly employed to account for a large number of causal factors.
• Third-generation research in the field sought to make greater use of multiple case studies and involve more longitudinal studies, to make the process ‘more
• suffered from a lack of relevant data and an inability to distil a vast range of causes of policy outcome variation into a manageable and testable general theory

Implementation science

• Early implementation science research tended to view the research–practice relationship as unidimensional and linear, with a flow of knowledge from the research community into the practice arena.
• today incorporates theoretical and methodological approaches from social science even though it features far more quantitative research than seen in policy implementation research.
• Case studies are not afforded the same status as in policy implementation research.
• Qualitative research is most typically conducted to identify and describe problems in creating practice change and to generate hypotheses about determinants of change.