Evaluating implementation and improvement

20jan/22jan15

John Øvretveit,
Director of Research, Professor of Health Innovation and Evaluation, Karolinska Institutet, Stockholm, Sweden
Objectives

• to improve Veteran’s healthcare more quickly
• ...by doing and using implementation evaluation research
• know tools and resources to help me

... for researchers and practitioners unfamiliar with improvement and/or implementation research
My needs – *most* useful to me would be…

Vote for one (3) – I will show all 3 then ask your vote

1. How to evaluate implementation
2. How to evaluate improvement
3. Difference and overlap between implementation and improvement sciences
My needs – *most* useful to me would be…

Vote for one – I will show all 4 then ask your vote

4 Evaluating implementation fidelity

5 Evaluating adaptations

6 Action evaluations to improve implementation and build knowledge

7 What? Explain all above please
Three Challenges

• “Inappropriate variations” in use of effective interventions across VA services
  – Vet’s deserve more for their service

• Changing "usual way" is difficult
  – when high workload & low change capacity-expertise & other Va priorities

• Also for VA researchers
  – to use new methods/practices
  – Reviewers not familiar with methods, your training, identity &
    to work more closely with ops & funding issue
Va Opportunities

• Find and focus on those effective improvements easy to implement or high impact
  – E.g. appointment reminders texting, adherence support
  – interventions which reduce costs and increase quality and easy to implement in most settings – e.g. Could researchers do this better – could the VA system?
  – relook at Queri steps & assumptions

• Generic implementation models >>> family of Implement approaches, for different interventions / settings / subjects

• Innovate in new practice-partnership research methods, in advance of Academia
  inc. using digital data for faster lower cost research & improvement
Disclosure – 5 biases/assumptions

• Reduce suffering more effectively by
  – a) measuring outcomes
  – b) *learning* how to get the best outcomes - research and practitioner (and patients)

• Data essential, varying quality, and need care to attribute “outcomes” (researcher expertise)

• Match method to purpose of the research
  ( = RCT best, and worst, of evaluation designs depending on user questions and resources)
Disclosure – Johns biases/assumptions

• **Environment** can make intervention more or less effective – sometimes need to understand

• **European bias:**
  – more emphasis on social context
  – qualitative and mixed-methods data-gathering valid and best, if done right, for some purposes
Final “preface points”

• Many improvements or implementations refer to changes to health care practices, processes or organisation
  – not to interventions to patients (treatments)

  = ”Implementing a treatment" usually refers to enabling providers to use it,

• can refer to what is done to enable patients to use it (adherence)

• Can evaluate a) if providers change, b) impact on patients
I & I = two domains separated by a “common language”

- No precision, no science. - How John will be using the words:

Improvement:

- better than otherwise, for someone, in some respect
  = outcome of an “intervention” - eg new treatment, new care process

Improvement method:

- Systematic approach to make an improvement (QI & gen)
  - (eg process diagram, PDSA, breakthrough collaborative)
  - Some “branded” some not

Implementation: enabling take up of new way
Evaluation
- providing systematically gathered information
- to a user, to judge value (using their criteria)
- of "the thing" being evaluated
- by making a comparison

4 types of comparisons - between

• Objectives Vs Achievements
  – (eg Va Blueprint for excellence)
• Plan Vs Reality - what was done
  – (or standards to everyday operations)
• Before on some measure Vs Later in our service
• B Vs L - compared to those in other service not exposed
Observation

1) “intervention” & “outcome”- people mean different things

Intermediate outcome of implementation = “new way” is used

Final outcome = patient/cost difference
(needs full implementation of the intervention-change)

2) Many explanations for observed differences Evaluation design aims to exclude other explanations (e.g. X is implemented by training in one service, by reminders in EMR in other) compare and control
Frontier Implementation research

Fundamentalists

• Implementation is only about evidence based proven interventions

Progressives

• “core” & “adaptable” – give guidance
• Must take dose and 3/day, but can take before or after meals, with or without alcohol

Radicals?

1/21/2015
3 Radicals: study adaption

• Will not be used if not adapted
• Adaptation will engage and motivate
  “Not invented here”
• Learn what works by
  – documenting how they change the intervention content & why
  – how they implement
= Translate in the spirit of the intervention for a context, not “copying to the letter”
1How to evaluate implementation
Example: Implement CTI

People leaving hospital - support for self help/care – 4 week length

1) Education for self-care

2) Coach Visits 1 & follow up calls 3
RCT evaluated – proven effective

- Research funded version
- Intervention specified in protocol
- Implementation not described

The intervention was conducted in collaboration with a large not-for-profit capitated delivery system that cares for more than 60,000 patients 65 years or older in Colorado. At the time the study was initiated, the 30-day hospital readmission rate in this delivery system for this particular population was approximately 15%. The delivery system contracts with a single hospital, 8 skilled nursing facilities, and a single home health care agency. Patients received care from hospital-based physicians...
Implementation Evaluation – 5Qs – how
1 Describe – intervention change & the implementation approach
2 Outcomes?
3 Context?
4 Attribution?  
  (how much the method for implementation vs other influences which led to take up)
5 Generalisation?  (where, and for, what would this implementation approach work best/not so well)
Implementation Evaluation

1) Agree with user of evaluation what they most need to know to act more effectively

Typically:

- What was the “implementation approach” used?
- Did it change practice/organisation?
  - Or enable patients to adhere to X
  - “Intermediate outcome” of the implementation
“3S framework” to describe “Implementation approach”

**Strategy** Steps over time

Feb 1) Form project team
March 2) Gather initial data
April 3) etc.

**Supports**
- Systems for data
- Facilitators

Example – QI breakthrough collaborative
Example of 3S elements – QI breakthrough collaborative

Select Topic

Planning Group

Participants

Prework

Codify Knowledge

LS 1 → LS 2 → LS 3

Printed Reports

National Congress

Supports

E-mail  Visits
Phone  Assessments
One Page Reports
List of implementation methods (Øvretveit 2012)

<table>
<thead>
<tr>
<th>Implementation Strategies</th>
<th>John Øvretveit’s list of evidence-based implementation strategies (John Øvretveit, Karolinska Institutet, Sweden <a href="mailto:jovretbis@aol.com">jovretbis@aol.com</a>)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Show the patient’s experience</td>
<td>The patient talks about their experience with the old way; another or same patient talks about their experience with the new way.</td>
</tr>
<tr>
<td>2. Show the money</td>
<td>Financial incentives for new behaviours - extra income or loss of income, one-off payments for eg education or changes to computer systems.</td>
</tr>
<tr>
<td>3. Show the results (of the new way)</td>
<td>Routine, timely feedback on compliance or performance in visual &amp; comparative display. Presenting feedback in terms of time saved or the value of the results to the individual or patient.</td>
</tr>
<tr>
<td>4. Training which involves practising new behaviour, with guidance-feedback (eg simulation)</td>
<td>Activating patients or carers to expect &amp; ask for the new way of working. For example, in the patient’s hospital admissions materials: ‘Our staff wash hands before touching you; ask them if they have washed their hands or wear this badge’.</td>
</tr>
<tr>
<td>5. Summaries or visual ‘job aids’ at the point of care (simple 1 page)</td>
<td></td>
</tr>
<tr>
<td>6. Reminders</td>
<td></td>
</tr>
<tr>
<td>7. Peer-based enabling sessions (ideally led by respected leader)</td>
<td></td>
</tr>
<tr>
<td>8. Leader actions</td>
<td>Motivational talks, individual coaching, modeling the new behaviours so all see or hear that they practice it (opinion leaders, clinical champions).</td>
</tr>
<tr>
<td>9. Facilitator/coach support</td>
<td>Academic detailing visits or sessions (on-site, one on one or group discussion about an innovation’s use in local setting), easy access to expert to ask questions (eg quick telephone support).</td>
</tr>
<tr>
<td>10. Management actions</td>
<td>Supportive supervision; escalating levels of disciplinary action for non-compliance; creating supportive environments using the ‘indirect strategies’ listed below.</td>
</tr>
<tr>
<td>11. Education or training</td>
<td></td>
</tr>
<tr>
<td>12. Showing the evidence (of benefit)</td>
<td></td>
</tr>
</tbody>
</table>

Indirect strategies – changes to the environment

1. Changing organisation to enable or reinforce new behaviours
   - Changing work-flow or information-flow
   - Providing support staff to take over some tasks, so as to release time for others to learn or practice the new behaviours
2. Changing systems to enable or reinforce new behaviours
   - Changing IT to give reminders at point of care or easy access to information relevant to the new behaviour
   - Providing support expertise
3. Changing physical environment of practice to enable or reinforce new behaviours
   - Changing organisation or workflow, reducing noise and interruptions
4. Higher level changes
   - Regulatory (eg accreditation standards, licensing changes)
   - Financial (reimbursement or grants)
   - Policies of professional or organisational associations "good practice" documents and clinical guidelines
I mple Eval design - depends on user’s needs

1) Was the method effective for implementation?
   a) Experimental trial of implementation approaches
      Same intervention-change (e.g. guidelines) implemented differently
      = randomise allocation, or match compared subjects
      Need time, money and cooperation
   b) Case evaluation,
   c) Both
      if less time and money
      Or understand implementation steps and what helps and hinders
**Objective**: nurses educate and help diabetic patients to **improve diet**, exercise to improve glycemic control, to reduce risks of ER and morbidity

- **Intervention actions** (eg training providers)
  - Change in trainees
    - Awareness, Knowledge
    - Skill
    - Motivation & intention to act

- **Proximal outcomes**
  - Change in trainees
    - Behaviour

- **Intermediate Outcomes 1**
  - Change in patients
    - Behaviour

- **Intermediate Outcomes 2**
  - Improved glycemic control

- **Intermediate Outcomes 3**
  - Change in diabetes related morbidity
  - Change in ER & other visits

- **Final outcomes**

**NB. This is the theory – “outcomes” are intended but not proven**
### Table 1 The logic model of Continuum of care for frail elderly persons, from the emergency ward to living at home intervention

<table>
<thead>
<tr>
<th>Core inputs</th>
<th>Immediate Impacts</th>
<th>Short-Term Impacts</th>
<th>Impacts</th>
<th>Health Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geriatric assessment at emergency department,</td>
<td>Contact between emergency department and community case manager,</td>
<td>Community care will have increased information regarding the needs of the older person, increased contact between emergency healthcare and community social care,</td>
<td>Possibilities for earlier discovery of problems, earlier care and rehabilitation efforts and changes in care and rehabilitation plans, better uptake of older people’s viewpoints</td>
<td>Maintained functional ability, increased life satisfaction, reduced number of visits to the emergency department,</td>
</tr>
<tr>
<td>Case manager and multi-professional team at the community care,</td>
<td>Case manager has early contact with older person at hospital, continuous contact between case manager and older people, early contact with older peoples’ families</td>
<td>Older people will have more knowledge of whom to contact when they need help, increased participation opportunities for older people and their families in care planning</td>
<td></td>
<td>Reduced number of stays in hospital wards, higher satisfaction with community care and rehabilitation</td>
</tr>
</tbody>
</table>
Features of Case Evaluation of Implementation design

May be just one case

Causal chain (esp if final outcomes)
- Logic model frames data collection
- May involve hypotheses about key context influences

Use multiple data sources to explain implementation / adaption observed
1) When evaluating an implementation of X, do we always have to evaluate “final” outcomes (patients/costs)?

Depends on

a) probable that full implementation will produce final outcomes,
b) no time/money
c) if adapt intervention
2) Do we always have to describe features of the environment helping and hindering implementation?
Context – see details at Generic Frameworks for deciding which influences to document at different levels of Hc system (or to consider in discussing findings)

CFIR (Damschroder 2009)

PHARIS (Rycroft-Malone 2002)

ORCA readiness - based on PHARIS

MUSIQ (Kaplan et al 2010) - QI

French et al 2009 (review of context measures for evidence-based practice (EBP))
List of help Imple Science can give to improvement practice and science

- Separate improvement change from implementation
- Some best copied exactly
- Some you need to adapt
- Understanding of context
- Use of theory and EB Imple approaches to design and evaluate implementation
- Later: Evaluating fidelity & adaption
- Next – are some Impl methods more effective?
Are some implementation methods and approaches more effective?
Implementing proven prevention interventions for falls, CLABSI (ICU), reducing readmissions

1) **The same method is effective** for implementing each

2) For **one - falls prevention** - the same method is effective

   a) in **different settings** ("context independent")
      high or low workload/resources

   b) for enabling **different people to “take up”** new way
      High% licensed nurses Vs High % unqualified care
Future research

Distinguish groupings of types of improvement changes to be implemented
E.g. care practices at nursing homes; CDS; ICU

- Specify and measure context influences
- Identify which most influence implementation

Possible direction:
Complexity & how much prescribed (copy exactly)
Which effective?

- Evidence?
- Most on “guideline implementation”

Some common findings – “6Ms”

1. Multiple methods
   - Training; feedback; leadership; finance
2. Used by multiple levels (nested implementation)
   - how enable higher levels to do this to enable lower levels?
   - difficult to align & maintain
Which effective?

Some common findings

3 Measures: credible comparative feedback (meaningful)

4 Money: finance powerful & blunt with perverse unintended (measures critical)

5 Medical leadership

6 Management time and persistence

How do we strengthen each to implement the intervention?

“One implementation approach fits all?”
2 How to evaluate improvement
“What” are we evaluating?

Improvement

1) Whether a method for improvement is successfully applied and results in an improvement
   (for someone, sometime? = Outcomes which show an improvement)

E.g. was there an improvement when 6 services adopted TQM methods (or lean etc.)
“What” are we evaluating?

Improvement

2) Whether a change (eg proven elsewhere) produced intended results

E.g. Proven transitions in care model
Improvement Evaluation – 5Qs – how..

1. Describe – improvement method or change evaluated

2. Outcomes?

3. Context?

4. Attribution?
   (how much the method for implementation vs other influences which led to take up)

5. Generalisation?
   (where, and for, what would this implementation approach work best/not so well)
Which of 3 types of improvement research contributes most to better care for Vets?

1. Research evaluation of a “improvement change” – rigorous academic
   - Experimental CRT
   - Case evaluation

2. Practitioner research to test a change
   - Using uncontrolled SPC or PDSA

3. Action evaluation reporting back data during improvement
CHOOSE evaluation design to match evaluation users information needs for action

1. Ask users

2. Work to define “what” they want evaluated and decisions it will inform
   1. Added value of your evaluation

3. Agree data they need

4. Work with them to get data (use already collected if possible)
Evaluation
- providing systematically gathered information
- to a user, to judge value (using their criteria)
- of "the thing" being evaluated
- by making a comparison

4 types of comparisons - between

• Objectives Vs Achievements
  – (eg Va Blueprint for excellence)

• Plan Vs Reality - what was done
  – (or standards to everyday operations)

• Before on some measure Vs Later in our service

• B Vs L - compared to those in other service not exposed
Experimental intervention: Comparative case

**Before Measures**

- Number of patients receiving intervention A:
- Length of time of intervention:

**What effect, compared to similar intervention?**

**Intervention B**

- Number of patients receiving intervention B:

**After Measures**

- Which and when?

**How people were selected for each intervention:**
b) what would “retrospective experimental” look like

- specified intervention? eg
- control group?
- before after?
Type Observational evaluations

- No planned experiment
- But use experimental principles to find those exposed to intervention or risk
- Often natural experiments & often retrospective
- Cross sectional
- Cohort
Type adaptive evaluation

- Small fast test and adapt intervention using what the evaluation found
- Simplest is PDSA or time series
ITS example: total x-ray referrals

Number of x-rays

Guidelines introduced
From my group, this was an important point to remember… 
Stepped wedge design

Shaded cells represent intervention periods
Blank cells represent control periods
Each cell represents a data collection point
Difference and overlap between implementation and improvement sciences
“Improvement” – changing meanings

• 1970s Quality audit - standards-based approach to QI

• 1990s TQM/CQI process improvement
  – Model for improvement (Langly 1996).

• Late 90s Implement proven, using PDCA.

• Incorporates safety (IOM 2001)

• 2010 Value improvement (costs/quality).

• Healthcare & health improvement (3aim)
Confusion: Competing definitions & Crowded industry

**Key messages**

Improvement science is about finding out how to improve and make changes in the most effective way. It is about systematically


The science of quality improvement implementation: developing a difference.

Alexander JA¹, Hearld LR.

**Abstract**

**BACKGROUND:** Quality improvement (QI) holds promise to improve quality of care; however, practitioners struggle with its implementation. It has been recommended that practitioners, managers, and researchers increase systematic understanding of the structure, practices, and context of organizations involved in the implementation of QI innovations.

**OBJECTIVES:** To critically review the empirical research on QI implementation in health care organizations. Studies were classified into 4 groups based on the types of predictors that have been identified in the literature.
Improvement =

• **Outcome**: whether healthcare (or health) has improved – *anything* which does this

• **Process/method**: using a method to improve practice, work process or organisation
Research evaluation of “improvement” =

• is the method for improvement effective?

Creating the Evidence Base for Quality Improvement Collaboratives
Brian S. Mittman, PhD

Intensive efforts are under way to improve patient safety throughout the United States. These efforts use the quality improvement approach emphasizing collaborative learning and support among a set of organizations. Unfortunately, the widespread adoption of this approach is based on anecdotes and unproven theories.

Systematic review of the application of the plan–do–study–act method to healthcare improvement: systematic review

Johan Thor, Jonas Lundberg, Jakob Ask, Jesper Olsson, Cheryl Carli, and Anthony S. D. Darzi,1
Pukk Härenstam and Mats Brommels

Qual. Saf. Health Care 2007;16;387-399
doi:10.1136/qshc.2006.022194
Research evaluation of “improvement” =

• are outcomes better in some respect?
  — (intermediate process, or final patient/cost)?

Does continuity of care improve patient outcomes?

Michael D. Cabana, MD, MPH, and Sandra H. Jee, MD, MPH
Child Health Evaluation and Research Unit, Division of General Pediatrics,
University of Michigan Health System, Ann Arbor, Mich
Which of 3 types of improvement research contributes most to better care for Vets?

1. Research evaluation of a “improvement change” – rigorous academic
   - Experimental CRT
   - Case evaluation

2. Practitioner research to test a change
   - Using uncontrolled SPC or PDSA

3. Action evaluation reporting back data during improvement

1/21/2015
Implementation science

• Study of what is done to establish a proven improvement in every day working, or patient’s lives

• Some implementations use QI methods as part
  – Overlap EBQI implementation of PACT (Rubenstein et al 2014)
History Implementation science

• Public health programmes - eg to reduce cardiovascular disease

More” evidence-based" education, social work & other welfare services

• Early period: copy exactly everywhere - will get same results as trial, if "force-fit”

Evaluation approaches:
- fidelity assessment
- adaption assessment
- report back findings to help implementation ("action evaluations" of implementation)
Is there a difference?
Implementation and Improvement overlapping “domains”

- Research communities
- Practitioners doing Imp and Imp
- Knowledge base (inc. “Imp science”)

1/21/2015
4 Evaluating implementation fidelity
Other studies

Implementation - next

Disseminating Evidence-Based Care into Practice

Eric A. Coleman, MD, MPH, Susan A. Rosenbek, RN, MS, and Sarah P. Roman, MGS
Table 2. Factors That Promote Implementation of the Care Transitions Intervention

Model fidelity

The home visit is essential for fostering meaningful and effective patient/family engagement; eliminating the visit is strongly discouraged. The Transitions Coach focuses on skill transfer and modeling of behaviors that support patients in getting their needs met during current and future care transitions. The Transitions Coach does not have competing roles such as conducting assessments (beyond the Patient Activation Assessment), providing patient education, or performing skilled services.

After training, Transitions Coaches have time to practice with colleagues and receive focused feedback (eg, shadowing each other’s home visits).

Selection of Transitions Coach and reinforcement of role

The Transitions Coach attended Care Transitions Intervention training and participates in ongoing learning community calls offered by the Care Transitions Program. The patient-Transitions Coach relationship is continuous over the duration of the 30-day intervention. The Transitions Coach demonstrates a patient-centered focus through eliciting the patient’s goal, exhibiting excellent communication skills, and resisting the urge to control the agenda or complete patient tasks. The Coach has a professional background in nursing, social work, or related field. The Care Transitions Program does not endorse the use of paid or volunteer layperson Transitions Coaches.

Model execution

The adopting organization defines workflows for Transitions Coaches and other professionals from the time of admission to the end of the 30-day intervention. The adopting organization clearly defines goals and approach to targeting; articulates realistic time lines to all participating personnel; and ensures that the intervention is aligned with the organization’s mission and values. The adopting organization convenes ongoing meetings that include all relevant stakeholders (eg, hospitals, primary care clinics, home health care agencies, community-based organizations) that provide an opportunity to problem solve operational issues, overcome barriers, and celebrate achieved goals.

Support to sustain the model

The adopting organization defines the criteria to sustain and/or expand the intervention. The adopting organization creates a strategy for how results will be communicated both within the organization and externally. The adopting organization plans for recruitment and training of additional Transitions Coaches. The adopting organization continually refines the business case in response to the changing health care environment.
Did subjects “take up” the change as intended?

• Did they copy exactly the plan

Compare what they did, to plan:

• Inputs: training, educational materials, practice - data from observations & documents

• Process outcomes:
  – Observe coaches sessions
  – Assess case records
5 Types of fidelity
proven intervention

Treatment, practice, service delivery model

– Whatever it takes to reproduce this in every day life and operations

2 Copy the implementation approach

– To enable patients to take the intervention, use exactly the same reminder system they found was effective for enabling patient uptake

3 Copy both The letter kills but the spirit gives life

4 Copy the logic of the intervention
4) Copy the logic

The effective ingredients to enable practitioners to follow hand hygiene were:

- Motivation (e.g. patient talks about MRSA)
- Ability (Gell dispensers everywhere, agreement excuse for late/take longer)
- Triggers (reminders)
- Rewards (performance feedback, etc.)

You make the mix which fits your service

Is that adaption or fidelity to logic or both?
5) Fidelity to guidance for adaptation for targeting or tailoring

- Following the guidelines for adapting treatments to older patients with multiple morbidity

**Guideline Summary NGC-9523**

**Guideline Title**

Guiding principles for the care of older adults with multimorbidity: an approach for clinicians.

**Bibliographic Source(s)**

What influences Fidelity

Influences on Fidelity

Implementer Characteristics
- Knowledge/Skill/Training
- Previous experience
- Beliefs & attitudes about EBIs
- Resources/support

Intervention
- EBI/Components
  - Complexity
  - Trialability
  - Flexibility

Organization/Setting/Community
- Support/Champion
  - Trained staff
  - Budget, materials
  - Fit with organizational mission

Population
- Demographic characteristics
  - Literacy
  - Health access
  - Socio-cultural norms

Fidelity
- Adherence to intervention
- Exposure or dose
- Quality of delivery
- Participant responsiveness
- Program differentiation

Implementation Effectiveness

Dissemination

Adaptation
- Population
- Setting
- Outcome
What do we need to ensure fidelity?

• Guidance from Transitions example Coleman 2013
  – 750 organizations in 40 states adopted CTI,
• Coleman et al reflected on their experience assisting these teams and observation of the success of adaptations (– Research?)
• Next = their judgement of core features – adapting these makes much less effective

Disseminating Evidence-Based Care into Practice

Eric A. Coleman, MD, MPH, Susan A. Rosenbek, RN, MS, and Sarah P. Roman, MGS
What we need to ensure fidelity of CTI:

1) Model fidelity
   - The home visit is essential for fostering meaningful and effective patient/family engagement; eliminating the visit is strongly discouraged.
   - The Transitions Coach focuses on skill transfer and modeling of behaviors that support patients in getting their needs met during current and future care transitions.
   - The Transitions Coach does not have competing roles such as conducting assessments (beyond the Patient Activation Assessment), providing patient education, or performing skilled services.
   - After training, Transitions Coaches have time to practice with colleagues and receive focused feedback (eg, shadowing each other’s home visits).
   - business case in response to the changing health care environment.
What do we need to ensure fidelity?

2) Selection of Transitions Coach and reinforcement of role

- The Transitions Coach attended Care Transitions Intervention training and participates in ongoing learning community calls offered by the Care Transitions Program.
- The patient–Transitions Coach relationship is continuous over the duration of the 30-day intervention.
- The Transitions Coach demonstrates a patient-centered focus through eliciting the patient’s goal, exhibiting excellent communication skills, and resisting the urge to control the agenda or complete patient tasks.
- The Coach has a professional background in nursing, social work, or related field. The Care Transitions Program does not endorse the use of paid or volunteer layperson Transitions Coaches.
What do we need to ensure fidelity?

3) Model execution

• The adopting organization defines workflows for Transitions Coaches and other professionals from the time of admission to the end of the 30-day intervention.

• The adopting organization clearly defines goals and approach to targeting; articulates realistic time lines to all participating personnel; and ensures that the intervention is aligned with the organization’s mission and values.

• The adopting organization convenes ongoing meetings that include all relevant stakeholders (eg, hospitals, primary care clinics, home health care agencies, community-based organizations) that provide an opportunity to problem solve operational issues, overcome barriers, and celebrate achieved goals.
Measuring fidelity

1) Implementer characteristics
Knowledge skills and resources to deliver intervention as planned. (drift from protocol over time)

2) Intervention characteristics
Change in the intervention (e.g. 3 session training not 5)

3) Organisational setting
Ie they delivered in PHC not hospital

4) Population
Many under 18 included

(Allen et al 2012 in Brownson et al 2012)
• **What data and when would you collect to measure,**

• **Adoption:**
  – by settings and staff invited participating - number, %, (and representativeness)

• **Reach:**
  – The number and % of invited and eligible participating (and their representativeness)

• **Implementation:**
  – extent to which a program or policy is delivered consistently, & time and costs

• **Effectiveness:**
  – The amount of change in outcomes

• **Maintenance:**
  – extent sustained, modified, or discontinued following initial trial or study period
Points from REAIM case to help your fidelity assessment

• Reach, Adoption etc. interpret in way which makes sense for your study

• Separate the intervention (pain killer) from the implementation actions to enable uptake of the intervention (e.g. alarm bell to remind to take pain killer)

• If you assess effectiveness, it may be a hybrid evaluation of implementation and of intervention (the exact copy or the local version)
REAIM (A&R) 1: One interpretation

**Total number potential settings**

- **Settings Eligible**
  - n and %

- **Excluded by Investigator**
  - n, % and reasons

**ADOPTION**

- **Setting and Agents Who Participate**
  - n and %

**REACH**

- **Total Potential Participants, n**

- **Individuals Eligible**
  - n and %

- **Excluded by investigator**
  - n, %, and reasons

- **Individuals Enroll**
  - n and %

- **Individuals Decline**
  - n, %, and reasons

- **Not Contacted/Other**
  - n and %

- **Other**
  - n and %
<table>
<thead>
<tr>
<th>RE-AIM Element</th>
<th>Guidelines and Questions to Ask</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REACH</strong></td>
<td>Can the program attract a large and representative percent of the target population?</td>
</tr>
<tr>
<td>Percent and representativeness of participants</td>
<td>Can the program reach those most in need and most often left out (i.e., the poor, low-literacy- and numeracy, complex patients)?</td>
</tr>
<tr>
<td><strong>EFFECTIVENESS</strong></td>
<td>Does the program produce robust effects across subpopulations?</td>
</tr>
<tr>
<td>Impact on key outcomes, quality of life, unanticipated outcomes and subgroups</td>
<td>Does the program produce minimal negative side effects and increase quality of life or broader outcomes (i.e., social capital)?</td>
</tr>
<tr>
<td><strong>ADOPTION</strong></td>
<td>Is the program feasible for the majority of real-world settings (costs, expertise, time, resources, etc.)?</td>
</tr>
<tr>
<td>Percent and representativeness of settings and staff that participate</td>
<td>Can it be adopted by low-resource settings and typical staff serving high-risk populations?</td>
</tr>
<tr>
<td><strong>IMPLEMENTATION</strong></td>
<td>Can the program be consistently implemented across program elements, different staff, time, etc.?</td>
</tr>
<tr>
<td>Consistency and cost of delivering program and adaptations made</td>
<td>Are the costs—personnel, up-front, marginal, scale-up, equipment costs—reasonable to match effectiveness?</td>
</tr>
<tr>
<td><strong>MAINTENANCE</strong></td>
<td>Does the program include principles to enhance long-term improvements (i.e., follow-up contact, community resources, peer support, ongoing feedback)?</td>
</tr>
<tr>
<td>Long-term effects at individual and setting levels, modifications made</td>
<td>Can the settings sustain the program over time without added resources and leadership?</td>
</tr>
</tbody>
</table>

See [www.re-aim.org](http://www.re-aim.org) or [http://www.center-trt.org/index.cfm?fa=webtraining.reaim](http://www.center-trt.org/index.cfm?fa=webtraining.reaim) for more information.
5Evaluating adaptations
Disseminating Evidence-Based Care into Practice

Eric A. Coleman, MD, MPH, Susan A. Rosenbek, RN, MS, and Sarah P. Roman, MGS

Descriptive study, by facilitators, of adaptions …with unclear evidence of outcomes, but very useful to practice improvement

- More funding for and research of this type?
**Model fidelity**

The home visit is essential for fostering meaningful and effective patient/family engagement; eliminating the visit is strongly discouraged.

**Selection of Transitions Coach and reinforcement of role**

The Transitions Coach attends Care Transitions Intervention training and participates in ongoing learning community calls offered by the Care Transitions Program. The patient-Transitions Coach relationship is continuous over the duration of the 30-day intervention. The Transitions Coach demonstrates a patient-centered focus through eliciting the patient’s goal, exhibiting excellent communication skills, and resisting the urge to control the agenda or complete patient tasks. The Coach has a professional background in nursing, social work, or related field. The Care Transitions Program does not endorse the use of paid or volunteer layperson Transitions Coaches.

**Model execution**

The adopting organization defines workflows for Transitions Coaches and other professionals from the time of admission to the end of the 30-day intervention. The adopting organization clearly defines goals and approach to targeting; articulates realistic time lines to all participating personnel; and ensures that the intervention is aligned with the organization’s mission and values. The adopting organization convenes ongoing meetings that include all relevant stakeholders (eg, hospitals, primary care clinics, home health care agencies, community-based organizations) that provide an opportunity to problem solve operational issues, overcome barriers, and celebrate achieved goals.

**Support to sustain the model**

The adopting organization defines the criteria to sustain and/or expand the intervention. The adopting organization creates a strategy for how results will be communicated both within the organization and externally. The adopting organization plans for recruitment and training of additional Transitions Coaches. The adopting organization continually refines the business case in response to the changing health care environment.
### Stirman 2009: types of adaptations

<table>
<thead>
<tr>
<th>Question</th>
<th>Modified</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Who made the modification?</td>
<td>Content (Modifications made to content itself, or that impact how aspects of the treatment are delivered)</td>
</tr>
<tr>
<td></td>
<td>Context (Modifications made to the way the overall treatment is delivered)</td>
</tr>
<tr>
<td></td>
<td>TRAINING AND EVALUATION (Modifications made to the way that staff are trained in or how the intervention is evaluated)</td>
</tr>
</tbody>
</table>

**BY WHOM are modifications made?**

- Individual practitioner/facilitator
- Team
- Non-program staff
- Administration
- Program developer/purveyor
- Researcher
- Coalition of stakeholders
- Unknown/unspecified
Context mods are made to which of the following?

For whom are mods made?

At what level are mods made?

What type of context mods are made?

- Format
- Setting
- Person
- Population

- Hospital level
- Network level
- Clinic/unit level
- Individual practitioner
- Individual
- Group level
- System level

- Tailoring/tweaking/refining
- Adding elements
- Removing/skipping elements
- Lengthening/extending (pacing/time)
- Shortening/condensing (pacing/time)
- Substituting
- Reordering of intervention modules
- Departing from the intervention (dissociating)
- Repeating elements or modules
- Using the whole protocol and integrating techniques into a general EBP approach
- Integrating another treatment into the framework (e.g., selecting elements from one framework and integrating the intervention into another framework)
- Integrating the intervention into another framework
Adapt to “Fit”, to setting and subjects

Adjust over time – dynamic

To do this - Resources, data and skills
. 6Action evaluations to improve implementation and build knowledge
Recap – the story so far..

• How intervention it is implemented
  – different structures strategies and supports (Iapproach)

• Some EBPs
  – will only give outcomes expected
    …if implemented *exactly* as specified (from original test)
    …*and don’t need to evaluate outcomes of intervention*
  – If it is difficult to copy exactly:
    …then change the context monitor fidelity,

But, some interventions can only work if they are adapted to context – *which, why and how?*
Action evaluations

• Describe what was implemented
• Intermediate outcomes
• BUT share data with implementers as it becomes available
• & document their adjustments and reasons for doing so.

Partnership research more necessary – trust and relationship

Example: KI MMC evaluating integrated care 6 month meetings (Øvretveit et al 2010)
7 What? Explain all above please
Implementation & improvement practice and science

Implementation R: Study of what is done to establish a proven improvement in every day working, or patient’s lives

Improvement research:
- did the intervention improve outcomes?
- was the method for improvement effective

Overlaps – especially in adaptive implementation
I mple Science can help improvement practice and science

- Separate improvement change from implementation
- Some best copied exactly
- Some you need to adapt
- Understanding of context
- Use of theory and EB Imple approaches to design and evaluate implementation
- Details Evaluating fidelity & adaption
Uses of imple eval for faster wider improvement

1 Avoid misinterpret “no improvement”
   (improvement not implemented; rule out this explanation)
2 Explain if variation in outcomes due to implementation
3 Helps implementers see how others implemented it & results
   – guidance about what is effective – reduces waste
4 Why some implementations fail and some succeed:
   Understand which methods work for which improvements in which settings - build scientific understanding
• Surprises?
• Most useful?
• Might not be true for us?
References and resources
Best web sites with tools guides and references

• Va implementation research and support center CIPRS http://www.queri.research.va.gov/ciprs/default.cfm
• National Implementation Research Network (NIRN) http://nirn.fpg.unc.edu/
Best Texts


• (easy read text is: Øvretveit, J (2014) Evaluating improvement and implementation for health, McGraw Hill/Open University Press, Milton Keynes, UK. Amazon & Kindle order
Key references - research


• International health summary: Peters et al 2013 Implementation research: what it is and how to do it, MJ 2013;347:f6753 doi: 10.1136/bmj.f6753 (Published 20 November 2013)
Recommended practical tools

ORCA

II. Context Assessment

For each of the following statements, please rate the strength of your agreement with the statement, to 5 (strongly agree).

(Culture) Senior leadership/clinical management in your organization:

a) reward clinical innovation and creativity to improve patient care

b) solicit opinions of clinical staff regarding decisions about patient care

c) seek ways to improve patient education and increase patient participation in treatment

<table>
<thead>
<tr>
<th></th>
<th>strongly disagree</th>
<th>disagree</th>
<th>neither agree nor disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>b)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>c)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
Recommended practical tools
HRET change readiness (spread)

4 areas: the innovation, target audience, the organisation, the environment,

**Organizational Factors:**

1. Leaders in the average organization the innovation needs to spread to are strongly supportive of its implementation:
   - Strongly agree: 5
   - Agree: 4
   - Neutral: 3
   - Disagree: 2
   - Strongly disagree: 1

2. Resources needed to implement the innovation are available in the average organization the innovation needs to spread to:
   - Strongly agree: 5
   - Agree: 4
   - Neutral: 3
   - Disagree: 2
   - Strongly disagree: 1

3. There are enough persons with quality improvement skill in order to implement the innovation in the average organization the innovation needs to spread to:
   - Strongly agree: 5
   - Agree: 4
   - Neutral: 3
   - Disagree: 2
   - Strongly disagree: 1
Recommended practical tools

Brach et al 2008: Will it work here?

<table>
<thead>
<tr>
<th>II. Should we do it here?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential Benefits</td>
</tr>
<tr>
<td>(p. 23)</td>
</tr>
<tr>
<td>▪ What benefits will the innovation generate? (p. 23)</td>
</tr>
<tr>
<td>▪ Will the benefits be visible to those who have to implement the innovation, to those who have to support it, and to patients and their families? (p. 24)</td>
</tr>
<tr>
<td>Potential Costs</td>
</tr>
<tr>
<td>(p. 27)</td>
</tr>
<tr>
<td>▪ What resources will we need to implement the innovation and what do they cost? (p. 27)</td>
</tr>
<tr>
<td>▪ What are the potential cost offsets? (p. 29)</td>
</tr>
<tr>
<td>▪ What are the opportunity costs of adopting the innovation? (p. 30)</td>
</tr>
<tr>
<td>Business Case</td>
</tr>
<tr>
<td>(p. 31)</td>
</tr>
<tr>
<td>▪ How do we prepare a business case? (p. 31)</td>
</tr>
<tr>
<td>▪ How can we calculate the return on investment? (p. 32)</td>
</tr>
<tr>
<td>▪ Is there a business imperative or strategic advantage for adoption? (p. 33)</td>
</tr>
</tbody>
</table>
Implementation/outcome evaluation “hybrid” designs (Curran et al 2012)

Hybrid Type I: Might use parallel process and RCT test clinical intervention, observe/gather information on implementation.

Hybrid Type II: test clinical intervention, study implementation intervention.

Hybrid Type III: test implementation intervention, observe/gather information on clinical intervention and outcomes.

From Curran, G., Bauer, M., Stetler, C., Mittman, B.
French et al 2009 synthesis of 30 instruments measuring context

ABSORPTIVE CAPACITY

Resources
- Support and access to expertise
- Encouraging and supporting a questioning culture
- Learning from experience
- Recognising and valuing existing skills/knowledge

LEARNING CULTURE
- VISION LEADERSHIP
- Knowledge need
- Acquisition of new knowledge

Knowledge Sharing
- Knowledge use
- Supporting teamwork
- Exposure to new information
- Accessing information
- Information dissemination

Promoting external contacts and networks
- Developing expertise
- Encouraging innovation
- Promoting internal knowledge transfer
- Knowledge transfer mechanisms
- Supporting teamwork

Role recognition and reward
- RECEPTIVE CAPACITY

Figure 1
Model of categories and organisational attributes.
Fluid terminology & confusion

….not just because of "immaturity of science"

- defining words in certain ways positions you for grants and to market a new approach
- definitions advance and protect material interests (eg "psychotherapist")
- consensus on terms is political process
  - with winners and losers who become aware when change is proposed
Implementation science

- Study of what is done to establish a proven improvement in every day working, or patient’s lives

- Scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services and care.

Eccles & Mittman 2006 Welcome to Implementation Science
Challenge: No definition of terms = no scientific advance

• Without specified concepts we cannot properly observe & share
• make a taxonomy implementation approaches
• find which is best for which intervention in which setting for which subjects

…but standardising terms is a social & political process

– We have too much to lose if we translate our sets of concepts – best set anyway for our work