INTERVENTION MAPPING FOR PLANNING IMPLEMENTATION STRATEGIES

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2017 Dissemination & Implementation Short Course: Navigating the Steps
Planning for Program Use Is Essential

The ultimate impact of a health education or health promotion program depends on:

• Effectiveness of the intervention
• Reach in the population
Implementation Strategies Are…

Methods or techniques used to enhance the adoption, implementation, and/or sustainability of a clinical or public health program or practice

OR

The ‘how to’ component of changing healthcare or public health practice.

Key: How to make the “right thing to do” the “easy thing to do…” Carolyn Clancy, Former Director of AHRQ

Adapted from Proctor, Powell, & McMillen, 2013
## Definitions in the Literature

<table>
<thead>
<tr>
<th>Author and Citation</th>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Powell et al.(^\text{15})</td>
<td>Implementation Strategy</td>
<td>A systematic intervention process to adopt and integrate evidence-based health innovations into usual care.</td>
</tr>
<tr>
<td>Curran et al.(^\text{16})</td>
<td>Implementation Intervention</td>
<td>A method or technique to enhance adoption of a “clinical” intervention. Examples include an electronic clinical reminder, audit/feedback, and interactive education.</td>
</tr>
<tr>
<td></td>
<td>Implementation Strategy</td>
<td>A “bundle” of implementation interventions. Many implementation research trials test such bundles of implementation interventions.</td>
</tr>
<tr>
<td>Mazza et al.(^\text{17})</td>
<td>Implementation Strategy</td>
<td>A purposeful procedure to achieve clinical practice compliance with a guideline recommendation.</td>
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<td>Proctor et al.(^\text{18})</td>
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<td>Bartholomew Eldridge et al.(^\text{19})</td>
<td>Implementation Interventions</td>
<td>Theory and evidence-based methods and practical applications to increase program use (adoption, implementation, and/or maintenance).</td>
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Implementation Strategy vs. Implementation Intervention

**Implementation Interventions:** interventions to increase program use (adoption, implementation, and/or maintenance)

**Implementation Strategies**
- *Discrete* - Single action or process (e.g., institute system of reminders)
- *Multifaceted* - Combination of multiple discrete strategies (e.g., training + reminders)
- *Blended* - Multifaceted strategies that have been protocolized and (often) branded (e.g., ARC)

Bartholomew et al. (2001); Powell et al., 2012; Procter 2011
Evidence-Base for Implementation Strategies

- Several strategies found to be effective under some, but not all circumstances
- Most strategies result in modest improvements
- Passive approaches (e.g., “train and pray”) are generally ineffective
- Mixed-evidence regarding the effectiveness of multi-faceted implementation strategies (Grimshaw et al., 2006; Squires et al., 2014; Wensing et al., 2009)
Developing (or choosing) strategies: a process too often haphazard

ISLAGIATT principle

“IT SEEMED LIKE A GOOD IDEA AT THE TIME”

Martin Eccles via Jeremy Grimshaw’s (2012) Presentation at KT Summer Institute
Selecting or Developing Implementation Strategies

Implementation strategies should be:

- Developed using participatory approaches
- Theory-based presented with a logic model
- Multi-faceted and multi-level if appropriate
- Robust or readily adaptable
- Feasible and acceptable to key stakeholders
- Compelling, saleable, trialable, observable
- Sustainable, cost effective, scalable

... in practice (evidence) or in principle (potential)

Mittman, 2010, 2012
Why do we need systematic planning and what is Intervention Mapping?
Implementation of Evidence.... “It’s Complicated”
A Cancer Control Example

(Zapka, et al., 2003)
What is Intervention Mapping?

- A **systematic approach** to program development, implementation & evaluation

- It provides a **framework** for decision-making at each step
  - Theory
  - Empirical evidence
  - Community input

- Uses an **ecological** approach
Demystifying the ‘Black Box’

“Then a miracle occurs...”

“I think you should be more explicit here in step two.”
What is Intervention Mapping?

The development of *Intervention Mapping* was stimulated by questions that could not be answered from available health education and health promotion resources.

- When and how to use theory and evidence?
- How to address both environmental and individual change
- Assuring ‘active ingredients’ for change
How to Take an Ecological Approach to Planning

- How to address changing the behavior of people in the environment (i.e., people who are not at risk for the health problem, but are important to changing conditions that affect those at risk)?

- How to address the complexity of multi-causation of problems and multi-level intervention points?
Participation in Health Promotion Planning

Equitable community participation

- Ensures that program focus reflects community concerns
- Brings greater breadth of skills, knowledge, and expertise
- Improves external validity
Three ways to use IM for D&I

1. Designing programs in ways that enhance its potential for being adopted, implemented, and sustained

2. Designing dissemination interventions (strategies) to influence adoption, implementation and continuation

3. Using IM processes to adapt existing evidence-based interventions

Intervention Mapping Steps

1. Logic model of the problem
2. Program outcomes and objectives (logic model of change)
3. Program design
4. Program production
5. Program implementation plan
6. Evaluation plan
This process can be used...

- For new programs, demonstration, and research projects:
  - Plan for initial implementation to ensure program is used as intended during the evaluation trial

- For programs that have already been implemented and evaluated:
  - Develop an implementation intervention to enhance dissemination or “scale-up” for widespread use
Intervention Mapping guides the D&I planner/researcher to answer the following questions:

- Who will decide to use the program? Who will implement the program? Who will assure that the program continues over time?
- What do they need to do?
- Why would they do it (determinants)?
- How (what methods and strategies) do we influence these adoption, implementation, and maintenance behaviors and conditions?
What are the subcomponents of the Implementation behavior?

- What do the program implementers need to do to deliver the essential program components with acceptable completeness, fidelity and adaptation?
Identify determinants, methods and strategies to address determinants of implementation

Implementation

- **Determinants**: Outcome expectations, Self-efficacy, Attitudes *(Can come from individual theories or integrated frameworks such as TDF)*

- **Methods**: Persuasion, Active learning, Social support, Dissonance reduction, Modeling, Skill building *(Guidance from individual theories, from IM or frameworks such as TDF)*

- **Strategies (how these methods are operationalized)**: Workshops, Discussion, Problem analysis, Role playing, Team meeting, Problem solving, Guided practice, Newsletters, Model stories, Resources, Information
Multi-level Implementation Context
Setting characteristics, policy climate, culture, readiness, resources

Theory - & Evidence-Based Program, Policy, Practice (EBP)

Context and setting
Program components for target population and environmental agents
Theory Based Change Methods and Practical Applications
Delivery

Program Implementation

Implementation Intervention
Delivers Methods designed to create change in determinants of Implementation behaviors and implementation environment

Determinants of Program Use
Determinants of Adoption: knowledge; perception of EBA
Determinants Implementation: skills; outcome expectations; collective-efficacy
Determinants of Maintenance:

Outcomes

Program Use Tasks (Performance Objectives)
Adoption POs: e.g. Clinic leaders review & discuss EBA
Implementation POs: e.g. Nurses deliver education to patients
Maintenance POs: Coordinator adjusts workflow to accommodate patient education prior to provider visit

Program Use Outcomes
Adoption
Implementation
Maintenance

Impact on Health and Quality of Life Outcomes
Tasks

1. Identify potential program implementers
2. State outcomes and performance objectives for program use
3. Construct matrices of change objectives for program use
4. Design implementation interventions
Peace of Mind Program Implementation Intervention

- Telephone-based EBI to increase mammography appointment adherence in underserved women
- Designed for use in FQHCs and charity clinics providing access to mammography services
Task 1: Identify Potential Program Implementers

- Who will decide to adopt and use the program?
- Which stakeholders will decision makers need to consult?
- Who will make resources available to implement the program?
- Who will implement the program?
- Will the program require different people to implement different components?
- Who will ensure that the program continues as long as it is needed?
Task 2: State Outcomes and Performance Objectives for Program Use

Program use outcomes

- **Adoption** is a decision to use a new program
- **Implementation** is the use of the program to a “fair trial point”
- **Maintenance** is the extent to which the program is continued and becomes part of normal practices and policies

- **Performance objectives** make clear who has to do what for the program to be adopted, implemented, and continued
Adoption Outcome

- [Someone] adopts the [innovative program] as indicated by [the evidence to indicate adoption]

  - The management team at [each] clinic decides to adopt the Peace of Mind Program (PMP) as indicated by the clinic director signing a memorandum of understanding
Example Performance Objectives for Adoption

The Management Team members will:

- Review PMP materials and evaluation results
- Compare the intended outcomes with current mammography services and completion rates
- Agree to participate in the PMP
- Agree to expand mammography services
- Provide a program champion for the PMP
- Review the PMP program manual including phone-counseling scripts

(cont’d …)
Continued …

- Work with partners to draft, edit, and sign the Memorandum of Understanding (MOU)
- Gain support from stakeholders’ reaction to the program (care providers, decision makers, navigators/schedulers, patients)
Implementation Outcome

- The [organization or individual] will implement [innovative program] including use of [program components]

- The [clinic managers and staff] will implement [the PMP program] including use of [all program components]
Example Performance Objectives for Implementation

Clinic decision makers will:
- Communicate with staff about practice change/role changes for patients due for mammography
- Designate time for EBI training

Program champion will:
- Arrange for any change to EHR or reporting for PMP
- Arrange for patient referrals for mammograms

Patient navigator will:
- Conduct telephone barrier counseling
- Use active-listening protocol when talking with patient
Maintenance Outcome

- Decide on the type of outcome to be achieved:
  - Institutionalization (integration into organization’s routines)
  - Continuation of health effects
  - Some combination of these

- Clinic leadership will maintain the PMP as part of a clinic’s standard practice for every appointed mammography patient after initial funding is withdrawn
Example Performance Objectives for Maintenance

**Program champion** will:

- Discuss with decision makers the continuation of the PMP after funding
- Work with decision makers to continue contractual arrangements for increased mammography services
- Add PMP tasks to normal clinic reminder calls
- Ensure that no-show rates continue to be reported (and remain stable or on a downward trend)

**Clinic decision makers** will:

- Approve steps to ensure integration of the PMP into normal clinic routines
Use Core Processes to select determinants of program use

- Pose a question (Why would adopters decide to use the program?)
- Brainstorm a list of provisional answers
- Review the theoretical and empirical literature to refine or add to list
- Collect new data from potential program adopters and implementers
Example (personal) Determinants

- Awareness of the program (RE-AIM)
- Perceptions about the program’s characteristics (DOI, CFIR)
- Perceived benefits of program use (SCT, CFIR)
- Self-efficacy and skills for implementation (SCT, CFIR, ISF)
- Subjective norms
- Social norms

Why? Because implementers are people too.
But of course there are contextual, social and/or structural factors that influence implementation

- Organizational Readiness
- Leadership
- Communication
- Available Resources
- Reinforcement
- External Policies and Incentives

and many more.....
<table>
<thead>
<tr>
<th>Performance Objective</th>
<th>Attitudes about PMP *</th>
<th>Knowledge</th>
<th>Outcome Expectations</th>
<th>Self-Efficacy</th>
<th>Normative beliefs (subjective and descriptive)</th>
</tr>
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<tr>
<td>1. Agree to participate in the PMP</td>
<td>• Perceive that PMP is easy to adopt and implement Describe PMP: • As an improvement over what is done now • As if the partners (UTSPH &amp; BHC) are here to help • As fitting with organizational goals and needs Perceive that breast health needs of their patients and community are important.</td>
<td>• Describe components of the PMP program • Describe rates of mammography in clinic including no show rates</td>
<td>Expect the following: • PMP intervention development partners will provide help with program implementation and resources • Program will provide effective/improved outreach</td>
<td>• Expresses confidence in the ability to do what is expected by the PMP** • Perceive that the clinic is capable of change • Believe clinic is ready for change (organizational readiness)</td>
<td>Express belief that other clinics like theirs are agreeing to implement PMP</td>
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<tr>
<td><strong>4. Provide a program champion for the PMP</strong></td>
<td>Believe that the program champion is an important element of the program</td>
<td>Explains the role of program champion in PMP</td>
<td>Expect that a program champion will enable the PMP to be implemented and maintained</td>
<td>Express confidence in ability to recruit a program champion</td>
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| 5. Gain support from stakeholders reaction to the program (care providers, decision makers, navigators/schedulers, patients)** | • Expresses belief that gaining support from stakeholders is an important step in the success of the program  
• Describes importance of feedback from stakeholders in making revisions and refinements for practice | Describes key points to discuss with stakeholders regarding the PMP program | Expect the following:  
• Gaining support from stakeholders such as care providers, patients and managers will ensure the successful adoption and implementation of the program  
• Stakeholders who are consulted will develop feelings of acceptance and ownership of the program | Express confidence in their ability to engage stakeholders and engender buy-in | 
Task 4: Design Implementation Interventions

Design implementation intervention methods and strategies to influence program use

- Choose change methods and practical applications
- Design the scope and sequence
- Produce materials for an implementation intervention to influence program use
## Mechanisms of Change (Theoretical Methods)

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<td>Michie et al.18</td>
<td>Behavior Change Techniques</td>
<td>Observable, replicable, and irreducible component of an intervention designed to alter or redirect causal processes that regulate behavior; that is, a technique is proposed to be an “active ingredient.”</td>
</tr>
<tr>
<td>Kok et al.20</td>
<td>Behavior Change Methods</td>
<td>General techniques or processes that have been shown to be able to change one or more determinants of behavior of members of the at-risk group or of environmental decisions-makers.</td>
</tr>
</tbody>
</table>

Adapted from Powell, B.J., Garcia, K.G., Fernandez, M.E. Implementation Strategies in Optimizing the Cancer Control Continuum, Eds. David Chambers, Cynthia Vinson, and Wynne Norton (forthcoming)
# Peace of Mind Program

## Implementation Intervention Plan

<table>
<thead>
<tr>
<th>Stage</th>
<th>Agent</th>
<th>Determinants/Change Objectives</th>
<th>Theoretical Change Methods</th>
<th>Practical Applications / Implementation Strategies</th>
</tr>
</thead>
</table>
| Adoption    | Clinic Decision Maker  | • Awareness/Perceptions of PMP  
• Outcome Expectations  
• Skills and Self-efficacy  
• Feedback and reinforcement | PMP program information  
Persuasion  
Modeling | • Email blast to BHC members with PMP informational video and link to pre-adoption survey  
• Webinar to BHC members covering evidence-based approaches to breast cancer prevention, PMP information and adoption steps  
• Adoption meeting held with interested clinics  
• Financial assistance to clinic  
• Assistance with connecting to mobile providers to increase screening (as needed) |
<table>
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</table>
| Implementation | Program Champion Navigator | Awareness/Perceptions, Outcome Expectations, Skills and Self-efficacy, Feedback and Reinforcement | • Information  
• Persuasion  
• Skill building and guided practice  
• Modeling  
• Monitoring and feedback  
• Technical assistance / capacity building  
• Facilitation  
• Vicarious reinforcement | • Face to face training held over two four hour sessions. Training was submitted to Texas for CEU certification for community health workers and social workers  
• BHC navigators model EBI behavior and provide ongoing implementation support on-site  
• PMP research team available via email, phone and training booster sessions as needed  
• Paperwork processes to provide funds for patients needing financial assistance from PMP |
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How to influence adoption & implementation?

- **RE-AIM**
  - Define and evaluate outcomes of D&I interventions

- **Consolidated Framework for Implementation Research (CFIR)**
  - Identify the behavioral targets associated with A&I, and the organizational changes and processes leading to those targets
  - Helped identify relevant attitudes about characteristics of the intervention

- **Social Cognitive Theory (SCT)**
  - Identify the psychosocial determinants of A&I behaviors, and the methods that can be used to create behavior change

- **Intervention Mapping**
  - Organize various A&I behaviors and determinants identified by SCT and CFIR
  - Guide development of intervention methods, strategies, materials to address adoption and implementation behaviors and determinants
Example

Increasing HPV Vaccination using Evidence-Based Approaches in a Federally Qualified Health Center
Goal: Implement a multilevel intervention to increase HPV vaccination initiation and completion rates among age-eligible patients (11 – 26 years)

Target population: Legacy Community Health, Houston’s largest FQHC.
- In 2013, 18.5% of age-eligible patients initiated the HPV vaccine
- Of those that initiated, 57% who received the second completed the third.

Applied Intervention Mapping to develop and implement system changes and provider level interventions.
Intervention components

System level (May 2015 - ongoing)
- Opt-out policy for HPV vaccination
- Standing orders authorizing immunization nurses to administer 2/3 dose
- Patient reminders: Magnets and reminder phone calls
- Provider reminders: Incorporated into EHR system
- Reduce client out-of-pocket expenses

Provider level (March 2016-ongoing)
- Provider training
  - Build skills and knowledge required to make a strong vaccination recommendation
- Audit and Feedback loop
  - Providers given quarterly reports and meet with clinic champion to address barriers and improve rates
  - Additional training for low performers
Intervention Mapping

- Systematic framework to develop theory and evidence-based multilevel interventions.

- Example: Developing provider training
  1. Identifying sub-behaviors necessary for providers and staff to deliver strong HPV vaccine recommendations
  2. Specifying determinants for related behaviors
  3. Creating matrices of change objectives
  4. Selecting methods and strategies to influence determinants of behaviors
  5. Producing training materials incorporating methods and strategies.
1. Identifying sub-behaviors:
Partners developed a detailed flowchart outlining all Legacy provider behaviors required to ensure patient receives HPV vaccine.

2. Specifying determinants and creating matrices:
Partners asked “why would providers perform these behaviors” and selected determinants (constructs) from health promotion theories. Matrices of change objectives in cells created by crossing sub-behaviors and determinants.

<table>
<thead>
<tr>
<th>Sub-behaviors</th>
<th>Determinants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training Development</td>
<td></td>
</tr>
<tr>
<td><strong>Knowledge</strong></td>
<td><strong>Skills &amp; Self Efficacy</strong></td>
</tr>
<tr>
<td>1) Provider accesses patient EHR to check eligibility for HPV vaccine</td>
<td>K1a. Describe steps for accessing patient EHR to check for HPV vaccine eligibility</td>
</tr>
<tr>
<td>2) Provider delivers strong HPV vaccination rec. to all eligible patients</td>
<td>K2a. Describe the components of a strong HPV vaccine rec</td>
</tr>
<tr>
<td>▪ Uses recommended phrasing</td>
<td>K2b. Describe CDC recs to provide a bundled rec if adolescent patient due for other vaccines</td>
</tr>
</tbody>
</table>
3. Selecting theoretical methods and practical applications:

Partners organized change objectives by determinant and selected theoretical methods influencing those determinants. Theoretical methods were translated into practical applications.

<table>
<thead>
<tr>
<th>Determinants</th>
<th>Methods</th>
<th>Practical Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge, Skills &amp; Self Efficacy, Outcome Expectations, Normative Beliefs</td>
<td>Modeling and skills training</td>
<td>Oncologist demonstrates how to give a strong HPV recommendation and providers practice giving recommendation.</td>
</tr>
<tr>
<td>(Chang Obj: K2a. K3b-d. SSE3a-d. OE3a-b. NB3a-b.)</td>
<td></td>
<td>Oncologist cites data highlighting that provider recommendations play a significant role in whether patients vaccinate.</td>
</tr>
<tr>
<td>Knowledge</td>
<td>Information</td>
<td>Tip sheet provides common questions and hesitancies that parents or patients may bring up with providers</td>
</tr>
</tbody>
</table>
Practical application

Training materials:

- UTHealth collaborated with MDACC to develop training materials to meet the specific needs of Legacy providers, improve communication skills and reduce missed opportunities.

- Training initially delivered in person by a gynecological oncologist from MD Anderson.

- Online webinar developed to provide a more flexible learning environment and reduce disruption to delivery of clinical services.
Training consists of:

- **Didactic instruction** on HPV vaccine recommendation guidelines, vaccine safety, and vaccine efficacy

- **Tailored messages** about Legacy Community Health’s special populations, dysplasia and genital warts incidence

- **Role play opportunities** to practice providing recommendations and identifying and addressing parent and patient concerns
January 2017:

- Training materials revised to incorporate revised CDC HPV vaccination recommendations (2 and 3 dose schedule).
- Incorporated HPV vaccination recommendations for specific population groups: people with compromised immune systems (HIV positive); transgender people; and gay or bisexual men.
- Delivered via webinar to provide a more flexible learning environment and reduce disruption to delivery of clinical services.
Take home points

- Intervention Mapping provided a systematic process for identifying and addressing specific needs, developing key messages and training materials to address them.
- There is much work to be done in understanding and defining the mechanisms of change of implementation strategies.
- Still working out how IS frameworks and models can best inform planning.
- Systematic planning that is participatory, and uses theory/frameworks, evidence, and new data can lead to more successful implementation strategies.