Implementation science + designing for dissemination

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Community partners (2008 – present)

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Clara Savage – Common Pathways
Jamiah Tappin – Health Resources in Action
Plan for today

1. Overview of implementation science

2. Designing for dissemination
   ◦ Participatory approaches
   ◦ Qualitative approaches
Identify determinants of the health issue of interest

Test solutions in controlled settings (Efficacy)

Test solutions in broader settings (Effectiveness)

Test ways to integrate solution into practice (Implementation science)
Some terminology

**Evidence-based intervention (EBI):** subject of dissemination and implementation efforts with proven impact on health outcomes (efficacy and effectiveness)
- Programs
- Practices
- Policies

**Dissemination:** the intentional process to spread information and EBIs to a defined target audience

**Implementation:** the process of integrating an EBI into practice within an organization or system
The core of implementation science

THE THING is the evidence-based program, practice, approach, or policy

1. Does THE THING work? How solid is the evidence base? *(Effectiveness research)*

2. How can we help people/places DO THE THING? *(Implementation science)*
   a. What about the context impacts the ability of people/places to DO THE THING? *(Implementation determinants)*
   b. What tactics help people/places DO THE THING? *(Implementation strategies)*
   c. What impact did we have on how well people/places DID THE THING? *(Implementation outcomes)*

1. Does THE THING work? How solid is the evidence base?

Good starting points:
- PubMed, Google Scholar. Look for systematic reviews, meta-analyses
- Recommendations from relevant national organizations, e.g., CDC or American Cancer Society
2. How can we help people/places DO THE THING?

EBI
(program, practice, policy)

Client outcomes
• Function, satisfaction, etc.
Implementation determinants
- Extra-organizational factors
- Intra-organizational factors
- Etc.

EBI (program, practice, policy)

Implementation strategies
- Tailor EBIs
- Change payment structures
- Etc.

Implementation outcomes
- Acceptability
- Feasibility
- Fidelity of delivery
- Etc.

Service outcomes
- Efficiency, equity, etc.

Client outcomes
- Function, satisfaction, etc.

Adapted from Smith, J.D. et al. (2020). *Implementation Science, 15*(1), 84.
In the chat:
What barriers prevent the US from meeting goals for delivery of HPV vaccine and cervical cancer screening?

The long-term target: Elimination of cervical cancer and related inequities
2a. What about the context impacts the ability of people/places to DO THE THING? A simplified systems perspective

**EXTRA-ORGANIZATION FACTORS**
- Policies
- Client/patient characteristics

**INTRA-ORGANIZATION FACTORS**
- Organizational characteristics
- Implementer characteristics

**BRIDGING FACTORS**
- Partnerships
- Purveyors

**INNOVATION FACTORS**
- EBI characteristics
- EBI fit

Details and resources at episframework.com
Detailed version - assessed across phases of exploration, preparation, implementation, and sustainment

**EXTRA-ORGANIZATION FACTORS**
- Leadership
- Policies
- Funding
- Inter-organizational environment and networks
- Client / patient characteristics
- Client / patient advocacy

**INTRA-ORGANIZATION FACTORS**
- Leadership
- Organizational characteristics
- Quality and fidelity monitoring / support
- Organizational staffing processes
- Implementer characteristics

**BRIDGING FACTORS**
- Partnerships
- Purveyors / intermediaries

**INNOVATION FACTORS**
- EBI characteristics
- EBI developers
- EBI fit with system, organization, provider, client/patient

Details and resources at episframework.com
We propose a delivery science for AI in healthcare that rests on the following principles: (1) much of healthcare is delivered in complex adaptive systems, so AI must accommodate this complexity, (2) AI should be viewed as not the end product, but rather an enabling component of broader solutions, and (3) solutions enabled by AI are often complex systems of people, processes, and technologies.

2b. What tactics help people/places DO THE THING?

Major categories of implementation strategies (73 total)

- Use evaluative and iterative strategies
- Provide interactive assistance
- Adapt and tailor to context
- Develop stakeholder interrelationships
- Train and educate stakeholders
- Support clinicians
- Engage consumers
- Utilize financial strategies
- Change infrastructure
Fidelity: Extent to which EBI was delivered as originally described

Adaptation: Changes to adjust for dynamic system in which EBI is being implemented
Back to HPV: Multi-component strategies increase vaccination rates

Combination of 2+

- Increasing community demand
  - Ex) media campaigns or reminders

- Increasing community access
  - Ex) reducing transportation barriers or costs

- Increasing provider delivery
  - Ex) provider reminders and audit/feedback

2c. What impact did we have on how well people/places DID THE THING?

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Other terms</th>
<th>Example Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reach</td>
<td>Participation</td>
<td>Surveys, admin data</td>
</tr>
<tr>
<td>Acceptability</td>
<td>Satisfaction, System readiness</td>
<td>Surveys, interviews</td>
</tr>
<tr>
<td>Appropriateness</td>
<td>Perceived fit, Relevance, Compatibility, Suitability, Usefulness, Practicability</td>
<td>Surveys, interviews</td>
</tr>
<tr>
<td>Feasibility</td>
<td>Utility, Suitability, Practicability, Community readiness</td>
<td>Surveys, admin data</td>
</tr>
<tr>
<td>Adoption</td>
<td>Uptake, Utilization, Knowledge Transfer, Intention to Try</td>
<td>Surveys, observations, interviews, admin data</td>
</tr>
<tr>
<td>Fidelity</td>
<td>Adherence, Integrity</td>
<td>Observation, checklist</td>
</tr>
<tr>
<td>Cost</td>
<td>Cost effectiveness, cost benefit</td>
<td>Admin data</td>
</tr>
<tr>
<td>Sustainability</td>
<td>Maintenance, institutionalization</td>
<td>Surveys, admin data</td>
</tr>
</tbody>
</table>

Equity considerations embedded
Identify determinants of the health issue of interest

Test solutions in controlled settings (Efficacy)

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Test ways to integrate solution into practice (Implementation science)

Bring in implementation and participation early!
Using participatory and qualitative approaches to design for dissemination
What could possibly go wrong?
Participatory implementation science

Ongoing, iterative approach to collaboration between researchers and stakeholders to improve research-practice linkages and create system change, improve health, and address inequities.

Builds on community-based participatory research, action research, and social ecological models.

Research for action.

Benefits of participatory implementation science

For a specific study

Selection of the EBI → Study execution → Analysis / interpretation → Dissemination

For the field

- Improving the relevance and impact of IS findings
- Developing infrastructure in practice settings for evidence-based implementation and IS

Unpacking the continuum

**Level of partnership engagement**

- **Contractual:** Passive involvement
- **Consultative:** Targeted expertise
- **Collaborative:** Jointly executed, researcher-driven
- **Collegial:** Sharing power and benefits

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Data-driven dissemination

Formative audience research – characterizes target audiences’ awareness of, attitudes towards, and adoption of an EBI + preferences for learning about it

Audience segmentation research – what are the meaningful subgroups within the audience and how should we tailor dissemination strategies to meet their needs?

Dissemination effectiveness research – which strategies are most effective?

Qualitative approaches to gather stakeholder input

Translating non-numerical data into actionable insights

Offers an opportunity to understand why something works, how it works, why there are differential impacts, etc.

Gives voice to a diversity of stakeholders
What we often see

Common forms
- Ethnography (including rapid ethnography)
- Key informant interviews
- Focus group discussions
- Site observations

Analysis is often pragmatic (versus wholly exploratory)

Often linked to quantitative data for mixed-methods projects
Methods from process improvement, design thinking, data science, information technology, and implementation science are combined into an iterative participatory process to build an AI enabled system for improving advance care planning. The expertise used across the different disciplines are as follows: (1) user experience design, (2) data science, (3) healthcare operations, (4) clinical informatics, (5) evaluation, and (6) ethical integrity assessment.
Example: Gathering data to meet researcher and policymaker needs
Diversity of stakeholders

Who are key stakeholders for your work? What different needs will you need to address?

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Useful resources

Harvard Implementation Science Working Group: email Trang Nguyen (trnguyen@hsph.harvard.edu) to be added to the listserv

Implementation science journal (https://implementationscience.biomedcentral.com/)
- You can search for research protocols to get a sense of study designs

CDC Community Guide (https://www.thecommunityguide.org/)
- Summaries and action points from systematic reviews

SAMHSA Evidence-based Practice Resource Center (https://www.samhsa.gov/resource-search/ebp)
- Evidence-based programs and evidence syntheses for mental health and substance use topics

Widely used implementation science framework: https://cfirguide.org/

Introductory videos for implementation science
- https://www.youtube.com/channel/UCJhGTpULmVIENeYHPDy-jLg/videos
- Full set of National Cancer Institute training videos, with new videos being added now: https://cancercontrol.cancer.gov/is/training-education/TIDIRC-open-access