Dissemination Strategies to Bridge the Gap Between Research and Practice in the Cancer Control System

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Disclosures

I have nothing to disclose.
Objective

- Define dissemination and implementation research and practice
- Discuss the challenges and opportunities of dissemination and implementation in a complex adaptive system
- Optimization of evidence-based cancer control interventions
  - Adaptation of evidence-based cancer control interventions
  - Development and selection of implementation strategies
“A little knowledge that acts is worth infinitely more than much knowledge that is idle.”

-Kahlil Gibran
Definitions: Implementation & Dissemination

- **Dissemination** refers to the distribution of an innovation or intervention to a specific audience.
- **Implementation** refers to the integration of a new innovation or intervention within a specific setting or context.
It takes 17 years to turn 14 percent of original research to the benefit of patient care.
Cancer Control Intervention Impact

The ultimate impact of a cancer control intervention depends on:

- Effectiveness of the intervention
- Reach in the population
If you build it, they will come.  
(no they won’t)
“Closing the gap between research discovery and program delivery is both a complex challenge and an absolute necessity if we are to ensure that all populations benefit from the Nation’s investments in new scientific discoveries.”

(National Institutes of Health)

"The latest research shows that we really should do something with all this research."
Types of Evidence-Based Interventions (EBIs) that can be implemented and disseminated

- Clinical Practice Guidelines
- Clinical Innovations (e.g. new screening technology)
- Cancer Prevention Educational Programs (Packaged programs)
- Policies
- Strategies (USPSTF Community Guide Recommendation; e.g. mass media, one on one, provider reminders)

Implementation and Dissemination Challenges

- Organizational and leadership support
- Limited involvement of stakeholders and policy makers
- Limited knowledge among practitioners of existing evidence-based cancer control interventions (EBIs)
- Concerns about fit with previous practices and with client needs
- Researcher focused studies and designs /little attention to external validity

Reference:
Society of Clinical Psychology/American Psychological Association

Escoffery, Hannon, Maxwell, Vu, Leeman et al. 2015
“If we want more evidence-based practice, we need more practice-based evidence”

Lawrence W. Green, PhD
RECOMMENDATION A: A U.S. National Cancer Control Plan should principally ensure resource integration and operational coordination across the various components of the cancer control system, and should actively do the following:

A1. Improve the availability of preventive, screening, diagnostic, and therapeutic interventions.

A5. Apply the tools of complex systems analyses for assessing the “value” of cancer control interventions.


A8. Expand and support reproducibility strategies for developing reliable evidence in cancer control from biomedical, clinical, public health, and social science research.
Cancer Control in a Complex Adaptive System

- Diverse components and actors that interact with each other and with the external environment.
- Property of both the intervention and the context.
- Unpredictability of effects.
- Invites new approaches to addressing the issue.
How do we improve dissemination of evidence-based interventions for cancer control in a complex adaptive system?

I trust my gut, Our project is too complex for logic and evidence.
Dissemination of Cancer Control in Complex Adaptive Systems

- Apply the tools of complex systems analyses for improving implementation and dissemination of EBI.
- Engage key stakeholders at multiple levels to better understand and intervene.
- Use systematic processes for developing D&I strategies using theory, empirical evidence, and advances in implementation science.
Definitions: Dissemination & Implementation Research

- **Dissemination research** is the scientific study of targeted distribution of evidence (knowledge, interventions, practices, policies) to a specific public health or clinical practice audience. The intent is to understand how best to spread and sustain evidence-based interventions.

- **Implementation research** is the scientific study of the use of strategies to adopt and integrate evidence-based health interventions into clinical and community settings in order to improve patient/population outcomes.

Adapted from: NIH PAR 16-238: Dissemination and Implementation Research in Health (R01)
Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science
Laura J Damschroder*1, David C Aron2, Rosalind E Keith1, Susan R Kirsh2, Jeffery A Alexander3 and Julie C Lowery1
Wait, what? You are saying we need more research to figure out what to do with all of this research?
Addressing Complexity to Enhance D&I

To address complexity, dissemination and implementation strategy planners must:

- Better understand the complexity of the context and issues all players are facing
- Systematically design implementation strategies that consider complexity and make reasonable assumptions about the “shock to the system”
- Learn to balance strategic designs with respect for self-organization principles (adaptation)

Reference:
Optimization of Evidence-Based Cancer Control Interventions

Optimization is: “A deliberate, iterative and data-driven process to improve a health intervention and/or its implementation to meet stakeholder-defined public health impacts within resource constraints”.

- Adaptation
- Developing, Selecting, and Tailoring Implementation Strategies

Program Adaptation

“Planned or purposeful changes to the design or delivery of an intervention”

Wiltsey-Stirman et al., 2013; Brownson et al., 2012
Core Elements: required components that most likely produce the EBI’s effectiveness. Core elements include:

1. Content
2. Delivery strategies
3. Methods/mechanisms of change
Assumptions limiting progress...

Program Drift

Permanence of Evidence Base

Chambers & Norton, 2016
Fidelity vs Adaptation

Historical view of fidelity vs adaptation

A mature view of fidelity and adaptation
Implementation and Dissemination Strategies

Methods or techniques used to enhance the adoption, implementation, sustainment, and scale-up of a program or practice.

Proctor, Powell, & McMillen (2013); Powell, Garcia, & Fernandez (2018)
Effective Dissemination and Implementation Strategies

- **Dissemination Targeting HEALTH PROFESSIONALS**
  - Intervention Examples:
    - Train the trainer, academic detailing, treatment algorithms, role modeling, multiple dissemination strategies, postal delivery

- **Dissemination Targeting ORGANIZATIONS**
  - Example: HMOs
  - Intervention Examples:
    - Evidence-based manuals, workshops, targeted approaches to management, passive dissemination of worksite interventions

- **Dissemination Targeting INDIVIDUALS**
  - Intervention Examples:
    - Media awareness campaigns & peer leader programs

References:
Updated Compilation Types of Implementation Strategies

- 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

A refined compilation of implementation strategies: results from the Expert Recommendations for Implementing Change (ERIC) project

Byron J Powell\textsuperscript{1*}, Thomas J Waltz\textsuperscript{2}, Matthew J Chinman\textsuperscript{3,4}, Laura J Damschroder\textsuperscript{5}, Jeffrey L Smith\textsuperscript{6}, Monica M Matthieu\textsuperscript{6}, Enola K Proctor\textsuperscript{8} and JoAnn E Kirchner\textsuperscript{6,9}

Challenges in Selecting Implementation and Dissemination Strategies

- While some compilations exist, they may be less relevant for certain settings (clinical vs public health or community settings)
- Strategies included in compilations are broad and may represent qualitatively different things (delivery channel, assessments, processes)
- Underutilization of conceptual models and theories,
- Variations related to the EBPs and the contexts in which they are implemented

Waltz, et al. 2014; Powell et al. 2017
Enhancing the Impact of Implementation Strategies in Healthcare: A Research Agenda

Byron J. Powell, Maria E. Fernandez, Nathaniel J. Williams, Gregory A. Aarons, Rinad S. Beidas, Cara C. Lewis, Sheena M. McHugh, and Bryan J. Weiner
1. Need to Enhance Methods for Designing and Tailoring

Methods to Improve the Selection and Tailoring of Implementation Strategies

Byron J. Powell, PhD  
Rinad S. Beidas, PhD  
Cara C. Lewis, PhD  
Gregory A. Aarons, PhD  
J. Curtis McMillen, PhD  
Enola K. Proctor, PhD  
David S. Mandell, ScD

- Group Model Building  
- Conjoint Analysis  
- Concept Mapping  
- Intervention Mapping

Baker et al. (2015); Bosch et al. (2007); Colquhoun et al. (2017); Grol et al. (2013); Powell et al. (2017)
Intervention Mapping:
A Systematic Approach for Program, Development, Implementation and Adaptation

Three ways to use IM for D&I

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

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

3. Designing implementation and dissemination strategies to influence adoption, implementation and continuation: Implementation Mapping

What is Implementation Mapping?

Implementation science + Intervention Mapping = Implementation Mapping
Community and Stakeholder Engagement

Knowledge generation comes from the hands of practitioners/implementers as much as it comes from those usually playing the role of intervention researcher.

Reference:
2. Specify & Test Mechanisms

Lewis et al. (2018); National Institutes of Health (2016); Weiner et al. (2012); Williams et al. (2016)
3. Improve Description, Tracking, and Reporting

- Poor description, tracking, and reporting:
  - Limits replication in science and practice
  - Precludes answers to how and why strategies work
  - Numerous reporting guidelines exist

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Albrecht et al. (2013); Boyd et al. (2018); Bunger et al. (2017); Hoffman et al. (2014); Proctor et al. (2013); Proctor, Powell, & McMillen (2013); https://impsciuw.org/implementation-strategies/
4. Increase Economic Evaluations

- In a review of 235 implementation studies, only 10% provided information about implementation costs.
- Severely inhibits decision making regarding strategies.
- Practical tools have been developed (e.g., COINS).
- Common framework facilitating comparability is needed.

Hoomans & Severens (2014); Raghavan et al. (2018); Saldana et al. (2014); Vale et al. (2007)
New Strategies: Network Interventions

Hypothetical network used to illustrate intervention techniques.

Network segmentation, with each group represented by a distinct color (top).
New Strategies: Adaptive Interventions

Goal: Implement and evaluate practical, scalable, evidence based tobacco cessation strategies among populations most impacted by tobacco use

Partnerships
Utah FQHCs (11 systems; 33 clinics)
Utah Tobacco Quit Line
Utah Department of Health
  • Reallocated their tobacco control resources to provide prescription meds
Association for Utah Community Health (AUCH)
  • AUCH tobacco control staff member works 80% time on QuitSMARTUtah at Center for HOPE

QuitSMART Utah
PCORI Pragmatic Clinical Trial
SMART: Sequential Multiple Assignment Randomized Trial

Clinic-Level Randomization: Phase 1
- AAC Out = Ask, Advise, Connect – Opt Out
- AAC In = Ask, Advise, Connect – Opt In

Patient-Level Randomization: Phase 2
- TM = Text Messaging; CO = Connect
- Only

Patient-Level Randomization: Phase 3
- TM+MAPS = Text Messaging Continued + Navigation
- TM-Cont = Text Messaging Continued
New Strategies: Advancing Precision Medicine with mHealth: Increasing Effectiveness and Reach

**Precision Medicine:** Takes into account *individual variability in genes, environment, and lifestyle* for each person

**Just-In-Time Adaptive Interventions (JITAlIs)**
- Real time, real world, precision tailored interventions
- Integrated into healthcare systems focused on underserved populations

**Assessment Approaches**
- Streaming physiology via on-body sensors
- Streaming GPS/GIS
- Ecological Momentary Assessment (EMA)
What is De-Implementation?

De-Implementation Research: Study of how to remove, replace, reduce (frequency and/or intensity) or restrict use of ineffective, untested, harmful, overused, inappropriate, and/or low-value health services and practices delivered to patients by health care providers and health systems.

1. **Ineffective**: Empirical evidence demonstrates that intervention does not work.
2. **Contradicted**: More recent, higher-quality empirical evidence indicates that intervention does not work.
3. **Mixed**: Quality and quantity of evidence is equal in support of and against use of intervention.
4. **Untested**: Little to no empirical evidence about intervention.

Norton, Kennedy, & Chambers, 2017; Norton, Chambers, & Kramer, 2019
National Cancer Institute

*Following slides on deimplementation courtesy of Wynne Norton, NCI*
Improvements in dissemination requires:

- Shift the academic culture and incentives to include a greater focus on linking scientists with research users.
- Enhance expectations from funders of research for more consistent and intentional dissemination.
- Identify and emphasize related incentives for dissemination in other organizations with a stake in dissemination (e.g., creative approaches among publishers).
- Design studies in a way that emphasizes dissemination early in the research process through involvement of stakeholders.
- Track impact with metrics that focus on use of research outside of academe.

There is much to learn about how we can bridge the gap between cancer control research and practice. It is critical to consider the dynamic and complex cancer control system as we move from discovery to delivery and use the advances in systems thinking and other tools to do so.

Implementation science can help bridge the gap by:
- building an actionable and pragmatic knowledge base to help understand determinants of implementation and dissemination;
- and developing strategies to accelerate and improve scale up and spread of effective cancer control research innovations.
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