Dissemination and Implementation Research: Optimizing the Success of Health Care

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Session Outline

- An Overview to D&I
- Considering Intervention Design
- Challenging basic assumptions
- Funding Opportunities and Resources
It takes 17 years to turn 14 percent of original research to the benefit of patient care.
A Challenge from Multiple Perspectives…

TRUST ME, HAROLD, IT'S NOT OR DEMAND... IT'S SUPPLY AND DEMAND

SNOW CONES

3-15

SAYS WASHINGTON POST WRITERS GROUP VILEV
An Evidence-Based Health Intervention

- Is only so good as how and whether... 
  - It is adopted?
  - Providers are trained to deliver it?
  - Trained providers choose to deliver it?
  - Eligible people receive?

If we assume 50% threshold for each step... 
(even w/perfect access/adherence/dosage/maintenance)

Impact: \(0.5 \times 0.5 \times 0.5 \times 0.5 = 6\%\) benefit

Adapted from Glasgow, RE-AIM
More than Efficacy/Effectiveness

Glasgow, Vogt, & Boles (1999)
Key Terms

- **Implementation Science** is the study of methods to promote the integration of research findings and evidence into healthcare policy and practice.

- **Dissemination research** is the scientific study of targeted distribution of information and intervention materials to a specific public health or clinical practice audience. The intent is to understand how best to spread and sustain knowledge and the associated 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 outcomes and benefit population health.
Studying Implementation

The Core of Implementation Research

What?
- QIs
- ESTs

How?
- Implementation Outcomes
  - Feasibility
  - Fidelity
  - Uptake
  - Costs

Service Outcomes*
- Efficiency
- Safety
- Effectiveness
- Patient-centeredness
- Timeliness

Health Outcomes
- Satisfaction
- Function
- Health status/symptoms

Implementation Research Methods

* IOM Standards of Care

Proctor et al 2009 Admin. & Pol. in Mental Health & Mental Health Services Research
A multi-level challenge no matter WHAT…

Figure 1: The multilevel context of care

- **Local Community**
  - Community level resources
  - Medical care offerings
  - Population SES
  - Lay support networks
  - Private cancer organizations
  - Local hospital & cancer services
  - Market
  - Level of competition
  - Managed care penetration
  - Percent non-profit
  - Specialty mix
  - Local professional norms
  - MD practice organizations
  - Use of guidelines
  - Practice patterns

- **Provider / Team**
  - Knowledge, communication skills
  - Perceived barriers, norms, test efficacy
  - Cultural competency
  - Staffing mix & turnover
  - Role definition
  - Teamwork

- **Individual Patient**
  - Biological factors
  - Socio-demographics
  - Insurance coverage
  - Risk status
  - Co-morbidities
  - Knowledge, attitudes, beliefs
  - Decision-making preferences
  - Psychological reaction/coping

- **National**
  - Policy – Affordable Care Act
  - Structure
  - Culture

- **State**
  - Policy reimbursement of clinical trials
  - Stucture
  - Culture
  - Advocacy groups
  - Attitudes/expectations

- **Organization / Practice Setting**
  - Leadership
  - Organizational structure, policies & incentives
  - Delivery system design
  - Clinical decision support
  - Clinical information systems
  - Patient education & navigation

- **Family / Social Supports**
  - Family dynamics
  - Friends, network support

**Improved Quality of Cancer Care**

**Improved Cancer-Related Health Outcomes**

Taplin et al, *JNCI*, 2012
The fish-bicycle conundrum…

Ref: Paraphrased from Irina Dunn, 1970
The Importance of WHAT...

What is the intervention that needs to be implemented?
A. Diagnostic Tests/Screening
B. Information Dissemination/educational intervention
C. Preventive Care
D. Treatment
E. Monitoring and Follow-up
F. All of the above?

What
Tabak et al. review of Implementation Science Models

- Identified 109 models
- Exclusions
  - 26 focus on practitioners
  - 12 not applicable to local level dissemination
  - 8 end of grant knowledge translation
  - 2 duplicates
- Included 61 models
- Across Construct Flexibility, SEF, D/I

Tabak, Khoong, Chambers, Brownson, AJPM, 2012
Roger’s Diffusion of Innovations

Characteristics of the intervention

Organizational characteristics

Adoption decision

Effective implementation

Outcomes

CIPRS: Stetler & Damschroder
Theoretical Frameworks

D& I Models: Damschroder’s Consolidated Framework for Implementation Research (CFIR)

Damschroder and Damush, 2009
Considering D&I earlier

An earlier focus on…
• Who’s going to deliver it?
• Fit with ultimate patient population
• Building in tests of training, support, adherence, mediators and moderators to high quality delivery
• Hybrid designs

https://nccih.nih.gov/grants/mindbody/framework
Toward User-Centered Design…

https://healthinnovationresearch.com/2018/03/01/how-human-centred-design-is-being-applied-to-health-outcomes-research/
NCI’s “Designing for Dissemination and Implementation”

SPeeding Research-tested INTerventions (SPRINT)

What is SPRINT?
Discover how this program will expedite the transfer or commercialization of your intervention into practice.

SPRINT informational Webinar (click to view)

Opening Workshop: February 7-9, 2018
On-line Sessions: Wednesdays 1:30 PM-4:30 PM
Closing Workshop: April 3-4, 2018

LEARN MORE

SPRINT Training

HOW TO APPLY
The PRECIS-2 Tool

CHALLENGING BASIC ASSUMPTIONS
Traditional Assumptions

- EBPs are static
- System is static
- Implementation proceeds one practice or test at a time
- Consumers/Patients are homogeneous
- Choosing to not implement is irrational
Valuing Consistency

ITV Development  →  Efficacy  →  Effectiveness  →  Implementation

Intervention X Evidence

Site 1

Intervention X Evidence

Site 2

Intervention X Evidence

Site 3

Intervention X Evidence

Site 4
“Voltage Drop” of an intervention as it moves through stages of development.

Chambers, Glasgow, Stange (2013), The Dynamic Sustainability Framework. Implementation Science
“Program Drift” of a fielded intervention (ITV) over time, with expected decrease of effect

Chambers, Glasgow, Stange (2013), The Dynamic Sustainability Framework. Implementation Science
Fidelity vs Adaptation?

Variable use for variable populations, settings, and purposes…
Relative Weights?

CONTEXT

INTERVENTION
A Natural Process

Adaptation is Inevitable…
Sources Of Intervention Adaptation

- Core Ingredients
- Cultural Adaptations
- Mode of Delivery Adaptations
- Target Audience Adaptations
- Service Setting Adaptations

Chambers & Norton, 2016
"Positive Deviance"

Impact

"Program Drift"

KEY: ITV = Intervention, Time and Space = variability of intervention characteristics over time and setting
Embracing Dynamism
Sustainability or Evolution?

- IF PRECISION MEDICINE CONTINUES TO EVOLVE, SHOULD EXISTING INTERVENTIONS BE SUSTAINED IN THE SAME FORM THAT WE’VE CREATED THEM?
- HOW DOES THE SYSTEM COPE WITH A DYNAMIC FIELD THAT IS CONSTANTLY CHANGING?
- WHERE DO WE GO FROM HERE?

http://www.thestrut.com/2012/12/19/the-evolution-of-the-beatles-hair/
A Dynamic Approach to Sustainability…

• Overuse of evidence-based practices
• Any use of harmful practices
• Mis-use of evidence-based practices
How to Evaluate Innovations that Outpace Usual Research Timelines?

- YouTube (2005)
- Wii (2006)
- iPhone (2007)
- Android (2008)
- iPad (2009)
- Facebook reaches 1B users (2012+)

Timeline:
- Grant Submit and Award
- Development and Pilot Testing
- Recruit and Randomize
- Follow-ups
- Analyze and Publish
- Ready for Use?

Adapted from Riley et al, 2013
Enter the learning health care system...

Hope for the future...
Current Funding Announcements

- NIH: PAR-18-007; 18-017; 16-237 (R01, R21, R03)
- NCI leads (16 ICs total, including FIC, NIMH, NHLBI, NHGRI, as well as OBSSR and ODP)
- Organizes the D&I research agenda across NIH
- >200 grants funded through NIH since 2006
- 2010 CSR standing review committee
- Program staff (contacts) happy to review concept papers, specific aims, answer questions at any time
Areas Ripe for Exploration

- **Sustainability** of EBPs in a changing context
- **Adaptability/Evolution** of EBPs over time
- Implementation of a set of ITVs
- Impact of dissemination strategies on practice
- **Scaling up practices** across health plans, systems, networks, and nations
- **De-Implementation/Exnovation**
- **Adaptive designs** (implementation as a step-wise approach)
Other PAs with an Implementation Science Flavor (mmm...sweet)

- Reducing overscreening for breast, cervical and colorectal cancers among older adults
- Linking the Provider Recommendation to Adolescent HPV Vaccine Uptake
- Oral Anticancer Agents: Utilization, Adherence, and Health Care Delivery
- Improving Smoking Cessation in Socioeconomically Disadvantaged Populations via Scalable Interventions
- Innovative Tobacco Control Policies to Reduce Disparities in Tobacco Use
- Innovative Approaches to Studying Cancer Communication in the New Media Environment
CANCER MOONSHOT

Implementation Science Working Group: Prevention and Screening

- Issue: Suboptimal uptake of evidence-based cancer prevention and screening programs, particularly among underserved populations.
- Can we better implement what has already been developed and tested?
- Effective scale-up of CRC screening and follow-up, HPV vaccination, and tobacco cessation interventions could result in:
  - 389,900 fewer new cancer cases annually
  - 318,500 fewer cancer deaths annually
- A robust knowledge base around implementation strategies needed to enact evidence-based care

Funding Opportunities to Support Cancer Moonshot

New Cancer Moonshot funding opportunities from NCI support goals articulated in the recommendations made by the Blue Ribbon Panel.
Accelerating Colorectal Cancer Screening and Follow-Up Through Implementation Science (ACCSIS) – RFA-CA-17-038/9

**CRC Screening & Follow-Up Practices**
- FOBT*
- gFOBT
- FIT*
- Flexible Sigmoidoscopy
- Colonoscopy
- Guideline-concordant Follow-up

**Implementation Strategies**

**Examples:**
- Outreach/Media Navigation
- Health IT supports
- Pat/Prov Reminders
- Workflow Changes
- Staff Training
- Innovative Funding Models

**Targets:**
- Patient
- Provider Team
- Organization
- Community

**Community and Healthcare Settings**

**Contexts:**
- Primary Care Clinics
- Community Centers
- Integrated Health Systems
- Technology Platforms
- Home

**Strata:**
- FQHCs
- Metropolitan Areas
- Health Systems
- Rural Settings (State or County approaches)

*FOBT=Fecal occult blood test; FIT=Fecal Immunochemical Test
Approaches to Identify and Care for Individuals with Inherited Cancer Syndromes

Approaches to Identify and Care for Individuals with Inherited Cancer Syndromes

NCI Board of Scientific Advisors and the National Cancer Advisory Board
June 2017
Implementation Science Centers for Cancer Control RFA Concept (via 3 Moonshot Teams)

- 4-5 Research Centers
  - Implementation “Laboratories”
  - Methods Development, Network Cores
  - Pilot Implementation Studies
  - Common Data Repositories
  - Building a Field-wide Consortium
- 3 Advanced Centers ($2M per yr); 2 Developing ($1M per yr) [P50/P20]
  - Advanced Ctrs in established areas (Cancer Prevention, Screening, Symptom Management)
  - Developing Ctrs in newer areas (precision medicine, de-implementation)
- FY19 Budget: $8M TC ($40M TC over 5 years)
Implementation Science Centers for Cancer Control (IS-C³)

Goal: Scaling Up IS Efforts Across Moonshot (and then some)

1. Administrative Core
2. IS Laboratories: Established Collaborations with Health and Community Systems (e.g. Oncology, Primary Care, Community Settings)
3. Measurement and Methods
4. Set of Innovative Research Pilots
5. Network Activities
   • Shared capacity to run program-wide IS Consortium (host annual meetings/dissemination of findings/training)
Implementation Science Training...
Future Directions in Implementation Research

December 2017

In Press
https://www.academyhealth.org/events/site/11th-annual-conference-science-dissemination-and-implementation-health
Improving the impact of cancer control and population science on the health and health care of the population, and fostering the rapid integration of research, practice, and policy.
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