A Brief Introduction to Implementation Science

David Chambers, DPhil
Deputy Director for Implementation Science, Division of Cancer Control & Population Sciences (DCCPS)
New Grantees Meeting
September 19, 2017
Presentation Outline

- Conceptualizing the Challenge
- Current Progress (NIH efforts)
- Opportunities and Resources
“PUBLICATION PATHWAY”

Balas & Boren, 2000

Negative results

- 18% Dickersin, 1987 variable

Submission

- 46% Koren, 1989 0.5 year

Acceptance

- 0.6 year Kumar, 1992

Publication

- 35% Balas, 1995 0.3 year

Bibliographic databases

- 50% Poynard, 1985

Reviews, guidelines, textbook

- 6 - 13 years Antman, 1992

Implementation

- 9.3 years

Lack of numbers

Inconsistent indexing

Expert opinion

50%
It takes 17 years to turn 14 percent of original research to the benefit of patient care.
We assume... “If you build it...”
An Evidence-Based Cancer Control Program

Is only so good as how and whether…

- It is adopted?
- Providers are trained to deliver it?
- Trained providers choose to deliver it?
- Eligible patients receive it?
- The degree to which access/engagement/quality/sustainability exist?

Impact: The degree to which an intervention benefits all those who COULD receive it…
Beyond efficacy/effectiveness

Figure 1. Elements of the RE-AIM Framework

Adapted from Glasgow, RE-AIM
Current Landscape and Progress
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.
Dissemination Research

- How the “evidence” is created?
- Packaging
- Transmitting
- Receiving
- Turning Information into Action

- Many of our early efforts in “translating research into practice” jumped over these steps.
Studying Implementation

What?
- QIs
- ESTs

How?
- Implementation Strategies

Implementation Outcomes
- Feasibility
- Fidelity
- Penetration
- Acceptability
- Sustainability
- Uptake
- Costs

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

Health Outcomes
- Satisfaction
- Function
- Health status/symptoms

* IOM Standards of Care

Implementation Research Methods

Proctor et al 2009 Admin. & Pol. in Mental Health & Mental Health Services Research
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Current Funding Announcements

- NIH: PAR-16-236; 13-237; 13-238* (18 ICs & Offices)
- 2010 NIH standing review committee
- PURPOSE: to support innovative approaches to identifying, understanding, and developing strategies for overcoming barriers to the adoption, adaptation, integration, scale-up and sustainability of evidence-based interventions, tools, policies, and guidelines. Conversely, there is a benefit in understanding circumstances that create a need to “de-implement” or reduce the use of strategies and interventions that are not evidence-based, have been prematurely widely adopted, yield sub-optimal benefits for patients, or are harmful or wasteful.
D&I Research Studies

→ Increasing funding opportunities through AHRQ, CDC, NIH, PCORI, RWJF, WT Grant, etc.
  e.g., > 150 projects through trans-NIH D&I announcements

→ CER of implementation approaches
  Quality Improvement, Organizational Change, Provider Training and Supervision, Financing/Policy Change

→ Emerging approaches
  Learning Collaboratives, technology as dissemination driver

→ Methods Devl., System Science, Genomic Medicine

For NCI analysis, Neta et al, 2015, *Implementation Science*
Priority Areas for PARs

• Implementation of genomic testing into practice
• Sustainability/Adaptation of effective practices in a changing health care context
• Impact of social media on demand for evidence-based practices
• Scaling up cancer interventions across health plans, systems, and networks
• De-Implementation of ineffective or suboptimal care
• Implementation in Global Settings
Cancer Moonshot Blue Ribbon Panel Report

The Blue Ribbon Panel report describes 10 transformative research recommendations for achieving the Cancer Moonshot's ambitious goal of making a decade's worth of progress in cancer prevention, diagnosis, and treatment in just 5 years.

Download the Complete Report

Download an At-a-Glance

https://www.cancer.gov/research/key-initiatives/moonshot-cancer-initiative/blue-ribbon-panel
10th Annual Conference on the Science of Dissemination and Implementation in Health

The pre-eminent event to bridge the gap between evidence, practice, and policy in health and medicine.

Quality research generates the evidence needed to optimize health and health care in the United States and elsewhere. However, the full potential of evidence can only be realized if it is effectively incorporated into health practice and policy.

A decade since its inception, the Annual Conference on the Science of Dissemination and Implementation in Health (D&I), co-hosted by the National Institutes of Health (NIH) and AcademyHealth has become the pre-eminent event to bridge the gap between evidence, practice, and policy in health and medicine.

http://www.academyhealth.org/events/site/10th-annual-conference-science-dissemination-and-implementation-health
D&I Research Training...
NCI Implementation Science Advanced Topic Webinars

Webinars

Welcome to the Implementation Science Webinar Series. In 2013, The National Cancer Institute (NCI) Division of Cancer Control & Population Sciences Implementation Science Team started a webinar series focused on advanced dissemination and implementation research topics. Each session will include approximately 45 minutes for presentation(s) by leaders in the field as well as 30 minutes for engaged discussion and Q&A. Review the list of topics and click on the session title below to register for upcoming sessions or view an archived session.

Archived Webinars

- **October 2016: Fireside Chat on the Development of Implementation Science & Future Directions**
  - October 2016
  - Features: Dr. David Chambers; Dr. Russell Glasgow

- **October 2016: Fireside Chat on History and Future Directions of Implementation Science at the US Department for Veterans Affairs**
  - November 2016
  - Features: Dr. Amy Kilbourne; Dr. Brian Mittman

- **July 2016: Are Learning Collaboratives Effective in Implementing Interventions for Obesity and Tobacco Dependence to Reduce Early Mortality in People with Mental Illness?**
  - July 2016
  - Features: Dr. Stephen J. Bartels

- **May 2016: Sustainability of knowledge translation interventions in healthcare decision-making: a scoping review**
  - May 2016
  - Features: Dr. Andrea Tricco; Dr. Monika Kastner

- **April 2016: Identifying, Specifying, and Applying Implementation Strategies**
  - April 2016
  - Features: Dr. Byron Powell

- **March 2016: Advancing Implementation Science through Measure Development and Evaluation**
  - March 2016
  - Features: Dr. Cara Lewis

- **February 2016: GBPR and Community Engaged**

- **January 2016: Researching the Impossible: The utility of**

- **December 2015: Mixed Methods in Implementation**

https://cyberseminar.cancercontrolplanet.org/implementationscience/
Evolving Paradigms for D&I Science

The DSF: Managing the Fit Between an Intervention and Context to Optimize Benefit

Incorporation of Knowledge Integration into the Translation Continuum

2004

2012

2013

Increasing Public Health Benefit

NIH NATIONAL CANCER INSTITUTE
Considering D&I earlier

Studies to Demonstrate Clinically Meaningful Signal
- Can benefit be measured?

Intervention Development, Refinement and Standardization
- Can the intervention be optimized for future studies?

Feasibility and Pilot Studies
- Can people adhere to protocol?

Efficacy Studies with Appropriate Comparison
- Can a clinically meaningful effect be measured in an ideal design?

Effectiveness or Comparative Effectiveness Research
- Can it work in real world setting?

Dissemination and Implementation Studies
- Can it be used widely?

https://nccih.nih.gov/grants/mindbody/framework
Designing for Dissemination and Implementation

- 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
“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

Ready to Apply?
Apply to be in the first cohort

http://nci-sprint.com
D&I RESOURCES

- http://dissemination-implementation.org
- http://gem-beta.org
- http://www.societyforimplementationresearchcollaboration.org
- http://cancercontrolplanet.cancer.gov
- https://researchtoreality.cancer.gov
This interactive website was designed to help researchers and practitioners to select the D&I Model that best fits their research question or practice problem, adapt the model to the study or practice context, fully integrate the model into the research or practice process, and find existing measurement instruments for the model constructs. The term ‘Models’ is used to refer to both theories and frameworks that enhance dissemination and implementation of evidence-based interventions more likely.

Select
Search, view, and select D&I Models

Adapt
Read strategies for adapting D&I Models to research or practice context

Integrate
Read strategies for incorporating D&I Models into the full spectrum of your project

Measure constructs
Find a list of constructs and links to measurement tools associated with the D&I Models

http://dissemination-implementation.org
Measurement: Toward Standardization & Harmonization

- **Society for Implementation Research Collaboration Instrument Review Project**

- **Grid-Enabled Measures developed by the National Cancer Institute**
## GEM-Dissemination and Implementation Initiative (GEM-D&I)

### Related Constructs & Measures

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Measures</th>
<th>Ratings</th>
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<tbody>
<tr>
<td>Acceptability</td>
<td>Acceptability of Decision Aid Scale</td>
<td>not yet rated Rate This!</td>
</tr>
<tr>
<td>Acceptability</td>
<td>Evidence Based Practice Attitude scale</td>
<td>Rate This!</td>
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<tr>
<td>Acceptability</td>
<td>Suicide Prevention Program Rating Profile</td>
<td>Rate This!</td>
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<td>Acceptability</td>
<td>Therapists' attitudes toward treatment manuals</td>
<td>Rate This!</td>
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<td>Acceptability</td>
<td>Treatment Evaluation Inventory</td>
<td>Rate This!</td>
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<tr>
<td>Acceptability</td>
<td>Residents incorporation of EBM in practice</td>
<td>Rate This!</td>
</tr>
<tr>
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<td>Atkinson's Perceived Attributes of eHealth Innovations</td>
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<tr>
<td>Acceptability</td>
<td>Van Schaik's Technology acceptance</td>
<td>Rate This!</td>
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<td>Adaptability</td>
<td>CFIR Adaptability</td>
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<td>Adherence</td>
<td>Morisky 6-item Medication Adherence Scale</td>
<td>Rate This!</td>
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<tr>
<td>Adherence</td>
<td>Morisky 4-item Self-Report Measure of Medication-Taking Behavior (MMAS-4)</td>
<td>Rate This!</td>
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<td>Adherence</td>
<td>Questionnaire on the Quality of Physician-Patient Interaction</td>
<td>Rate This!</td>
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<tr>
<td>Adherence</td>
<td>Medical Outcomes Study (MOS) Measures of Adherence</td>
<td>Rate This!</td>
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<tr>
<td>Adjustment process</td>
<td>Meaning in Life Scale</td>
<td>Rate This!</td>
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<tr>
<td>Adopter attitudes</td>
<td>Steckler's Perception of Innovation &quot;Rogers's Adoption Questionnaire&quot;</td>
<td>Rate This!</td>
</tr>
<tr>
<td>Adoption</td>
<td>Roman's measure of adoption in substance abuse treatment (application of the many-facet Rasch model)</td>
<td>not yet rated Rate This!</td>
</tr>
<tr>
<td>Adoption</td>
<td>Li, Simon, Bodenheimer, Gillies, Causalino, Schmittke, &amp; Shortell, adoption</td>
<td>Rate This!</td>
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<tr>
<td>Adoption</td>
<td>Menachemi, Saunders, Chululatov, Matthews, &amp; Brooks</td>
<td>Rate This!</td>
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<td>Adoption</td>
<td>Noonan, Ensmich, Moos, Armstrong, Weinberg, &amp; Boll, Adoption, Adaptation, and Fidelity</td>
<td>Rate This!</td>
</tr>
<tr>
<td>Adoption</td>
<td>Zardi, Marridtt, &amp; Nation, adoption, acceptability and</td>
<td>Rate This!</td>
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[Link to the website](https://www.gem-measures.org/public/wsoverview.aspx?cat=8&wid=11&aid=0)
Highlighted Features

- **FUNDING OPPORTUNITIES**
  Apply for funding in cancer control and population sciences. [VIEW ALL]

- **MEET OUR STAFF**
  Connect with the team of dedicated scientists and research associates. [VIEW ALL]

- **GRANT APPLICATION RESOURCES**
  View successful applications and resources for

- **WEBINAR SERIES**
  Explore advanced dissemination and implementation

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Your e-mail:
Submit

IS Tweets
- @NCI_ImplSci thanks for the #NCSPRINT coverage @ApriliYO

Posted 11 hours ago

- #impci theme at @QSEN_Institute's 2017 Forum? & a keynote from @AnnisSales4? we'll be following the #QSEN17 convo!

http://ow.ly/AHtq3oCmgd

Posted on 18 Apr

- @NCIEpi
Cancer Control PLANET portal provides access to data and resources that can help planners, program staff, and researchers design, implement and evaluate evidence-based cancer control programs.

DATA

State Cancer Profiles (http://statecancerprofiles.cancer.gov) (CDC, NCI)

COLLABORATION

Research to Reality (http://researchtolreality.cancer.gov) (NCI)

RESEARCH SYNTHESIS

Guide to Community Preventive Services (http://www.thecommunityguide.org/index.html) (Federally Supported)

U.S. Preventive Services Task Force (http://www.uspreventiveservicestaskforce.org) (Federally Supported)

Evaluation of Genomic Applications in Practice and Prevention (EGAPP) (http://www.epagreviews.org/recommendations/index.html) (Federally Supported)

Additional Research Evidence Reviews (synthesis.html)

PROGRAMS

Research Tested Intervention Programs (RTIPs) (http://tips.cancer.gov/tips/index.do)

EVALUATION

Reach Effectiveness Adoption Implementation Maintenance (RE-AIM) (http://www.re-aim.org)

PLAN

WHAT'S NEW


E-NEWSLETTER

Sign up (http://www.iccp-portal.org) to receive monthly updates on Cancer Control PLANET.

FEEDBACK

We welcome your feedback (contact.html) on the Cancer Control PLANET and its satellite web sites. Thank you for helping to improve this site for the cancer control community.

TOPICS

- Breast Cancer (breast_cancer.html)
- Cervical Cancer (cervical_cancer.html)
- Colorectal Cancer (colorectal_cancer.html)
- Diet / Nutrition (diet.html)
- HPV Vaccination (hpv_vaccination.html)
- Informed Decision Making (informed.html)
- Obesity (obesity.html)
- Physical Activity (physical_activity.html)
- Public Health Genomics (public_health_genomics.html)
- Sun Safety (sun_safety.html)
- Survivorship (survivorship.html)
- Tobacco Control (tobacco_control.html)

SPONSORS
# Intervention Programs

**Search Criteria Used:** Survivorship/Supportive Care  
**Refine Your Search**

<table>
<thead>
<tr>
<th>Program Title &amp; Description (17 programs alphabetically listed)</th>
<th>Program Focus</th>
<th>Population Focus</th>
</tr>
</thead>
</table>
| 1. **Alleviating Depression Among Patients With Cancer (ADAPt-C)**  
Designed to enhance the quality of life for cancer survivors. (2011)  
NCI (Grant number: R01CA105269)  
**Criteria Matched:** Survivorship/Supportive Care | Psychosocial - Coping | Cancer Survivors |
| 2. **Breast Cancer Education Intervention (BCEI)**  
Designed to enhance the quality of life for breast cancer survivors. (2007)  
**Criteria Matched:** Survivorship/Supportive Care | Psychosocial - Coping | Cancer Survivors |
| 3. **Bright IDEAS: Problem-Solving Skills Training**  
Designed to help reduce the emotional distress in mothers of children recently diagnosed with cancer. (2005)  
NCI (Grant number: ca65520)  
**Criteria Matched:** Survivorship/Supportive Care | Psychosocial - Coping | Caregivers |
| 4. **Coping with Chemotherapy**  
Designed to enhance the quality of life of individuals prior to undergoing chemotherapy. (2002)  
NCI (Grant number: CA70875)  
**Criteria Matched:** Survivorship/Supportive Care | Psychosocial - Coping | Cancer Survivors |
R2R engages its community in a collaborative effort to implement evidence-based interventions.  
• Learning Communities  
• Monthly cyber-seminars  
• Discussions  
• Cross-walks with RTIPs  
• Research/Practice/Policy Connections  

Robust community of more than 2,300 cancer control practitioners, researchers, students and clinicians.  

In 2014, R2R had 80,000 page views (3,200 average monthly views)  
• 33% of discussions are community-driven;  
• 73% of discussion posts generate comments  

https://researchtoreality.cancer.gov
dchamber@mail.nih.gov
240-276-5090
@NCIDACHambers