

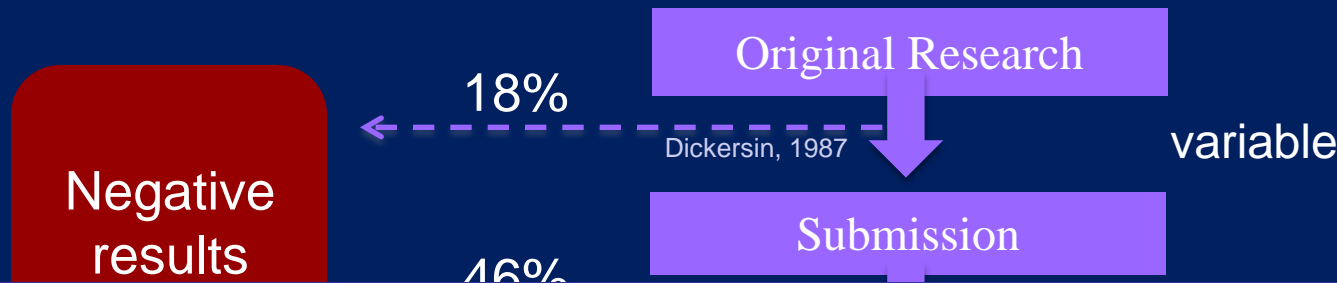
# *A Brief Introduction to Implementation Science*

David Chambers, DPhil  
Deputy Director for Implementation Science  
Division of Cancer Control and Population Sciences, NCI  
New Grantees Meeting  
November 5, 2015

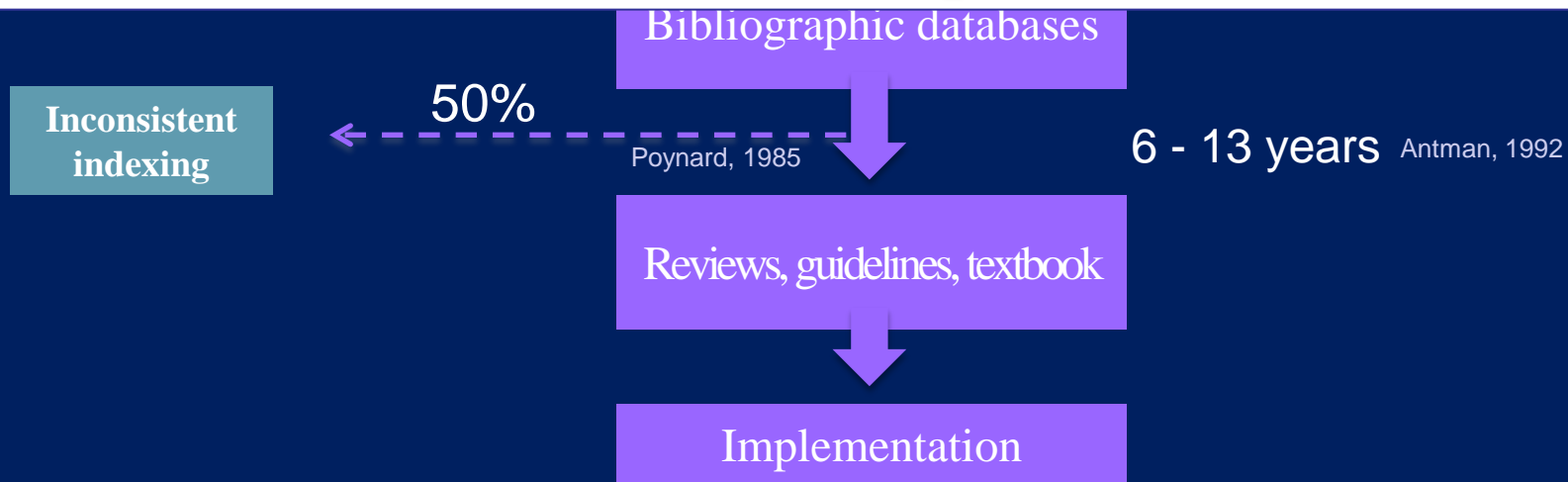
# Presentation Outline

- Conceptualizing the Challenge
- Current Progress (D&I efforts)
- Resources

## “PUBLICATION PATHWAY” Balas & Boren, 2000



**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...

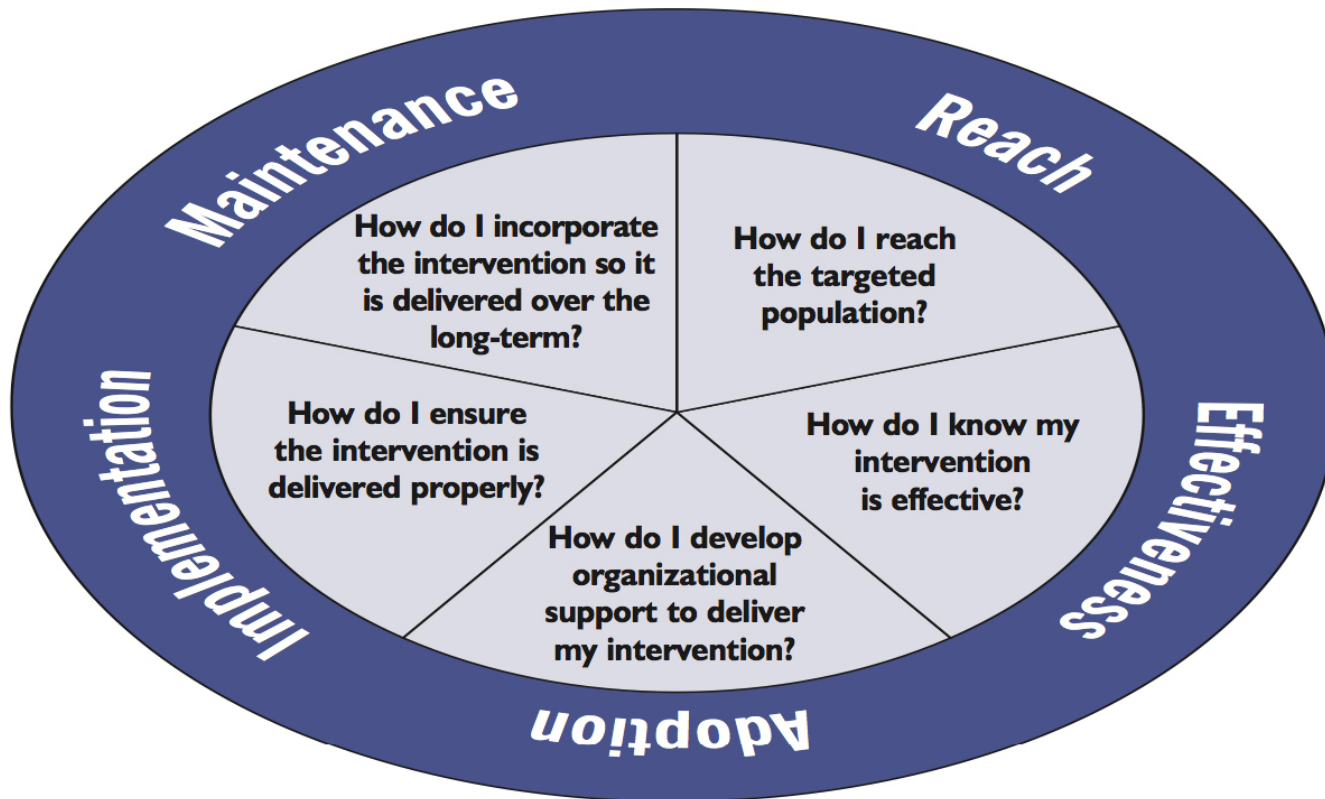
- It is adopted?
- Providers are trained to deliver it?
- Trained providers choose to deliver it?
- Eligible patients receive it?
- The degree to which access/engagement/quality/sustainability exist?

**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**



The background is a deep blue gradient. It features several glowing, semi-transparent molecular models composed of spheres and connecting rods. Additionally, there are bright, curved light streaks or energy waves that sweep across the scene, adding a sense of dynamic movement and scientific exploration.

# How Far Have We Come?

# Dissemination and Implementation Research

- **Dissemination is** “the targeted distribution of information and intervention materials to a specific public health or clinical practice audience.”
- **Implementation is** “the use of strategies to adopt and integrate evidence-based health interventions and change practice patterns within specific settings.”

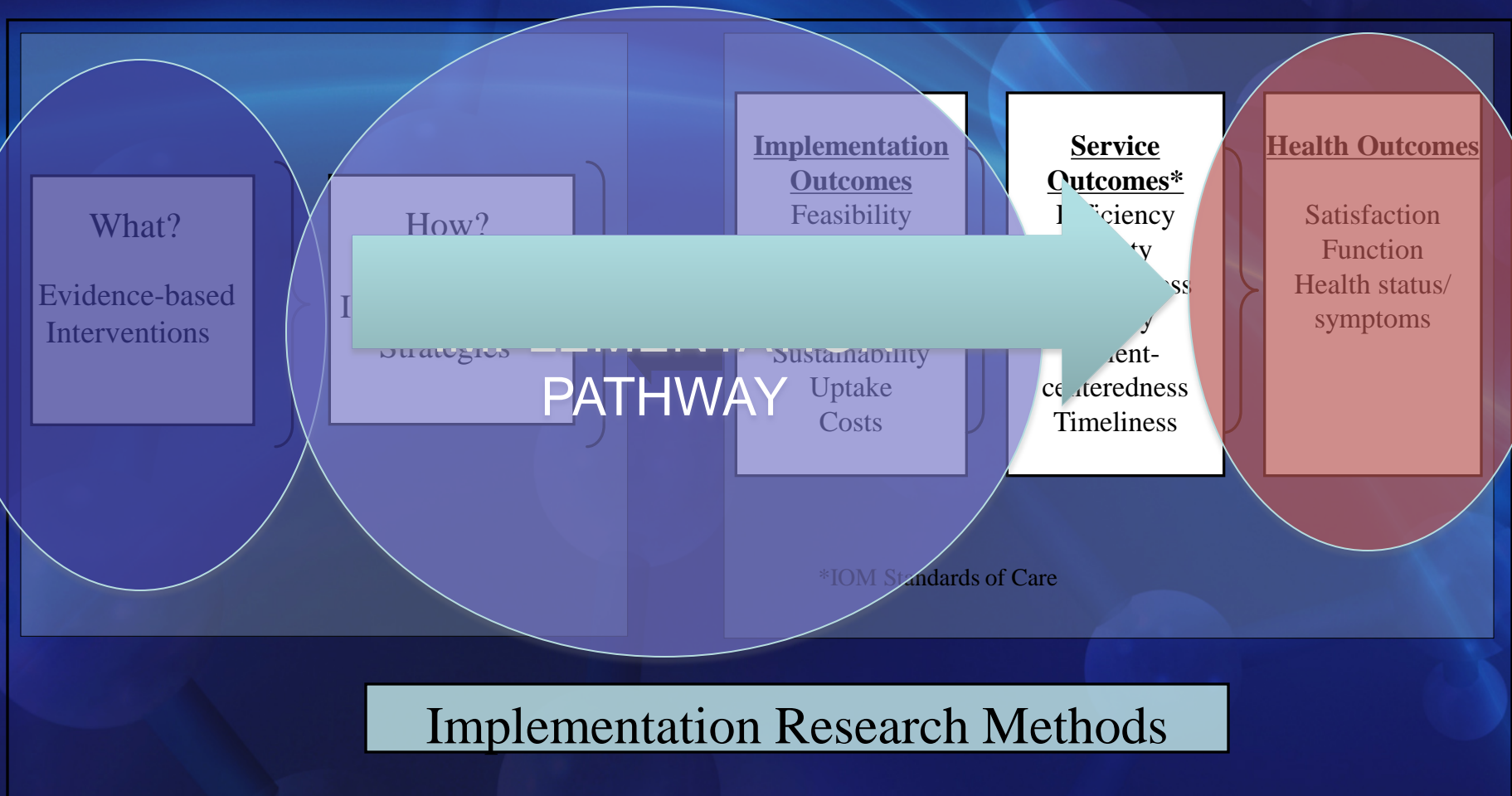
NIH PAR-13-055; Adapted from Lomas (1993)



# Dissemination Research

- How the “evidence” is created?
- Packaging
- Transmitting
- Receiving
- Turning Information into Action
- Too often we assume as researchers that we do this well...

# Studying Implementation



Proctor et al 2009 *Admin. & Pol. in Mental Health & Mental Health Services Research*

# Current Funding Announcements

- NIH: PAR-13-054; 13-055;13-056 (R03, R01, R21)
- **NCI** leads (16 ICs total, including **FIC**, **NIMH**, **NHLBI**, **NHGRI**, as well as **OBSSR**)
- Organizes the D&I research agenda across NIH
- **147** grants funded through NIH since **2006** (**46 NCI** grants over **9 years**)
  - 25 NCI R01s; 5 R03s; 16 R21s
- 2010 CSR standing review committee
- Modal Grant—**Randomized trial** of an **implementation strategy** for an **effective intervention** (where we've been)



# D&I Research Studies

- Increasing funding opportunities through AHRQ, CDC, NIH, PCORI, RWJF, WT Grant, etc.  
e.g., > 100 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

# NCI's Active PAR Grants (selected)

- Implementation of evidence-based **cancer early detection** in **black churches** (R01 CA 147313: Holt)
- Online **Social Networks** for Dissemination of **Smoking Cessation** Interventions (R01 CA155369: Cobb)
- Communicating **Genetic Test Results** by Telephone: A Randomized Trial (CA160847: Bradbury)
- Implementing **Tobacco Use Treatment Guidelines** in **Dental Public Health Clinics** (CA162035 Shelley/Ostroff)



# 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**



# Leveraging NCI Initiatives

- Platforms—e.g. NCORP CCDR, CRN, SCTC, CPCRN
- Initiatives—HPV vaccine uptake, PQ#12, Smoking Cessation in the context of lung cancer screening
- Future Opportunities—Precision Medicine, Next-generation surveillance, Big Data, Health Disparities, mHealth

# Annual D and I Meetings

- First meeting: September 2007: “Showcase”, ~350 participants
- Second-Fifth meetings: 2009-2012, up to 1200 registrants
- Sixth meeting(s): “Training,” “Research Design,” “Measurement” 2013-4
- Seventh Meeting: Co-hosted with AcademyHealth; Co-sponsors: AHRQ, CDC, PCORI, RWJF, VA, WT Grant, Dec 2014; [Details at http://www.academyhealth.org](http://www.academyhealth.org)
- Eighth: Dec 14-16, 2015, Wash DC, registration open

□ [http://obssr.od.nih.gov/scientific\\_areas/translation/dissemination\\_and\\_implementation/index.aspx](http://obssr.od.nih.gov/scientific_areas/translation/dissemination_and_implementation/index.aspx)



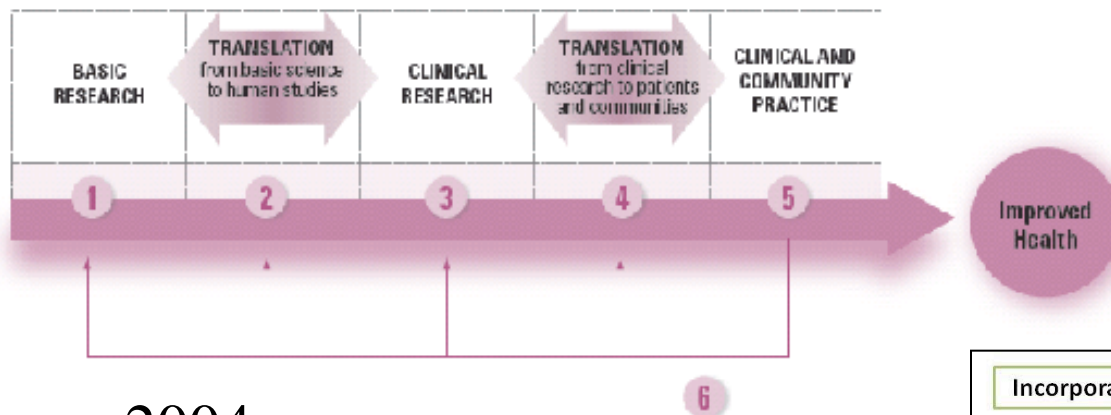


# Growing Resources

- Training Programs (e.g. TIDIRH, IRI, MT-DIRC, KT Canada, Universities)
- Research Infrastructure (CIPRS, CPCRN, HMORN, Other Centers, CTSA Cores)
- Measurement Tools (GEM-IS, SIRC, SIC, RE-AIM)
- The Next Generation (100s of trainees)
- *Implementation Science*
- Brownson, Colditz, Proctor (Eds.) *Dissemination and Implementation Research in Health, 2012*

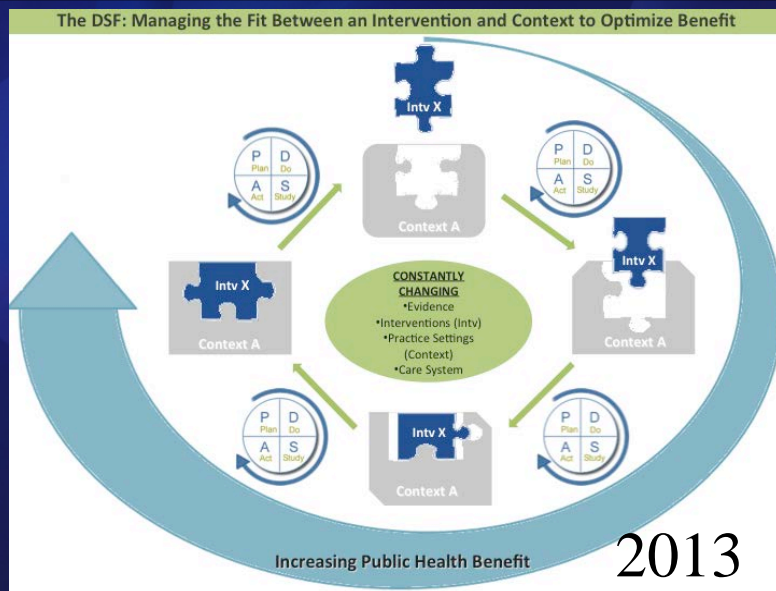


# The Current Paradigms for D&I Science



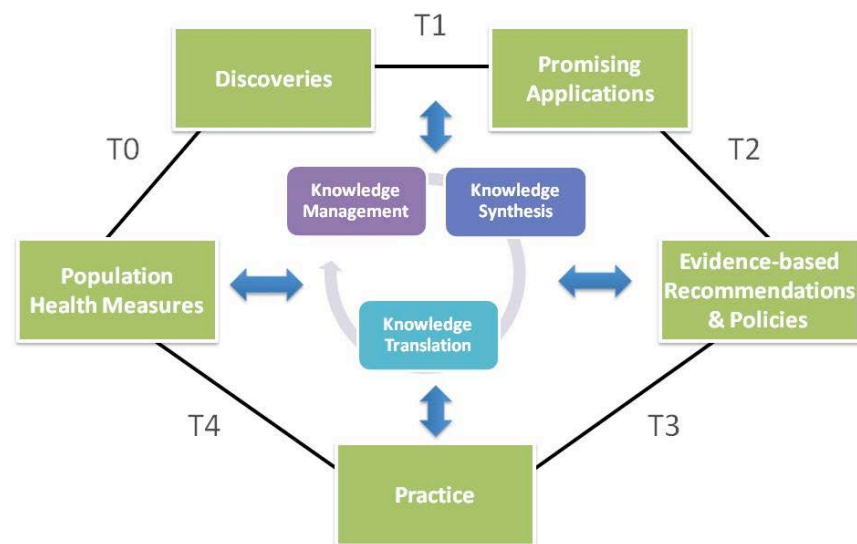
2004

2012



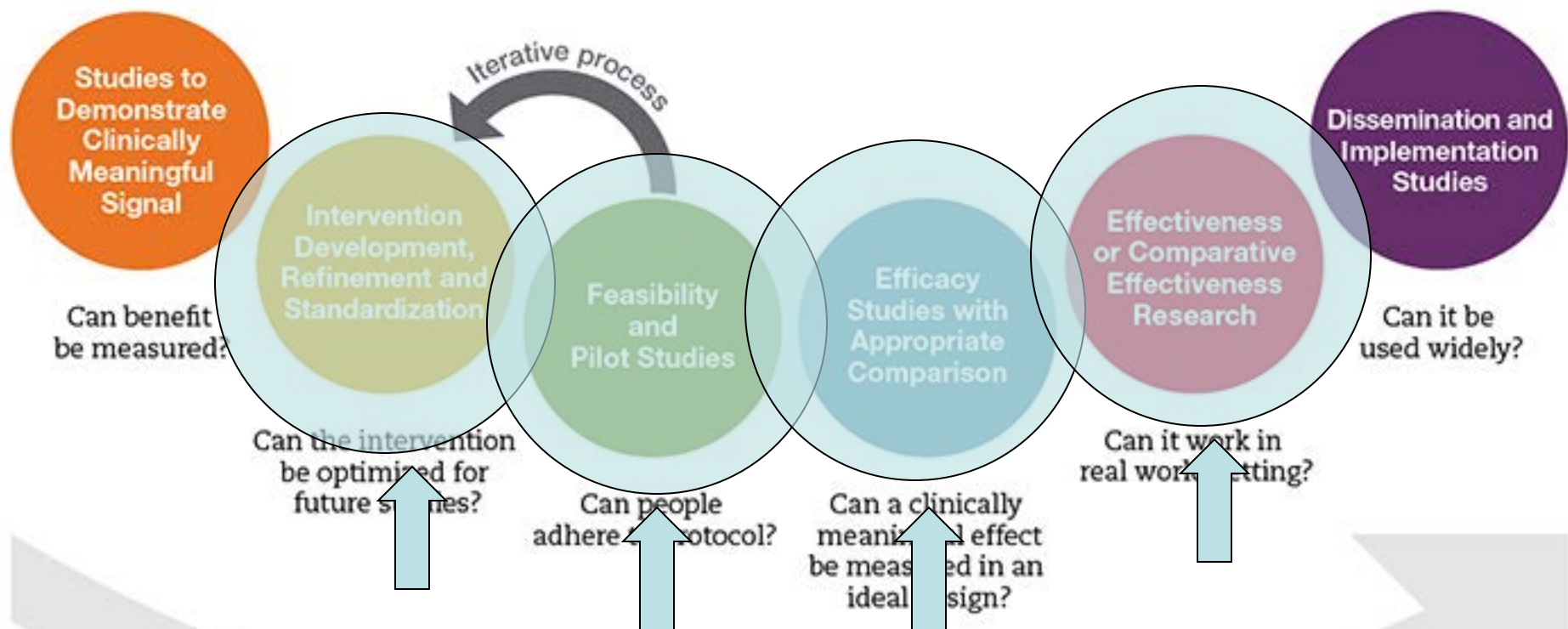
2013

## Incorporation of Knowledge Integration into the Translation Continuum



National Cancer Institute

# Considering D&I earlier



## 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

<https://nccih.nih.gov/health/implementation>

# D&I RESOURCES

- <http://dissemination-implementation.org>
- <http://gem-beta.org>
- <http://www.societyforimplementationresearchcollaboration.org>
- <http://cancercontrolplanet.cancer.gov>
- <http://rtips.cancer.gov/rtips/index.do>
- <https://researchtoreality.cancer.gov>



# Dissemination & Implementation Models

## in Health Research & Practice

### Need Help?

[Tutorial](#)[FAQ](#)[Glossary](#)[Contact Us](#)[Home](#)[Resources](#)[Submit Models](#)[About Us](#)

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

Footer info will go here. Links will look like this: [Privacy](#) [Terms](#)

Need Adobe Reader?



Last Updated:

•

<http://dissemination-implementation.org>  
National Cancer Institute



## Overview

**Measures**

## Datasets

## Uploads

## Reports

**GEM-Dissemination and Implementation Initiative (GEM-D&I)**
**Related Constructs & Measures**
[+ Add New Construct](#) [+ Add New Measure](#) [+ Add Existing Construct/Measure](#)

Constructs ▲	Measures	Ratings
Acceptability	Acceptability of Decision Aid Scale	not yet rated <a href="#">Rate This!</a>
Acceptability	Evidence Based Practice Attitude scale	★★★★☆ (average) <a href="#">Rate This!</a>
Acceptability	Suicide Prevention Program Rating Profile	★★★★☆ (average) <a href="#">Rate This!</a>
Acceptability	Therapists' attitudes toward treatment manuals	not yet rated <a href="#">Rate This!</a>
Acceptability	Treatment Evaluation Inventory	★★★★☆ (average) <a href="#">Rate This!</a>
Acceptability	Residents incorporation of EBM in practice	★★★★☆ (average) <a href="#">Rate This!</a>
Acceptability	Atkinson's Perceived Attributes of eHealth Innovations	★★★★☆ (average) <a href="#">Rate This!</a>
Acceptability	Van Schaik's Technology acceptance	★★★★☆ (average) <a href="#">Rate This!</a>
Adaptability	CFIR Adaptability	not yet rated <a href="#">Rate This!</a>
Adherence	Morisky 8-Item Medication Adherence Scale	★★★★☆ (average) <a href="#">Rate This!</a>
Adherence	Morisky 4-Item Self-Report Measure of Medication-Taking Behavior (MMAS-4)	★★★★☆ (average) <a href="#">Rate This!</a>
Adherence	Questionnaire on the Quality of Physician-Patient Interaction	★★★★☆ (average) <a href="#">Rate This!</a>
Adherence	Medical Outcomes Study (MOS) Measures of Adherence	not yet rated <a href="#">Rate This!</a>
Adjustment process	Meaning in Life Scale	★★★★☆ (average) <a href="#">Rate This!</a>
Adopter attitudes	Steckler's Perception of Innovation "Rogers's Adoption Questionnaire"	★★★★☆ (average) <a href="#">Rate This!</a>
Adoption	Roman's measure of adoption in substance abuse treatment (application of the many-facet Rasch model)	not yet rated <a href="#">Rate This!</a>
Adoption	Li, Simon, Bodenheimer, Gillies, Casalino, Schmittiel, & Shortell, adoption	★★★★☆ (average) <a href="#">Rate This!</a>
Adoption	Menachemi, Saunders, Chukmaitov, Matthews, & Brooks	not yet rated <a href="#">Rate This!</a>
Adoption	Noonan, Emshoff, Mooss, Armstrong, Weinberg, & Ball, Adoption, Adaptation, and Fidelity	not yet rated <a href="#">Rate This!</a>
Adoption	Zaidi, Marriott, & Nation, adoption, acceptability and	not yet rated



# THE SIRC INSTRUMENT REVIEW PROJECT

Three primary outcomes for this project series include:

- (1) a comprehensive library of D&I instruments measuring the **implementation outcomes identified by Proctor and colleagues** (2010) and organized by the **Consolidated Framework for Implementation Research** (CFIR; Damschroder et al., 2009) for SIRC members;
- (2) a rating system reflecting the degree of empirical validation of instruments, adapted from the **evidence-based assessment (EBA) work** of Hunsley and Mash (2008) and Terwee et al (2012);
- (3) a **consensus battery of instruments** decided upon by D&I expert task force members using the EBA criteria to guide future D&I research efforts.

## *An update on SIRC Instrument Review Project Progress (10/15/14)*

We have now identified nearly 450 instruments to be included in our repository. The instruments assessing Implementation Outcomes (Proctor et al., 2009) have all been twice rated using our evidence-based assessment rating criteria. Results are available through the IRP portion of the website. The repository is available to all SIRC members

[www.societyforimplementationresearchcollaboration.org](http://www.societyforimplementationresearchcollaboration.org)



[\(index.html\)](#)

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Cancer Control P.L.A.N.E.T. 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](#) [\(//cgi-bin/awredir.pl?url=http://statecancerprofiles.cancer.gov\)](#) (CDC, NCI) [i](#)

## COLLABORATION

[Research to Reality](#) [\(//cgi-bin/awredir.pl?url=http://researchto reality.cancer.gov/\)](#) (NCI) [i](#)

## RESEARCH SYNTHESIS

[Guide to Community Preventive Services](#) [\(//cgi-bin/awredir.pl?url=http://www.thecommunityguide.org/index.html\)](#) (Federally Supported) [i](#)

[U.S. Preventive Services Task Force](#) [\(//cgi-bin/awredir.pl?url=http://www.uspreventiveservicestaskforce.org\)](#) (Federally Supported) [i](#)

[Evaluation of Genomic Applications in Practice and Prevention \(EGAPP\)](#) [\(//cgi-bin/awredir.pl?url=http://www.egappreviews.org/recommendations/index.htm\)](#) [i](#)

[Additional Research Evidence Reviews \(synthesis.html\)](#)

## PROGRAMS

[Research-tested Intervention Programs \(RTIPs\)](#) [\(//cgi-bin/awredir.pl?url=http://rtips.cancer.gov/rtips/index.do\)](#)

## EVALUATION

[Reach Effectiveness Adoption Implementation Maintenance \(RE-AIM\)](#) [\(//cgi-bin/awredir.pl?url=http://www.re-aim.org/\)](#) [i](#)

## PLAN

## 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 \(tobacco\\_control.html\)](#)

## WHAT'S NEW

Cancer Control P.L.A.N.E.T. now links to the International Cancer Control Partnership's (ICCP) new web-portal. Learn more about their [portal](#) [\(//cgi-bin/awredir.pl?url=http://www.iccp-portal.org/about-portal\)](#) and [search](#) [\(//cgi-bin/awredir.pl?url=http://www.iccp-portal.org/cancer-plans\)](#) over 100 international cancer plans and emerging non-communicable disease plans at [http://www.iccp-portal.org/cancer-plans](#) [\(//cgi-bin/awredir.pl?url=http://www.iccp-portal.org/cancer-plans\)](#).

## E-NEWSLETTER

[Sign up](#) [\(//cgi-bin/awredir.pl?url=https://planetnewsletter.cancercontrolplanet.org/\)](#) to receive monthly updates on Cancer Control P.L.A.N.E.T.

## FEEDBACK

We welcome your [feedback \(contact.html\)](#) on the Cancer Control P.L.A.N.E.T. and its satellite web sites. Thank you for helping to improve this site for the cancer control community.

## SPONSORS



Use the link below to select a number of criteria, and see a list that contains programs from several topics.

### Select from 159 Intervention Programs

RTIPs is a searchable database of cancer control interventions and program materials and is designed to provide program planners and public health practitioners easy and immediate access to research-tested materials.

### Register your program now and be part of the RTIPs Community.

For more information on how to participate in a RTIPs review, read the [RTIPs Submission and Review Process: A Guide for Program Developers](#)



**Search Research to Reality (R2R)** NCI's online community of practice that links cancer control practitioners and researchers, for discussions, cyber-seminars, and much more.

### RTIPs and Research Reviews

The [Guide to Community Preventive Services](#) evaluates the effectiveness of types of interventions (as opposed to individual programs) by conducting [systematic reviews](#) of all available research in collaboration with partners.

The [Task Force](#) on Community Preventive Services then uses the systematic review findings as the basis for their recommendations for practice, policy and future research. The symbol to the right links to Community Guide findings. Many Research-tested Intervention Programs (RTIPs) are directly linked to associated Community Guide findings.



### New Programs on RTIPs:

- Sun Safety
  - ★ [-Colorado Kids Sun Care Program](#) (Post date: August, 2015)
- Obesity
  - ★ [-Start For Life](#) (Post date: July, 2015)
- Informed Decision Making
  - ★ [-Impact of a Decision Aid on Colorectal Cancer Screening](#) (Post date: June, 2015)

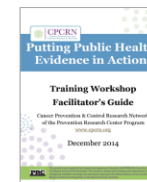
★ New programs are released periodically. Please check for updates.

### News and Announcements About RTIPs

- [RTIPs highlighted in the University of Kentucky News](#)

### Tools Available:

- [Putting Public Health Evidence in Action](#) : The CPRN has created an interactive training curriculum to support community program planners and health educators in developing skills in using evidence-based approaches.



We welcome your feedback on the Research-tested Intervention Programs Web site. To submit feedback, please [contact us](#). Thank you for helping to improve this site for the cancer control community.

# Within the Cancer Control P.L.A.N.E.T.

Service at 1-800-4-CANCER.

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NIH... Turning Discovery Into Health®

# Research to Reality: NCI's online community of practice. A "living lab" for implementation science.



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://researchtooreality.cancer.gov>





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