

# Research to Reality: Implementation Science

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**DCCPS Grantees  
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# Outline

- Current Gap Between Research and Practice:  
Why is Implementation Science Needed?
- What Do We Know About Dissemination & Implementation (D&I) Science? How is it Different?
- New Models and Conceptualizations- Thinking Differently
- Future Directions/Dissemination and Implementation Opportunities

# Translation Continuum



Bench



Bedside



Clinic



Community



Population  
& Policy





# Bench to Bookshelf



# Current Situation in United States<sup>1</sup>

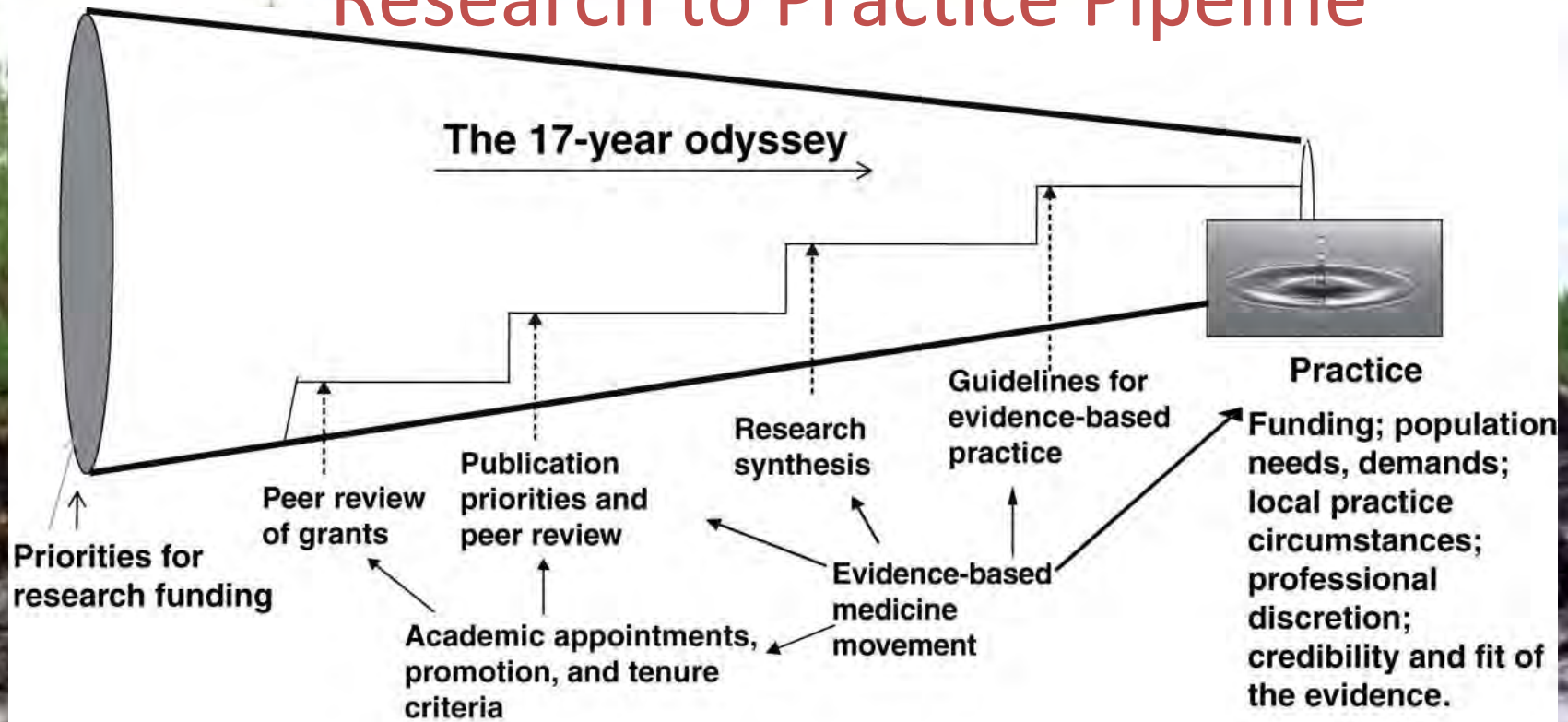
- Underperforming health care system<sup>2</sup>
- Balkanized and silo approaches
- Expensive, unsustainable cost, increasing
- Inequitable: Health disparities
- **CRISIS and OPPORTUNITY**

<sup>1</sup>Institute of Medicine. Unequal treatment...Washington D.C., National Academies Press, 2003

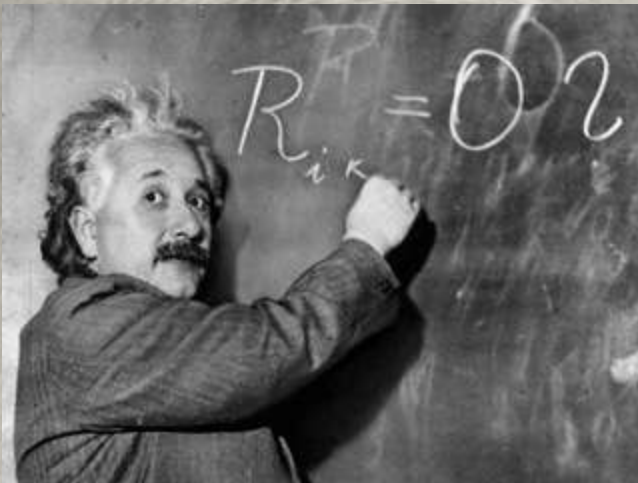
<sup>2</sup>McGlynn EA et al. The quality of health care...*N Eng J Med* 2003;348(26):2635-2645



# Research to Practice Pipeline



***“The significant problems we  
face cannot be solved by the  
same level of thinking that  
created them.”***



**A. Einstein**



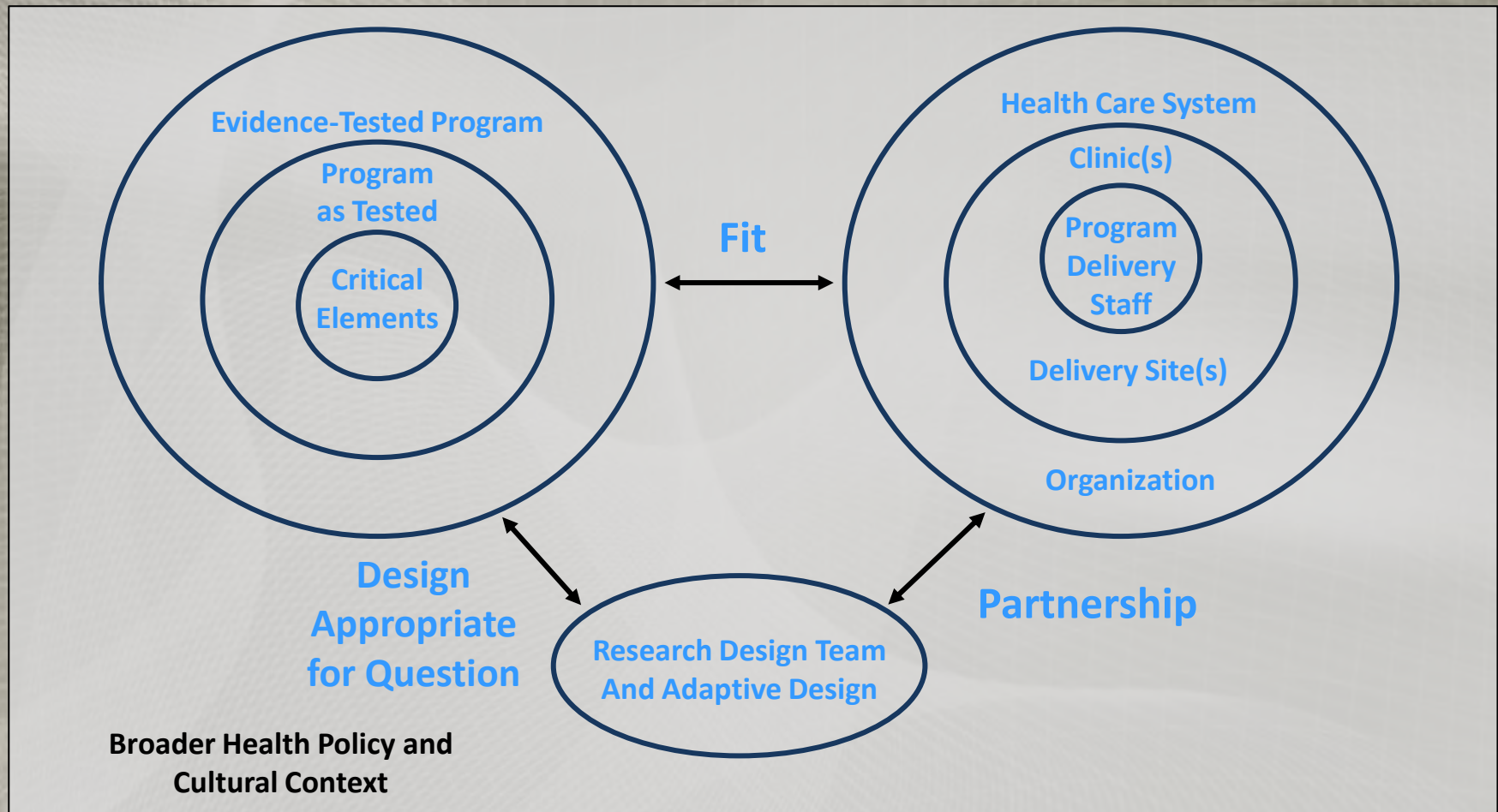
# Implementation and Dissemination Research Characteristics

- Contextual
- Complex
- Multi-component programs and policies
- Non-linear
- Transdisciplinary
- Multi-level

Glasgow R & Steiner J. (2011). In Dissemination and Implementation Research. Brownson, R, Colditz, G, and Proctor, E (Eds.). Oxford.



# Integrated Dynamic, Multilevel Research-Practice Partnerships Systems Approach



# Recommended Purpose of Research (ala RE-AIM)

## Collect evidence to document interventions that can:

- **Reach** large numbers of people, especially those who can most benefit
- Be widely **adopted** by different settings
- Be consistently **implemented** by staff members with moderate levels of training and expertise
- Produce **replicable** and **long-lasting** effects (and minimal negative impacts) at reasonable **cost**



# Ultimate Impact of an Insurance-sponsored Weight Management Program in West Virginia<sup>1</sup>

Dissemination Step	Concept	% Impacted
8.8% of Weight Management sites participated	Adoption	8.80%
5.9% of members participated	Reach	0.52%
91.4% program components implemented	Implementation	0.47%
<b>43.8% of participants showed weight loss</b>	<b>Effectiveness</b>	<b>0.21%</b>
21.2% individuals maintained benefit (individual)	Maintenance	0.04%



<sup>1</sup>Abildso CG, Zizzi SJ, Reger-Nash B. Evaluating an Insurance-Sponsored Weight Management Program With the RE-AIM Model, West Virginia, 2004-2008. Preventing Chronic Disease Public Health Research, Practice, and Policy. 2010. 7(3).

**Intervention Program/Policy*****(Prevention or Treatment)***

(e.g. design; key components; principles;  
external validity)

Evidence

Stakeholders

**Multi-Level Context**

- Intrapersonal/Biological
- Interpersonal/Family
- Organizational
- Policy
- Community/Economic
- Social/Environment/History



**Intervention Program/Policy***(Prevention or Treatment)*

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Evidence

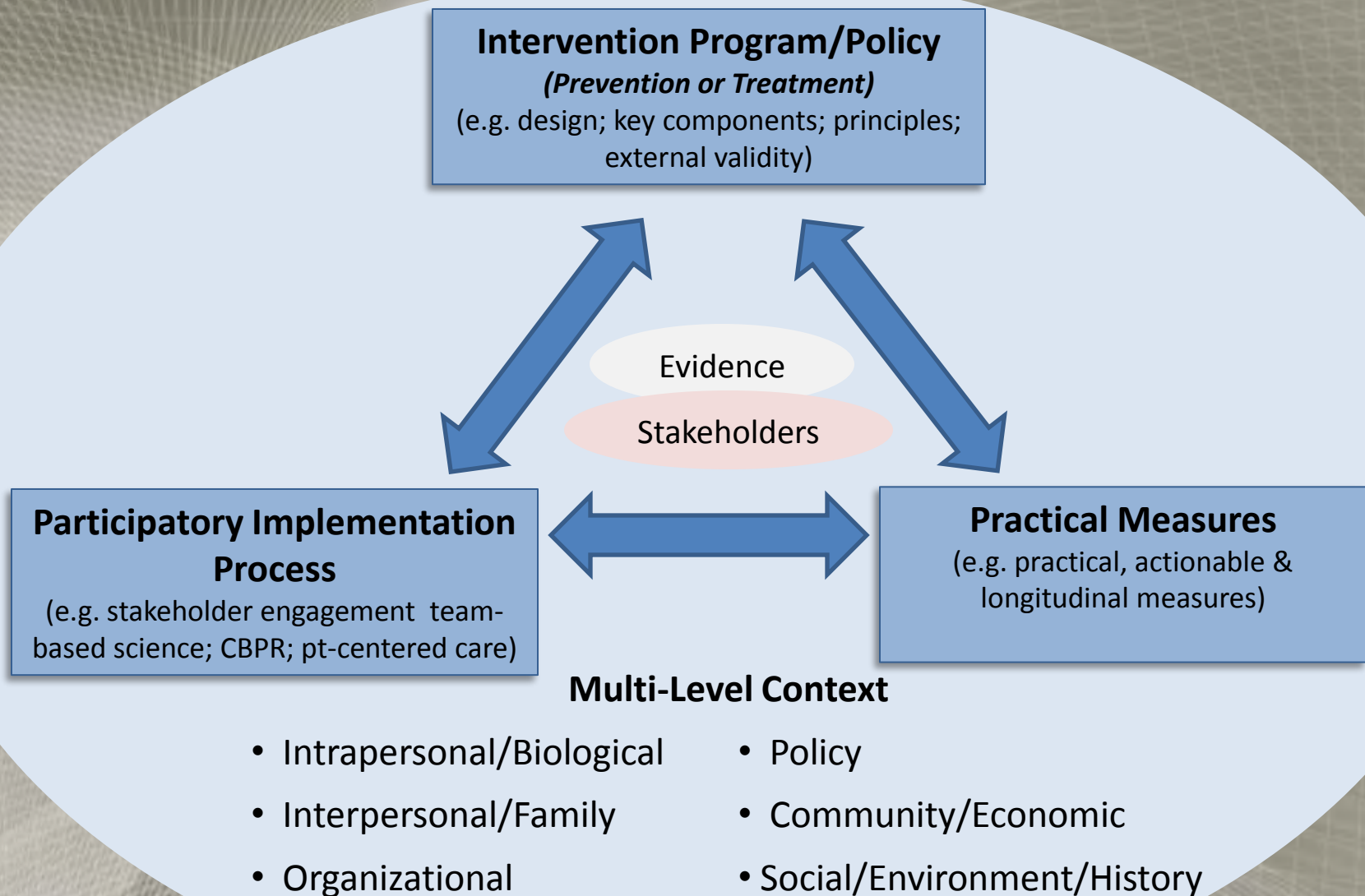
Stakeholders

**Practical Progress Measures**

(e.g. actionable & longitudinal  
measures)

**Multi-Level Context**

- Intrapersonal/Biological
- Interpersonal/Family
- Organizational
- Policy
- Community/Economic
- Social/Environment/History





***“For every complex problem  
there is a simple solution ...  
and it is wrong.”***



***H.L. Mencken***

# Bridging the Gap: A Synergistic Model

Getting Evidence Based Cancer Control Interventions into Practice

**GOAL:** To increase the adoption, reach and impact of evidence-based cancer control

## Science Push

*Documenting, improving,  
and communicating the  
intervention for wide  
population use*



## Delivery Capacity

*Building the capacity  
of relevant systems to  
deliver the  
intervention*



## Market Pull/Demand

*Building a market  
and demand for the  
intervention*

Increase the number of systems providing evidence-based cancer control  
Increase the number of practitioners providing evidence-based cancer control  
Increase the number of individuals receiving evidence-based cancer control

## ULTIMATE GOAL:

*Improve population  
health and well-being*



# Evolving Implementation Science Issues

- Simulations, MODELING, system dynamic models
- Time-lagged REPLICATIONS
- Natural experiments
- Well-documented quality improvement studies
- RAPID LEARNING and electronic medical records (EHR) databases<sup>1</sup>
- Practical and pragmatic trials<sup>2</sup>

<sup>1</sup>Etheredge LM, Health Affairs, 2007, Web Exclusive Collection: w107-118

<sup>2</sup>Thorpe KE et al., Can Med Assoc J, 2009, 180: E47-57

# Rapid Learning Approaches

## Data Collected:

- With real (and complex) patients
- By real world staff
- Under real world conditions and settings
- And evaluated through real time data (often with Electronic Health Records)



# Practical (Pragmatic) Trials: Key Contextual Characteristics

- Multiple, heterogeneous settings
- Representative populations
- Comparison conditions are real-world alternatives
- Multiple outcomes important to decision and policy makers

Thorpe KE et al., *Can Med Assoc J*, 2009, 180: E47-57

Tunis SR et al. Practical clinical trials...*JAMA* 2003;290:1624-1632

Glasgow RE et al. Practical clinical trials...*Med Care* 2005;43(6):551-557

# Example Cancer Screening Implementation Study

- Large scale (n = 5,905) RCT of efficient automated phone call patient reminder system for Colorectal Cancer Screening (CRC)
- Used PRISM framework and partnership with HMO operations to design feasible, sustainable program
- Intervention patients 1.3 times more likely to receive CRC screening than controls- this REPLICATES parallel findings for mammography, which increased screening rates by 1.5 times
- System found to be cost-effective, and continued by the HMO

Mosen DM, Feldstein AC, et al. Med Care, 2010, 48: 604-610.



# Evidence that...

is **MORE**



is **LESS**

**Contextual**

Isolated

**Practical**, efficient

Abstract, intensive

**Robust**, generalizable

Singular (setting, staff, pop.)

**Comprehensive**,

Single outcome

Comparative

Representative

From ideal settings

**RIGOROUS , RELEVANT, and PRACTICAL**

# Challenges and Conclusions

- The future is **multiple** (conditions, behaviors, interactive modalities)
- The future is **complex** (and we ignore complexity at our peril)<sup>1</sup>
- “**All models (and designs) are wrong**”<sup>2</sup> – and greater tolerance, respect, and creativity is needed
- We need to **UN-learn** much of what we have been taught to answer the tough questions

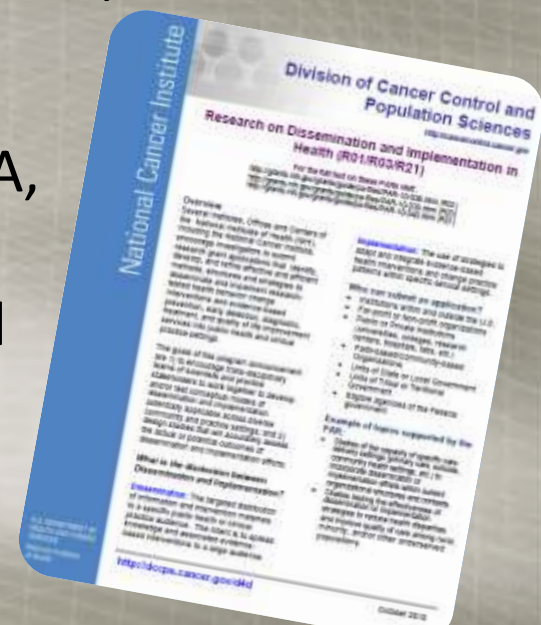
<sup>1</sup> Glasgow RE, Emmons KM. *Annual Review of Public Health*. 2007;28:413-33

<sup>2</sup> Sterman JD. *Syst Dynam Rev* 2002;18:501-531



# The Trans-NIH D&I Funding Announcement

- R01 - PAR 10-038 (\$500k per annum up to five years)
- R03 - PAR 10-039 (\$50K per annum up to two years)
- R21 - PAR 10-040 (\$275K up to two years)
- Participating Institutes: NIMH, NCI, NIDA, NIAAA, NIAID\*, NHLBI, NINR, NIDDK\*, NINDS\*, NIDCD, NIDCR, NCCAM\* & Office of Behavioral & Social Sciences Research
- Starting October 2010, new standing review committee, Dissemination and Implementation Health Research
- Three submission dates per year:  
**February, June, October**



# Annual D&I Meetings

- Annual meetings held since 2007 - “State of the D&I Science” Venue
  - Participation increased from 350 registrants in 2007 to over 1200 in 2011
  - Past themes have included: “Building Capacity” and “Methods and Measures”. This year it is “Crossroads”

**Next meeting: Bethesda, MD March 19-20, 2012**

Registration: <http://conferences.thehillgroup.com/obssr/di2012/index.html>

- Week long TRAINING in D & I Research- each summer
  - Information and Slides available:  
<http://conferences.thehillgroup.com/OBSSRinstitutes/TIDIRH2011/index.html>



# IMPLEMENTATION SCIENCE

INTEGRATING SCIENCE, PRACTICE, AND POLICY

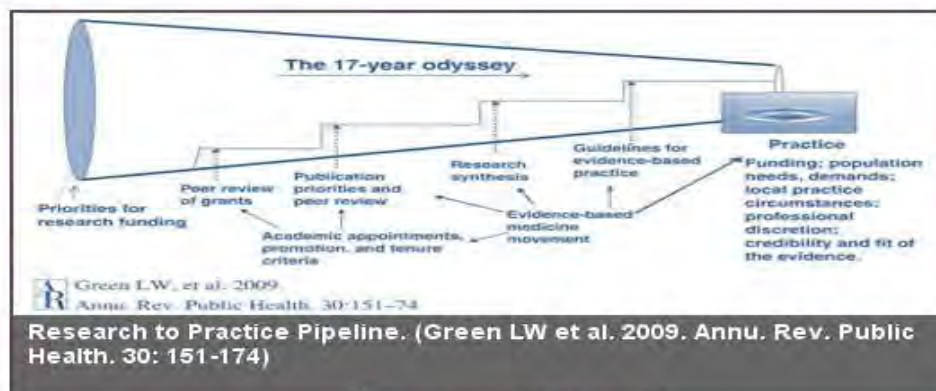
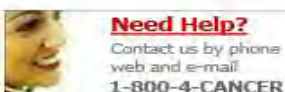
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**Cancer Control & Population Sciences Home**



**CANCER CONTROL P.L.A.N.E.T.**  
Plan, Link, Act, Network with Evidence-based Tools



[Text version of slide show](#)

## About

Mission, definitions, staff and contact information

## Resources and Interactive Tools

Cancer Control P.L.A.N.E.T., Cancer Trends Progress Report, Conferences and Presentations, Fact Sheets, Research Reviews, RE-AIM

## Publications

Dissemination and Implementation Publications

## Funding Opportunities

Apply for Grants, Archive of Funding Opportunities, Application Information, Dissemination and Implementation Research Portfolio

## Conferences and Training

Annual NIH Conference on the Science of Dissemination and Implementation, Training Institute for Dissemination and Implementation Research in Health

## Presentations

Presentations by Implementation Science Team, Presentations by D&I Investigators

## What's New

### Save the Date:

Mar 19-20, 2012  
5th Annual NIH Conference on the Science of Dissemination and Implementation: Research at the Crossroads [\[Link\]](#)  
Bethesda, MD

Training Institute for Dissemination and Implementation Research in Health [\[Link\]](#)  
August 1-5, 2011  
[Agenda and Presentations](#) [\[Link\]](#)

Identifying Core Behavioral and Psychosocial Data Elements for the Electronic Health Record [\[Link\]](#)  
May 2-3, 2011  
EHR Meeting  
Executive Summary  
[Download PDF](#) [\[Link\]](#)

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# Research to Reality (R2R): A Virtual Community of Practice



**A dialogue between practitioners and researchers on how to move evidence-based programs into practice**

- Launched February, 2011 (NCI)
  - Linked to Cancer Control P.L.A.N.E.T. Step 2

- Site Features:

- Monthly cyber-seminars
- Discussion forums
- An events calendar
- Featured partners
- Community profiles





# Questions? Comments?

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NCI Implementation Science Website:

<http://cancercontrol.cancer.gov/IS/>