



Research to Reality: The Evidence Integration Triangle

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Outline

- Need for Implementation Research
- What Do We Know About Dissemination & Implementation (D&I) Science?
- How to Make Sense out of this Complexity?
 - The Evidence Integration Triangle (EIT)
- How to Learn More- and GET FUNDED?
- Future Directions and Opportunities to Get Involved

Translation Continuum



Bench



Bedside



Clinic



Community



Population
& Policy



Bench to Bookshelf



Current Situation in United States¹

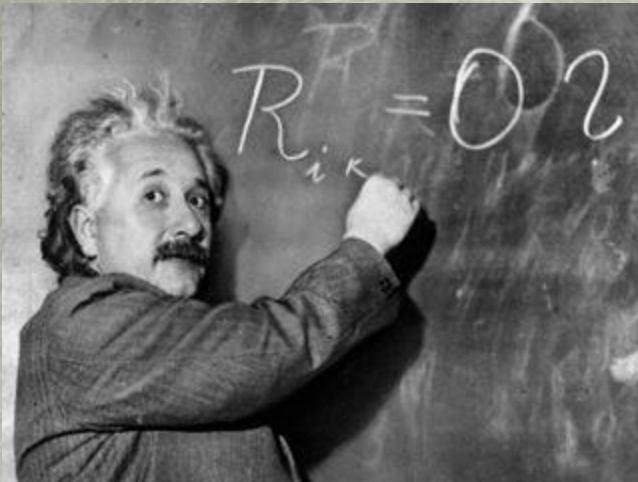
- Underperforming health care system²
- Balkanized and silo approaches
- Expensive, unsustainable cost, increasing
- Inequitable: Health disparities
- **CRISIS and OPPORTUNITY**

¹Institute of Medicine. Unequal treatment...Washington D.C., National Academies Press, 2003

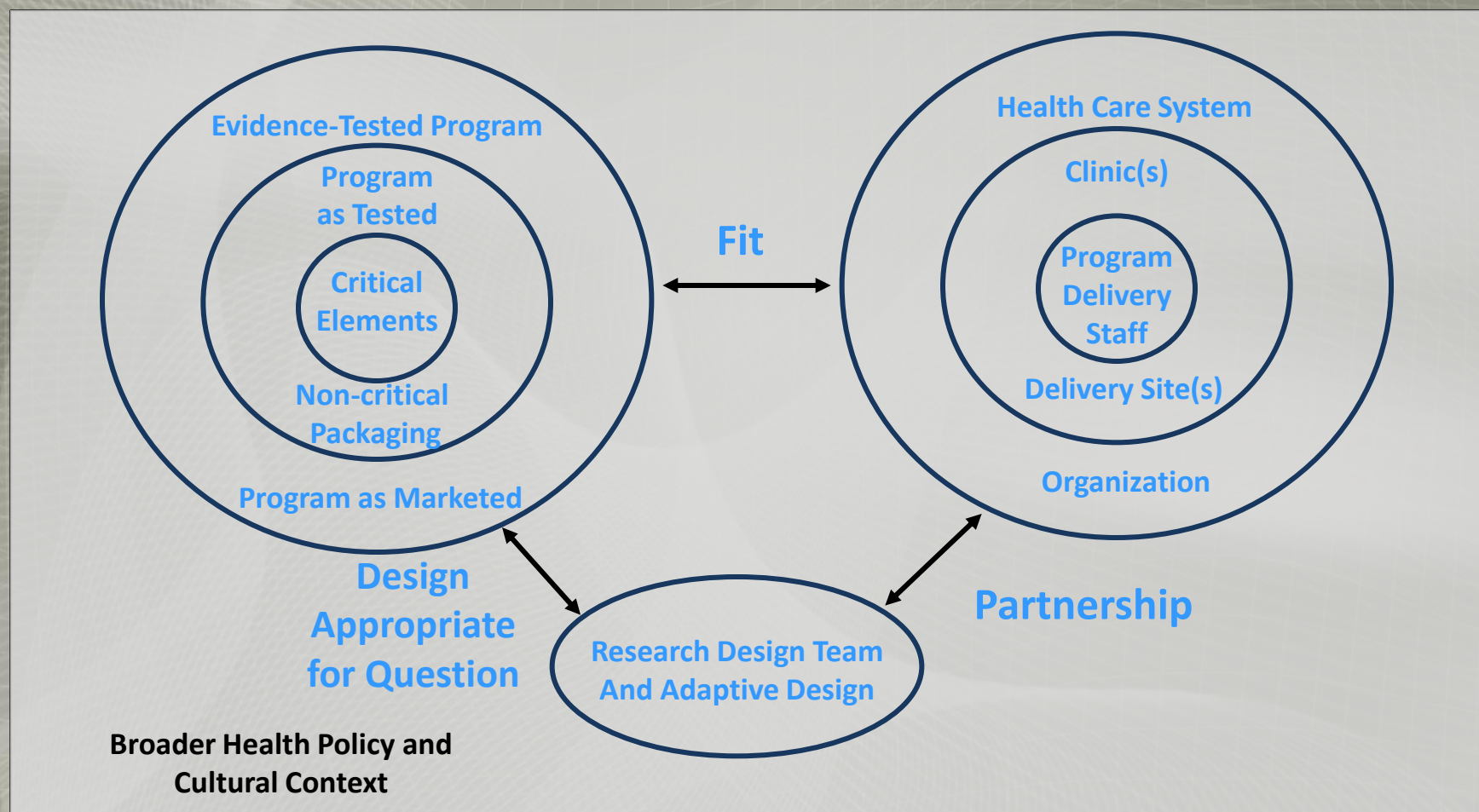
²McGlynn EA et al. The quality of health care...*N Eng J Med* 2003;348(26):2635-2645

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

A. Einstein



Integrated Dynamic, Multilevel Research-Practice Partnerships Systems Approach



Implementation and Dissemination Research Characteristics (Russ' view)

- 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.

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)

Tunis, S.R.; Carino, T.V.; Williams, R.D.; Bach, P.B. A Rapid Learning Health System. *Health Affairs* (supplement). 2007;26(2):140-149.

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 Virginia¹

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%
43.8% of participants showed weight loss	Effectiveness	0.21%
21.2% individuals maintained benefit (individual)	Maintenance	0.04%

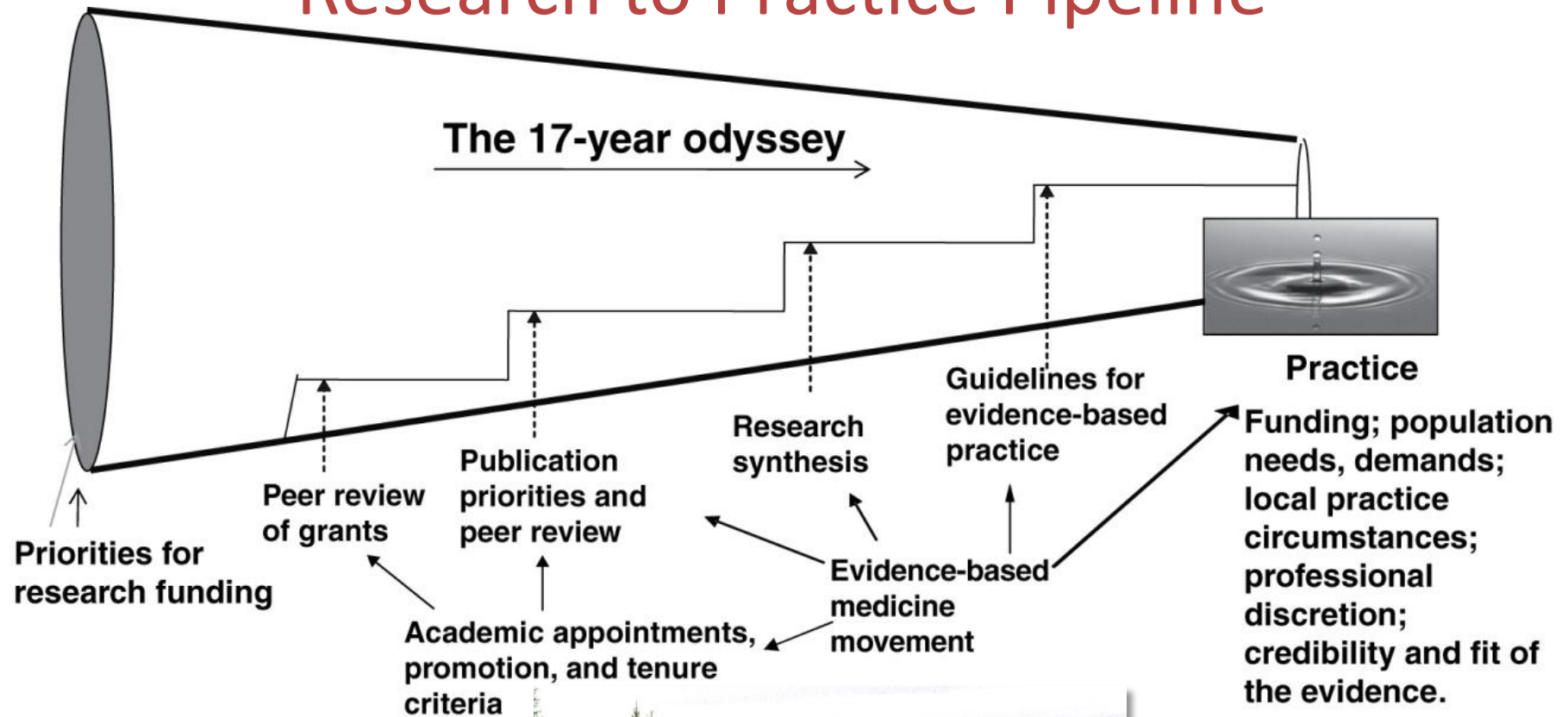


Are they representative?

¹Abildso 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).

STEP	TRANSLATION ISSUES INVOLVED	LENGTH OF TIME
Initial Research	Choice of measures; generalizability.	1-5 years
Replication Research	Degree measures harmonized, samples similar study(ies).	1-3 years
Synthesis Reviews	Criteria used for: inclusion, quality, outcomes, realist review?	1-2 years?
Guideline Created	Implementation guides? Adaptation guides, feasibility.	1-3 years?
Other Guidelines?	Consistency with original, costs and ease of implementation.	1-2 years?
Adoption of Guidelines	Politics, costs, adaptation.	6 months?
Implementation of Guidelines	Readiness, capacity, incentives, tracking, guidelines.	3-12 months
Patient "Adherence"	Competing demands, cost, meaning.	1 – X months
Sustainability	Evolution over time, "drift."	2 - ? years
Complete Cascade	Partnership, relevance, adaptation are cross-cutting issues.	8-17+ years

Research to Practice Pipeline



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

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

Evidence

Stakeholders

Multi-Level Context

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

Intervention Program/Policy*(Prevention or Treatment)*

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Evidence

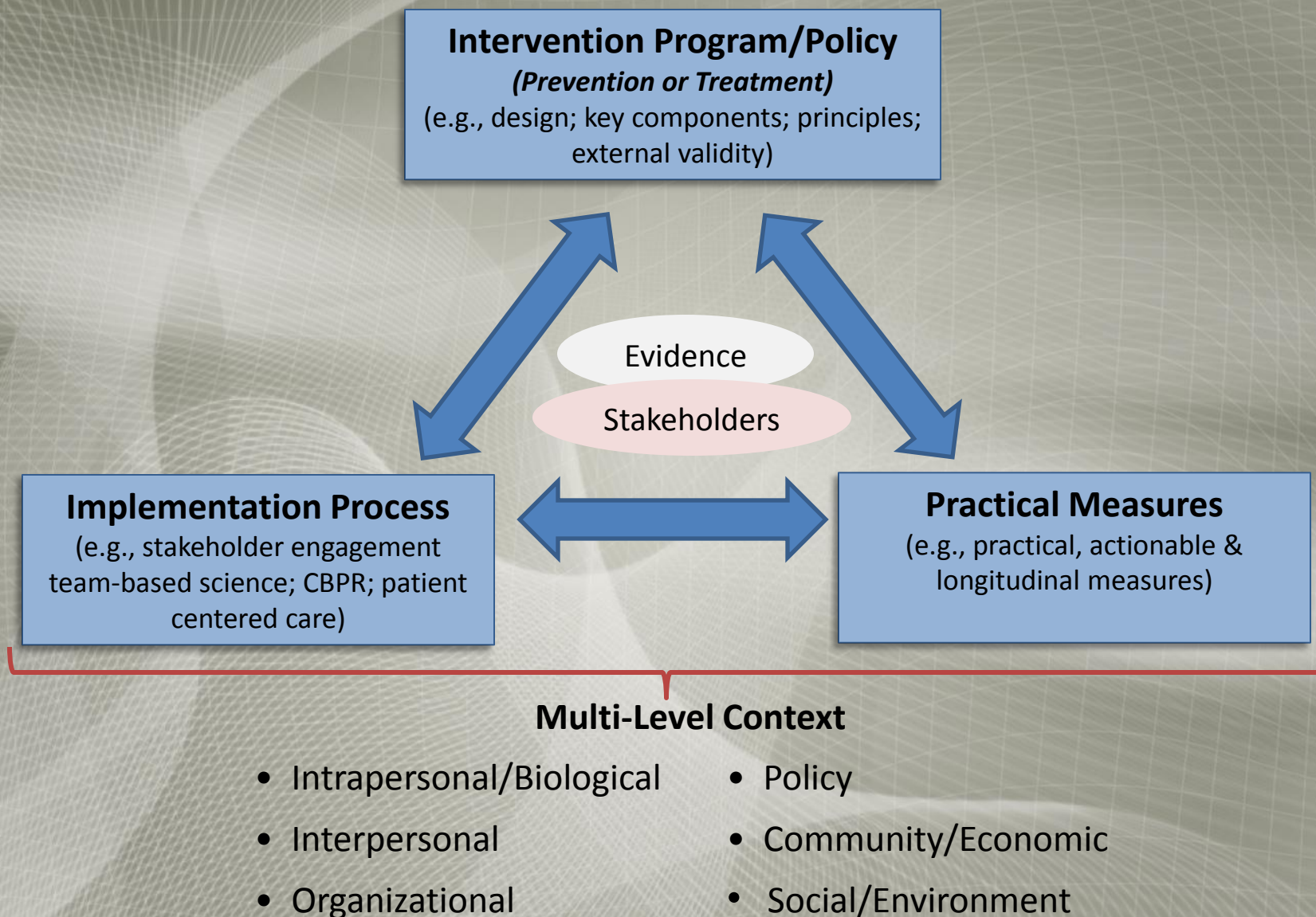
Stakeholders

Practical Measures

(e.g. actionable & longitudinal
measures)

Multi-Level Context

- Intrapersonal/Biological
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Intervention Program/Policy – The “What”

- Identify key components or theoretical principles
- Need for detailed implementation guides, lessons learned manuals
- Need to focus and report on both internal and external validity (need to add relevance to rigor)
- Most focus on treatment; less on prevention; least on policy

“If we want more evidence-based practice, we need more practice-based evidence.”

Practical Measures – the “So What”

Measures need to be:

- Brief and practical
- Collected longitudinally to assess progress
- Reliable and valid
- Sensitive to change
- Have national norms, easily understood and ACTIONABLE
- Culturally appropriate across groups
- Reflect multiple stakeholder perspectives



Society of Behavioral Medicine Health Policy Statement on Public Health Need for Patient Reported Measures. http://www.sbm.org/policy/patient-reported_measures.pdf

Implementation Process – The “How”

- Partnership and Community Based Participatory Research (CBPR) approaches¹
- Patient-centered Care Approach
- Team science in action^{2,3}
- Iterative, self-correcting

¹ Guidelines and Categories for Classifying Participatory Research Projects in Health:

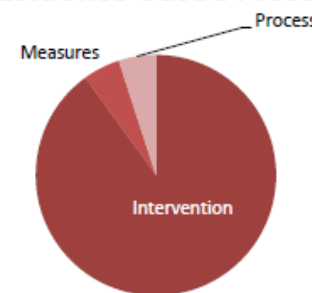
<http://lgreen.net/guidelines.html>

² Gray, D. O. (2008). In C. L. S. Coryn & M. Scriven (Eds.), *Reforming the evaluation of research. New Directions for Evaluation*, 118, 73–87.

³ Mâsse, LC, et al. *Am J Prev Med*. 2008; 35 (2S): S151-S160.

CURRENT IDEAL

Current Research Focus of Evidence-based Practice



Intervention Program/Policy
(Prevention or Treatment)
 (e.g., design; key components; principles; external validity)

Evidence

Stakeholders

Implementation Process

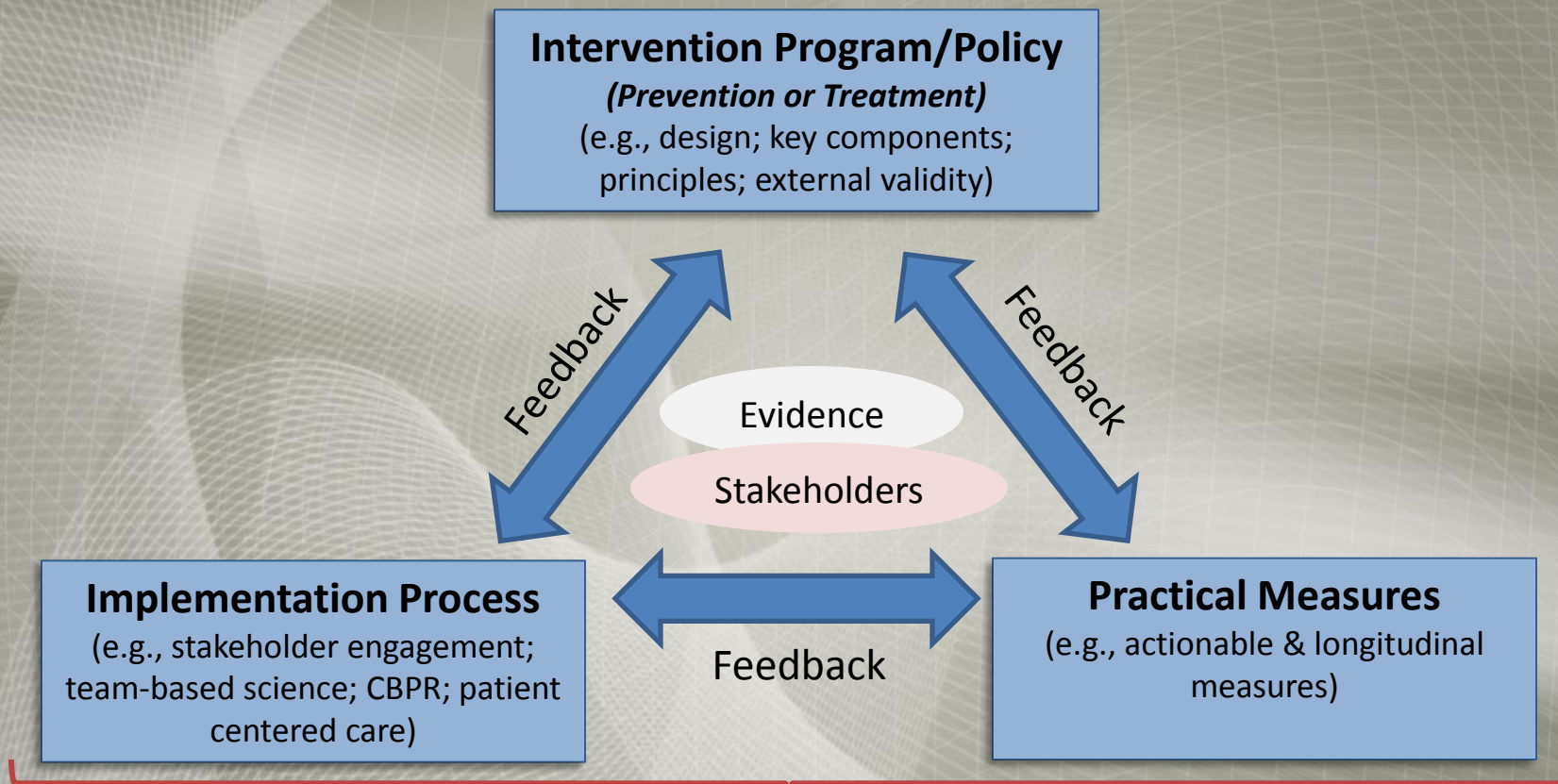
(e.g., stakeholder engagement; team-based science; CBPR; patient centered care)

Practical Measures

(e.g., actionable & longitudinal measures)

Multi-Level Context

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Multi-Level Context

- Intrapersonal/Biological
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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

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



H.L. Mencken



"By God, gentlemen, I believe we've found it—the Fountain of Funding!"

The Major Cross-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, & Office of Behavioral & Social Sciences Research
- Starting October 2010, new standing review commit Dissemination and Implementation Health Research
- Three submission dates per year: **February, June, October**



Key Features

- “To identify, ... and refine effective and efficient methods....
- and strategies to disseminate and implement research-tested ...
- interventions and prevention... and Quality of Life improvement services.....
- in public health and clinical practice settings”

Other D & I Mechanisms

- CTSA funding at many medical schools
- Partnerships with Prevention Research Centers
- Some CDC Mechanisms
- AHRQ Funding- especially via PBRNs and EHR Related
- Other NIH and private funding (ACS, etc.)

Key Content Issues Funded

- Implementation of evidence-based interventions in healthcare and community settings
- Workplace health promotion
- Survey of state (provincial) tobacco plans and implementation research to reach and assist underserved populations

Key Questions Asked By Reviewers

- Is this program or policy ready for dissemination?
- Is team really transdisciplinary?
- Will this advance the field; how is it innovative?
- Is there a good plan for sustainability or broader dissemination of the project?

Content Issues Seldom Addressed (Research Opportunities)

- Comparative Effectiveness Research
- Dissemination to large number of settings
- Proposals addressing complex patients, complex and multilevel problems
- Health policy issues
- Dissemination & implementation of systematic review evidence

Annual D&I Meetings

- “State of the D&I Science” Venue
- Three meetings held since 2007
 - Participation increased from 350 registrants in 2007 to over 900 in 2010
 - Past themes have included: “Building Capacity” and “Methods and Measures”

Next meeting: Bethesda, MD March 21-22, 2011

Theme: Policy and International Contributions

Registration: <http://conferences.thehillgroup.com/obssr/DI2011/index.html>

PREDICTING THE FUTURE...



**“You Don’t Need a Weatherman
To Know Which Way the Wind Blows”
-Bob Dylan**

Evolving Issues

- Simulations, MODELING, system dynamic models
- Time-lagged REPLICATIONS
- Natural experiments
- Well-documented quality improvement studies
- RAPID LEARNING and electronic medical records (EHR) databases¹
- Practical and pragmatic trials²

¹Etheredge LM, Health Affairs, 2007, Web Exclusive Collection: w107-118

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

Challenges and Conclusions

- The future is **multiple** (conditions, behaviors, interactive modalities)
- The future is **complex** (and we ignore complexity at our peril)¹
- **“All models (and designs) are wrong”**²— 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

¹Glasgow RE, Emmons KM. *Annual Review of Public Health* Dec 6,2006 epub ahead of print

²StermanJD. *Syst Dynam Rev* 2002;18:501-531

Evidence that...

IS MORE



IS LESS

Contextual

Isolated

Practical, efficient

Abstract, intensive

Robust, generalizable

Singular (setting, staff, population)

Comparative

Academic

Comprehensive

Single outcome

Representative

From ideal settings



COMMENTS, QUESTIONS, ETC.

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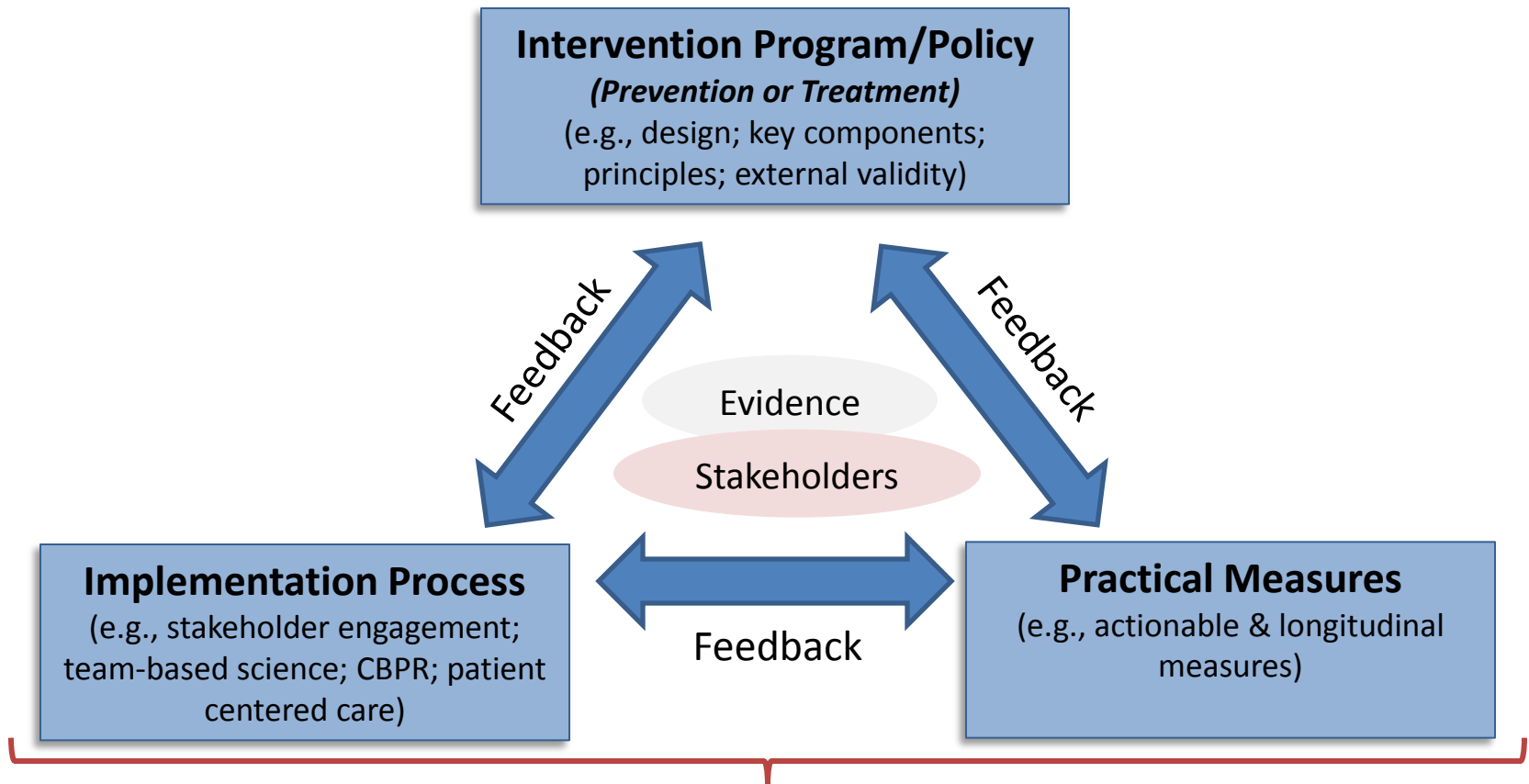
<http://cancercontrol.cancer.gov/d4d/>



NATIONAL[®]
CANCER
INSTITUTE

Evidence Integration Triangle

Translation Across the Continuum



- Intrapersonal/Biological
- Interpersonal
- Organizational
- Policy
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- Social/Environment

Key Pragmatic and Translation Content Issues in Need of Study by Research Design, Intervention and Evaluation Issues

Research Issue	Key T3-T4 Complex Issues in Need of Study			
	Practical and Feasible Interventions	Key Contextual Factors	Transparent Reporting	Design Fits Question
Experimental Design	<ul style="list-style-type: none"> Addresses issues <u>relevant</u> to decision makers Representative settings and participants Includes <u>complex patients</u> and realistic comparison treatment(s) 	<ul style="list-style-type: none"> Heterogeneous or typical settings Study of <u>moderating factors</u> Includes qualitative features. 	Reports <ul style="list-style-type: none"> Modification and adaptation to recruitment and design across sites <u>local</u> customization. 	<ul style="list-style-type: none"> Fits specific question <ul style="list-style-type: none"> Dynamic Adaptive Rapid and efficient Information for scale-up and robustness analyses Simulations
Intervention Characteristics	<ul style="list-style-type: none"> Designed for <u>broad adoption and implementation</u> Efficient MINC* Stepped care <u>Scalable</u>. 	<ul style="list-style-type: none"> Flexible Provides <u>guidelines</u> for fidelity and customization Deliverable by variety of staff in typical settings 	Reports on: <ul style="list-style-type: none"> <u>Adoption</u> Implementation <u>Modifications</u> Subgroup effects “<u>CONSORT Plus</u>”** information. 	<ul style="list-style-type: none"> Designed for healthcare <u>settings of future</u> QI blends that get smarter over time <u>Sustainable</u> with typical resources.
Evaluation Measures and Analyses	<ul style="list-style-type: none"> Analyses of modifier and subgroup effects Effects of <u>Tx intensity</u> and staff expertise <u>Cost, cost-effectiveness, and sensitivity analysis.</u> 	<ul style="list-style-type: none"> Report policy, economic, and political context Assess impact on <ul style="list-style-type: none"> <u>Disparities</u> high-risk subgroups <u>variation</u> across settings staff and time <u>Generalization analyses</u> 	<ul style="list-style-type: none"> Reach by <ul style="list-style-type: none"> Condition Unintended Quality- of-life impacts <u>Implementation</u> by condition and over time <u>Maintenance</u> at setting and individual levels. 	<ul style="list-style-type: none"> Evaluate systems impacts and unintended consequences Understand multi-level effects and mediators “Post-mortem” interviews long-term sustainability and program evaluation

WHY? (Targets for Change?)

- Much research not relevant to patients, practitioners, policy makers
- Vested interests (FDA model)
- Way we were trained – “unlearning”
- Complex, “wicked issues”¹
- Insufficient funding (98.5% NIH budget for basic)

¹Kreuter MW et al. Understanding wicked problems. *Health EducBehav*2004;Aug;31(4):441-454