

Practice-based evidence: The need for a more collaborative approach to knowledge production in public health

17^{es} Journées annuelles de santé
publique du Québec

Lawrence W. Green

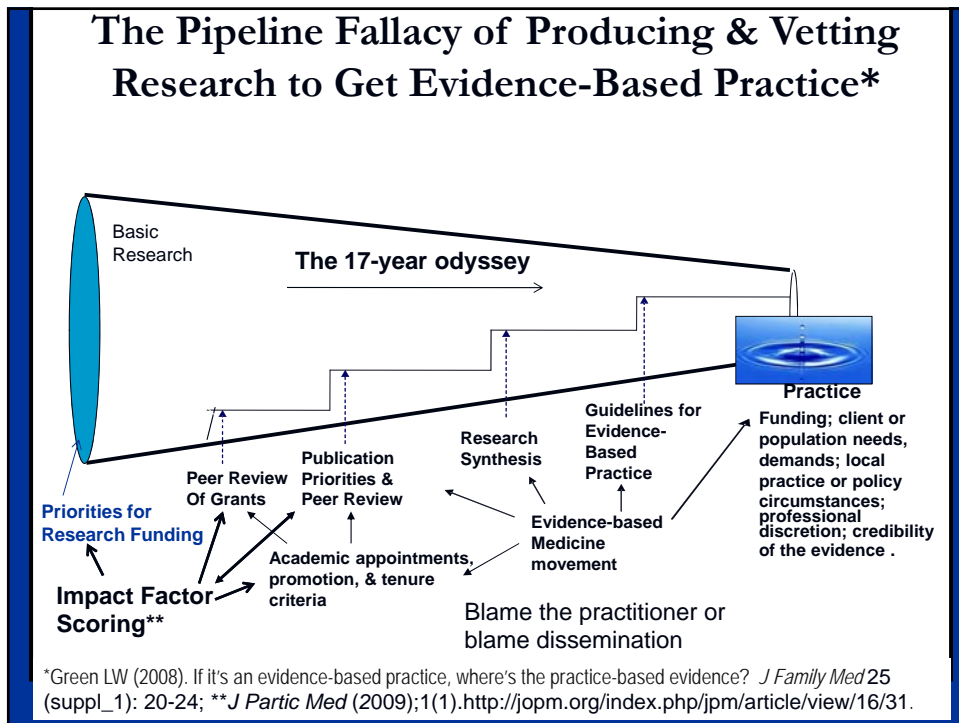
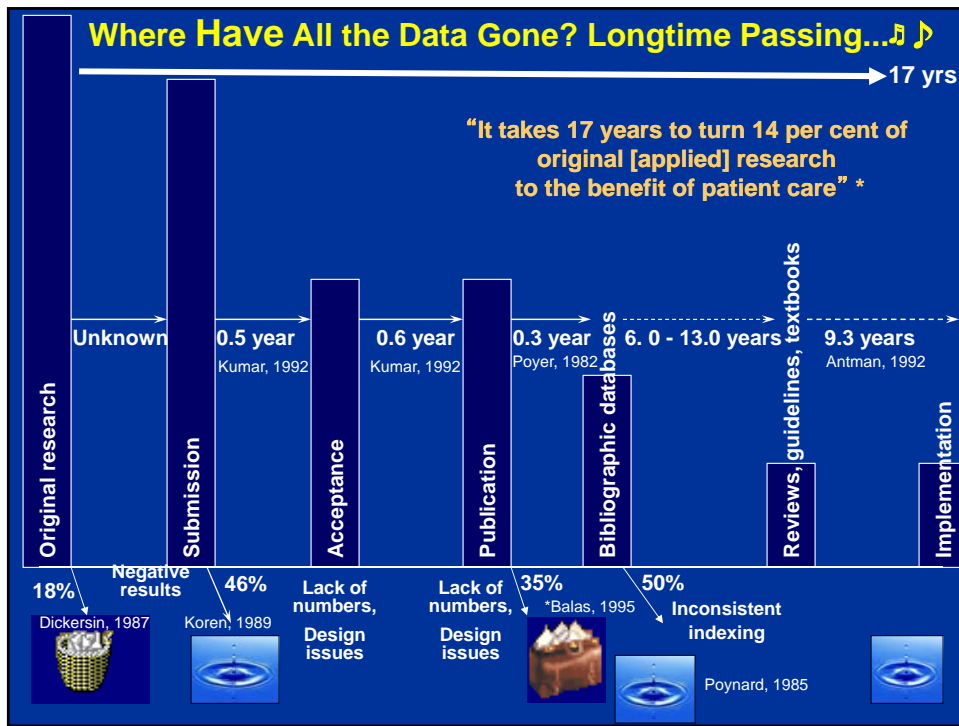
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25 Novembre 2013

The Challenges & Opportunities

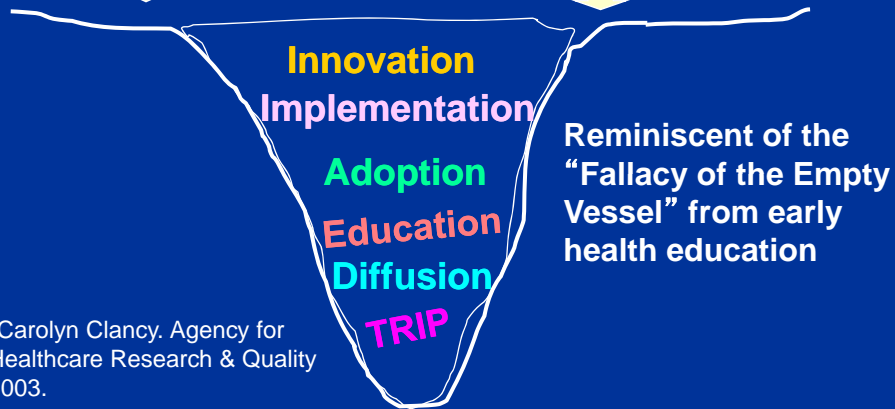
- The two biggest challenges:
 - To match the evidence for public health that policy makers & practitioners need with what they get from our research, especially beyond clinical to behavioral, social and environmental change
 - Reform some peer review & editorial tendencies
- The two biggest opportunities:
 - Apply participatory research principles (PR) in use of surveillance, evaluation and continuous quality improvement methods to answer *their* questions
 - Combine PR with multi-site evaluation methods



Filling the Gap/Chasm, as Seen by the U.S. Translation Agency*

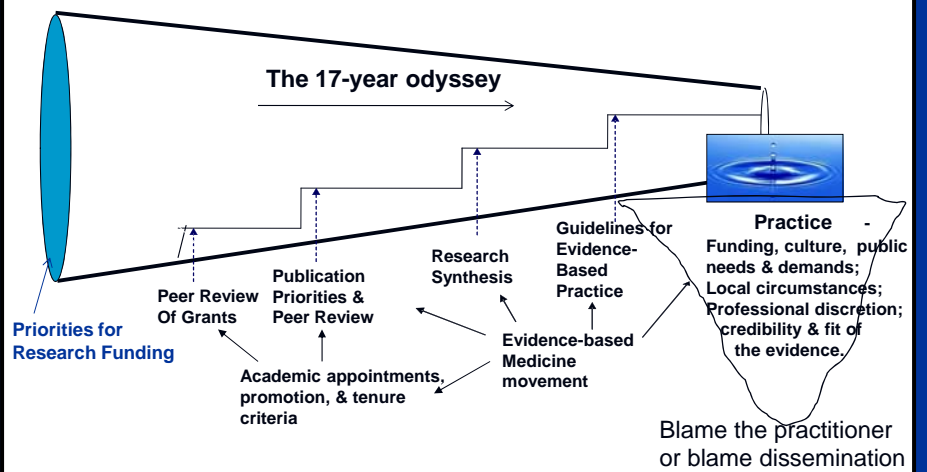
Practice is here

We want it to be here



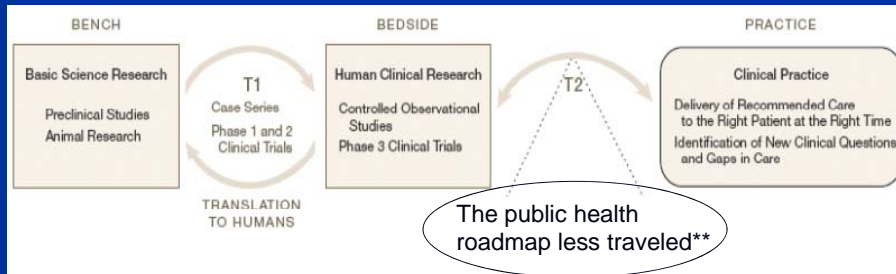
*Carolyn Clancy. Agency for Healthcare Research & Quality 2003.

The Pipeline Fallacy of Producing & Vetting Research to Get Evidence-Based Practice*



*Based on Green, L.W. From research to "best practices" in other settings and populations. *Am J Health Behavior* 25:165-178, April-May 2001.

US NIH "Roadmap Initiative" "--translating discoveries into health"*

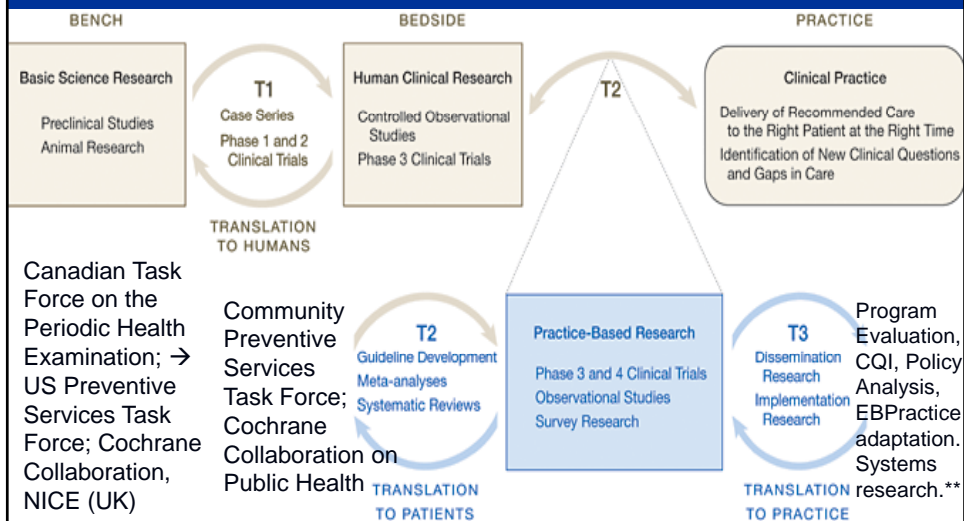


"The Roadmap identifies the most compelling opportunities in three arenas: new pathways to discovery, research teams of the future, and reengineering the clinical research enterprise" (Zerhouni, p. 63).*

*Zerhouni E. *Science* 2003, Oct 3;302(5642):63-72 .

**Green LW. *Am J Prev Med.*, 2007; 33(2):137-38, after K. Grumbach.

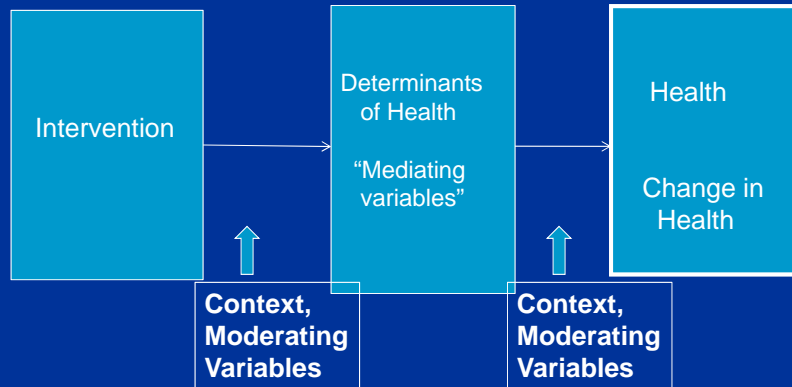
"Blue Highways" on the NIH Roadmap*



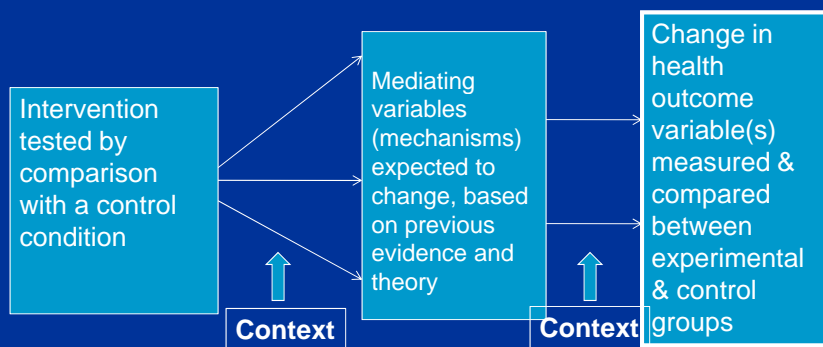
*Westfall JM et al. *JAMA* 2007;297:403-406.

**Green LW. *AJPH* 2006;96:406-409

The Determinants of Health



The Prevailing Standard of Evidence: The Randomized Controlled Trial



- Interventions highly standardized.
- Interventions reduced to simplistic form
- Everything else held constant, ignored
- Clients randomized, no choice.
- Interventionists have no discretion.
- Unrepresentative, trained, supervised

- Comparison based on average change for each group
- Subgroup analysis discouraged
- Dropouts discounted, even ignored
- Cut-off date for outcomes often too soon for change to occur
- Context largely ignored, undescribed

The #1 complaint from practitioners about evidence

“Lack of consideration of external validity is the most frequent complaint about systematic reviews, and guidelines.”*

- ***Rothwell PM**, Subgroup analysis in randomised controlled trials: importance, indications, and interpretation. *Lancet*, 2005;365:82-93
- Green LW, Glasgow RE. Evaluating the relevance, generalization, and applicability of research: Issues in external validation and translation methodology. *Eval & the Health Professions*, Mar 01, 2006 29: 126-153.

What's Good for Scientists Not Necessarily Good for Science*

- Leveraging chance by running many low-powered studies, rather than a few high-powered ones (Ioannidis, 2005);
- Uncritically dismissing “failed” studies as pilot tests or because of methodological flaws, but uncritically accepting “successful” studies as methodologically sound (Bastardi et al., 2011; Lord et al., 1979);

*Nosek et al., Scientific utopia: Restructuring incentives and practices to promote truth over publishability. *Perspectives on Psychological Science*. 2012;7:615.
See also, “How science goes wrong,” *The Economist*, Oct. 2013.

Scientists vs Science

- **Selectively reporting studies with positive results and not studies with negative results** (Greenwald, 1975; John et al., 2012; Rosenthal, 1979) or selectively reporting “clean” results (Begley & Ellis, 2012; Giner-Sorolla, 2012)
- **Stopping data collection as soon as intended effect is obtained** (John et al., 2012; Simmons et al., 2011; Green et al., 2010)
- **Resting on internal validity without concern for external validity** (Green, 2001; Rothwell, 2005; Green & Glasgow, 2006; Klesges et al, 2007; Green et al. *Am J Prev Med.*, 37(6 Suppl 1):S187-91, Dec 2009)

Alternatives to Strict RCT Evaluation and Their Trade-Offs

- Sanson-Fisher RW, et al. Limitations of the randomized controlled trial in evaluating population-based health interventions. *Am J Prev Med.* 2007; 33(2): 155-61.
- Mercer SM, et al. Study designs for effectiveness and translation research: Identifying trade-offs. *Am J Prev Med.* 2007; 33(2): 139-54.
- Hawkins NG et al. The multiple baseline design for evaluating population-based research. *Am J Prev Med.* 2007; 33(2): 162-8.

Canadian Cancer Society RFP for a Review to Answer 4 Questions

Are group counseling programs for smoking cessation effective?

If so, what is the optimal content of the sessions?

What is the optimum number and frequency of sessions that should be offered?

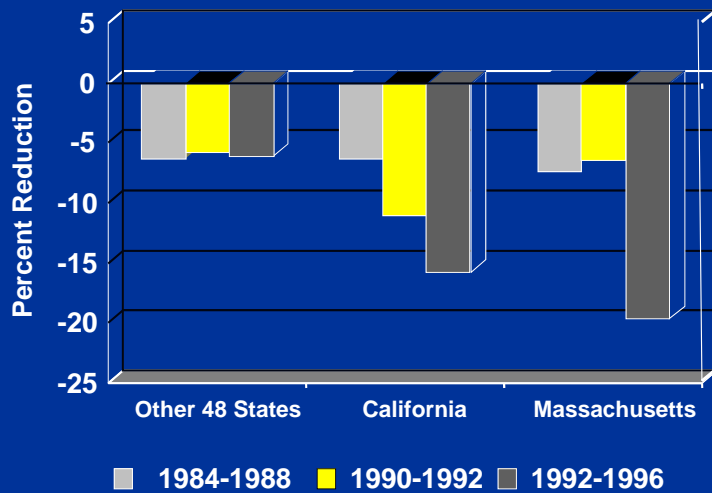
What are the characteristics of the most effective facilitators?

University of Waterloo Results*

- **A comprehensive literature review of over 40 years of published and unpublished studies**
- **Deficiencies in purpose, sampling, design and reporting**
- **Research could answer only the first of 4 questions: that group programs for smoking cessation are effective...**

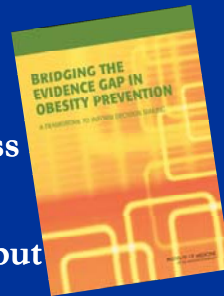
*Manske SR, Miller S, Moyer C, Phaneuf MR, Cameron RC. Best practice in group-based smoking cessation: Results of a literature review. *AJHP* 18:409-23, 2004.

Change in Per Capita Cigarette Consumption California & Massachusetts vs Other 48 States, 1984-1996



Problems Identified by IOM Report*

- **Narrow focus: Lack of attention to larger systems context**
- **Lacking details of implementation process**
- **Lack of relevance to real world**
- **Many studies focus on one intervention, but obesity may require a combination of interventions; in fact, some things appear not to work when tested alone, but are essential ingredients in a more comprehensive program (www.nap.edu)**



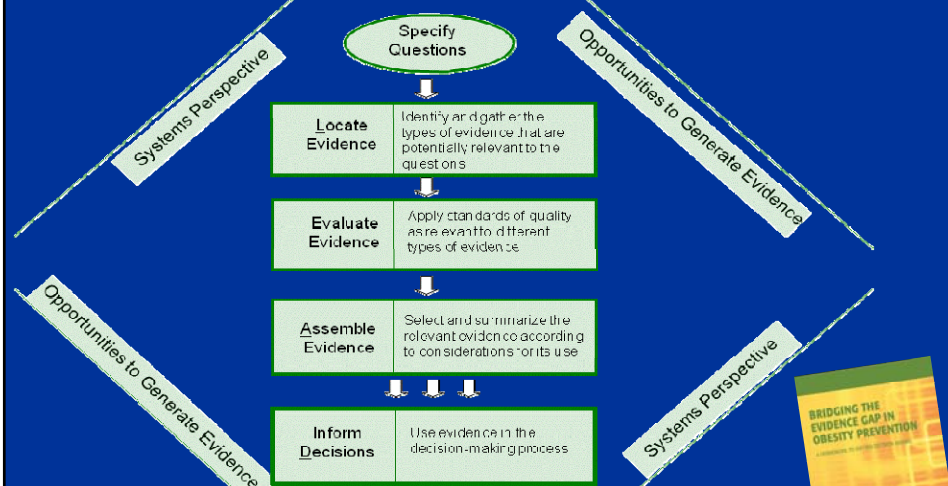
*Institute of Medicine. *Bridging the Evidence Gap in Obesity Prevention: A Framework to Inform Decision Making*. Washington, DC: The National Academies Press, 2010.

IOM Conclusions about Status of Evidence

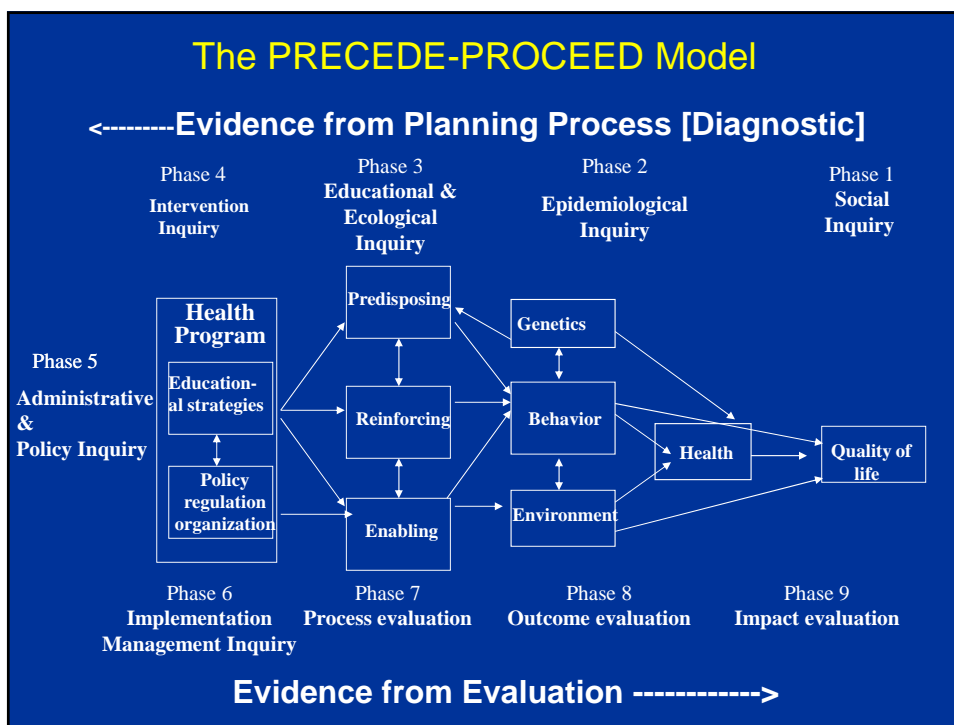
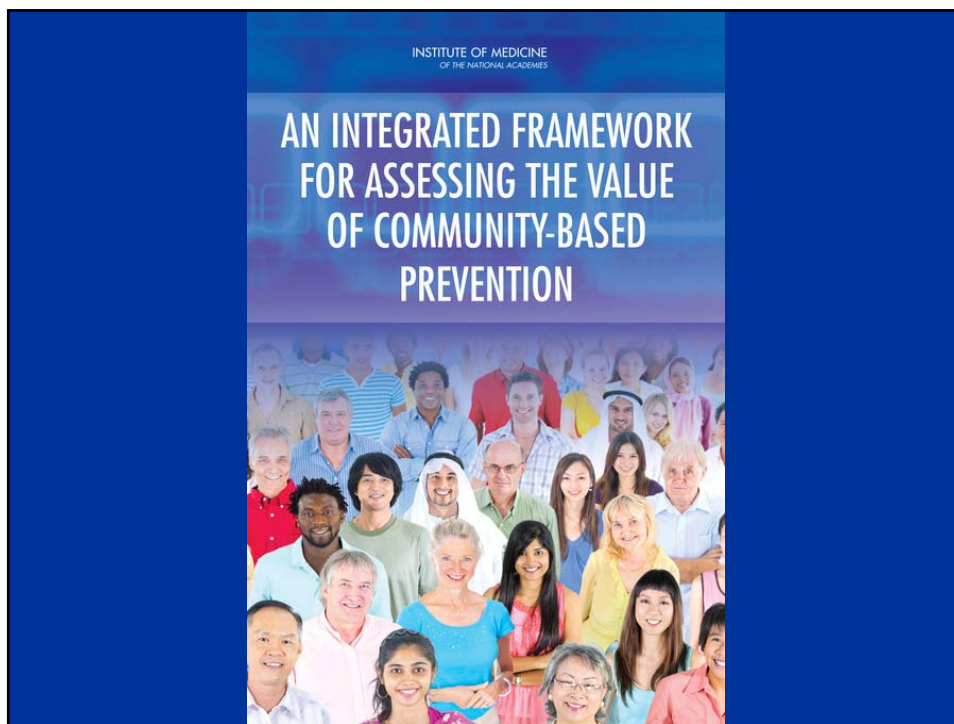
- The current evidence lacks the power to set a clear direction for obesity prevention across a range of target populations
- This lack of evidence for effectiveness seen as a lack of effectiveness
- It is difficult to fund, conduct & publish research on community, environmental, and policy-based obesity prevention initiatives
- Assessing or reporting on generalizability of research results to other populations or settings has not been given priority

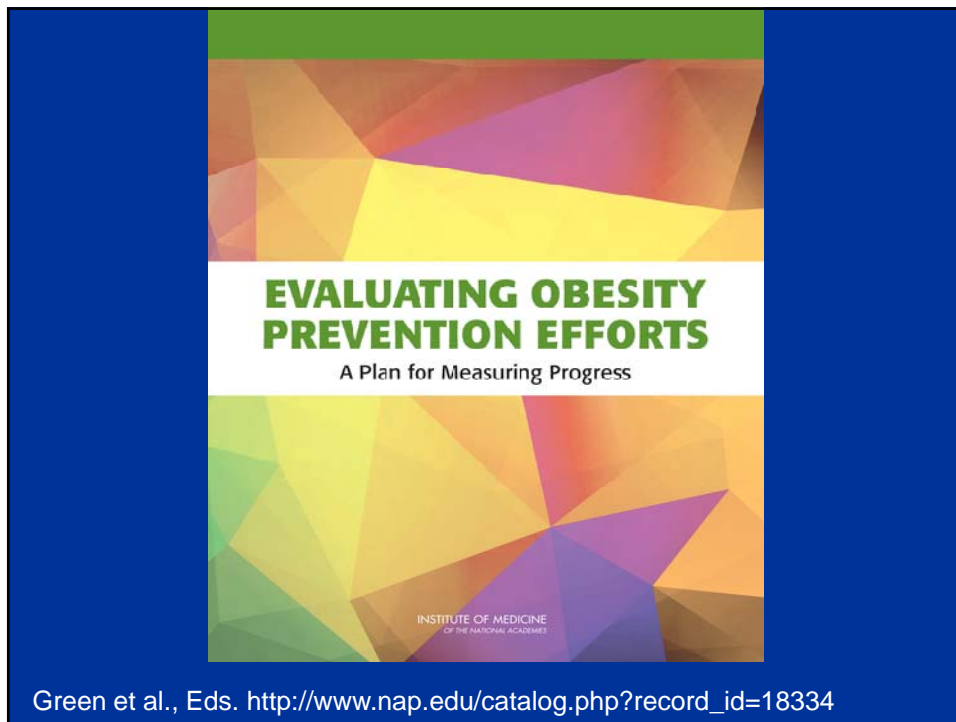


The L.E.A.D. Framework for a More Inclusive Evidence Base



Institute of Medicine. *Bridging the Evidence Gap in Obesity Prevention*. Washington, DC: The National Academies Press, 2010. (www.nap.edu)





Types of Community-Engaged Evidence for Health Research

- Participatory research evidence
 - Community-Based Participatory Research (CBPR)
 - Practice-based or action research
- Surveillance evidence
- Population diagnostic evidence
- Program evaluation evidence
 - Multi-component; Continuous Quality Improvement with adaptations of evidence
 - Natural experiments with monitoring
 - How context effects (moderates) outcomes

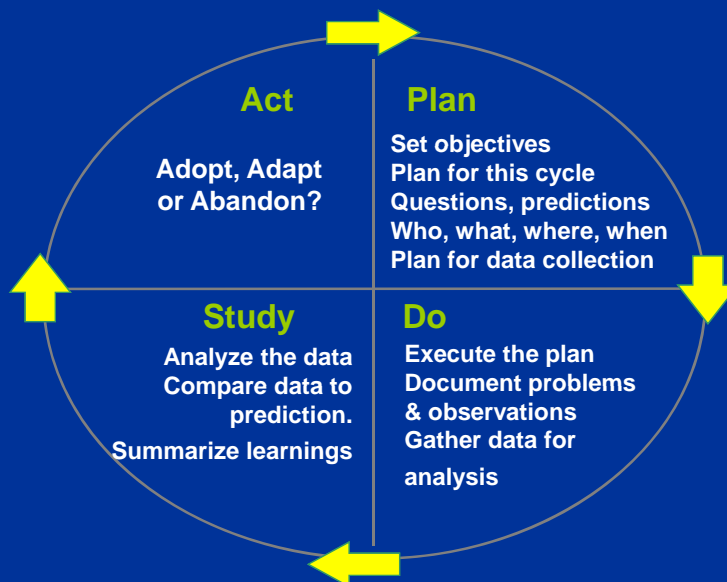
Ongoing Linkage and Exchange: Effectiveness in Policy World

Systematic review of 24 studies that asked over 2000 policymakers what facilitated or prevented their use of research evidence

- #1 facilitator = "personal contact between researchers and policy-makers" (13/24)
- #1 barrier = "absence of personal contact between researchers and policy-makers" (11/24)

Innvaer et al. *J Hlth Serv Res Pol* 2002;7:241

The Plan-Do-Evaluate-Act Model



7 Uses of Evaluation

- **Valuing use:** Advocacy; professional dissemination ; networks; community events; websites ; media/press. Core work of evaluation; not symbolic
- **Instrumental use:** **Process Use:** improve implementation; adapt program; improve evaluation. **Outcome use:** recruit; (structural) change program; obtain funding
- **Conceptual use:** Enable choice; advance discourse; embed concepts; provide reference point
- **Use of evaluation learning:** Organizational learning; stakeholder learning; evaluator learning
- **Symbolic use:** Giving assurances of accountability
- **Communication use:** Advocacy; professional dissemination; networks; community events; websites; media/press
- **Use for decision making:** Continue, adapt or abandon

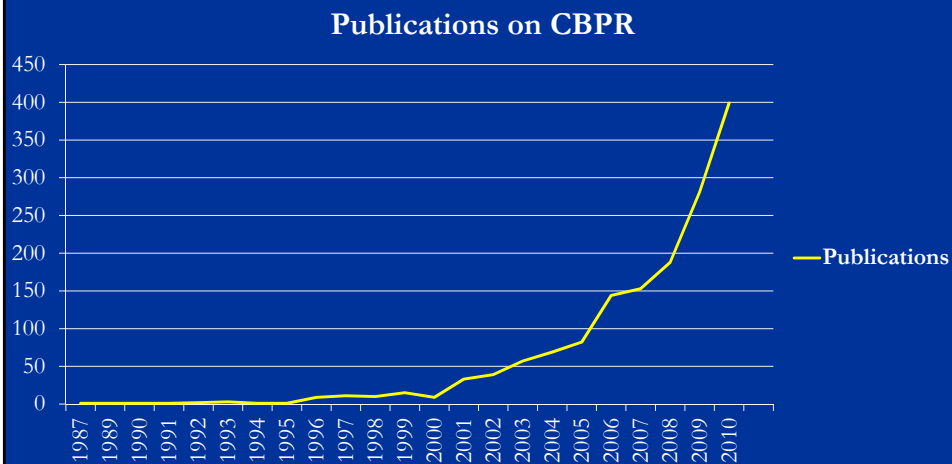
The Spheres of Practice-Based, Community-Based, Academic & Participatory Research



Two Paradoxes

- **The internal validity–external validity paradox**
 - The more rigorously controlled a study testing the efficacy of an intervention, the less reality-based it becomes, so it cannot be taken to scale or generalized with assurance of applicability
- **The specificity – generalizability paradox**
 - The more relevant and particular to the local context, the less generalizable to other contexts

Number of Publications on CBPR Based on Scopus Search*



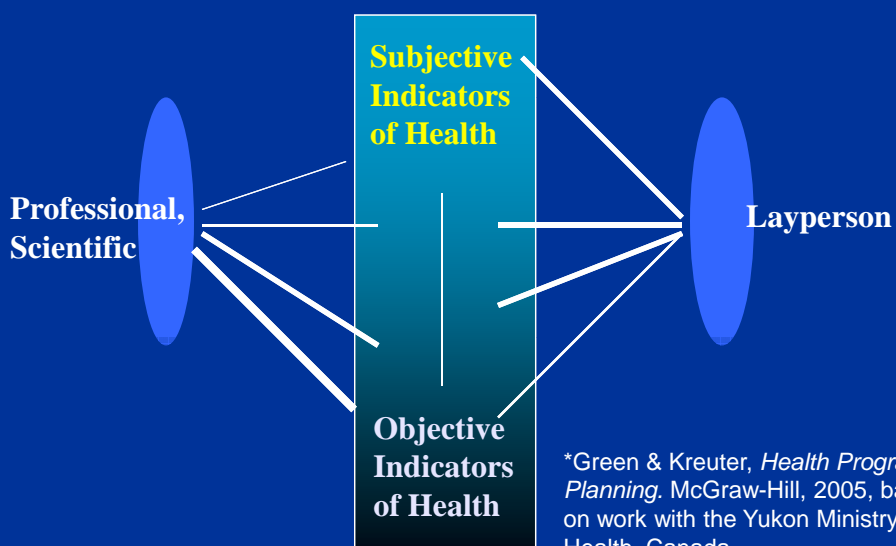
*Based on unpublished Scopus review by Doug Brugge, Tufts U., 2011.

Top 9 journals publishing CBPR papers

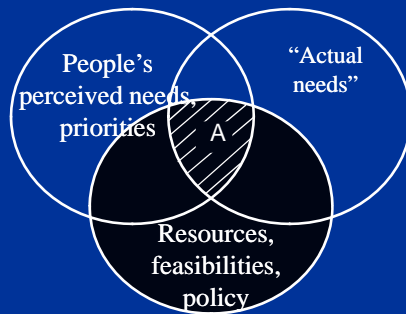
- *Progress in Community Health Partnerships: Research, Education & Action* (87)
- *American Journal of Public Health* (49)
- *Journal of Health Care for the Poor and Underserved* (33)
- *Health Promotion Practice* (30)
- *Environmental Health Perspectives* (29)
- *Ethnicity and Disease* (26)
- *Health Education and Behavior* (25)
- *American Journal of Preventive Medicine* (21)
- *Journal of Urban Health* (21)

*Based on unpublished Scopus review by Doug Brugge, 2011

The Lenses of Scientists, Health Professionals and Lay People*

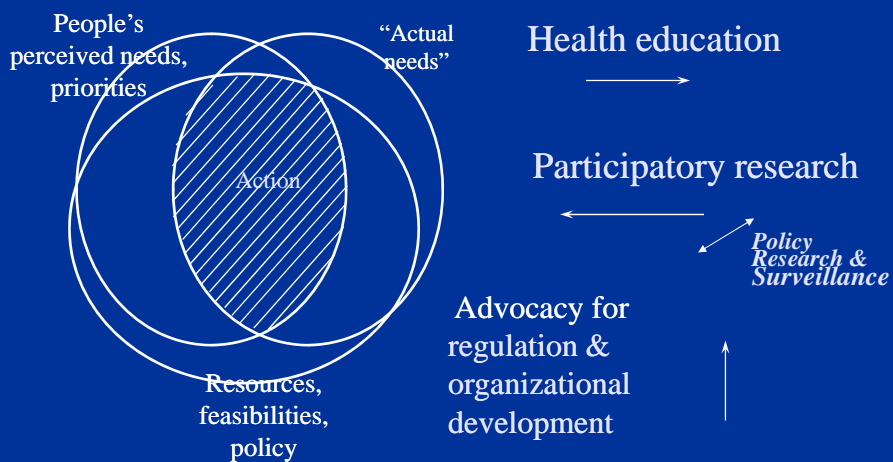


Closing the Gaps Between Population & Scientists' or Practitioners' Perception of Needs, and Funders' Assessments*



*Green & Kreuter, *Health Program Planning*, 4th ed., NY: McGraw-Hill, 2005, p. 40.

Reconciling Perceived Needs, "Actual Needs," & Resources*



*Source: Green LW & Kreuter MW. *Health Program Planning*, 4th edition, 2005. p.41.

Evidence Integration Triangle (EIT)*

