Balancing Fidelity and Adaptation in Applying Evidence-Based Practices in Health Promotion

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Current trends in health promotion colleges are struggling with...

- “Title IX; resiliency and stress; alcohol and other drugs; explaining consent in relationships; explaining incapacitation with alcohol to students in a way they understand it (and adhere to it). Student stress is not new, but students’ inability to cope with it is. Many students don’t know how to handle every day interactions, challenges or disappointments. The legalization of marijuana presents challenges and opioid use is a growing concern...” --Jolene Nevers
In Which Roles Have You Encountered Demands or Needs for Evidence-Based Practice?

- Health promotion practitioner delivering services on a college campus?
- Program planner?
- Program implementer or manager?
- Program evaluator or researcher?
- Program funder?
- Program recipient?
- Other?
What Needs to be Covered?

- Why is fidelity an issue?
  - Practitioner resistance to evidence-based guidelines
    - Perceive it as an unrealistic burden on their practice
    - Perception that it is based on research too far removed from their realities
  - Researchers’ belief (Hubris? Conflict of interest?) in the certainty and universality of their findings
  - Experience in some sectors that what is passing as evidence-based practice is not what the evidence showed

- Differences to be considered?
  - Differences between clinical v. behavioral
  - …between individual v. community/population
Challenges & Opportunities

Two biggest challenges:
- To close the gap between the evidence for implementation that policy makers, program planners, practitioners and communities need & what they are getting from our research and systematic reviews\(^1\)
- Sponsor and support more practice-based evidence\(^2\)

Two biggest opportunities
- Extend participatory research principles to work with policy makers, program planners & practitioners in use of natural experiments—e.g., evaluation and continuous quality improvement methods\(^3\)
- Combine PR with multi-site RCT methods that expand the external validity of the results\(^1,2,3,4\)
3 Conceptualizations of the Gap Between Knowledge & Practice*

- Practitioners need to implement the lessons of research by translating them into practice.
- Research and practice are entirely separate disciplines and each must develop their own answers to their own problems.
- Research and practice have complementary perspectives and skills that need to be used together to address the real need, collaborative knowledge production.

The Research Causes of the Gap

- Misplaced precision\textsuperscript{1}
  - In testing and deconstructing theoretical models
  - In generalizing to diverse settings and populations
  - In confusing statistical with practical significance
- Misplaced faith in unnatural experiments\textsuperscript{2}
- Misplaced belief in generalizable fixed effects\textsuperscript{3}
- Misplaced pursuit of singular, mostly downstream causes and interventions\textsuperscript{4}
- Misplaced dichotomies, categorical variables, and mean effects equated with generalizability
The Drift and the Drag

- After innovating with quasi-expt’l and mixed-method designs as we tried to get at complexities of population-level, socially-conditioned health problems, we retreated back to RCTs. Why?
- NIH budgets and peer review became stiffer, pay lines sank, and research retreated to safer designs and methods that would fit & survive funding and qualify for systematic reviews
- More-rigorous-than-thou ethic in peer review
Priority-Setting for Health Research*

From “Levy Arrow” to Roadmap Initiative: “From Bench to Bedside”

Knowledge Acquisition
Knowledge Validation
Dissemination
Implementation

Basic Research & Development
Clinical Investigations
Clinical Trials
Demonstration & Education Research
Molecular

Population
Surveillance
Community & Statewide Effectiveness Trials
PBRNs, CQI

Applied Research & Development
CDC & PRCs
AHRQ
CIHR
TIDIRH

NIH


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CDC’s K2A Framework*

The Causes of Renewed Drive

- The ascendancy of ecological models & systems thinking in challenging RCT limitations
- The intensification of theory & program or policy innovation testing
- The emergence of community-based & patient-centered participatory research
- Reactions to evidence-based practice criteria limiting funding of robust, innovative programs
- New “Friends of Evidence” & new evidence
A Brief History of Systematic Reviews Driving Medicine & Dragging Public Health

- R.A. Fisher (1926) testing of hybrid seeds in agriculture
- Archie Cochrane, & D. Bradford-Hill, UK, 1960s
- David Sackett, McMaster Univ., Canada, 1970s
- Brian Haynes, founding editor, *J. Evid.-Based Med.*, 1970-80s
- Gord Guyat, GRADE criteria for systematic reviews
- Canadian Task Force, USPSTF & Cochrane, 1980s-present
- Community Preventive Services Task Force, 90s
- Federal OMB of the Bush Administration, 2002
- Agency directories of evidence-based practices
- Funding of programs requiring EBPs 2002
- USPSTF reviews set Medicare reimbursement 2002

2004 CDC & CPSTF promote “practice-based evidence”
Multi-level Complementarity of USPSTF & CPSTF
“It takes 17 years to turn 14 per cent of original [applied] research to the benefit of patient care” *
The Pipeline Fallacy of Producing & Vetting Research to Get Evidence-Based Practice*


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Meeting the Top-Down Evidence Push with Bottom-Up Practice-Based Evidence*

1. Define the Problem
   Data collection and surveillance

2. Identify Causes
   Risk factor identification

3. Develop and Test Interventions
   Efficacy and effectiveness research

4. Adoption and Widespread Use
   Community demonstration and dissemination program

*CDC, National Center for Injury Prevention & Control, as adapted by Hanson DW, Finch CF, Allegrante JP, Sleet DA. Closing the gap between injury prevention research & community safety promotion practice: Revising the public health model. Public Health Reports 2012;127(2), p. 147.

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Prevailing Standards of Evidence for Efficacy & Effectiveness Limited to the Randomized Controlled Trials

Intervention tested by comparison with a control condition

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

Mediating (and moderating) variables expected to change, based on previous evidence and theory

- Change in outcome variable(s) measured & compared between experimental & control groups
- Comparison based on average change for each group
- Subgroup analysis discouraged
- Dropouts discounted, ignored
- Cut-off date for outcomes often too soon for change to occur
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)

Scientists vs Science (cont’d)

- 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 collections as soon as intended effect is obtained (John et al., 2012; Simmons et al., 2011; Green et al., 2010)
Linking Research and Public Health Practice

A Review of CDC’s Program of Centers for Research and Demonstration of Health Promotion and Disease Prevention

INSTITUTE OF MEDICINE

(1997)

AN INTEGRATED FRAMEWORK FOR ASSESSING THE VALUE OF COMMUNITY-BASED PREVENTION

INSTITUTE OF MEDICINE OF THE NATIONAL ACADEMIES

(2012)
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)

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
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
  - How context effects (moderates) outcomes
The Lenses of Scientists, Health Professionals and Lay People*

Professional, Scientific

Subjective Indicators of Health

Objective Indicators of Health

Layperson

Or very sensitive professional

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

Reconciling Perceived Needs, “Actual Needs,” & Resources*

People’s perceived needs, priorities

“Actual needs”

Health education

Participatory research

Advocacy for policy, regulation & organizational development

Resources, feasibilities, policy

Action

Surveillance, Evaluation

Neglected Evidence Forms

- Participatory research evidence
  - Community-Based Participatory Research
  - Practice-based or action research
- Surveillance evidence [e.g., County Rankings]
- Population diagnostic evidence
- Program evaluation evidence
  - Multi-component evaluations
  - Continuous quality improvement
  - How context effects (moderates) outcomes
  - Multi-center trials
Uses of Evidence & Theory in Population-Based, Diagnostic, Planning & Evaluation Models*

1. Assess Needs & Capacities of Population
2. Assess Causes (X) & Resources
3. Design & Implement Program
4. Evaluate Program

Evidence from community or population
Evidence from etiologic research
Evidence from efficacy studies, and use of theory to fill gaps
Program evidence & effectiveness studies, and use of theory
Reconsider X

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

Percent Reduction

Other 48 States  California  Massachusetts


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The CDC Obesity Maps

Percent of Obese (BMI ≥ 30) in U.S. Adults

1990

CDC

No Data  <10%  10%–14%  15%–19%  20%–24%  25%–29%  ≥30%
Reasons for Surveillance as a Challenge and an Opportunity

- For CBPR
  - Communities need/want more particular, local data
  - CBPR projects usually can’t afford to do population surveys, much less time-series surveys

- For community research in general
  - Provides the most powerful alternative to RCTs for population-level change & community interventions
  - Provides the most credible source of evidence for external validity and dissemination of practice-based evidence
Mediating and Moderating Variables*

Challenges to “Best Practices” from Controlled Trials*

- Challenge of translating “best practices” from science to practitioner behavior, and to different circumstances
- …of generalizing from research in one place, with one population, to other places, people and circumstances
- …of imposing experimental controls to generate “best practices” for community and population efforts
- Recommend “best practices” with “best processes” of locally-specific, diagnostic-planning procedures & CBPR to adapt efficacy-tested interventions to moderating variables…

The Multi-Site Translational Community Trial (mTCT) Proposal*

- Blends the internal validity advantages of
  - Cluster randomized trial or multi-site RCT
  - Fidelity to the function (but not the form) of an efficacy-tested intervention

- With the external validity advantages of
  - Diversity of settings, cultures, circumstances
  - Adaptation of the form (not the function) of the efficacy-tested intervention with some sacrifice of CBPR degrees of freedom

The mTCT for Practice-Based, Community-Based, Academic to Participatory Research
Aligning Evidence* with (and deriving it from) Practice: Matching, Mapping, Pooling & Patching

- **Matching** ecological levels of a system or community with RCT evidence of *efficacy* for interventions at those levels.
- **Mapping** theory to the causal chain to fill gaps in the evidence for *effectiveness* of interventions.
- **Pooling** experience to blend interventions to fill gaps in evidence for the effectiveness of programs in similar situations.
- **Patching** pooled interventions with indigenous wisdom and professional judgment about plausible causes & interventions to fill gaps in the *program* for the specific population.

Summary: The Case for Participatory and Practice-Based Research

- “Participatory approach at the front-end of the research pipeline is the best assurance of relevance and utilization of the research at the other end of the pipeline.”

- “If we want more evidence-based practice…

- …we need more practice-based evidence”*  
  *AJPH, 2006