Evaluating What Works: Tools for State Legislators

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Presentation at the NCSL Promising State Practices in Women’s Health Conference
Washington, DC
December 2014

RESEARCHERS AND POLICY MAKERS…COMMON INTERESTS…DIFFERING LANGUAGE AND NEEDS
Researchers and policymakers—travelers in “parallel universes”

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Because what you told me is absolutely correct but completely useless.

The problem

Because you don’t know where you are, you don’t know where you’re going, and now you’re blaming me.
Incorporation of evidence-based practice into legislation is challenging

Source: Eyler et al. (2010), *J Sch Health* 80(7): 326-332

**Figure 1. Number of PE Bills by Enacted Status and Inclusion of at Least 1 Evidence-Based Element Plotted by Year of Introduction**

N=781 bills analyzed

Source: Eyler et al. (2010), *J Sch Health* 80(7): 326-332

THE REALITY...“DECISION MAKERS OFTEN CONFRONT THE NEED TO ACT IN THE ABSENCE OF GOOD EVIDENCE”

Source: Anderson et al., *AJPM* 1005:28(5S)
Evidence-based public health

- The development, implementation, and evaluation of effective programs and policies in public health through the application of principles of scientific reasoning, including systematic uses of data and information systems and appropriate use of behavioral science theory and program planning models.

Source: IOM, 2010
Need to consider all available evidence

- Assessment data on magnitude of problem
- Epidemiologic data on determinants
- Stakeholder opinions on problem and solutions
- Existing practices and traditions
- Promising interventions
- Budgetary constraints
- Political will….etc.

Source: Anderson et al., AJPM 1005:28(5S)

Domains of evidence-based public health policy

Source: Brownson, Chriqui, Stamatakis, AJPH, 2009
Examples of types of studies

- Experimental
  - Randomized control trials: the gold standard
- Quasi-experimental studies
  - Time series
  - Pre-/post-test design
  - Natural experiments
- Observational
  - Variables observed rather than manipulated

“The best is the enemy of the good”  
-Voltaire

The problem of randomized trials and parachutes....
The effectiveness of parachutes has not been subjected to rigorous evaluation by using randomised controlled trials…. We think that everyone might benefit if the most radical protagonists of evidence based medicine organised and participated in a double blind, randomised, placebo controlled, crossover trial of the parachute.

Smith and Pell, BMJ, 2004
## Two types of evidence

### 1. Quantitative: #s
- Scientific, peer-reviewed studies
- Public health surveillance systems
- Evaluations of individual policy components
- Systematic reviews (more on this)

Quantitative studies are **useful for evaluating scientific status** of a health-related policy intervention

*Source: Brownson, Chriqui, Burgeson, et al., Ann Epid 2010;20:436-444*

### 2. Qualitative: Non-numeric observations
- Observations, interviews, focus groups, case studies
- Often takes on narrative form

Qualitative studies are **useful for evaluating a policy intervention’s relevance** to the targeted community, **framing** the issue

*Source: Brownson, Chriqui, Burgeson, et al., Ann Epid 2010;20:436-444*
Both quantitative and qualitative evidence are necessary for developing successful policy!

Systematic Reviews

- A review of a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise relevant research and to collect and analyze data from the studies that are included in the review.
- Statistical methods (meta-analysis) may or may not be used to analyze and summarize the results of the included studies.
Systematic reviews cont.

- The gold standard for assessing evidence for population-wide public health interventions, programs, policies.
- Sometimes, when there is a lot of “evidence,” you may find a “review of reviews”

FINDINGS Twenty-four studies were selected for inclusion. Studies focused on state laws (n = 14), district policies (n = 8), or both (n = 2), with the majority of studies (n = 18) examining foods and beverages (as opposed to food-only or beverage-only policies). Sixteen studies examined prepolicy/postpolicy changes, and 8 studies examined postpolicy changes. Study designs were cross-sectional (n = 20), longitudinal (n = 3), or a combination (n = 1). Outcomes examined included change in BMI, weight, probability of overweight or obesity (n = 4), consumption (n = 10), and availability (n = 13); 3 studies examined more than 1 outcome. The majority of studies primarily reported results in the expected direction (n = 15), with the remaining studies (n = 9) reporting primarily mixed or nonsignificant results.

CONCLUSIONS AND RELEVANCE In most cases, CF&B policies are associated with changes in consumption and/or availability in the expected direction; however, caution should be exercised, given that nearly all were cross-sectional. The influence of such policies on overall student consumption and BMI and weight outcomes was mixed. The findings hold promise for the likely influence of federal CF&B regulations on changes in student in-school consumption and in-school competitive food availability. Further research is needed to truly understand the association between these policies and overall consumption and weight outcomes.
Categorize Strength of the Evidence in the Literature

- Strong evidence for
- Strong evidence against
- Mixed evidence
- Insufficient evidence

Systematic Review Sources

- The Cochrane Collaboration
  (www.cochrane.org and www.ph.cochrane.org)

- The Guide to Community Preventive Services
  (http://www.thecommunityguide.org/index.html)

- U.S. Preventive Services Task Force
  (http://www.uspreventiveservicestaskforce.org/Page/Name/home)
Cost-effectiveness Analysis

- Used to assess the most efficient method for achieving a program or policy goal.
- Costs of alternatives are measured in terms of their requisite estimated dollar expenditures.
- **Effectiveness** = degree of achievement of a goal and may be measured in dollars.
- Cost-effectiveness Analysis Registry (https://research.tufts-nemc.org/cear4/)

Source: IOM, 2010

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### Cost Effectiveness of Community-Based Physical Activity Interventions

**Methods:** A lifetime cost-effectiveness analysis from a societal perspective was conducted to estimate the costs, health gains, and cost-effectiveness (dollars per quality-adjusted life year [QALY]) gained, relative to no intervention, of seven public health interventions to promote physical activity in a simulated cohort of healthy U.S. adults stratified by age, gender, and physical activity level. Interventions exemplifying each of four strategies strongly recommended by the Task Force on Community Preventive Services were evaluated: community-wide campaigns, individually adapted health behavior change, community social-support interventions, and the creation of or enhanced access to physical activity information and opportunities. Each intervention was compared to a no-intervention alternative. A systematic review of disease burden by physical activity status was used to assess the relative risk of five diseases (coronary heart disease, ischemic stroke, type 2 diabetes, breast cancer, and colorectal cancer) across a spectrum of physical activity levels. Other data were obtained from clinical trials, population-based surveys, and other published literature.

**Results:** Cost-effectiveness ratios ranged between $14,000 and $65,000 per QALY gained, relative to no intervention. Results were sensitive to intervention-related costs and effect size.

**Conclusions:** All of the evaluated physical activity interventions appeared to reduce disease incidence, to be cost-effective, and—compared with other well-accepted preventive strategies—to offer good value for money. The results support using any of the seven evaluated interventions as part of public health efforts to promote physical activity.

Health Impact Assessment

- A combination of procedures, methods, and tools by which a policy, program, or project can be evaluated in terms of its potential effects on the health of a population and the distribution of those effects within the population.
Other sources of evidence-based practices

- SAMHSA's National Registry of Evidence-based Programs and Practices (NREPP) (http://www.nrepp.samhsa.gov/ViewAll.aspx)
- Best practice reports from federal agencies
  - CDC
  - Surgeon General's reports

THE “WHY,” “WHAT,” AND “HOW” OF EVIDENCE GATHERING

Source: Institute of Medicine, Bridging the Evidence Gap, 2010

Questions Guiding Evidence Gathering (IOM, 2010)

WHY should we do something about this problem?

HOW do we implement this information for our situation?

WHAT specifically should we do about this problem?
Questions Guiding Evidence Gathering (IOM, 2010)

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HOW do we implement this information for our situation?

WHAT specifically should we do about this problem?

“WHY” Questions

- Help make the case for taking action
  - Specific, quantifiable evidence to evaluate scope and severity of the problem
    - Absolute and relative to other problems
  
- Applies equally to new actions and continuing to justify regulation, funding, etc.
### Areas of Concern and Examples of Evidence Needed for “WHY” Questions: The Case of Obesity (IOM, 2010, Table 5-1)

<table>
<thead>
<tr>
<th>Area of Concern</th>
<th>Examples of Evidence Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Public Health Situation</strong></td>
<td></td>
</tr>
<tr>
<td>• Health burden</td>
<td>Recorded levels of illness, disease, or death related to obesity</td>
</tr>
<tr>
<td>• Frequency/incidence of disease or risk factor</td>
<td># people or rate of new cases affected by obesity/obesity-related diseases</td>
</tr>
<tr>
<td>• Social or environ. determinants of disease/risk factor</td>
<td># census tracts w/o a supermarket or food store selling fruits &amp; vegetables</td>
</tr>
<tr>
<td>• Trends</td>
<td>Rates of increase of obesity/related diseases</td>
</tr>
<tr>
<td>• Health disparities</td>
<td>Relative/absolute differences in risk among demographic groups</td>
</tr>
<tr>
<td><strong>Monetary and Social Costs</strong></td>
<td></td>
</tr>
<tr>
<td>• Health care costs</td>
<td>Estimates of public $ spent on obesity-related health care</td>
</tr>
<tr>
<td>• Other societal costs</td>
<td>Estimates of $ spent by or lost from public/private sector due to obesity (e.g., absenteeism, worker productivity)</td>
</tr>
</tbody>
</table>

### Examples of Sources of Data for Answering “WHY” Questions

- Surveillance systems
  - E.g., Behavioral Risk Factor Surveillance System
- Administrative data
- Population trend analyses
- Health impact studies
- Cost studies/projections of future burden
  - E.g., economic cost to society of obesity vs. other health problems
Questions Guiding Evidence Gathering (IOM, 2010)

**WHY** should we do something about this problem?

**HOW** do we implement this information for our situation?

**WHAT specifically should we do about this problem?**

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**“WHAT”** Questions

- How effective is the strategy being considered?
  - Synthesize the evidence for each potential strategy to answer three questions:
    1. What is the broader context for the strategy?
       - “Systems” perspective
    2. Evaluating the effectiveness of the interventions
       - Will do exercise in a few minutes
    3. What will be the overall public health impact of the strategy?
Evaluating the effectiveness of interventions (IOM, 2010)

- Need to adapt to local context
- Take a “realist” approach
  - Synthesize information from disparate sources including scientific evidence, theory, professional experience, and local wisdom
- Evaluating the impact of interventions
  - RE-AIM framework
    - Reach, Effectiveness, Adoption, Implementation, Maintenance

Questions Guiding Evidence Gathering (IOM, 2010)

WHY should we do something about this problem?

HOW do we implement this information for our situation?

WHAT specifically should we do about this problem?
How to implement the evidence for local context?

- Will the findings from the evidence hold up in your own state, district, local community?
- Are the resources required feasible for your context?
- Does the evidence provide sufficient information on the likely impact on disparate populations, particularly those in your state/community?

A TOOL FOR EVALUATING EVIDENCE (IOM, 2010)
IOM L.E.A.D. Framework Reporting Template (IOM, 2010)

1. Question asked by the decision maker
2. Strategy for locating evidence
3. Evidence table
4. Summary of evidence
   • Why should we do something about this problem in our situation?
   • What specifically should we do about this problem?
   • How do we implement this information for our situation?

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### TABLE 7-2. Evidence Table Template

<table>
<thead>
<tr>
<th>Issue/Potential Intervention</th>
<th>Source</th>
<th>Type</th>
<th>Quality</th>
<th>Outcome/Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood obesity rates in our area (2008 data)</td>
<td>Department of Health Expanded Immunization Registry</td>
<td>Quantitative report using existing database</td>
<td>High</td>
<td>A map of our community showing childhood obesity rates by neighborhood is provided.</td>
</tr>
</tbody>
</table>

Part B: What specifically should we do about this problem?

All evidence associated with the effectiveness and impact of a particular intervention (e.g., causal pathways, outside influences, sustained effects, unintended consequences) should be described in this section. One example:

| School nutrition policy changes | Study citation | Descriptive, quantitative | High | Policy changes in one state’s public schools significantly reduced calorie consumption among its youth during the school day. |

Part C: How do we implement this information for our situation?

All evidence associated with the relevance and implementation of a particular intervention (e.g., generalizability, sustainability, cost-effectiveness, cost feasibility, strategic planning, implementation policies, potential challenges) should be described in this section. One example:

| Removal of sugar-sweetened beverages from all vending machines on school campuses | Study citation | Quantitative report using revenue statements for vending machines in schools | High | When replaced with water, juice, and milk, sugar-sweetened beverages can feasibly be removed from a cost perspective. |
Group Exercise: Pick a Policy Question and Think Through the Template

Specify your Policy Question:

<table>
<thead>
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<th>Quality</th>
<th>Outcomes/Findings</th>
</tr>
</thead>
</table>

**Part A: Why should we do something about this problem in our situation?**

All needs assessment evidence for the particular problem (e.g., health burden, frequency/incidence, social determinants, trends, health disparities, monetary and social costs) should be described in this section.

**Part B: What specifically should we do about this problem?**

All evidence associated with the effectiveness and impact of a particular intervention (e.g., causal pathways, outside influences, sustained effects, unintended consequences) should be described in this section.

**Part C: How do we implement this information for our situation?**

All evidence associated with the relevance and implementation of a particular intervention (e.g., generalizability, sustainability, cost-effectiveness, cost feasibility, strategic planning, implementation policies, potential challenges) should be described in this section.

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**Further reading**


Contact

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