The Community Guide: Using Systematic Reviews to Inform Task Force Recommendations

www.thecommunityguide.org
Content of this Presentation

- Part A: How are Guide to Community Preventive Services (Community Guide) systematic reviews conducted and used by the Task Force on Community Preventive Services (Task Force)?

- Part B: How are Task Force findings and recommendations disseminated?
Part A:
How are Community Guide systematic reviews conducted and used by the Task Force?
Role of the Community Guide Systematic Review Team

Interdisciplinary teams conduct **systematic reviews** of scientific literature to identify what works to promote health and prevent disease, injury and disability. These teams:

- Are led or supported by Community Guide scientists in collaboration with:
  - Scientists, program managers from within CDC
  - Researchers, practitioners, policymakers from throughout the U.S.
  - Liaison organizations
Role of the Task Force

The Task Force uses all information analyzed through the Community Guide systematic review process to:

- Make evidence-based recommendations about:
  - a) Interventions that work to promote public health
  - b) Interventions that are ineffective

- Identify where more research is needed to determine if an intervention is or is not effective
Task Force Sets Priorities* for Topics to be Reviewed

● Criteria

♦ **Burden of or exposure to disease, injury, disability:** Mortality and morbidity estimates and costs

♦ **Preventability:** Amount of burden that could be reduced given adequate resources

♦ **Related initiatives:** Topics that are currently important within public health and that other groups are focusing on as well

♦ **Usefulness** of package of selected topics to the target audience

● Task Force provides prioritized list of topics for systematic reviews to Community Guide staff

*with input from its Liaison organizations and agencies, CDC Programs, and other partners and stakeholders

The Community Guide - What works to promote health
Defining an Intervention

- An **intervention** is *defined* according to what was done, how and when the intervention was delivered, and who was targeted.

- When an intervention definition is finalized, the following aspects should be clear to the reader (cf., Zaza et al, 2000):
  - Components of the intervention (e.g., activities, breadth of focus)
  - How the intervention was delivered (e.g., by whom, intensity of exposure)
  - The target population
  - The type of setting in which the intervention is delivered
The Task Force Seeks Answers to these Questions about an Intervention

• Does it work?
  - How well?
  - For whom?
  - Under what circumstances is it appropriate?

• What does it cost?

• Does it provide value?

• Are there barriers to use?

• Are there any harms?

• Are there any unanticipated outcomes?
The Review Process

- Convene a review team
- Develop a logic model
- Develop a prioritized list of interventions
- Develop an analytic framework
- Search for evidence
- Abstract and critically evaluate available studies
- Summarize the evidence
- Task Force discussion and decision
The Review Team

- **Coordination Team**
  - Coordinating scientist and a fellow
  - Subject-matter experts
  - Task Force member(s)
- **Consultants**
  - Subject-matter experts
  - Typically specialized knowledge
- **Assisted by librarian, statistician, economist, CG scientific director and staff**
How the Community Guide Convenes a Review Team

- Responsibility of the Coordinating Scientist
- Members identified using various methods
  - Identify topic area experts based on
    - The scientific literature and Google searches
    - Input from the Task Force and Liaisons
    - Input from stakeholder agencies and organizations
  - Recommended members subsequently identify other potential members
  - Use a formal nomination process and have a smaller group of experts rank or vote for potential members
- Send formal invitations
- Conduct trainings, orientation via Web meetings
The Review Process

- Convene a review team
- *Develop a logic model*
- Develop a prioritized list of interventions
- Develop an analytic framework
- Search for evidence
- Abstract and critically evaluate available studies
- Summarize the evidence
- Task Force discussion
Logic models

- Are created early in the systematic review process
- Help the review team decide which interventions are to be evaluated
- Are developed to illustrate the entire public health context in which the specific set of interventions might act
- Show relationships between social, environmental, and biological determinants and outcomes, strategic points for action, and interventions that might act on those points
Logic Model Components

- *Interventions* - Planned activity or group of activities (including programs, policies and laws) designed to prevent disease or injury or promote health in a group of people, about which a single summary conclusion can be drawn.

- *Determinants* of subsequent outcomes that are modifiable by interventions (nonmodifiable or difficult to modify determinants may also be included if conceptually relevant).

- *Intermediate Outcomes* - Variables that mediate between the intervention-related changes in modifiable determinants and the health outcomes of interest.
Logic Model Components

- **Health Outcomes** - Variables that directly reflect wellness, morbidity, or mortality.

- **Recommendation Outcomes** - Broader set of variables than health outcomes that also include the subset of intermediate outcomes with sufficiently strong evidence of a causal association with health outcomes that any changes in them can also be assumed to affect health outcomes.

- **Other Outcomes** - Variables that represent potential secondary effects of interventions. These may or may not be health outcomes, and may be either beneficial or harmful.
Sample Logic Model
The Review Process

- Convene a review team
- Develop a logic model
- **Develop a prioritized list of interventions**
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Developing a List of Interventions

- Brainstorm to develop an initial list using key priority-setting criteria:
  - Potential reduction of population-attributable risk
  - Potential for reducing the burden of disease and injury
  - Potential for increasing healthy behaviors and reducing unhealthy behaviors
  - Potential to improve upon current practices or policies
  - Potential to increase the implementation of interventions presumed to be effective, but not widely used
  - Potential to decrease the use of interventions presumed to be relatively ineffective in favor of more effective or more cost-effective options
  - Current level of interest among providers and decision makers
  - Other relevant priority-setting criteria
Developing a List (cont.)

- Review key literature
- Solicit expert opinions
- Finalize the set of criteria to be used for setting priorities among interventions
- Set priorities, usually through a voting procedure (with the votes of the consulting team members weighing most heavily)
- Approve the final list of subtopic and intervention priorities
Sample List of Interventions Examined in the Physical Activity Review

• Point-of-decision prompts
• School-based physical education
• Classroom-based health education
• Health education/TV turnoff
• Mass media campaigns
• Community-wide education
• College-age physical education
• Family-based social support
• Targeted information campaigns
• Non-family social support
• Creation and/or enhanced access
• Transportation policy and infrastructure
• Urban planning approaches
The Review Process

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Analytic Frameworks

These detailed analysis plans are created for each intervention chosen for review to:

- Expand on portions of the larger logic model
- Map the plan for evaluating interventions
- Show the hypothesized links between the intervention and the health outcomes, intermediate outcomes, and other effects that will be considered in the review
- Guide the search for evidence and evaluation of the interventions
Questions Asked When Developing Analytic Frameworks

- How is the intervention thought to be related to improved health or risk factor reduction?
- How is the intervention thought to be related to reduced morbidity and/or mortality?
- Do changes in an intermediate outcome clearly improve health or reduce known risk factors or increase protective factors?
- Are there any potential adverse effects of the intervention?
- Are there any potential beneficial effects of the intervention beyond the outcomes of primary interest in the review?
Sample Analytic Framework:
Increasing Breast, Cervical, and Colorectal Cancer Screening through Provider Reminder Interventions

Provider Reminders → Change Knowledge, Attitudes & Intentions → Increase Test Offering → Increase Screening (Recommendation outcome) → Increase Discussion of test with patients → Efficacy Established → Decrease Incidence, Morbidity, Mortality

Other positive or negative effects on preventive care and service
The Review Process

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Search for Evidence

- Identify a research librarian to conduct formal electronic search
- Identify relevant existing systematic or narrative reviews; identify and obtain relevant studies from reference lists of reviews
- Determine which types of documents are most relevant to the study question
- Determine which databases are most likely to yield the appropriate document types
- Determine the search parameters and inclusion criteria (including applicable range of publication dates)
Search for Evidence (con’t)

- Draft a document with the intervention definition, research question, keywords, and proposed databases
- Search the databases
- Screen titles and abstracts of resulting document list to determine potential relevance
- Obtain selected documents
- Review documents to confirm they meet inclusion criteria
- Review documents for additional references
Sample Search Details

- Search period: Jan 1980 – Aug 2007
- Searched for studies published in English
- No country limitation
- References from review articles, systematic reviews, relevant studies
- Asked subject matter experts to review search results
Potentially relevant articles from electronic databases and review of reference lists (duplicates removed)  
\[ n = 780 \]

Ordered full text for detailed review  
\[ n = 171 \]

Articles or evaluated studies clearly did not assess intervention of interest  
\[ n = 690 \]

Articles not available through library resources  
\[ n = 13 \]

Full text articles excluded:
- Not an intervention study  51
- Lack of person-to-person component  13
- No behavioral outcomes reported  35
- Population does not fit inclusion criteria  7
- Other  35
Total = 141

Studies with limited quality of execution  
\[ n = 5 \]

Articles and reports reviewed in full text by staff  
\[ n = 158 \]

Studies that met inclusion criteria  
\[ n = 17 \]

Studies included in analysis  
12 studies
The Review Process

• Convene a review team
• Develop a logic model
• Develop a prioritized list of interventions
• Develop an analytic framework
• Search for evidence
  • Abstract and critically evaluate available studies
• Summarize the evidence
• Task Force discussion
Abstraction

• Minimum two readers
• Record details of*
  - Study design
  - Intervention description
  - Methods
  - Sample Characteristics
  - Analysis plan
  - Results
  - Other issues addressed in paper

*The Community Guide uses a formal abstraction form for this purpose.
Quality Scoring

- Review abstraction results
- Assess results*
  - Description
    - Study population
    - Intervention
  - Sampling
  - Measurement
    - Exposure
    - Outcomes
  - Data analysis
  - Interpretation of results
  - Other

*The Community Guide has a formal procedure for quality scoring.
Design Suitability

- Based on study design and data analysis described in reviewed papers
- The suitability of the *study design* for protecting against potential biases or confounding
- Most bodies of evidence include a range of study designs
Quality of Execution

- Determination resulting from the abstraction process
- A global rating that reflects how useful a research report or paper is for addressing the research questions in the systematic review
- Studies of “limited” quality of execution are always excluded from the final body of evidence
- Most bodies of evidence include a mix of studies of varying quality of execution
Example of a Body of Evidence:
Smoke-free Policies and Tobacco Use
\( (n = 53 \text{ Studies Identified}) \)

<table>
<thead>
<tr>
<th>Quality of Execution</th>
<th>Greatest</th>
<th>Moderate</th>
<th>Least</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good (0-1 limitations)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fair (2-4 limitations)</td>
<td>7</td>
<td>6</td>
<td>19</td>
</tr>
<tr>
<td>Limited (≥5 limitations)</td>
<td>2</td>
<td>4</td>
<td>15</td>
</tr>
</tbody>
</table>

Included Studies: 32 studies
Studies Excluded: 21 studies
The Review Process

- Convene a review team
- Develop a logic model
- Develop a prioritized list of interventions
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- Search for evidence
- Abstract and critically evaluate available studies
- **Summarize the evidence**
- Task Force discussion
Summarizing the Evidence

- There are four general strategies for combining results from included studies in a systematic review:
  - No combination
  - Qualitative combination (narrative characterization)
  - “Simple” quantitative combination
  - Meta analysis
Preparing the Data for Public Consumption

- Qualitative and statistical results presented for each outcome of interest
  - Verbal and visual presentations prepared for the Task Force
  - Written reports prepared for peer-reviewed publication
- Preferred format
  - Express all study results in the same units
  - Create scatter plot (or forest plot)
  - Summarize results using
    - Descriptive statistics—Median and inter-quartile interval effect estimates, or
    - Inferential statistics—Weighted mean and confidence interval
- When results cannot be expressed in the same units
  - Tables of related results reviewed qualitatively to assess the consistency and magnitude of effects
Example of Scatter Plot

Overall Change in Tobacco Use Prevalence*

(\(n=27\) measurements from 27 study arms in 23 qualifying studies)

Study (sample size)

- Anderson 99-1 (96)
- Anderson 99-2 (87)
- Edye 89 (1937)
- Erfurt 91a-2 (998)
- Erfurt 91a-3 (987)
- Erfurt 91a-4 (908)
- Kronenfeld 87 (455)
- Nilsson 01 (89)
- Puska 88 (576)
- Shi 92-3 (1188)
- Shi 92-4 (1013)
- Sorensen 02 (7327)
- Sorensen 96 (84 sites)
- WHO 86 (49784)
- Musich 03 (2141)
- Poole 01 (304)
- Wood 97 (218)
- Bertera 93 (7178)
- Erfurt 91b (77)
- Goetzel 02 (4586)
- Goetzel 96 (805)
- Goetzel 94 (9162)
- Holt 95 (629)
- Ozminkowski 00 (9234)
- Pelletier 04 (500)
- Shimizu 03 (1029)
- Wood 89 (688)

* The findings on this slide are drawn from a review of assessments of health risks with feedback to change employee behavior.
Example of Results Table

**Quantity of Alcohol Use***

*n = 5 data points from 5 study arms in 5 studies*

<table>
<thead>
<tr>
<th>Study</th>
<th>Measure</th>
<th>N</th>
<th>FU</th>
<th>Pre</th>
<th>Post</th>
<th>Absolute Change, CI (Relative Change, CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Puska 88</strong></td>
<td>Drinks per week</td>
<td>391 (I) 258 (C)</td>
<td>1 y</td>
<td>6.6</td>
<td>5.8</td>
<td>6.6</td>
</tr>
<tr>
<td></td>
<td>Difference</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Edye 89</strong></td>
<td>Drinks per week</td>
<td>861 (I) 1076 (C)</td>
<td>3 y</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td></td>
<td>Difference</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Kronenfeld 87</strong></td>
<td>% having five or more drinks in a sitting</td>
<td>142 (I) 313 (C)</td>
<td>1 y</td>
<td>14</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td><strong>Holt 95</strong></td>
<td>Ounces of alcohol per day (self-report)</td>
<td>629</td>
<td>5 y</td>
<td>0.55</td>
<td>0.44</td>
<td>-0.11 ounces (-20.0%) (p&lt;0.001)</td>
</tr>
<tr>
<td><strong>Bertera 93</strong></td>
<td>Mean number of drinks per week for those who reported 15+ drinks/week at pretest</td>
<td>511</td>
<td>2 y</td>
<td>23.2</td>
<td>13.3</td>
<td>-9.9 drinks (-42.8%) (p&lt;0.001)</td>
</tr>
</tbody>
</table>

I = Intervention group
C = Comparison group
* The findings on this slide are drawn from a review of assessments of health risks with feedback to change employee behavior.
Review Team Provides Summary Evidence Tables

- Very abbreviated summary of each study and the study’s results, presented in tabular format

- Includes
  - Important study variables
  - Data elements used in analysis

- Useful to understand
  - Individual studies with related characteristics
  - When one intervention is assessed for multiple outcomes
The Review Process

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- Summarize the evidence
- *Task Force discussion*
Task Force Discussion

● When final results are tabulated, the review team presents results at a public meeting of the Task Force

● Purpose is so the Task Force can
 ◆ Provide oversight on reviews led by CDC scientists
 ◆ Carefully consider and summarize review results
 ◆ Make recommendations for (or against) interventions shown by the systematic review to promote (not promote) population health
 ◆ Identify areas within the reviewed topics that need more research
Task Force Meetings Are Not Rubber-Stamping Events...

- Task Force decisions require judgments about the quality and reliability of research evidence, and the magnitude of public health impact
- Members of the Task Force consider carefully our purpose, methods, and process
  - Inclusion/exclusion of study designs
  - Summary effect measurements
  - Requirements for translating the findings and recommendations into action in real world practice and policy
Main Questions Asked to Inform a Recommendation

- Does it work?
  - How well?
  - For whom?
  - Under what circumstances is it appropriate?
- What does it cost?
- Does it provide value?
- Are there barriers to use?
- Are there any harms?
- Are there any unanticipated outcomes?
In General, a Task Force Conclusion About Effectiveness Requires…

**A Body of Evidence**

- Number and quality of studies;
- Design suitability:
  - More than 1 study
  - Fewer studies if high quality and suitable design
  - More studies if lower quality/unsuitable design

**A Demonstration of Effectiveness**

- **Consistency of Effect**
  - “Most” studies demonstrate an effect in the direction of the intervention

- **Sufficient Magnitude of Effect**
  - The effect demonstrated across the body of evidence is “meaningful”
What Do the Findings Mean?

- **Recommended**— strong or sufficient evidence that the intervention is effective
- **Recommended Against**— strong or sufficient evidence that the intervention is harmful or not effective
- **Insufficient Evidence**— the available studies do not provide sufficient evidence to determine if the intervention is, or is not, effective
What Does “Insufficient Evidence” Mean?

- Insufficient evidence means that additional research is needed to determine whether or not the intervention is effective.
- In some cases there are not enough studies to draw firm conclusions.
- In other cases, the available studies have inconsistent findings.
- This does NOT mean that the intervention does not work.
# Sample Task Force Recommendations: Policy Level

## Motor Vehicle-Related Injuries

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Policy Level</th>
<th>Strength of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol-Impaired Driving</td>
<td>Sobriety Checkpoints</td>
<td>Recommended (Strong Evidence)</td>
</tr>
<tr>
<td></td>
<td>Lower Blood Alcohol Concentration (BAC) Laws for Young or Inexperienced Drivers</td>
<td>Recommended (Strong Evidence)</td>
</tr>
<tr>
<td></td>
<td>0.08% Blood Alcohol Concentration (BAC) Laws</td>
<td>Recommended (Strong Evidence)</td>
</tr>
<tr>
<td></td>
<td>Maintaining Minimum Legal Drinking Age (MLDA) Laws</td>
<td>Recommended (Strong Evidence)</td>
</tr>
<tr>
<td>Child Safety Seats</td>
<td>Community-Wide Information and Enhanced Enforcement Campaigns</td>
<td>Recommended (Strong Evidence)</td>
</tr>
</tbody>
</table>

[http://www.thecommunityguide.org/uses/policyinterventions.html](http://www.thecommunityguide.org/uses/policyinterventions.html)
Part B:
How are Task Force findings and recommendations disseminated?
How are Task Force Recommendations and Findings Disseminated?

1) [www.thecommunityguide.org](http://www.thecommunityguide.org)
How are Task Force Recommendations and Findings Disseminated? (con’t)

2) Peer-reviewed Journals
   - American Journal of Preventive Medicine (always)
     - Evidence review
     - Recommendations article
   - Morbidity and Mortality Weekly Report (MMWR)
   - Topic-specific journal

3) Summary documents and briefs

4) Liaison organizations share with their constituents or members

5) Conference, Web, other presentations
Visit the Community Guide Web site and find out what works to promote health and safety in your community. Learn about:

- Evidence-based Task Force findings and recommendations
- Systematic review methods
- Interventions on 18 public health topic areas
- How to use the Community Guide
- And more!

[www.thecommunityguide.org](http://www.thecommunityguide.org)