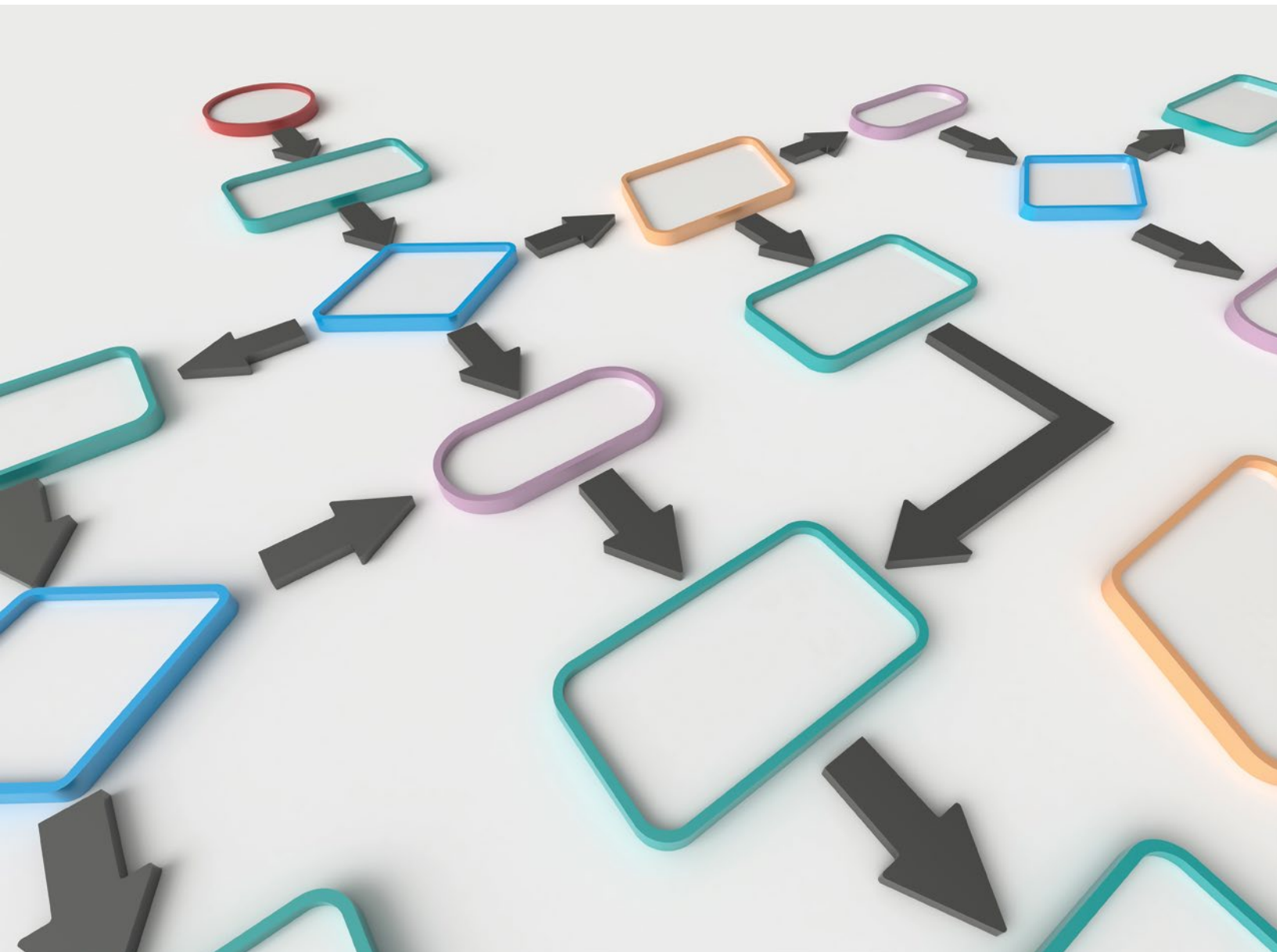


# Methods Manual for Community Guide Systematic Reviews

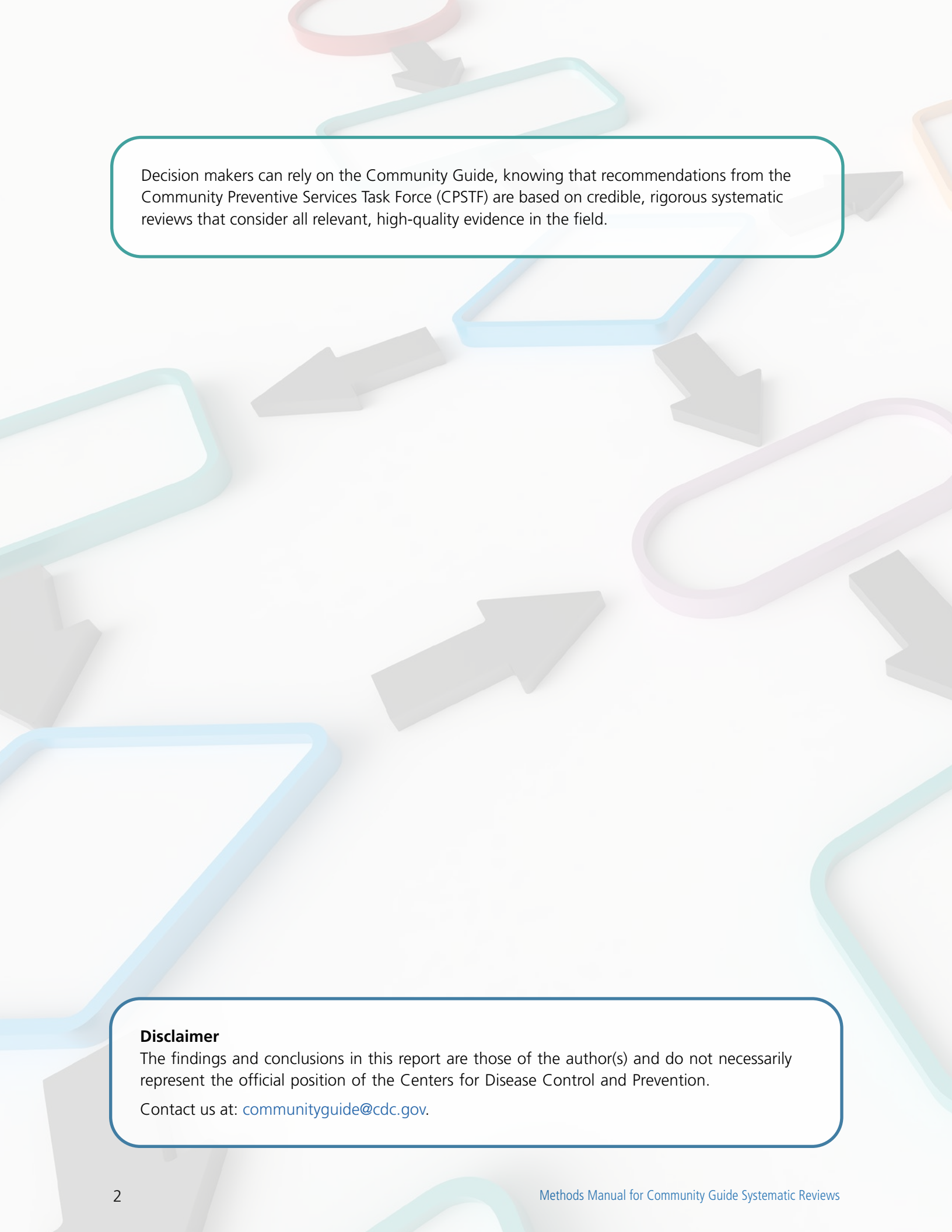


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September 2021

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A fully accessible version is available at <https://www.thecommunityguide.org/methods-manual>.



Decision makers can rely on the Community Guide, knowing that recommendations from the Community Preventive Services Task Force (CPSTF) are based on credible, rigorous systematic reviews that consider all relevant, high-quality evidence in the field.

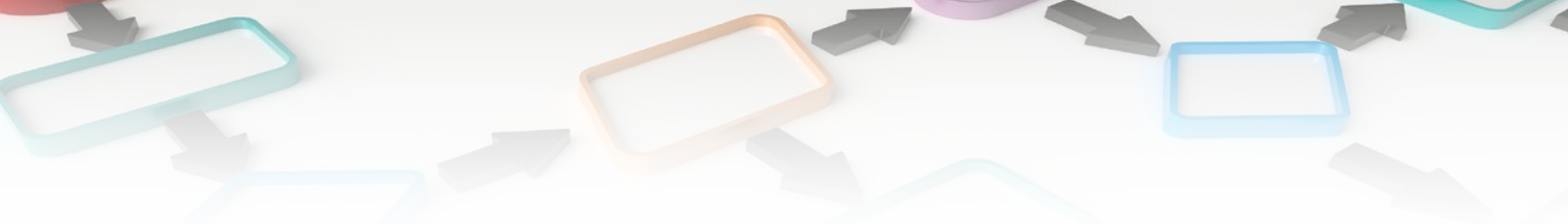
**Disclaimer**

The findings and conclusions in this report are those of the author(s) and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Contact us at: [communityguide@cdc.gov](mailto:communityguide@cdc.gov).

# Contents

Introduction .....	5
Key Participants and Responsibilities .....	6
<b>Part 1: Effectiveness Review Methods</b> .....	7
Section Overview .....	7
Step 1: Select Priority Topics .....	8
Selection Criteria for Topics .....	8
Step 2: Convene a Coordination Team .....	9
Coordination Team Members .....	9
Step 3: Select an Intervention Approach .....	10
Examples of Intervention Approaches .....	10
Step 4: Define the Conceptual Approach .....	11
Five Elements of the Conceptual Approach .....	11
Step 5: Systematically Search the Literature .....	14
Step 6: Screen the Studies Identified in the Search .....	15
Three-Stage Screening Process .....	15
Step 7: Abstract Relevant Information from Selected Studies .....	16
Abstraction Process .....	16
Step 8: Analyze the Abstracted Data .....	18
Analytic Principles .....	18
Analysis Methods .....	19
Applicability Analysis .....	19
Assessing Meaningful Impact .....	20
Step 9: CPSTF Makes Recommendations and Findings .....	20
From Evidence to Recommendations and Findings .....	20
Information on Additional Benefits and Potential Harms .....	21
CPSTF Evidence Decision Table .....	21
Considerations for Implementation .....	21
Evidence Gaps .....	22
Task Force Finding and Rationale Statement .....	22
Step 10: Disseminate CPSTF Findings .....	23
Dissemination Channels .....	23
<b>Part 2: Economic Review Process</b> .....	24
Section Overview .....	24
Purpose .....	24



Step 1: Prioritize Economic Reviews .....	24
Step 2: Create Coordination Team .....	25
Step 3: Conceptualize Economic Review .....	25
Step 4: Search .....	26
Step 5: Screen Literature .....	26
Step 6: Abstract .....	26
Quality Assessment .....	26
Step 7: Analyze .....	27
Data Standardization .....	27
Analysis Methods .....	27
Step 8: Make CPSTF Economic Finding .....	28
Evidence Gaps .....	28
Step 9: Disseminate Conclusions .....	28
Reference List .....	29
Appendix .....	30
Appendix 1. Example of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Flowchart from Review of Interventions to Support Healthier Foods and Beverages in Schools .....	30
Appendix 2. Example of Evidence Table Template from School-Based Health Centers Review .....	31
Appendix 3. Example Body of Evidence Table from School-Based Health Clinics Review .....	32
Appendix 4. Example Study Effect Estimate Display from CHWs for Diabetes Prevention Review...	32
Appendix 5. CPSTF Evidence Decision Table (Revised 2017) .....	33
Appendix 6. CPSTF Options for Modifying Findings and Conclusions .....	34
Appendix 7. Detailed Evidence Table for Economic Review from School-Based Health Centers Review .....	35
Appendix 8. Detailed Evidence Table for Economic Review from School-Based Health Centers Review .....	36
Appendix 9. Economic Decision Table for Cost-Effectiveness Finding .....	37
Appendix 10. Options in Case of Inconsistent Evidence .....	38

**Sample citation:**

Guide to Community Preventive Services. Methods Manual for Community Guide Systematic Reviews. <https://www.thecommunityguide.org/methods-manual>



# Introduction

(<https://tinyurl.com/3e3e6tvn>)

The Methods Manual for Community Guide Systematic Reviews, hereafter referred to as the manual, provides a comprehensive overview of the Community Guide systematic review methods that serve as the basis for Community Preventive Services Task Force (CPSTF) recommendations and findings. The Community Guide Office (CGO) developed the **manual** to broadly explain how CPSTF and CGO conduct the Community Guide reviews. It is not intended as a step-by-step, “how-to” guide to conducting a systematic review.

After reading the manual, the user should be able to better understand the description of the systematic reviews that support specific CPSTF recommendations and findings. This information is intended to help decision-makers be more

***A systematic review (<https://tinyurl.com/3z4dwsed>) is a process by which a body of literature is reviewed and assessed using systematic methods which are intended to reduce bias in the review process and improve understandability.***

confident in their choice of recommended interventions to adopt and implement, and help researchers critically assess the Community Guide findings and identify areas of research to strengthen the body of evidence or fill identified research gaps.

This manual is divided into two parts.

- **Part 1** of the manual describes the steps in conducting a systematic review of the effectiveness evidence for a specified intervention approach (service, program, or policy). It also describes how the systematic review findings and CPSTF recommendations are disseminated to key partners and the public.
- **Part 2** describes the steps in conducting a systematic review of the economic evidence to identify the economic impact of interventions.

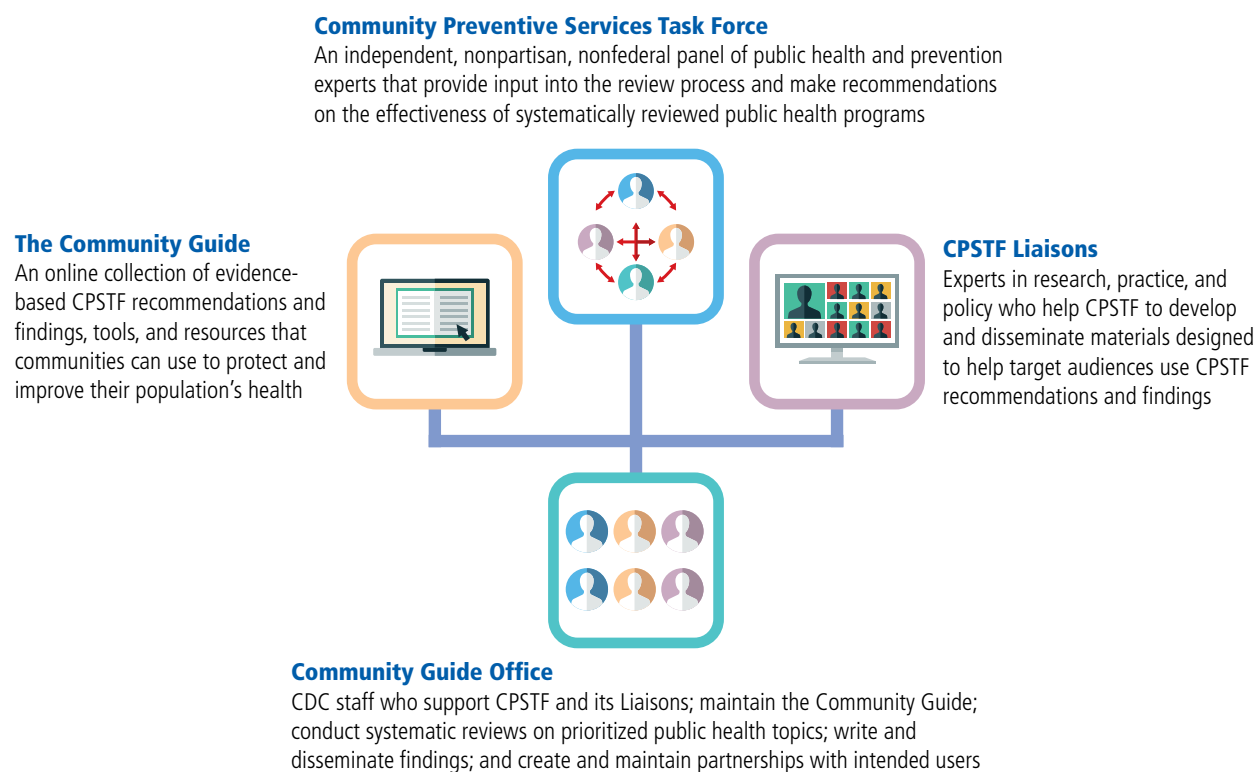
The manual was designed to enhance learning about the Community Guide systematic review methods. Links throughout the document refer the reader to specific examples. Graphics and other visuals support descriptions of sometimes complex processes. Each section includes an “In Brief” box to capture the key points.

The Community Guide methods were developed and described in a series of published papers.<sup>2-4</sup> This manual is based on those publications.

## Key Participants and Responsibilities

The Community Preventive Services Task Force (CPSTF) (<https://tinyurl.com/4f6m4yxd>) is an independent, nonpartisan, nonfederal panel of public health and prevention experts whose members are appointed by the director of the Centers for Disease Control and Prevention (CDC). CPSTF provides findings and recommendations for a wide range of decision makers on services, programs and environmental or policy interventions aimed at improving population health. CPSTF is supported by staff at the Community Guide Office (CGO) within the Office of the Associate Director for Policy and Strategy at CDC. Systematic review teams comprised of CGO staff, with guidance from 1-2 CPSTF members, 1-2 CPSTF Liaisons, and other partners and subject matter experts conduct the systematic reviews of interventions on various topics. Results are presented to the full CPSTF, which uses them to issue evidence-based findings to the public health community. CPSTF members and Liaisons (<https://tinyurl.com/52ez2dtx>) help disseminate findings to end users.

Figure 1: Key Components Involved in Determining CPSTF Findings



CPSTF findings, and the systematic reviews of the evidence on which they are based, are compiled in The Guide to Community Preventive Services (the Community Guide [<http://www.thecommunityguide.org/>]), an online resource for state and local health departments and other public health and community organizations to help improve health and prevent disease in their state, community, or school. This manual is designed to provide an overview of the steps involved in the process of developing systematic reviews for the Community Guide.



# Part 1: Effectiveness Review Methods

(<https://tinyurl.com/ps8p5vum>)

## Section Overview

The CGO, with guidance from CPSTF, conducts systematic reviews of interventions using a rigorous ten-step process.

### Figure 2: Ten Steps in The Community Guide Effectiveness Review Process

- 1. Select Topic:** Select a review topic based on CPSTF prioritization.
- 2. Create Coordination Team:** Create a team of staff, CDC program partners, CPSTF members, and other subject matter experts.
- 3. Select Intervention:** Select an intervention within the topic.
- 4. Conceptualize:** Define the intervention; craft the analytic framework; identify outcomes.
- 5. Search:** Systematically search for and retrieve evidence.
- 6. Screen:** Narrow retrieved set of papers.
- 7. Abstract:** Evaluate studies for quality and collect information from papers.
- 8. Analyze:** Analyze data from included studies.
- 9. Make CPSTF Recommendations:** Translate evidence into CPSTF recommendations and findings.
- 10. Disseminate:** Disseminate CPSTF findings and evidence gaps.

CPSTF decides on the topic for review based on their prioritization process. From there, a coordination team (hereafter called “the team”) is convened to guide the review. The team selects an intervention approach (a type of intervention that is used to address a specific public health problem, such as mass media campaigns to increase safety belt use) within the topic area for review.

Each team follows an extensive conceptualization process in which they draft a definition, inclusion and exclusion criteria, analytic framework, research questions, and applicability factors.

Next, the team consults with a research librarian at the CDC Library to draft a search strategy. The research librarian then conducts the systematic search.

Once candidate publications are obtained from the systematic search, the team begins a three-stage screening process to identify potential papers for inclusion.

The team narrows the search yield through the screening process and abstracts relevant information from the remaining papers using the Community Guide criteria to examine the quality of these papers.

Then, the team analyzes the data, calculating summary effect estimates and assessing applicability.

After completing the analysis, the team presents the findings to CPSTF, who translates evidence into CPSTF recommendations and broadly disseminates the findings to public health practitioners.

# Step 1: Select Priority Topics

CPSTF periodically reviews and selects priority topics considered for systematic review.

They use a data-driven process (<https://tinyurl.com/pr9vyfr2>) to select priority topics (<https://tinyurl.com/y6xjh55c>), starting with consideration of the Healthy People topics (<https://tinyurl.com/3f2xh92h>). CPSTF engages partners to provide input on priority issues and topics. For each topic, CPSTF applies several criteria and engages in deliberation and voting to select the set of priority topics.

## In Brief

*CPSTF uses a data-driven approach to select priority topics for systematic reviews.*

## Selection Criteria for Topics

The criteria used by CPSTF to select topics have evolved over time and generally include the following.

- **Alignment:** The degree to which potential intervention approaches within the topic align with federal or national efforts.
- **Balance:** The degree to which CPSTF has a balance across public health topics and can fill evidence gaps.
- **Burden:** The degree to which a topic reflects conditions with high burden or severity.
- **Coverage:** The ability for CPSTF to develop a robust set of recommendations based on a sufficient body of evidence.
- **Disparities:** The presence of important health disparities that may be addressed by population health intervention approaches.
- **Impact:** The degree to which CPSTF findings would be relevant and helpful to the field.
- **Preventability:** The degree to which population-based interventions could achieve prevention outcomes in this topic.
- **Partner interest:** The degree to which key partners demonstrate interest in, or priority of, the topic.

CPSTF selected a set of nine priority topics to guide their systematic reviews for the period 2020–2025. The priority topics are as follows:

- Heart Disease and Stroke Prevention
- Injury Prevention
- Mental Health
- Nutrition, Physical Activity, and Obesity
- Preparedness and Response
- Social Determinants of Health
- Substance Use
- Tobacco Use
- Violence Prevention



## Step 2: Convene a Coordination Team

CPSTF relies on a coordination team (the team) to direct the conduct of the systematic review. For each intervention review, the team is involved in the entire review process, providing guidance at every step. The team identifies important intervention approaches to consider for systematic reviews; guides development of the intervention definition, relevant research questions, appropriateness of data analysis and communication of results; identifies important evidence gaps and questions for further research; responds to CPSTF requests for additional information or analyses to address CPSTF questions and concerns; and ensures that the final products (e.g., CPSTF findings, peer-reviewed publications, dissemination materials) are useful to the end user.

### In Brief

- **Coordination teams support CPSTF in assessing whether an intervention is effective.**
- **Each team is comprised of 6–10 people, including CPSTF members and Liaisons, scientists, subject matter experts, and other public health experts.**
- **Team members meet regularly to discuss issues involved in conducting the systematic review.**

## Coordination Team Members

Generally, the team consists of 6-10 people, representing diverse perspectives to cover the multidisciplinary nature of topics reviewed.<sup>2</sup>

- **Community Guide Office staff:** Led by a senior scientist, CGO staff conduct the day-to-day work of the team.
- **Subject Matter Experts:** Researchers and public health practitioners from federal and non-federal agencies, academia, and other organizations provide expertise in the scientific, programmatic, or policy issues related to the topic area of interest.
- **CPSTF Member(s):** At least one CPSTF member with relevant interests and expertise in the subject matter serves on the coordination team.
- **CPSTF Liaison(s):** At least one representative from a Liaison organization serves on the coordination team to represent the perspectives of those in the community who would implement CPSTF recommendations.



## Step 3: Select an Intervention Approach

The team develops a comprehensive list of intervention approaches addressing a specific priority topic for potential review. CPSTF approves the list of potential reviews. To determine the order in which intervention approaches are reviewed, the team and CPSTF consider factors such as the burden of disease and preventability, feasibility, interest from partners, and availability of resources.

The intervention approaches selected for CPSTF reviews aim to improve population health.

### In Brief

- ***Intervention approaches for CPSTF reviews focus on improving public health or decreasing risk of a group.***
- ***The team develops a comprehensive list of possible intervention approaches for CPSTF reviews.***

## Examples of Intervention Approaches

- **Services:** Team-based care to improve blood pressure control
- **Behavioral or social programs:** Interventions to reduce risky sexual behavior, HIV, other sexually transmitted infections, and pregnancy among youth
- **Environmental or policy:** Coordinated built environment approaches combining elements of pedestrian or cycling transportation systems with land use and environmental design features

The team may look at relevant, high quality, existing systematic reviews (ESRs) to inform the selection of an intervention approach and their initial conceptualization of the intervention.

## Step 4: Define the Conceptual Approach

Each team uses a common process that addresses five elements to define the conceptual approach: draft an intervention definition, set inclusion and exclusion criteria, develop research questions and an analytic framework, and consider applicability factors.

The elements may be considered at the same time and the process evolves over the course of the systematic review.

### In Brief

- **Each review uses a conceptualization process that considers five key elements.**
- **The elements may be addressed at the same time and the process may go back-and-forth.**

## Five Elements of the Conceptual Approach

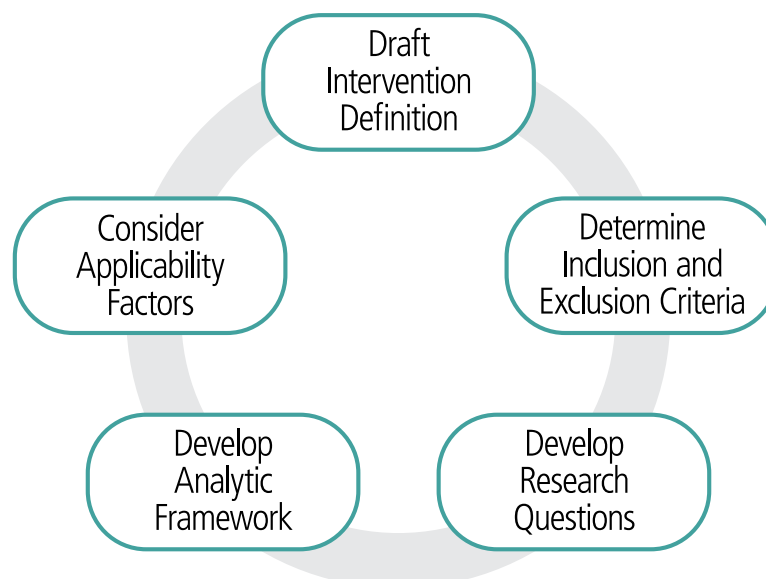
### 1. Intervention Definition

The intervention definition is a combination of a definition and a description of the intervention. The intervention definition uses terms common to the field that are easily understood by users.

#### Components of an Intervention Definition

- **Must haves** are the essential aspects of the intervention. These directly inform inclusion and exclusion criteria for the review.
- **May haves** are important, but not-essential intervention characteristics that may vary on how an intervention is implemented.

Figure 3: Conceptualization process characteristics that may affect the intervention of interest



## 2. Inclusion and Exclusion Criteria

These criteria determine the intended scope of the review and whether a study belongs in the body of evidence.

- Specific Community Guide criteria that must always be satisfied:
  - ▶ Study must be conducted in a World Bank-designated high-income country. (<https://tinyurl.com/cvtvar4s>)
  - ▶ Study must be published in English.
- Other factors to consider include
  - ▶ Community Guide reviews generally consider all types of comparative study designs (e.g., experimental studies with allocated control groups, observational studies with concurrent or historical control groups, and observational studies with single group before-after comparisons of change).
  - ▶ Study design exclusions are usually topic, intervention, or outcome specific.
- The PICOS framework (see sidebar) can help focus systematic review inclusion and exclusion criteria.<sup>1</sup>

### PICOS Framework<sup>1</sup>

- **Population:** *Who is the population of interest?*
- **Intervention:** *What are some must or must-not-have intervention characteristics (this is informed by the “must have” section of the definition)?*
- **Comparison:** *What or who is being compared to the intervention group to determine effectiveness? Will this be consistent across all the expected studies?*
- **Outcome:** *What outcomes of interested need to be reported?*
- **Study designs:** *Which study designs should be included that will allow you to answer your research question?*

## 3. Research Questions

Throughout conceptualization, the team develops and refines research questions.

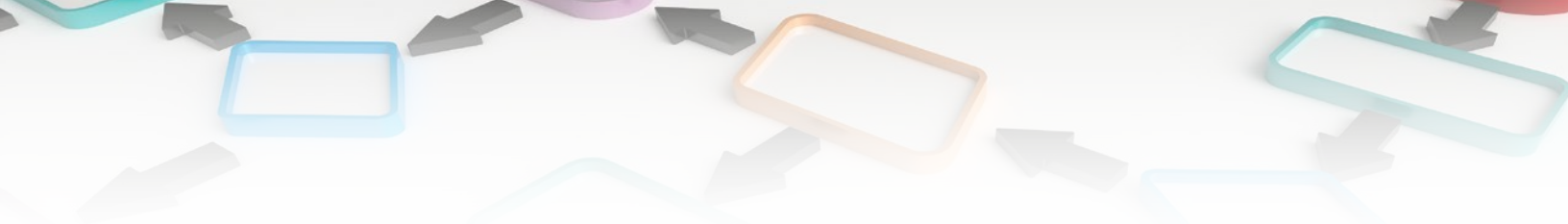
- Research questions ask if the intervention works. Does the intervention improve study participants’ health outcomes, quality of life, and reduce morbidity and mortality? Through what intermediate steps are these outcomes achieved?
- Additional research questions may address implementation of the intervention. Does intervention effectiveness change based on intervention settings, population or intervention characteristics? Answers to these questions help determine applicability of the intervention across different population groups and settings.

## 4. Analytic Framework

The analytic framework (<https://tinyurl.com/59c83rsx>) is a graphic display postulating how the intervention works to affect downstream health outcomes.

### Components in a Community Guide analytic framework include

- Intervention under review
- Population of focus for the intervention
- Intermediate outcomes

- 
- Health outcomes or well-established proxy for a health outcome (these are usually recommendation outcomes for the Community Guide reviews, the basis of CPSTF recommendations)
  - Key potential effect modifiers (e.g. participant or intervention characteristics that may modify the effect of the intervention)
  - Additional benefits and potential harms occurring outside the causal pathway of the intervention

## 5. Applicability Factors

Applicability factors answer the questions of what works when, where, and for whom. These answers help those who are planning to implement interventions based on CPSTF recommendations and findings select what might work in their community.

During the systematic review, teams make *a priori* hypotheses (described below) for each applicability factor and note considerations for the review. They then collect and assess relevant data to present to CPSTF to generate a formal conclusion on applicability factors.

### Sources for Evidence and Considerations

- **Body of evidence:** The team looks across the body of evidence to assess the differences among study participants, and intervention settings and characteristics to determine whether the intervention is effective across different populations and conditions.
- **Individually included studies:** The team assesses stratified analysis from each included study based on factors of interest and other factors that were not considered by the authors but determined to be important for the intervention under review.
- **Evidence beyond included studies:** The team examines the broader literature and considers subject matter expertise from team members and the broader literature to indicate whether the intervention is effective across settings and population groups not examined by included studies.
  - ▶ For example, if all included studies were conducted in high-income countries outside the United States, can the team expect the review findings to be generally accepted in the United States? If all studies were implemented in urban settings, can the team generalize the findings to rural areas?

### Applicability Factors Usually Considered

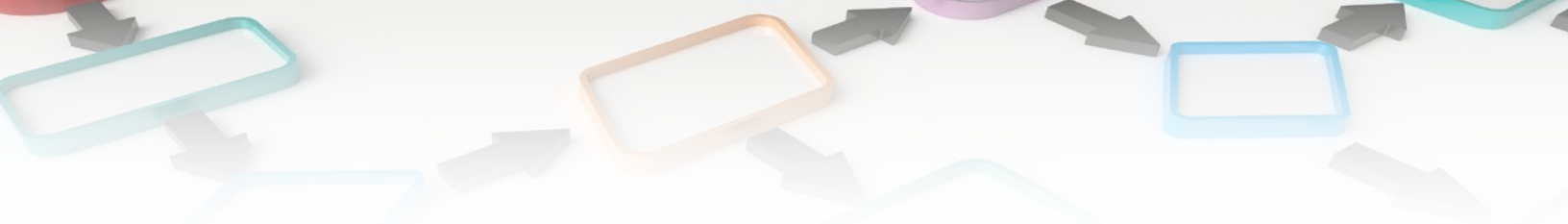
Community Guide systematic reviews always assess settings (inside or outside the United States), population density (rural, suburban, urban), race and ethnicity, and socioeconomic status indicators (e.g. income, education, employment). The team may include additional applicability factors based on the intervention under review (e.g. intervention characteristics).

### Determining *a Priori* Hypotheses

Once the team has a list of applicability factors for consideration, they look at each factor and determine *a priori* hypotheses for that factor, based on theory or the team members' expertise.

### Three Possible Hypotheses

- **Probably applicable:** The team does not expect this factor to influence intervention effectiveness. For example, mobile phone-based interventions to remind patients to take medicine probably work in all high-income countries, including the United States.

- 
- **Probably effect modification:** This factor likely will influence intervention effectiveness differently for different groups. For example, for diabetes control interventions, the intervention effect will vary based on patients' baseline blood glucose level. The broader literature suggests that patients with higher baseline blood glucose will experience more reduction in blood glucose because there is more room for improvements.
  - **Unsure:** The team cannot make a decision based on available information. For example, for interventions to increase cancer screening, the team may not know if the intervention will work the same for population groups with different racial backgrounds, and there is not enough information from the broader literature or the team's subject matter expertise to make an informed decision.

## Step 5: Systematically Search the Literature

Prior to conducting the search for evidence, the team will have read existing reviews and other background literature to inform the intervention approach. CGO staff then work with a CDC librarian to determine search terms and which databases to search. Together these form the review's search strategy.

### In Brief

***Search strategies are broad enough to capture all relevant evidence and minimize bias.***

### Sources of Potential Search Terms

- Existing reviews on the intervention approach of interest
- Terms from a sample of studies that fit the intervention definition
- Inclusion criteria

### Regularly Searched Databases

- Cochrane
- Embase
- Medline
- PsychINFO
- PubMed

Teams may choose to include grey literature and government reports. These decisions are often dependent on the intervention approach.



## Step 6: Screen the Studies Identified in the Search

Screening begins once the team obtains the library search results. Community Guide reviews commonly have several thousand references in the search yield. The search is broad to ensure that all relevant studies are captured. The CGO uses a systematic review software management program to help with the screening process.

The team screens based on the [inclusion and exclusion criteria](#) in place.

### In Brief

*Teams use a three-stage screening process to determine which studies are included or excluded during systematic reviews.*

### Three-Stage Screening Process

Each stage in the screening process is more discriminating than the previous one, resulting in studies with greater relevancy.

- 1. Title screen:** Using the search results for individual studies, the team screens each paper by title to quickly eliminate papers that are unrelated to the review. If the title is related to the intervention of interest, the team uses it.

- Requires one screener

- 2. Abstract screen:** After passing the title screen, the team screens each paper's abstract, using more specific criteria (e.g., population or outcome of interest, from high income country, or relevant intervention). Papers not reporting outcomes of interest might pass through this stage if they provide useful information for the review (e.g., background information or benefits and harms of intervention).

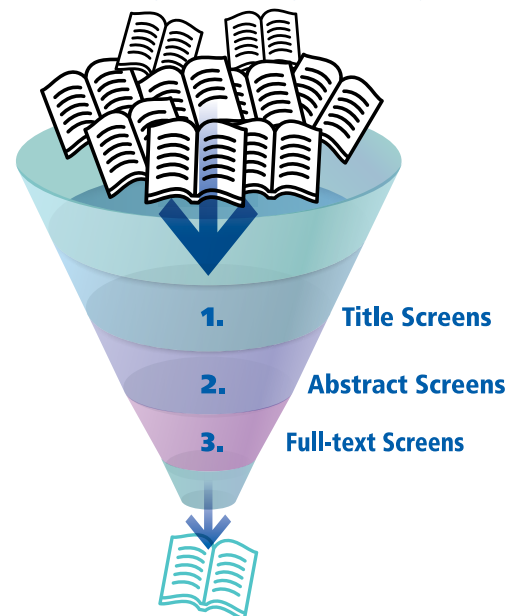
- Requires one or two screeners

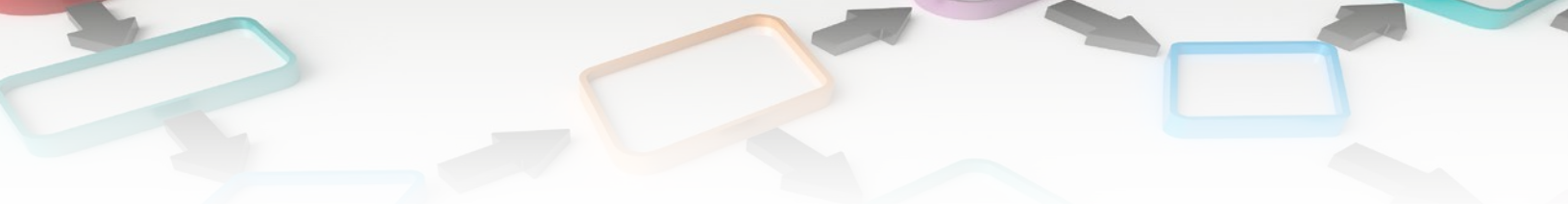
- 3. Full-text screening:** After identifying potentially relevant papers through abstract screening, the team reads the full-text versions of the articles. At this stage, the team has enough information to explore more detailed inclusion criteria (e.g., does the paper evaluate an intervention that fits into the definition). The team may revisit conceptualization ([Step 4](#)) and determine whether adjustments are needed (e.g., analytic framework may need to be added or another pathway or health outcomes).

- Requires 2 screeners

**Figure 4. Three-Stage Screening Process**

Each screening stage is more discriminating than the previous one, resulting in studies with greater relevancy.





Once screening is complete, the team can create a PRISMA<sup>5</sup> flow diagram. The PRISMA flow diagram depicts the flow of information through the different phases of a systematic review. (See [example of PRISMA flow diagram](#).) It maps out the number of papers identified, included and excluded, and the reasons for exclusions. The team will include this diagram in their presentation to CPSTF as well as in the publication of the review.

***Did you know? The coordination team may add inclusion criteria to narrow a review. However, removing criteria to broaden the review requires rescreening.***

## Step 7: Abstract Relevant Information from Selected Studies

Once the team narrows the search yield through the screening process, the team abstracts relevant information to assess the quality of the evidence from each included study. Abstractors record:

- Study design
- Pertinent details of the intervention
- Methods used in the study to evaluate its effectiveness
- Outcomes of interest
- Potential benefits and harms of the intervention
- Information for applicability assessment

### In Brief

***Teams abstract relevant information to assess the quality of the evidence from each study and calculate summary measures.***

## Abstraction Process

Each team relies on two independent abstractors to ensure that abstraction is comprehensive and accurate. To avoid undue influence, abstractors independently read the study and collect relevant information. Then, abstractors meet to discuss and reconcile differences. If differences persist, abstractors will present the issue to the full coordination team. Each abstractor uses a detailed evidence table to collect the data from studies. CGO staff use a standardized form that is modified for each review to collect the relevant data determined through the conceptualization of the intervention approach (Step 4). Because the form is standardized, bias in collecting data is minimized. (See [example detailed evidence table template](#)).

These abstracted data are further summarized into a summary evidence table in which the most relevant details of the intervention and its estimated effects are recorded for each study. (See example summary evidence table at <https://tinyurl.com/m36yje69>.)

## Assess Study Quality and Assign Quality of Execution

The abstraction form includes a quality of execution assessment framework to address threats to internal and external validity. This tool is divided into six domains and includes nine possible limitations for each study.<sup>4</sup> (See “Quality of Execution Assessment Framework” below). Instructions are included in the abstraction form to provide explicit decision rules and examples of how to answer the question in various circumstances.<sup>4</sup>

A study is deemed to have good quality of execution if there was zero to one limitation, fair if two to four limitations, and limited if more than four limitations. Studies with limited quality of execution are excluded from the remainder of the review.<sup>4</sup>

### Quality of Execution Assessment Framework

Domain	Potential Reasons for Limitations	Maximum # of Limitations Given for Each Domain
<b>Description</b>	<ul style="list-style-type: none"><li>■ Was the study population well described?</li><li>■ Was the intervention well described? What was done? When was it done? How was it done? Where was it done? How was it targeted to the study population?</li></ul>	1
<b>Sampling</b>	<ul style="list-style-type: none"><li>■ Was the sampling frame or universe adequately described?</li><li>■ Were the inclusion and exclusion criteria clearly specified?</li><li>■ Was the unit of analysis the entire eligible population or a probability sample at the point of observation?</li></ul>	1
<b>Measurement</b>	<ul style="list-style-type: none"><li>■ Were outcome measures valid and reliable?</li><li>■ Was exposure to the intervention assessed?</li><li>■ If yes, were these exposure measures valid and reliable?</li></ul>	2
<b>Data Analysis</b>	<ul style="list-style-type: none"><li>■ Appropriate statistical testing conducted?</li><li>■ Reporting of analytic methods and tests?</li><li>■ Appropriate controlling for design/outcome/population factors?</li><li>■ Other issues with data analysis?</li></ul>	1
<b>Interpretation of Results</b>	<ul style="list-style-type: none"><li>■ &gt;80% completion rate? Data set complete?</li><li>■ Study groups comparable at baseline? If not, was confounding controlled before examination of intervention effectiveness?</li><li>■ Biases that might influence the interpretation of results including other events/interventions that might have occurred at the same time?</li></ul>	3
<b>Other</b>	<ul style="list-style-type: none"><li>■ Other biases or concerns not included in the previous domains (e.g., evidence of selective reporting)?</li></ul>	1

## Assessing Suitability of Study Design and Quality of Execution

The team assesses the strength and utility of the study design in evaluating effectiveness of the intervention.<sup>2,4</sup>

### Categories of Suitability

- Greatest: randomized controlled trial, non-randomized trial, prospective cohort, other design with concurrent comparison
- Moderate: interrupted time series, retrospective cohort, case-control
- Least: uncontrolled before-after, cross-sectional

The team combines suitability of design with quality of execution to assess each review's body of evidence. (See [example of body of evidence table](#).)

## Step 8: Analyze the Abstracted Data

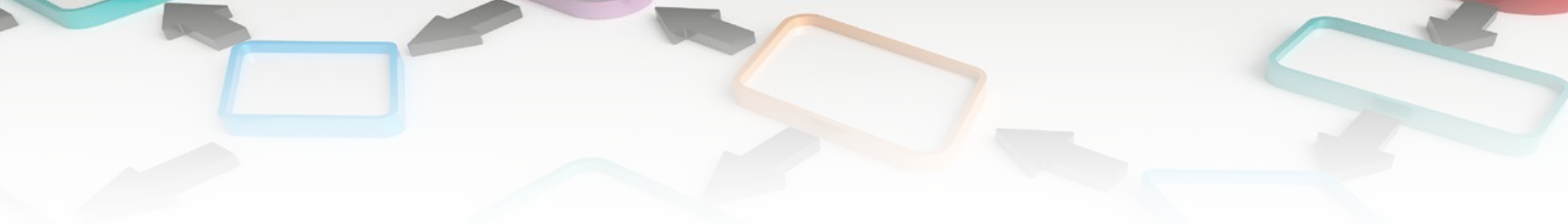
After abstracting quality of execution and intervention details, the team identifies included studies that have evidence for the outcomes of interest. The team then organizes evidence for each outcome of interest separately and decides how best to organize data for analysis and display. The analytic framework helps the team organize evidence for outcomes of interest. In addition, they consider applicability and identify implementation considerations and evidence gaps.

### In Brief

- ***The analytic framework guides organization of data for analysis.***
- ***During the analysis step, teams consider the analytic framework, applicability, impact, potential benefits and harms, implementation factors, and evidence gaps.***

## Analytic Principles

- Community Guide systematic reviews consider evidence for each recommendation outcome in the analytic framework, including behavior, health, morbidity, and mortality outcomes. (See example at <https://tinyurl.com/59c83rsx>.)
- The team documents the linkage between the intervention and behavior and clinical changes to recommendation outcomes (health or health-related outcomes)
- Evidence from included studies are used to
  - ▶ Group and report studies by recommendation outcome,
  - ▶ Summarize or tabulate study information by evaluating similarities and differences of the included studies (e.g. organizing by study design), and
  - ▶ Translate data into common effect estimate and convert, if needed, into similar descriptive or statistical formats.
  - ▶ The preferred method of combining data is to use the raw data provided in included studies to calculate absolute or relative change. Other times, the team may make use of adjusted measurements.

- 
- ▶ When studies provide similar outcome measurements that cannot be combined, these are assessed narratively.
  - ▶ Assess patterns and relationships across and within studies for each recommendation outcome.

## Analysis Methods

- Using descriptive statistics (e.g., median, interquartile range), to report population characteristics (e.g. race or ethnicity), intervention characteristics (e.g. intervention components, duration), and study characteristics (e.g. sample size).
  - ▶ Study, intervention, setting, and populations characteristics are also used to identify the potential subset of evidence to consider for effect modification and applicability analysis.
- Using narrative synthesis and descriptive statistics to report results from recommendation outcomes.
- Grouping studies by study design (e.g. analyzing studies of greatest suitability of design together) and generating summary effect estimates (absolute or relative change). (See [example of study effect estimates display](#).)
- Depicting results visually by using scatterplots, graphs, and tabular displays.
  - ▶ When there are three or more studies, median and interquartile interval are calculated.
  - ▶ When it is not possible to combine studies for a summary effect estimate or when less than three studies report an outcome, narrative results are reported in tables.
- Performing subgroup analysis to identify effect modifiers and compare subgroup analysis of interest with the overall summary results.

## Applicability Analysis

Once the team has determined applicability factors and *a priori* hypotheses, they can collect and analyze data for all applicability factors. With the data collected from the studies, combined with information gathered from the broader literature and team members, the team can accept or reject *a priori* hypotheses.

Applicability considerations include

- Examining differences in intervention characteristics, such as intervention intensity, as well as differences in study population and other key potential modifiers. (See [applicability factors](#).)
- Analyzing a subset of studies that report on a particular factor of interest and can also highlight important limitations. For example, when considering age, the evidence might suggest the intervention is effective for one age group and not another, or there may be too few studies to determine the intervention's applicability to different age groups.
- Assessing the broader literature and expertise from the coordination team.

Applicability conclusions

- If factors did not influence intervention effectiveness, then review findings are applicable across the factors examined.
- If factors did influence intervention effectiveness, then there are differential review findings based on these factors.

## Assessing Meaningful Impact

To assess the public health impact of the intervention, CPSTF considers evidence documented by

- Included studies in the systematic review
- Studies outside of the systematic review
- Other Community Guide systematic reviews
- Consistency of results: Do most studies demonstrate an effect in the direction that favors the intervention for recommendation outcomes?
- Magnitude of results: Is the effect demonstrated across the body of evidence meaningful in a public health or population context. Most systematic reviews by the Community Guide will include shorter term (e.g., fruit and vegetable consumption measures of change in outcomes) but do not include longer-term (e.g., progression to obesity or development of heart disease or cancer) population attributable effects on health. CPSTF will use the results from a review on upstream outcomes with known links to downstream outcomes (e.g., adequate fruit and vegetable intake is linked to decreased adiposity<sup>7</sup> and improved weight management, reduced risk of heart disease and some cancers<sup>8</sup>).

## Step 9: CPSTF Makes Recommendations and Findings

CGO staff present results of systematic reviews, on behalf of the coordination team, to CPSTF for their deliberation and decisions about recommendations and findings. CPSTF members review and discuss the evidence, consider input from partners, and issue a recommendation or finding based on the strength and consistency of the effectiveness evidence.

### In Brief

- ***CPSTF reviews and discusses evidence presented by CGO staff.***
- ***CPSTF recommendations and findings are based on the meaningfulness and consistency of effectiveness evidence.***

## From Evidence to Recommendations and Findings

### Primary Consideration for Reaching a CPSTF Recommendation

- Body of evidence with an adequate number of good or fair quality of execution studies with greatest, moderate, or least study design suitability
- Intervention effectiveness (are results consistent and meaningful?)

### Additional Factors Considered for CPSTF Finding and Recommendation Statement

- Applicability (intervention works when, where, and for whom?)
- Additional benefits and potential harms (do harms outweigh intervention benefits)? See more about benefits and potential harms on the next page.





## Categories of CPSTF Recommendations and Findings

- **Recommend**, with *strong* or *sufficient* evidence
- **Recommend against**, with *strong* or *sufficient* evidence when the harms are greater than the benefits
- **Insufficient evidence**, when there is not enough evidence to determine intervention effectiveness or inconsistent evidence. It does not mean that the intervention doesn't work, but rather that we can't tell yet if it works.

## Information on Additional Benefits and Potential Harms

- **Additional benefits** may result from exposure to the intervention. For instance, a school-based health center might focus on improving students' health as well as enabling parents to lessen needed time-off from work for their children's doctor's visits.<sup>6</sup> (Learn more at <https://tinyurl.com/572h6smh>.)
- **Potential harms** may result when, despite improvements in other outcomes, an intervention may also have unintentional, harmful consequences. For example, an intervention of school dismissal to reduce pandemic flu transmission may reduce the likelihood of flu spreading, but it may also lead to an increased cost in childcare for parents. (Learn more at <https://tinyurl.com/8sxb7jmc>.)
- Included studies might address these points in additional benefits or potential harms, or they may be identified in the broader literature or team discussions.

## CPSTF Evidence Decision Table

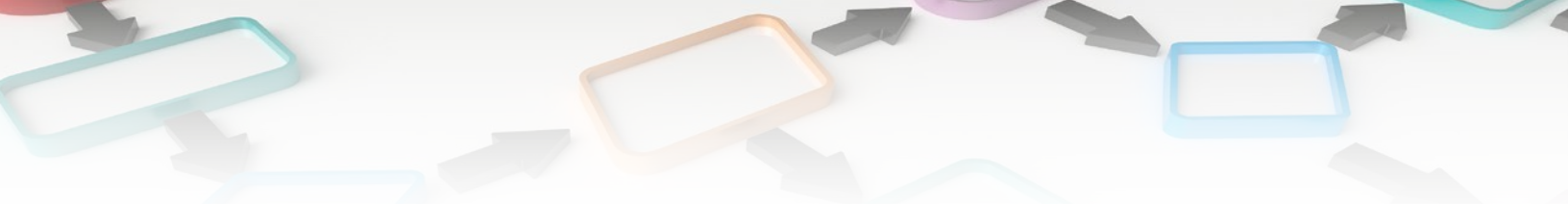
During the presentation to CPSTF, teams share the [CPSTF evidence decision table](#). The decision table displays evidence of an intervention's effectiveness based on the suitability of study design and quality of execution of the body of evidence and consistency of the results and meaningfulness of the effect. CPSTF may consider options for [modifying findings and conclusions](#) of the review, such as upgrading or downgrading the strength of evidence.

For example, CPSTF may decide to

- Upgrade the strength of evidence from *sufficient* to *strong*, based on a large magnitude of effect
- Downgrade the strength of evidence from *strong* to *sufficient*, based on concerns about the evidence or results
- Narrow the recommendation, based on differences of effectiveness across the body of evidence
- Downgrade a finding to *Insufficient evidence*, based on serious concerns about the evidence or results
- Downgrade a finding of *Recommend for* to *Recommend against*, if evidence of an important harm is established

## Considerations for Implementation

- Implementation considerations offer guidance on what others should be aware of when attempting to implement the intervention under review. This includes suggesting ways to best facilitate implementation, such as

- 
- ▶ Identifying any potential barriers or challenges and informing both practice and research in public health
  - ▶ Identifying implementation resources from CDC and other sources that can be used to implement CPSTF recommended interventions and programs

## Evidence Gaps

- After determining the effectiveness and applicability of an intervention, the team highlights any evidence gaps that have emerged during the review process. These gaps may be identified in the literature, by the team, or from the applicability assessment.
- Common evidence gap questions include
  - ▶ Will the intervention work everywhere for everyone?
  - ▶ How should programs be structured or delivered to ensure effectiveness?
- When a review receives an insufficient evidence finding, the team outline gaps in the effectiveness evidence and may also include specific challenges.

## Task Force Finding and Rationale Statement

After CPSTF makes its decision regarding the finding statement using the Evidence Decision Table, the team develops a Task Force Finding and Rationale Statement (TFFRS) for each intervention. TFFRS are divided into multiple parts, including the

- Intervention definition
- Rationale, which includes
  - ▶ Description of the body of evidence
  - ▶ Applicability issues
  - ▶ Data quality concerns
  - ▶ Potential benefits and harms
  - ▶ Evidence gaps
  - ▶ Considerations for implementation that should be considered by the public health community

Once approved, the TFFRS is disseminated to the public health community primarily through the Community Guide website as described in Step 10.

## Step 10: Disseminate CPSTF Findings

After CPSTF issues a finding statement, the Community Guide Office establishes a dissemination team of CGO staff, CPSTF members, CDC program partners, CPSTF Liaisons, and external partners who work in areas related to the review.

The dissemination team develops web products that are posted for every review, such as an intervention summary and the TFFRS. Also, staff develop a one-page, plain language, formatted summary of the review that can be viewed online or downloaded and shared with colleagues or partners. Once these products are available, the team sends an email notice to subscribers interested in news or that particular topic area. The team also develops a home page feature on the Community Guide website, email updates, and tweets from @CPSTF.

### In Brief

***The dissemination team is made up of CGO staff, CDC program partners, CPSTF members and Liaisons, and other partners. This team collaborates to disseminate reviews' findings through multiple channels.***

## Dissemination Channels

- **The Community Guide website ([www.thecommunityguide.org](http://www.thecommunityguide.org)):** The site includes all CPSTF recommendations and findings along with the effectiveness and economic evidence on which they are based. The site also has resources to help implement CPSTF recommendations, Community Guide in Action success stories.
- **Email:** Subscribers select topic areas of interest and receive relevant notices about CPSTF recommendations and findings, upcoming CPSTF meetings, and new products.
- **Social Media:** @CPSTF regularly updates Twitter followers with news about CPSTF recommendations and resources.
- **Presentations:** CPSTF evidence reviews and findings are shared during scientific meetings and conferences, invited talks, and webinar presentations.

## Expanding Reach and Impact on Public Health through Partnerships

- **Partners:** CDC program partners and Liaisons to CPSTF use their own channels, such as newsletter articles, social media posts, and websites to disseminate information about CPSTF recommendations.
- **Peer-reviewed journals:** Recommendation statements and evidence summaries are published in the American Journal of Preventive Medicine, the Journal of Public Health Management and Practice, and other peer-reviewed journals.

The CGO staff support CDC programs and other partners by developing and disseminating tools and resources to help practitioners implement CPSTF findings. (For more information, contact [communityguide@cdc.gov](mailto:communityguide@cdc.gov).)

## Part 2: Economic Review Process

(<https://tinyurl.com/ttfa9bac>)

### Section Overview

#### Purpose

An economic review, based on published literature, is conducted for interventions that are recommended on the basis of effectiveness by CPSTF. A nine-step economic review process, similar to the [ten-step effectiveness review process](#), assesses the economic impact of an intervention approach recommended by CPSTF.

Economic reviews determine:

- Cost to implement the intervention;
- Economic benefits due to the intervention; and
- Summary of economic estimates that compares cost-to-benefits or cost-to-health outcomes.

#### Figure 5. Nine Steps in the Community Guide Economic Review Process

- 1. Prioritize Economic Reviews:** Select reviews based on CPSTF prioritization
- 2. Create Coordination Team:** Create a team of staff, CDC partners, CPSTF members, and subject matter experts
- 3. Conceptualize Economic Reviews:** Define the intervention; craft the economic analytic framework; identify outcomes
- 4. Search:** Systematically search for and retrieve evidence
- 5. Screen:** Narrow retrieved set of papers
- 6. Abstract:** Evaluate studies for quality and collect information from papers
- 7. Analyze:** Analyze data from included studies
- 8. Make CPSTF Economic Finding:** Translate evidence into CPSTF economic findings
- 9. Disseminate:** Disseminate CPSTF findings and evidence gaps

### Step 1: Prioritize Economic Reviews

All intervention approaches that CPSTF recommends with *strong* or *sufficient* evidence of effectiveness become candidates for economic reviews. With limited capacity, it is necessary to prioritize which intervention approaches are reviewed.

To help CPSTF decide which reviews to select for an economic evaluation, CGO staff provide information on the number of published economic evaluations that provide information on cost-effectiveness or cost-benefit, based on an informal desktop search (e.g. Google Scholar or PubMed search).



## Step 2: Create Coordination Team

The coordination team (the team) assembled for the effectiveness review generally participates in the economic review. An economist directs the team with guidance from the senior scientist leading the effectiveness review.

The team's tasks for the economic review include developing and approving the following:

- Economic analytic framework
- Economic research questions
- Search strategy and inclusion/exclusion criteria
- Components of an intervention, including drivers which are important contributors to intervention cost, intervention benefit, and summary economic outcomes of cost-benefit and cost-effectiveness
- Quality assessment method
- Draft CPSTF economic finding statements

Each of these are described in the following steps.

## Step 3: Conceptualize Economic Review

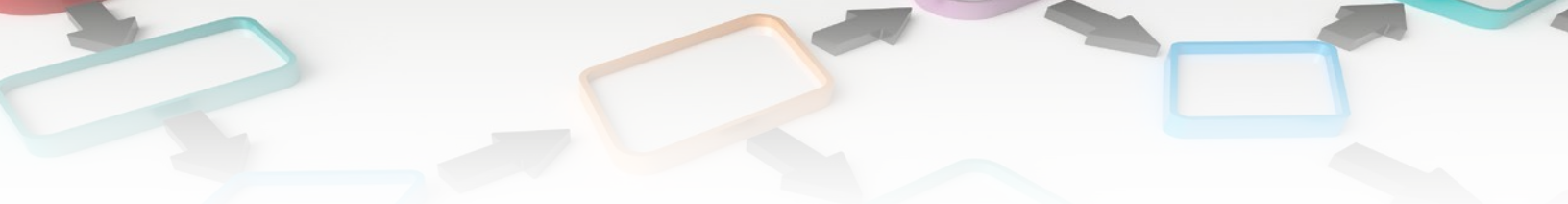
Several products are used for both the effectiveness and the economic review.

- Intervention definition, which defines the activities or actions that take place in the intervention.
- Analytic framework, which specifies the conceptual approach to evaluate the primary health outcomes and other non-health related outcomes of the intervention.
- Effectiveness search strategy, which describes the formal search method and sources searched.

The team develops an **economic analytic framework**, based on the analytic framework in the effectiveness review, but adds the economic components to visually represent the long- and short-term intervention cost and benefits. (See example economic [See example economic analytic framework at <https://tinyurl.com/jhwvab2>].)

The team also develops economic research questions to elicit estimates for the following standard economic outcomes:

- Intervention cost, which is the cost of resources necessary to implement the intervention.
- Intervention economic benefits due to improved health, such as
  - ▶ Averted healthcare cost,
  - ▶ Improved worksite productivity, and
  - ▶ Increased number and quality of years lived.
- Other intervention economic benefits due to effects that may not be related to health.
- Comparison of intervention cost to intervention economic benefit.
- Assessment of cost per quality-adjusted life year and disability-adjusted life year for cost-effectiveness.



The team defines inclusion and exclusion criteria to select papers for the economic review. In addition to meeting effectiveness review criteria, each study for the economic review must also provide estimates for at least one economic outcome described in the research questions.

## Step 4: Search

CGO staff work with the CDC Library staff on literature searches to identify potential studies to include in the evidence. The team may also include potential studies identified during the effectiveness review, suggested by subject matter experts, and from references cited within studies.

The **economic search strategy**, which builds on the search strategy used for the effectiveness review, may include the following.

- Database sources with an economic focus, as well as the EconLit, Cochrane Economic Evaluations, and Campbell Collaboration databases
- Search terms relating to economics, such as cost, economic benefit, cost-benefit, and cost-effectiveness, and the effectiveness search terms
- Sources beyond the peer-reviewed literature, such as government and non-governmental organization reports, depending on the type of intervention

## Step 5: Screen Literature

The search yield is screened in [multiple stages](#), as described in Part I above.

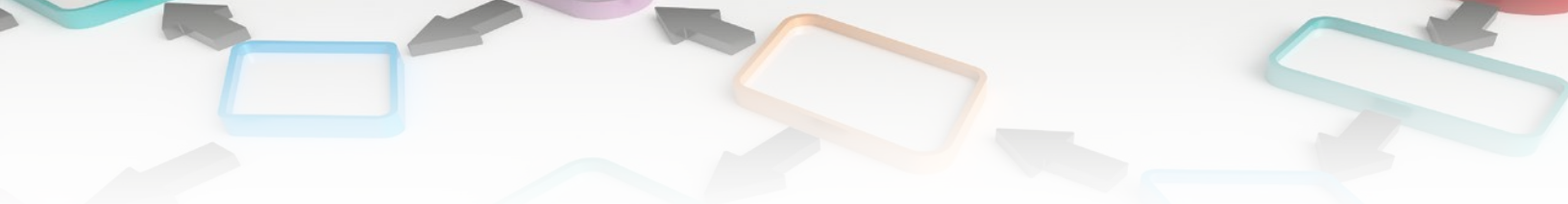
## Step 6: Abstract

Once the team narrows the search yield through the screening process, the team [abstracts](#) relevant data into a detailed evidence table for each study as described in Part 1 above. (See [example](#) economic detailed evidence table.)

## Quality Assessment

The team assesses the quality of evidence collected from the included studies. Each economic estimate is assigned a quality of good, fair, or limited based on how well it captures the components known to be drivers of the estimate and the measurement methods used in estimation. A good quality estimate includes all or most of the components known to be drivers of its magnitude and has none or few limitations points assigned for shortfalls in statistical and measurement methods. A fair quality estimate captures some of the known drivers or have some limitations in statistical and measurement methods. A limited quality estimate fails to include all or most components known to be drivers of its magnitude or also has numerous limitation points assigned for shortfalls in statistical and measurement methods.<sup>9</sup>





The components considered to be drivers and the areas in which the measurement aspects are assessed will be different for each economic review. Limited quality estimates are excluded from the body of evidence. (See example from a completed economic review at <https://tinyurl.com/kcayzrbz>.)

### Key Elements of Quality Assessments

- Capture of drivers in estimates of cost and benefit
- Appropriateness of measurement in the areas of perspective, population in consideration, time horizon, valuation method, measurement of intervention effect, estimation of modeled outcomes, and any intervention-specific areas not covered in previous areas
- Appropriate perspective, including the societal perspective (preferred for the Community Guide economic reviews) or a more restricted perspective from healthcare systems, employers, or government
- Analytic period of the intervention and its effects, usually a lifetime to determine effects on morbidity and mortality as measured by quality and disability-adjusted years lived
- Components and drivers of cost and benefit

## Step 7: Analyze

### Data Standardization

The team standardizes estimates to enhance comparability across studies that differ in sample size, intervention duration, year of implementation, and currency in which monetary values are expressed. Estimates are expressed in per person per year terms and monetary values are converted to U.S. dollars for a common year using purchasing power parities (<https://tinyurl.com/npc5y5rm>) from the World Bank and the consumer price index (<https://tinyurl.com/36xs88bh>) from the Bureau of Labor Statistics.

### Analysis Methods

The team summarizes and organizes the review's results as economic evidence that address each of the research questions about intervention cost, intervention benefit, cost-benefit, and cost-effectiveness. Gaps in the economic evidence are also identified.

The evidence collected from multiple studies for each of the economic outcomes of interest are summarized and presented as medians and interquartile intervals (IQI). In cases where there are three or fewer estimates, all estimates are presented and not summarized.

The economic review conclusion, whether the intervention is cost-beneficial or cost-effective, is based on all the estimates for cost-benefit or cost-effectiveness, respectively, considered together.

- A cost-benefit estimate is favorable (cost-beneficial) for the intervention when economic benefits exceed the cost of intervention.
- A cost-effectiveness estimate is favorable when the cost per quality-adjusted life year (QALY) saved is less than a conservative threshold of \$50,000 OR when the cost per disability-adjusted life year (DALY) averted is less than the conservative benchmark of per capita gross domestic product of the country of implementation.



## Step 8: Make CPSTF Economic Finding

CGO staff present results of systematic reviews, on behalf of the coordination team, to CPSTF for their deliberation and decisions about economic findings. CPSTF members review and discuss the evidence, consider input from partners, and issue an economic finding statement.

Primary consideration for reaching a CPSTF economic finding is determined by whether the benefits exceed the cost or the cost-effectiveness estimate is below a threshold.

### **CPSTF Economic Decision Tables**

As part of the presentation to CPSTF, the coordination team presents [CPSTF Economic Decision Table for Cost-Benefit Findings](#) and [CPSTF Economic Decision Table for Cost-Effectiveness Findings](#), as appropriate.

The economic decision tables display evidence of an intervention's cost-benefit or cost-effectiveness findings based on the quality of estimates, consistency of the results, and criterion for determination.

When estimates are [inconsistent](#) in indicating whether benefits exceed cost or if the intervention is cost-effective, the interquartile interval for the estimates is consulted. CPSTF reaches a finding of cost-effectiveness if all values in the interquartile interval are less than the threshold or reaches a finding that benefits exceed cost if all net benefit values in the interquartile interval are greater than zero. Otherwise, there is no CPSTF economic finding. A CPSTF economic finding statement appears in the finding section when the results for cost-benefit or cost-effectiveness are favorable. Results from an economic review appear in the rationale section of the TFFRS.

### **Evidence Gaps**

As in the effectiveness review, the economic review may reveal gaps in the research that fail to adequately address one or more of the research questions. Evidence gaps may also be drawn from elements in the economic analytic framework that are not estimated or addressed in the current research.

## Step 9: Disseminate Conclusions

The updated TFFRS from the effectiveness review, now including the economic findings, is disseminated through the same channels used for the effectiveness review. Associated [dissemination materials](#), such as email and social media, are also updated and redistributed.



## Reference List

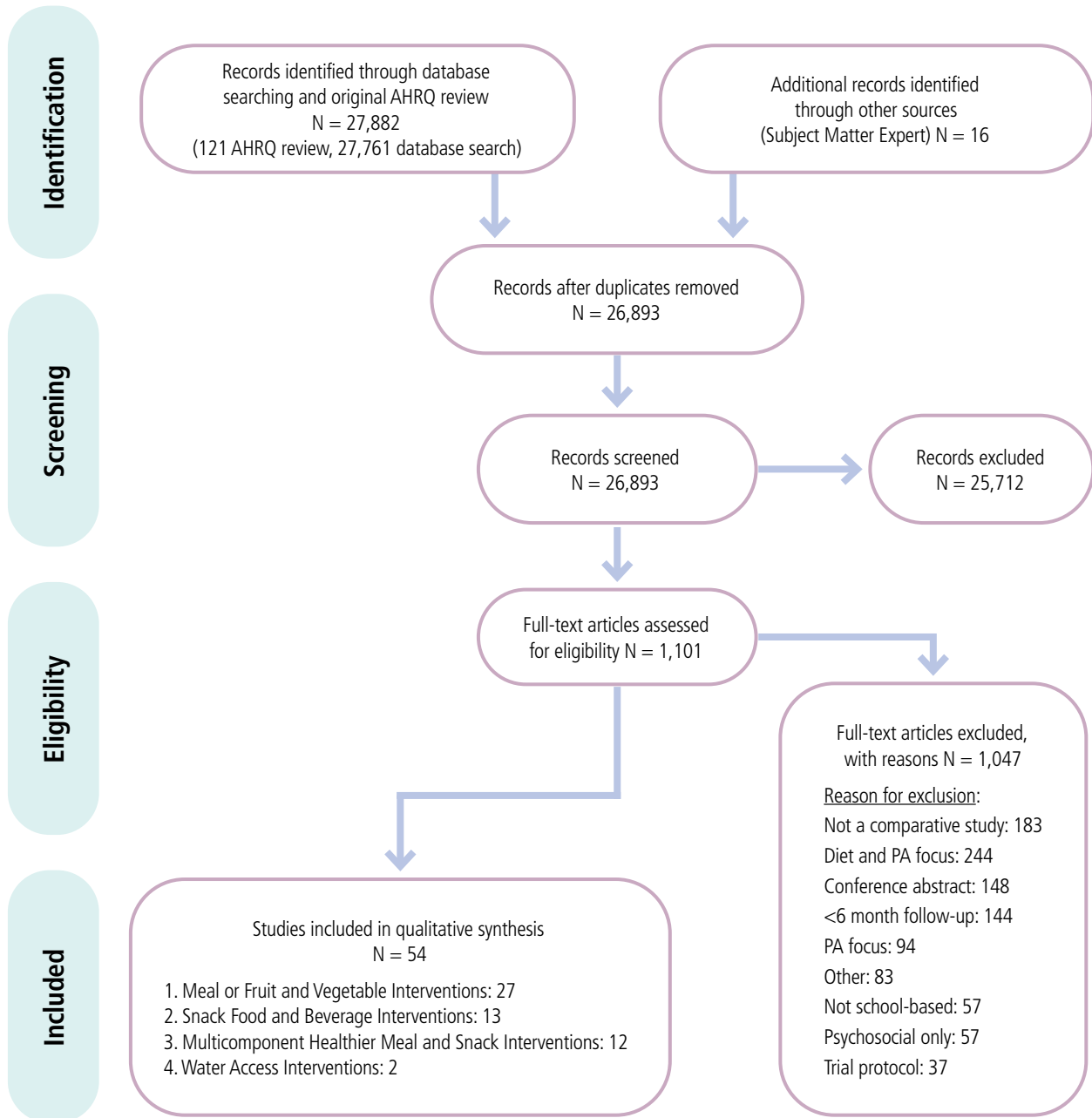
(<https://tinyurl.com/49dtnyxn>)

1. O'Connor D, Green S, Higgins JP. Defining the Review Question and Developing Criteria for Including Studies. In: *Cochrane Handbook for Systematic Reviews of Interventions*; 2008. p. 81-94.
2. Briss PA, Zaza S, Pappaioanou M, Fielding J, Wright-De Aguero L, et al. Developing an evidence-based Guide to Community Preventive Services--methods. *American Journal of Preventive Medicine*. 2000;18(1 Suppl):35-43.
3. Carande-Kulis VG, Maciosek MV, Briss PA, Teutsch SM, Zaza S, et al. Methods for systematic reviews of economic evaluations for the Guide to Community Preventive Services. Task Force on Community Preventive Services. *American Journal of Preventive Medicine*. 2000;18(1 Suppl):75-91.
4. Zaza S, Wright-De Aguero L, Briss PA, Truman BI, Hopkins DP, et al. Data collection instrument and procedure for systematic reviews in the Guide to Community Preventive Services. Task Force on Community Preventive Services. *American Journal of Preventive Medicine*. 2000;18(1 Suppl):44-74.
5. Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche PC, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: explanation and elaboration. *British Medical Journal* 2009;339:b2700.
6. Knopf JA, Finnie R, Peng Y, Hahn RA, Truman BI, et al. School-based health centers to advance health equity: a Community Guide systematic review. *American Journal of Preventive Medicine*. 2016;51(1):114-26.
7. Ledoux TA, Hingle MD, Baranowski T. Relationship of fruit and vegetable intake with adiposity: a systematic review. *Obesity Reviews* 2011 May;12(5):e143-e150. [doi: 10.1111/j.1467-789X.2010.00786.x]
8. Lock K, Pomerleau J, Causer L, Altmann DR, McKee M. The global burden of disease attributable to low consumption of fruit and vegetables: implications for the global strategy on diet. *Bulletin of the World Health Organization* 2005 Feb;83(2):100-108
9. Jacob V, Chattopadhyay SK, Reynolds JA, Hopkins DP, Morgan JA, et al. Economics of interventions to increase active travel to school: a Community Guide systematic review. *American Journal of Preventive Medicine* 2021;60(1):e27-40.

# Appendix

(<https://tinyurl.com/49dtnyxn>)

## Appendix 1. Example of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Flowchart from Review of Interventions to Support Healthier Foods and Beverages in Schools (<https://tinyurl.com/h7p84rd9>)



Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart showing number of studies identified, reviewed in full text, reasons for exclusion, and total number of included studies from the review of Healthier Food and Beverage Interventions in Schools.

## Appendix 2. Example of Evidence Table Template from School-Based Health Centers Review

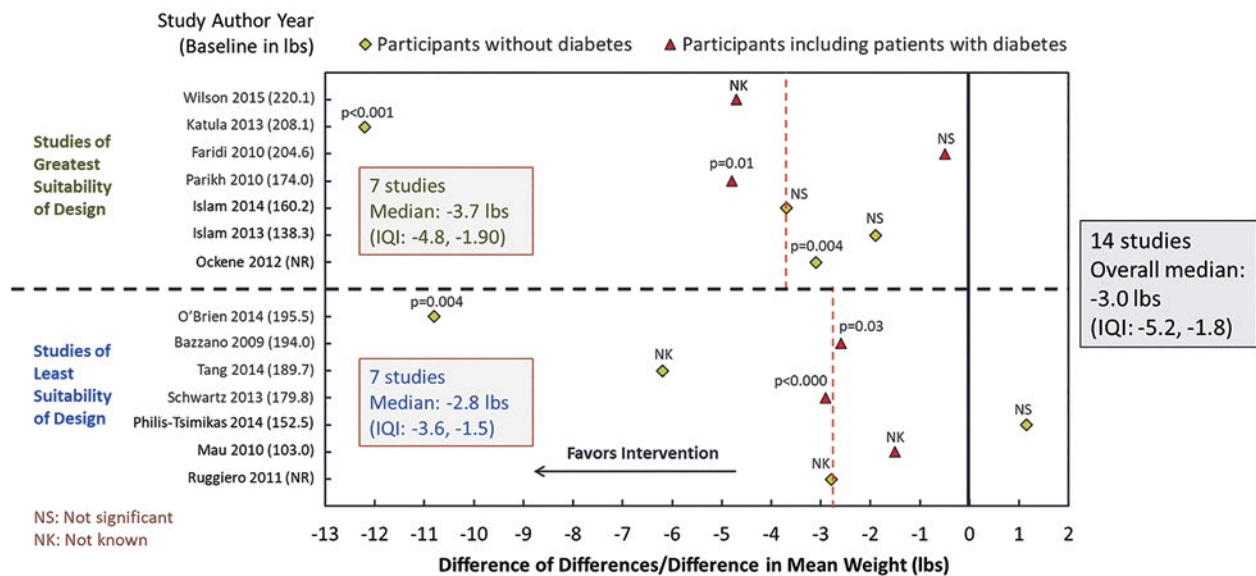
(<https://tinyurl.com/b4ma3ucn>)

Author and Year	Design and Execution	Population and Setting	Intervention and Comparison	Outcome measure and how determined	Major result(s)
<ul style="list-style-type: none"> <li>■ First three authors and dates</li> <li>■ Study objective</li> </ul>	<ul style="list-style-type: none"> <li>■ Study design</li> <li>■ Suitability of design</li> <li>■ Quality of execution (total number of limitations)</li> <li>■ Descriptions (intervention and study population) (# of 1)</li> <li>■ Sampling (# of 1)</li> <li>■ Measurement (# of 2)</li> <li>■ Data Analysis (# of 1)</li> <li>■ Interpretation of Results (# of 3)</li> <li>■ Other (# of 1)</li> </ul>	<ul style="list-style-type: none"> <li>■ Location               <ul style="list-style-type: none"> <li>▶ City</li> <li>▶ State</li> </ul> </li> <li>■ Rural or urban setting</li> <li>■ Setting</li> <li>■ Eligibility criteria or study population</li> <li>■ Study groups or sample size</li> <li>■ Study period</li> <li>■ Age</li> <li>■ Gender</li> <li>■ Race or Ethnicity</li> <li>■ Socioeconomic status</li> </ul>	<p>Intervention</p> <ul style="list-style-type: none"> <li>■ Study group or condition</li> <li>■ Services offered</li> <li>■ Staffing</li> <li>■ Hours or time of operation</li> <li>■ Years established or fully operational before study period</li> <li>■ Implementer</li> <li>■ Restrictions on services offered or eligibility</li> </ul> <p>Control</p> <ul style="list-style-type: none"> <li>■ Study group or condition</li> <li>■ Services offered</li> <li>■ Staffing</li> <li>■ Hours or time of operation</li> <li>■ Years established or fully operational before study period</li> <li>■ Implementer</li> <li>■ Restrictions on services offered or eligibility</li> </ul>	<ul style="list-style-type: none"> <li>■ Outcomes (metrics)</li> </ul>	<ul style="list-style-type: none"> <li>■ Multi-site or single site evaluation?</li> <li>■ Did author evaluate one or many SBHCs?</li> <li>■ If multi-site, are results aggregated across sites?</li> <li>■ Does author report results specific to each SBHC?</li> </ul> <p><b>Effect sizes</b></p> <ul style="list-style-type: none"> <li>■ Summary of major findings</li> <li>■ Other harms</li> <li>■ Other benefits</li> <li>■ Applicability</li> <li>■ Economic information</li> </ul>

**Appendix 3. Example Body of Evidence Table from School-Based Health Clinics Review**  
 (<https://tinyurl.com/b4ma3ucn>)

Quality of Execution	Suitability of Study Design		
	Greatest	Moderate	Least
Good (0-1)	10	0	12
Fair (2-4)	5	0	17

**Appendix 4. Example Study Effect Estimate Display from CHWs for Diabetes Prevention Review**  
 (<https://tinyurl.com/3nh22c6k>)



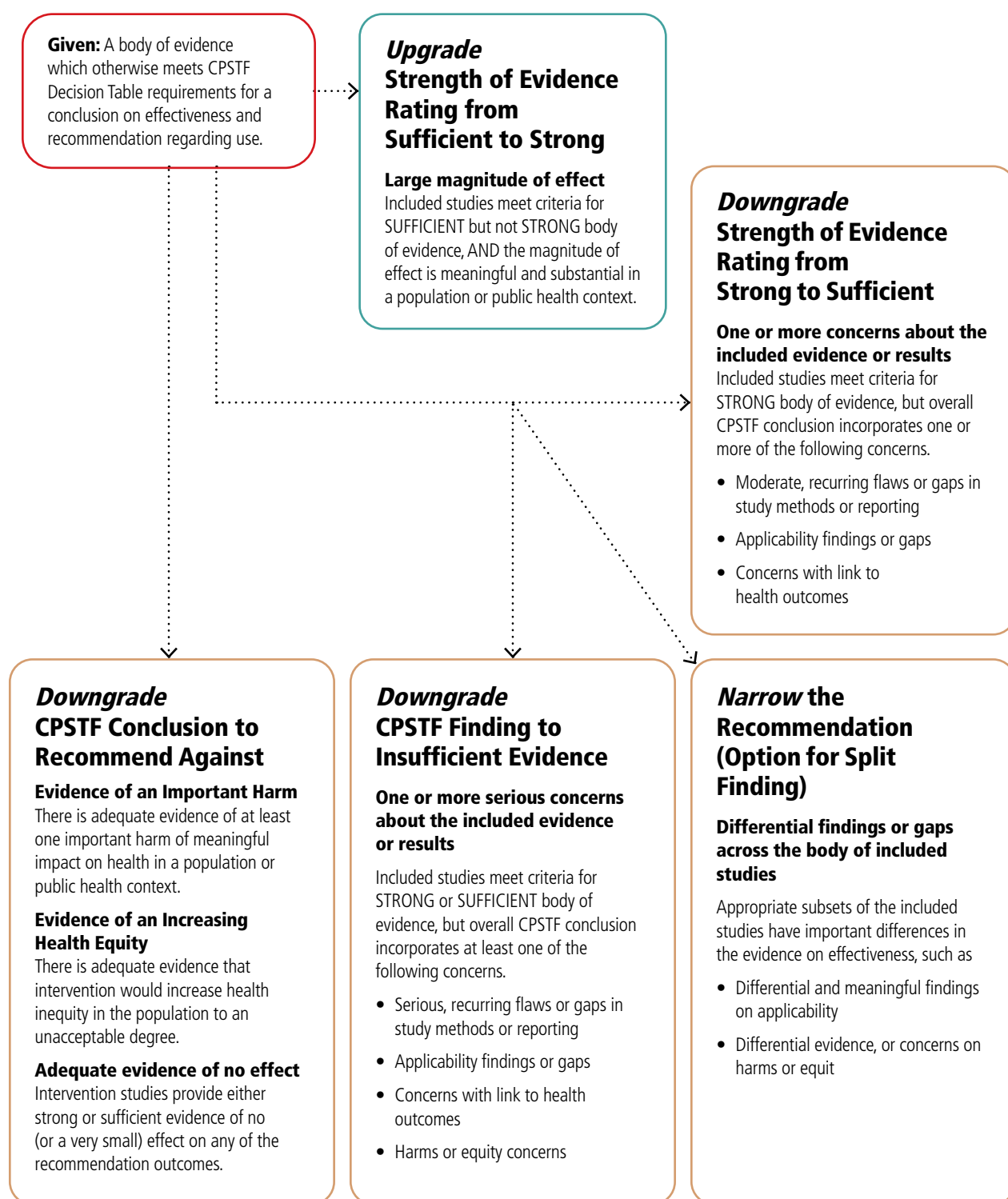


## Appendix 5. CPSTF Evidence Decision Table (Revised 2017)\*

CPSTF Rating for the Strength of Evidence on Effectiveness	Required suitability of study design within the included studies	Required quality of execution within the included studies	Required number of studies of that study design suitability and quality of execution	Overall assessment of the distribution of study results for the recommendation outcome or outcome pathway	Overall assessment of the (population) health impact based on findings from included studies for the recommendation outcome or outcome pathway
<b>STRONG</b>	Greatest	Good	2 or more	Consistent	Meaningful
	Moderate or a mix of Greatest and Moderate	Good	5 or more	Consistent	Meaningful
	Greatest	Fair or a mix of Fair and Good	5 or more	Consistent	Meaningful
	Included studies meet criteria for SUFFICIENT but not STRONG body of evidence, but magnitude is substantial and supports UPGRADING the strength of the evidence supporting CPSTF conclusion on the effectiveness				Large
<b>SUFFICIENT</b>	Greatest	Good	1	NA	Meaningful
	Moderate or a mix of Greatest and Moderate	Fair or a mix of Fair and Good	3 or more	Consistent	Meaningful
	Least, or a mix of Least and higher	Fair or a mix of Fair and Good	5 or more	Consistent	Meaningful
<b>INSUFFICIENT</b>	Included studies meet criteria for STRONG body of evidence, but CPSTF assessment finds one or more issues and therefore decides to DOWNGRADE the strength of the evidence to SUFFICIENT (see supplementary table)				
	Identified evidence does not meet minimum requirements or combinations based on design suitability, quality of execution, or number of studies			<b>Or</b> overall assessment is that study findings are inconsistent	<b>Or</b> overall assessment is that studies demonstrate Small or No Effects

Based on "Translating Evidence of Effectiveness into Recommendations" from Briss 2000<sup>2</sup>

## Appendix 6. CPSTF Options for Modifying Findings and Conclusions\*



\*This table expands on "Translating Evidence of Effectiveness into Recommendations" from Briss 2000<sup>2</sup>

## Appendix 7. Detailed Evidence Table for Economic Review from School-Based Health Centers Review (<https://tinyurl.com/b4ma3ucn>)

This table is an example of a detailed evidence table from an economic review. Each column represents a category (e.g., Study information) with types of information or evidence (e.g., Author, year).

Study Information	Location	Intervention Description	Effectiveness Outcomes of Interest to Economic Review	Intervention Cost	Cost Averted by Type	Benefit-cost Ratio
<ul style="list-style-type: none"> <li>■ Author, year</li> <li>■ Study design</li> <li>■ Economic method</li> <li>■ Monetary conversion</li> </ul>	<ul style="list-style-type: none"> <li>■ Eligibility</li> <li>■ Population characteristics               <ul style="list-style-type: none"> <li>▶ Sample size</li> <li>▶ Female</li> <li>▶ Age or school grade</li> <li>▶ Race or ethnicity</li> <li>▶ Insurance status</li> </ul> </li> <li>■ Time horizon</li> </ul>	<ul style="list-style-type: none"> <li>■ Control group</li> </ul>		<ul style="list-style-type: none"> <li>■ School #1</li> <li>■ School #2</li> <li>■ Source</li> <li>■ Components included</li> <li>■ Quality of capture</li> <li>■ Quality of measurement</li> <li>■ Overall quality</li> </ul>	<ul style="list-style-type: none"> <li>■ School #1               <ul style="list-style-type: none"> <li>▶ Emergency department services</li> <li>▶ Avoided pregnancy</li> <li>▶ Early pregnancy detection</li> <li>▶ Prenatal care</li> <li>▶ STD detection and treatment</li> </ul> </li> <li>■ School #2               <ul style="list-style-type: none"> <li>▶ Emergency department services</li> <li>▶ Avoided pregnancy</li> <li>▶ Early pregnancy detection</li> <li>▶ Prenatal care</li> <li>▶ STD detection and treatment</li> </ul> </li> <li>■ Total benefit</li> <li>■ Source</li> <li>■ Components included</li> <li>■ Quality of capture</li> <li>■ Quality of measurement</li> <li>■ Overall quality</li> </ul>	<ul style="list-style-type: none"> <li>■ School #1</li> <li>■ School #2</li> <li>■ Net benefit</li> <li>■ School #1</li> <li>■ School #2</li> <li>■ Quality of estimate</li> <li>■ Notes</li> </ul>

## Appendix 8. Decision Table for Conclusion on Cost-Beneficial Finding

CPSTF Finding	Required <i>quality of estimates</i> from included studies	Required <i>number of studies</i>	Overall assessment of the distribution of study results for the finding statement	Criterion for determination
<b>Cost-beneficial</b>	Good	2 or more	Consistent	Benefits > Cost
	Fair and good	3 or more	Consistent	
	Fair	4 or more	Consistent	
<b>No finding</b>	Identified evidence does not meet requirement of minimum quality or combinations based on quality of estimates and number of studies		OR overall assessment is that study results are inconsistent	<b>OR</b> Benefits < Cost*

\*Woolf, Steven H. "A closer look at the economic argument for disease prevention." *JAMA* 301.5 (2009): 536-538.

## Appendix 9. Economic Decision Table for Cost-Effectiveness Finding

CPSTF Finding	Required <i>quality of estimates</i> from included studies	Required <i>number of studies</i>	Overall assessment of the distribution of study results for the finding statement	Criterion for determination
<b>Cost-effective</b>	Good	2 or more	Consistent	Cost per QALY gained $\leq$ \$50,000
	Fair and good	3 or more	Consistent	<b>OR</b>
	Fair	4 or more	Consistent	Cost per DALY averted $\leq$ annual GDP capita
<b>Not cost-effective</b>	Good	2 or more	Consistent	Cost per QALY gained $>$ \$150,000
	Fair and good	3 or more	Consistent	<b>OR</b>
	Fair	4 or more	Consistent	Cost per DALY averted $>$ 3x annual GDP capita*
<b>No finding</b>	Identified evidence does not meet requirement of minimum quality or combinations based on quality of estimates and number of studies		<b>OR</b> overall assessment is that study results are inconsistent	<b>OR</b> \$50,000 $<$ Cost $\leq$ \$150,000 per QALY gained <b>OR</b> annual GDP per capita $<$ Cost per DALY averted $<$ 3x annual GDP per capita*

\*Note the WHO guidelines suggest interventions are cost-effective when DALY is less than 3x annual GDP per capita. See World Health Organization. *Macroeconomics and Health: Investing in Health for Economic Development: Report of the Commission on Macroeconomics and Health*. 2001.

## Appendix 10. Options in Case of Inconsistent Evidence

**Given:** A body of evidence which otherwise meets CPSTF Decision Table requirements for minimum quality and quantity of studies but with inconsistent results

Upgrade from **No Finding** to a **Finding** Statement

### Based on

The interquartile interval (**IQI**), as a summary of body of evidence, includes

- Net-Benefit values all positive (for cost-beneficial finding)
- Values which are all below or above the threshold (for cost-effective or not cost-effective finding)
- Quantity and quality of estimates when the IQI includes zero for cost-benefit analyses and the threshold value in case of cost-effectiveness analyses

Additional considerations to cost-effectiveness estimates that are closer to cut-off threshold or closer to lower or higher values in a range of thresholds

Other?