

# A framework for evaluating public health interventions for obesity prevention

## An IOM committee report

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# Bridging the Evidence Gap in Obesity Prevention: the charge

- Provide an overview of the evidence base for obesity prevention
- Identify the challenges in integrating scientific evidence with broader influences on policy
- Provide a framework of recommendations for selecting, implementing, and evaluating obesity prevention efforts.
- Specify a plan for disseminating and evaluating the proposed framework.

# Valuing Community-Based, Non-Clinical Prevention Policies and Wellness Strategies: the charge

“develop a framework for assessing the value of community-based, non-clinical prevention policies and wellness strategies.”

# What is a “framework?”

- The committee’s definition: “a process for identifying, evaluating, and compiling evidence related to obesity prevention efforts.”
- Kuhn defines a scientific paradigm as:  
“universally recognized scientific achievements that, for a time, provide model problems and solutions for a community of researchers.”

# Developing the framework for obesity prevention

- Defining population-based obesity prevention.
- Envisioning potential users and the types of decisions they face.
- Assessing current approaches to evaluating and generating evidence about obesity prevention.
- Expanding, if possible, the research approaches to informing decision making on obesity prevention.

# Developing the framework

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# Potential users of our framework

1. Decision makers and those who assist them in making decisions.
  - e.g., a city's mayor and director of public health
  - The policy question: should the mayor support a proposal to create 20 miles of bike paths?
2. Those who do research on obesity prevention or evaluate existing programs.

# Potential public health decision scenarios

- Population-wide policy changes that might affect weight-related behavior .
- Decisions to undertake a specific program that affects access to food or exercise.
- Choices between programs to reduce obesity-promoting environmental influences.



# The problem and the committee's solution

- The problem: assembling a body of trustworthy evidence to inform public health decisions and policy making.
- The committee's solution: develop an evidence evaluation framework from an existing paradigm
  - the concepts, principles, and procedures used in developing **practice guidelines**.

**Clinical question**

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graph TD; A[Clinical question] --> B[Systematic Review of the Evidence]; B --> C[Recommendations];
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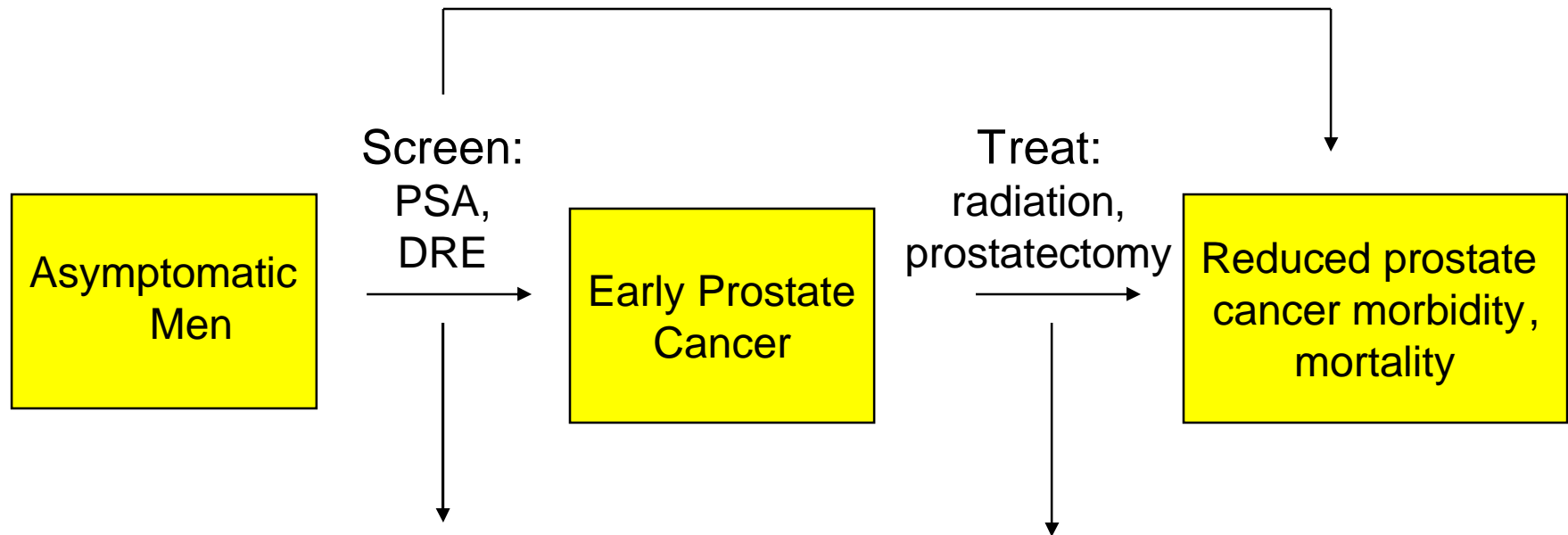
**Systematic Review of the Evidence**

**Recommendations**

# Systematic reviews

- Define the clinical question
- Develop an analytic framework to specify key questions to be addressed
- Do a systematic literature search on each key question
- Describe the included studies and their results
- Do a qualitative literature synthesis
- Perhaps combine the studies (meta-analysis)

# Analytic Framework for a clinical problem: Prostate Cancer



Adverse effects of screening and diagnosis:

- false pos, false negative
- inconvenience,
- pain, infection, labeling
- over-diagnosis

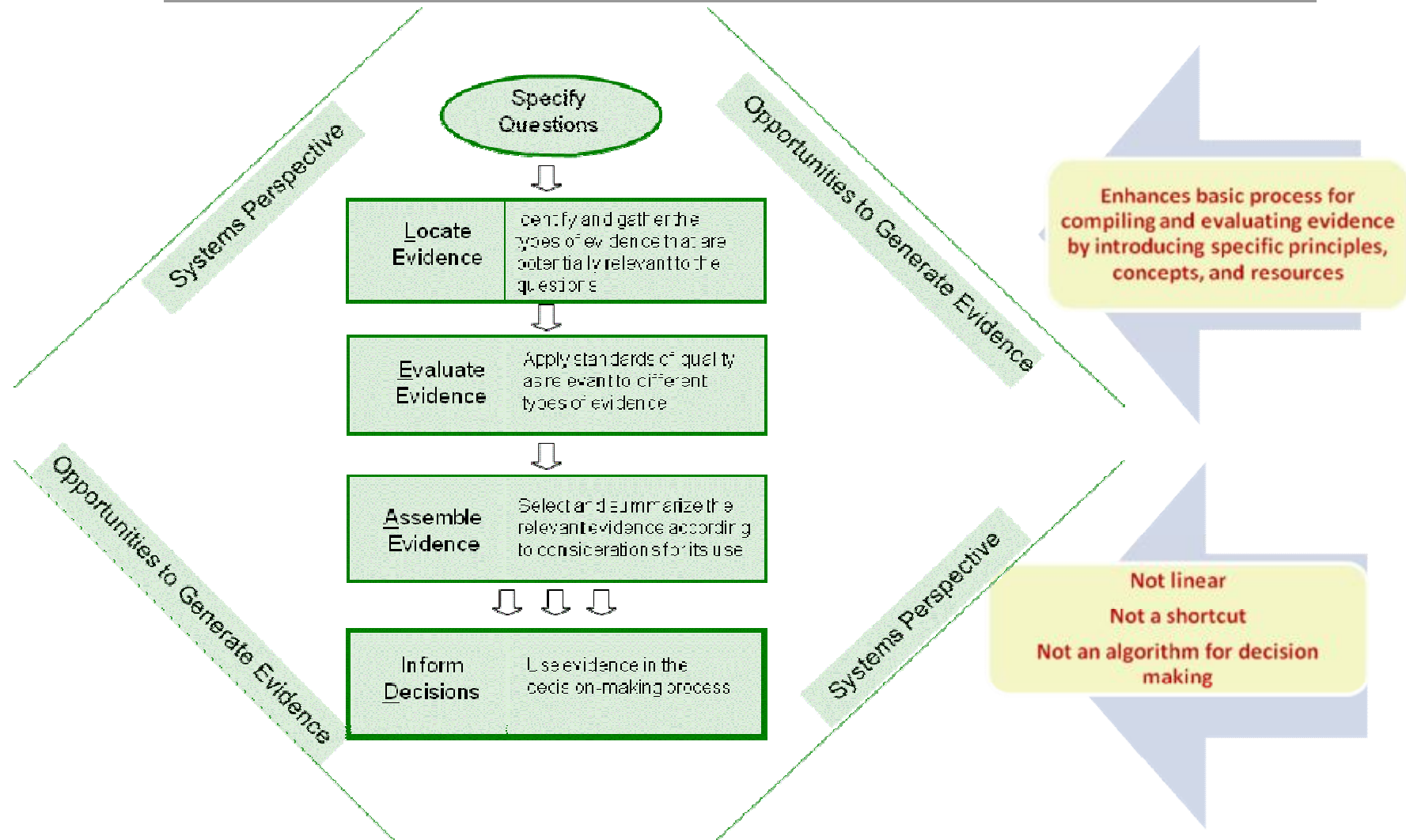
Adverse effects of Rx:  
Impotence, incontinence,  
death, over-treatment

Courtesy of the USPSTF

# The L.E.A.D. framework

- Locate evidence
- Evaluate evidence
- Assemble evidence
- Inform Decisions

# The L.E.A.D. Framework



# The L.E.A.D framework: specifying the question(s) to address

- The analytic framework
- User questions:
  - WHY should we do this?
  - WHAT should we do (strategy)
  - HOW should we do it (tactics)

# The L.E.A.D framework: modifying the existing paradigm

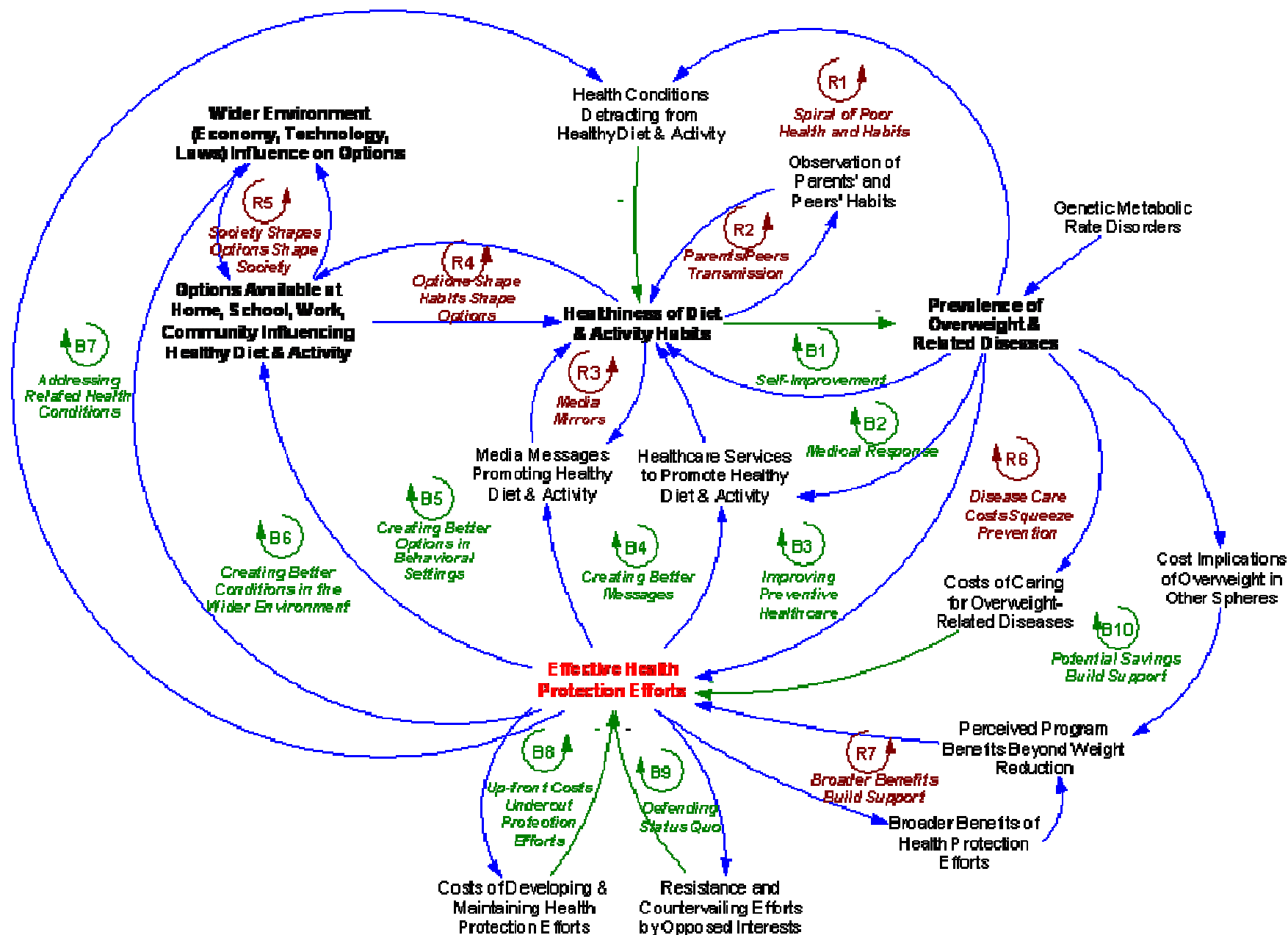
- Modification 1: use systems thinking to represent the complexity of influences in the public arena → the analytic framework.
- Modification 2: expand the scope of admissible evidence to fit the breadth of inputs implied by systems thinking



# An analytic framework for public health problems: systems thinking

- Systems approach: a paradigm for analyzing a situation, in which one examines all of the contributing elements and their interactions.
- Systems thinking: an iterative learning process that takes a holistic, long-term perspective and examines interactions between contributing factors.

# Figure 4.5 from the IOM Obesity Prevention Report

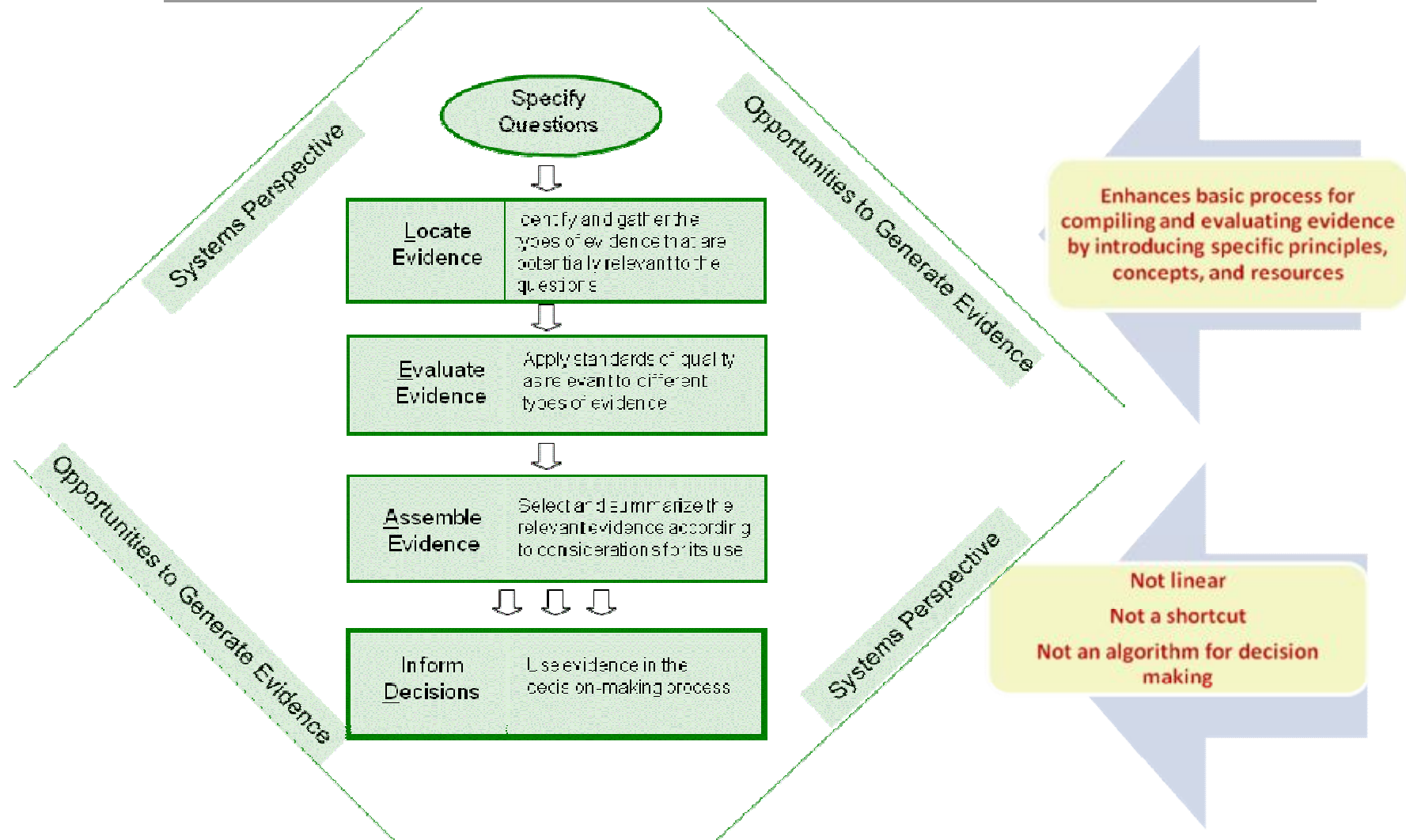


SOURCE: Milstein and Homer, 2009. Reprinted with permission.

# A systems approach to obesity prevention

- The web of influences that impinge on dietary and physical activity habits is very complex.
  - Each of these influences is a key question for a SR.
  - Evidence for the size and direction of even one of these influences is fragmentary and untrustworthy.
- Fully evidence-based public health decision making about prevention is a distant goal.

# The L.E.A.D. Framework



# Potentially useful sources of evidence

- Nonexperimental or observational studies
- Experimental and quasi-experimental studies
- Qualitative research and analysis
- Mixed-methods studies
- Evidence synthesis methods
- Parallel evidence
- Expert knowledge

LEAD Framework Report, Chapter 5, page 100

See Table 6-1, pages 125-126 for evaluation criteria for each source

# Parallel Evidence

- Research evidence on effects of parallel interventions
  - tobacco and alcohol taxes re sugar-sweetened beverage taxes
- Parallel research on legal issues
  - related to free speech and TV advertising to children
- Parallel research on implementation process or policy development
  - precedents for environmental and policy approaches that impact personal behavior

Table 5-9, on page 109 of the LEAD Framework IOM Report

# Some additional thoughts

- Decisions about public health interventions to prevent obesity should take into account
  - the theory of the intervention
  - the scientific evidence about its effectiveness
    - Internal validity and external validity
  - experience with its costs and effects in similar settings → a national registry of project
  - a qualitative, systematic assessment of whether it could work in the specific local environment → modeling.

# ASSEMBLING THE REPORT

- Question asked by the decision maker
- Analytic framework → key questions
- Strategy for locating evidence
- Evidence table and Summary of Evidence organized by
  - why, what, and how questions
  - Analytic framework

LEAD Framework Report, Chapter 7, pages 148-149

See Table 6-1, pages 125-126 for evaluation criteria for each source



# Local decision making

- The proposers should describe the theory, evidence, experience, and projected local effects in an objective, balanced report.
- A widely inclusive group of local stakeholders and experts should read the report, discuss it, and modify it to reflect the group consensus.
- As modified, this report will inform the public official or legislative body that makes the final decision.

# Principles

- Specifying user-oriented questions to identify types of relevant evidence
- “Fit for purpose” approach to evidence gathering—no evidence hierarchy
- Matching evidence to questions
- Matching evidence evaluation to type of evidence

# Principles

- Embracing complexity
  - Systems perspective
- Inclusive definition of evidence
  - Multiple disciplines
  - Information
- Combining multiple sources of evidence

# A framework for Valuing Community-Based, Non-Clinical Prevention Policies

- WHO
  - Specify your target audience
  - Be sure your framework for measuring value fits their decision-making style
- WHAT
  - What paradigm will you adopt for organizing the evidence for decision makers?
    - Effectiveness
    - Costs and cost-effectiveness
    - Systems thinking

# A framework for Valuing Community-Based, Non-Clinical Prevention Policies

- HOW
  - What tactics will you recommend?
    - Extend the concept of Evidence-based Practice Centers to the public health arena.
    - Steps to legitimize costs and cost-effectiveness as public health decision-making paradigms.

## More emphasis on:

- Modeling to project outcomes, especially when the evidence is weak.
- Analytic Framework to define key questions to address with evidence
- Registries that describe the experience of local intervention
  - Enlarge the nation's capacity to learn from experience; a community of communities.
- Measures of value for decision makers.