Logic Models in Public Health Program Management

May 16, 2012

Visit us: Public Health Performance Management Centers for Excellence
Today’s Objectives

After this session participants will be able to:

– Explain at least 3 benefits of a logic model
– Describe the elements of a logic model
– Create a draft logic model for an activity or program in your workplace
– Describe what makes the logic model most valuable
Polling Question

I ___________ logic models.

A. Love
B. Tolerate
C. Hate
D. I can’t tell you--my boss is listening
Polling Question

My agency ________ logic models.

A. Requires
B. Uses
C. Avoids
D. Loses
Polling Question

My experience is ________ with logic models.

A. High
B. Medium
C. Low
D. None
Context for Logic Models

- Quality improvement in public health is the use of a process, such as Plan-Do-Study-Act, which is focused on activities that are responsive to community needs and improving population health.

- Refers to a continuous and ongoing effort to achieve measureable improvements in the efficiency, effectiveness, performance, accountability, outcomes, and other indicators of quality service.
Many different frameworks in the literature, but all have same components to evaluate and improve a program.
Benefits of Logic Models

1. Integrates planning, implementation, performance measurement and evaluation
2. Prevents mismatches between activities and effects
3. Builds program clarity from the process
4. keeps staff, managers, and partners focused on outcomes
5. Helps planners prioritize most effective activities for directing resources
6. Uses evidence-based models and practice wisdom to design and refine a program
7. Reveals data needs and framework for analyzing data
Limitations and Pitfalls of Logic Models

1. Logic models make the program theory clear not true
2. They take time to complete
3. Without data collection, their utility is limited
4. They strike fear in the hearts of many
5. Pursuit of perfection can impede utility
6. The notion that “evaluation is being done to me, rather than with me”
The Value of Logic Models

- What gets measured gets done
- If you don’t measure results, you can’t tell success from failure
- If you can’t see success, you can’t reward it
- If you can’t reward success, you’re probably rewarding failure
- If you can’t see success, you can’t learn from it
- If you can’t recognize failure, you can’t correct it
- If you can demonstrate results, you can win public support
“Why do I need a logic model?”

You don’t ever need a logic model, but you always need a program description.

Logic models are a program management tool.
A Logic Model by Any Other Name

- Logic models
- Road map or pathways map
- Blueprint
- Program framework
- Program theory
- Theory or model of change
- Chain of causation
Beware the tower of Babel!

The collision of public health jargon, planning jargon, different QI jargon, and our own LHJ or program jargon can lead to great confusion!
• Graphic display of boxes and arrows; vertical or horizontal
  – Relationships, linkages

• Any shape is possible
  – Circular, dynamic
  – Cultural adaptations; storyboards

• Level of detail
  – Simple
  – Complex
  – Dependent on need
Creating a Logic Model

• How?
  – No single way, flexible
    • Forward logic driven by “But Why?” or “If-Then” thinking
      – Starting from the condition or problem end
    • Reverse logic driven by “But How?”
      – Starting from the vision end

• Who?
  – Depends

• When?
  – Varies
We inspect restaurants

But why do we do this?

If - then

Conditions in the restaurant don’t create unsafe food

If-then

Public is sold food that is safe to eat

If-then

There are fewer incidents of foodborne illness

The Logic of Public Health
But how do we achieve this?

We inspect restaurants

Conditions in the restaurant don’t create unsafe food

Public is sold food that is safe to eat

There are fewer incidents of foodborne illness

# of inspections
# of critical violations
% of critical violations corrected within 24 hours
# of foodborne outbreaks
Basic Logic Model Parts

- Conditions, Environment
- Problems, Needs
- Program theory

Inputs ➔ Activities ➔ Outputs ➔ Outcomes

Agency Vision, Mission, Goals

Indicators or Measures
Inputs

Account of *resources invested*
in the program...

- Staff
- Volunteers
- Time
- Money
- Materials
- Equipment
Activities

*Describes* what the program does...

- Provides counseling sessions
- Conducts workshops on heart disease
- Inspects housing units
- Distributes smoking cessation materials
Outputs

Measures what the program does and who the program reaches...

- # of workshops held
- # of brochures
- # of counseling sessions
- # of parents served
- # of schools visited
- # of neighborhoods reached
Outcomes

Shows the program’s *theory of change*

- Describes desired individual, family, or community change
- Can be measured

<table>
<thead>
<tr>
<th>Short-term</th>
<th>Mid-term</th>
<th>Long-term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in <em>learning...</em></td>
<td>Change in <em>action...</em></td>
<td>Change in <em>condition...</em></td>
</tr>
<tr>
<td>» Knowledge</td>
<td>» Behavior</td>
<td>» Environment</td>
</tr>
<tr>
<td>» Attitude</td>
<td>» Policy</td>
<td>» Morbidity and Mortality</td>
</tr>
<tr>
<td>» Skills</td>
<td>» Practices</td>
<td>» Quality of Life</td>
</tr>
</tbody>
</table>
## Outcomes

### Car Seat Safety Program Example

<table>
<thead>
<tr>
<th>Short-term</th>
<th>Mid-term</th>
<th>Long-term</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Change in learning...</strong></td>
<td><strong>Change in action...</strong></td>
<td><strong>Change in condition...</strong></td>
</tr>
<tr>
<td>» Increased knowledge about how to correctly install a car seat</td>
<td>» Increased % of correct car seat installation by parents seen at car seat checks</td>
<td>» Reduced injury hospitalizations and deaths of children in auto accidents</td>
</tr>
<tr>
<td>» Increased ability of parents to correctly install a car seat</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Funded by the U. S. Centers for Disease Control’s National Public Health Improvement Initiative*
Outcomes

Shows the program’s *theory of change*

- Improving services leads to change
- Increases robustness and reach of program

### Process Outcomes

Change in *way it’s done* . . .

- Timeliness
- Customer service
- Effectiveness

### Impact Outcomes

Change in *learning, action, condition* . . .

- Knowledge, Attitudes, Skills
- Behavior
- Policy, Practices

### Health Outcomes

Change in *population health* . . .

- Health behavior, determinants, and status
# Outcomes

<table>
<thead>
<tr>
<th>Process Outcomes</th>
<th>Impact Outcomes</th>
<th>Health Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in <strong>effectiveness</strong>...</td>
<td>Change in <em>learning</em> and <em>action</em>...</td>
<td>Change in <em>condition</em>...</td>
</tr>
<tr>
<td>Increased participation of parents at car seat safety check</td>
<td>» Increased knowledge about how to correctly install a car seat</td>
<td>» Reduced injury hospitalizations and deaths of children in auto accidents</td>
</tr>
<tr>
<td>Increased satisfaction from materials provided to support correct installation</td>
<td>» Increased ability of parents to correctly install a car seat</td>
<td></td>
</tr>
<tr>
<td></td>
<td>» Increased % of correct car seat installation by parents seen at car seat checks</td>
<td></td>
</tr>
</tbody>
</table>
Causal Arrows

• Arrows can go from:
  – Activities to other activities
  – Activities to outcomes
  – Early effects/outcomes to later one
Strong and Weak Arrows

**Strong Arrows**
I believe A leads to B because of:
- Published studies
- Demonstration projects
- Best practices
- Theoretical backing

**Weak Arrows**
I believe A leads to B because:
- It seems really logical
- Actually, it’s more like I hope A leads to B
Outcome Measures

Outcomes should be:
- Realistic
- Achievable
- Directly related to program activities
- Written clearly
  - Who/what
  - Change desired
  - In what
  - By when

Example:
- Providers increased their knowledge by 30% on how to order vaccine through CHILD Profile by June 30.

Measures should be:
- Specific
- Could be more than 1 measure per outcome
- Require data collection
- Example:
  - % knowledge gained on pre and post test evaluation
  - % providers attending training sessions
<table>
<thead>
<tr>
<th></th>
<th>Outcome</th>
<th>Outcome Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short-term</strong></td>
<td>Pregnant women increased knowledge regarding recommended vitamin and calcium intake</td>
<td>% of pregnant women who know recommended vitamin and calcium intake</td>
</tr>
<tr>
<td><strong>Mid-term</strong></td>
<td>Increased pregnant women taking recommended vitamins and calcium during 1st trimester by 20%, by May 31, 2013</td>
<td>% of pregnant women who take recommended vitamins and calcium</td>
</tr>
<tr>
<td><strong>Long-term</strong></td>
<td>Infants experienced fewer neural tube defects</td>
<td>% of infants with neural tube defects</td>
</tr>
</tbody>
</table>
Evolving Outcomes

• Reduced % pregnant women who smoke in program by December 2012
  – Measure: % pregnant women who smoke
    • 32 smoke/124 women or 26%

• Reduced % pregnant women who smoke in program by 20% (want 20% rate) by December 2013

• Reduced % pregnant women who smoke in program to 20% by December 2013

• Reduced % pregnant women who smoke in program by 6 percentage points by December 2013
## Outcomes and Measures

### Activities
- Offer dance classes
- Start sports groups

### Outputs
- # of kids served
- # of dance classes
- # of sport groups

### Change in Attitude
- Short-term outcome
  - Kids will learn fun physical activities
- Mid-term outcome
  - Kids will spend more time being physically active
- Long-term outcome
  - Kids will be more physically fit

### Change in Behavior
- % of kids who like dance or sports
- % of time kids spend on physical activities

### Change in Status
- Change in BMI and fitness test

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Discussion on Outcomes...

- Your outcomes won’t be perfect the first time
- You can develop good outcomes over time
- The only right set of outcomes are the set that make sense to you and your stakeholders
- Outcomes should be based on what you can realistically achieve through your program activities
- Outcomes should be useful to your program and not just to fulfill a requirement
- The sign of a good set of outcomes is that they are easily understood by all stakeholders
Skeleton Logic Model: Any Health Problem

Your agency vision, mission, and goals!

- Conditions
- Problems
- Needs
- History
- Environment
- Theory
- Evidence-based practice

**Inputs**
- FTE
- RCWs
- Funding

**Outputs**
- Evidence of activities
- Units of service
- How many?
- Improved knowledge, attitudes, skills
- Improved behaviors, policy, practice

**Outcomes**
- Short-Term
- Mid-Term
- Long-Term

- Improved environment or condition
- Reduced morbidity, mortality
- Improved quality of life

**Activities**
- Primary strategies
  - Who receives these services?

**Numerators and denominators**

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An Example and an Exercise
### Unintentional Injury

#### Resources
- Grant
- Community Partnerships
- Staff
- Discount helmet program

#### Activities
- Coordinate Safe Kids coalition
- Distribute low cost helmets through partners to low-income families

#### Inputs
- Increase in head injuries
- 4% helmet use
- Cost of helmets
- Intersection problems
- Community discussions
- New commissioner
- Research on head injuries
- If families are provided helmets and educated on the issue, more children will wear helmet while biking.

#### Outputs
- # helmets distributed
- # targeted schools with safety program
- # partners in coalition
- # signed up for helmet distribution

#### Outcomes (Short-Term)
- Increased partners in coalition
- High satisfaction of members
- Increased partners signed up to distribute helmets to target population

#### Outcomes (Mid-Term)
- Increased % of helmets worn by children at selected sites
- Increased # of schools with bicycle safety program

#### Outcomes (Long-Term)
- Reduced unintentional injuries and deaths from pedacycle incidents

**Indicator:**
- Rate of hospitalization and mortality from pedacycle injuries

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**May 16, 2012**
Evolving Outcomes

Increased partners signed up to distribute helmets to target population by end of year.

- Indicator: % partners signed up to distribute helmets
- New program = no partners
- Data at end of year: 4 of 15 partners or 27%

Next year’s outcome measure:
Increased partners who signed up to distribute helmets by 50% (want 6 partners)

Or
Over 50% of partners signed up to distribute helmets (want 8 partners) by July 1st.
## Exercise: My Program ______________

<table>
<thead>
<tr>
<th>Theory</th>
<th>Inputs</th>
<th>Activities</th>
<th>Outputs</th>
<th>Outcomes</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write out the theory behind what you believe the activities will do for the problem you are trying to improve.</td>
<td>List the resources, constraints, influences on your program.</td>
<td>List the 8 main activities or strategies that you do in this program.</td>
<td>Describe the numbers you will need for each indicator.</td>
<td>Start with 1 of your top activities. List what results you want to have achieved from this activity.</td>
<td>List the measures for each outcome.</td>
</tr>
<tr>
<td>Present tense: Train, convene, inspect, test, convene</td>
<td></td>
<td></td>
<td>Numbers of</td>
<td>Past tense: Increased, Reduced, Maintained</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>% Percentage</td>
</tr>
</tbody>
</table>
What do you (and others) want to know about this program?

<table>
<thead>
<tr>
<th>Process Evaluation</th>
<th>Outcome Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>How is the program implemented?</td>
<td>To what extent are desired changes occurring? For whom?</td>
</tr>
<tr>
<td>Is the program at capacity?</td>
<td>Is the program making a difference?</td>
</tr>
<tr>
<td>Are activities delivered as intended?</td>
<td>What seems to work? Not work?</td>
</tr>
<tr>
<td>Are participants being reached as intended?</td>
<td>What are unintended outcomes?</td>
</tr>
<tr>
<td>What are participant reactions?</td>
<td>Are we doing the right activities?</td>
</tr>
</tbody>
</table>

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# Maturity of Program

<table>
<thead>
<tr>
<th>New Program</th>
<th>Established Program</th>
<th>Long-Term Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater focus on process</td>
<td>Focus on process, short and mid-term outcomes</td>
<td>Focus on process, short, mid, and long term outcomes</td>
</tr>
<tr>
<td>Is the program operating as planned?</td>
<td>Is the program achieving its outcomes?</td>
<td>Is the program achieving its outcomes?</td>
</tr>
<tr>
<td>Did it reach the capacity level intended?</td>
<td>Are the short and mid-term outcomes aligned?</td>
<td>Are there population health results?</td>
</tr>
<tr>
<td>Outcome</td>
<td>Outcome Indicators</td>
<td>Data Source</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Reduced % pregnant women who smoke in program by December 2012</td>
<td>% pregnant women who smoke</td>
<td>Client assessment tool</td>
</tr>
</tbody>
</table>

You have to look at your data . . . this is the most important and valuable part of having a logic model.
Revisit and Realign

• Set time to analyze data
• Clarify path of activities to effects
• Expand activities to reach goals
• Establish or revise mile markers (steps)
• Redefine the boundary of your program
• Reframe goals or desired outcomes
**Plan**
- Objective
- Questions and predictions
- Plan to carry out the cycle (who, what, where, when)
- Plan for data collection

**Act**
- What changes are to be made?
- Next cycle?

**Study**
- Complete the data analysis
- Compare data to predictions
- Summarize lessons

**Do**
- Carry out the plan
- Document problems, successes and unexpected observations
- Begin analysis of the data

**WORK PLAN**

**DATA REPORT**

**DOCUMENTATION OF CHANGE - MINUTES**

**REVISE LOGIC MODEL**
Key points about Logic Models

• Take time, but have huge value
• Align activities to outcomes
• Put data collection tools in place
• Focus activities on what’s important, not on what’s nice to do
• Become the way you do your work
• The greatest value is pulling the logic model data and looking at the results
Resources

- University of Wisconsin - Extension: Planning and Evaluating Education and Outreach Programs with a Logic Model
  - uwex.edu/ces/lmcourse#
- Community Tool Box: Developing a Logic Model
  - ctb.ku.edu/
- NW Center for PH Practice - Online training
  - nwcphp.org/training/courses/logic-models
- Logic Model templates
  - uwex.edu/ces/pdande/evaluation/evallogicmodelworksheets.html
- Center for Disease Control
  - cdc.gov/eval/resources/index.htm
- W.K. Kellogg Foundation Logic Model Development Guide
  - wkkf.org/Pubs/Tools/Evaluation/Pub3669.pdf
- How Logic Models Can Help NIDRR Grantees Plan and Demonstrate Progress
  - ncddr.org/du/researchexchange/v09n02/1_logic.html
Please complete the evaluation survey we send out!

Our Upcoming In-person Training Events

**Experiencing the QI Method**  
July 18, 2012, 9 AM to 3:30 PM,  
Tacoma-Pierce County Health Dept.

**Preparing for National Public Health Accreditation**  
September 20, 2012, 9 AM to 3:30 PM,  
Tacoma-Pierce County Health Dept.

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What Questions Have You Thought Of?