Logic Models, evaluation and systematic reviews

Mark Petticrew
Dept. of Social and Environmental Health Research
London School of Hygiene & Tropical Medicine

What is a logic model?

• A description of our theory or assumptions about how an intervention affects outcomes (rather than a description of what happens in real life)
• It describes our “theory of change”
Why logic models?

- Theoretical plausibility
- Theory behind the intervention and why effects on sub populations (re: health equity) need to be considered
- Demonstrates the hypothesised relationship between interventions and their intended outcomes
Developing a logic model

- Rarely developed “from scratch"
- May not always be appropriate
to finalize a logic model before
doing the review
  - Iterative process...
- Consulting stakeholders
- Reviewing existing theories
- Reviewing existing evidence

More detailed logic models- some examples

Model: How housing vouchers for poorer families may affect health (CDC)

Key: circle denotes intervention, rounded boxes are intermediate outcomes, and square boxes are community health outcomes.

Patient perspective
Patient preferences, concerns, misconceptions, stigma, perception of discrimination, Cost of testing.

All refugees and immigrants (risk varies with region of origin, migration experience)

Publicly funded rent-based rental vouchers & allowances

Reduce social isolation of poor families in neighborhoods of concentrated poverty

Accessibility to private rental market housing in more affluent neighborhoods

Household income spent on housing not greater than 25% of household income for necessities such as food, clothing, healthcare

Family stability (fewer family moves, less crowded living conditions, less homelessness)

Improved physical & mental health status, lower risk of behavioral problems among youth, & of violence or injuries for all ages

Adverse effects of screening:
Risk: spousal abandonment or violence, community/family rejection

Cost of testing

Treatment
ARV treatment and Prophylaxis
Education Counseling
Support

Pretest Counseling
HIV testing
Serologic algorithm (EIA & confirmatory test)

Screening

Adverse effects of vaccination:
Cost impact of HIV risk related behaviors

Canadian Guidelines on Immigrant and Refugee Health: logic model to illustrate beneficial and adverse effects of screening for and treating 20 specific conditions relevant to newly-arrived immigrants and refugees in Canada.
Logic model for the “Pawsitive Directions” Canine Program at Nova Institution for Women

- The next logic model derives from an evaluation of the “Pawsitive Directions” Canine Programme for women prisoners.

- This is a canine-handler training program that introduces women inmates to the basics of dog care and training, based on the principles of pet-facilitated therapy.
Systematic review of slum upgrading strategies to improve living conditions in developing world cities

Re-cap:
Added value of logic models

- Clarifying thinking! *(What are we thinking about how this will work?)*
- Checking consensus *(Are we all thinking the same thing?)*
- Refining review question *(what components/pathways are we/should we be focussing on in this review, or evaluation?)*
- Focussing on components *(Should we “lump” or “split”?)*
- Guiding inclusion & exclusion criteria *(“What sort of evidence do we need, and are we likely to find about the stages?)*
...Added value of logic models (continued)

- Justifying need for subgroup analyses (e.g. according to sex/gender, socioeconomic status) (“What works for whom, in what circumstances”)
- Explaining the rationale behind surrogate outcomes used in the review (Related to the previous point)
- Interpreting results based on intervention theory and systems thinking
- Illustrating how harms, feasibility, and cost issues are connected with interventions
- Dissemination: Communicating with others about the intervention and the review findings

Particularly useful…

- …when it is difficult to work out what the actual intervention “is”
- …when you know nothing about an intervention…but you have to do a review or an evaluation

Background: Prevalence of the problem or condition, current context

Data on prevalence of injury; analysis of policy or other context in which the intervention is being implemented

Information on types of intervention – how implemented, flexibility in implementation


**Background: Prevalence of the problem or condition, current context**

Survey to examine knowledge, attitudes to intervention(s)


**Background: Prevalence of the problem or condition, current context**

Survey, qualitative research to examine risk, attitude to risk


Background: Prevalence of the problem or condition, current context

Data on fines, violations, observational data


Background: Prevalence of the problem or condition, current context

Outcome evaluation: ITS? RCT? CBA?
An example...in the United States, the Robert Wood Johnson Foundation has suggested a range of strategies to combat childhood obesity in schools and communities*

- Increase the availability of healthy foods at home
- Offer healthy food choices at schools
- Increase physical activity in schools
- Increase physical activity in communities
- Reduce children’s screen time at home

* Stroup et al. 2009: Reversing the Trend of Childhood Obesity Prev Chronic Dis 2009;6(3)

Abbreviated logic model for reducing childhood obesity (Stroup et al., 2009)