Cochrane-WHO collaborative experiences

Systematic reviews to inform complex interventions, the importance of good reporting and context in guideline development processes.

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You're right, after thinking it through, I'm not sure how the one leads to the other.
Cochrane Reviews - Background

• Have always asked review authors to say ‘How the intervention might work’
• Extremely important for social interventions, or any complex intervention that might ‘work’ differently in different contexts
• BUT - least well done
• Impacts on a number of steps in the conduct of a review, including making sense of the results in terms of implications for practice and future research.
Black box evaluations

"I think you should be more explicit here in step two."
A theory of change

• Guideline developers need to know not only whether an intervention works, but
• How and why and under what circumstances

‘A theory of change is a description of how and why a set of activities – be they part of a highly focused program or a comprehensive initiative – are expected to lead to early, intermediate, and long-term outcomes over a specified period.’

Anderson, 2000
‘White box’ or theory driven evaluations

- Explore the internal/inherent ‘logic’ of an intervention
- Social science origins - Suchman (1967), Weiss (1972ff), Chen (1989)
- Beginning to appear in systematic reviews, and in broader discussions about the evaluation of complex health interventions e.g. Rohwer et al 2016; De Silva et al. 2014
Survey results: 9 out of 10 angels feel that dancing on the head of a pin is demeaning and potentially quite hazardous.
Building blocks of a theory of change

1. A clearly articulated **problem definition**
2. Specification of the **essential components** of the intervention; 
   \( f, d, 'dose' \) and how this can be delivered;
3. The **means whereby** the intervention brings about change, including
   - any important sequencing of events or relationships between component parts,
   - any mechanisms that might explain differential responses to the intervention, such as individual differences, timing, method of delivery;
4. Specification of expected outputs and outcomes, and the interrelationships between them.

Lipsey 1993
Component Parts

• Inputs
  – The resource that go into the programme, e.g:
    • Staff time, materials, money, equipment, training

• Outputs
  – What is ‘done’ and who ‘takes part’ e.g:
    • Parenting programme for parents of preschool children

• Outcomes
  – Changes or results from the programme:
    • short-, medium- or long-term

• PICO–friendly, but needs to articulate relationships and mechanisms of change
FROM: Rohwer et al. 2016 – their example of a ‘system-based logic model’
Simple Logic Model

Get food → Eat food → Feel better

How ToC and Logic Models Help

• Improve ‘upstream’ development of interventions (feasibility and acceptability)

• For systematic reviews:
  – Improve review coherence
  – Improve choice of outcomes
  – Improve attention to ‘context’ and other indicators of the underlying mechanisms of change
  – Improve interpretation of results
  – Improve articulation of implications for future research and practice
HOLE IN YOUR
LOGIC
SOME REFERENCES


• De Silva et al. (2014) Theory of Change: a theory-driven approach to enhance the Medical Research Council’s framework for complex interventions, Trials, 15, 267

• Evaluation and Program Planning – 2013 - Special Issue on logic modelling and evaluation theory Vol 38.


• Rohwer et al. (2016) Logic models help make sense of complexity in systematic reviews and health technology assessments. J. Clin Epidem, http://dx.doi.org/10.1016/j.jclinepi.2016.06.012

The Black Box

"the way scientific and technical work is made invisible by its own success. When a machine runs efficiently, when a matter of fact is settled, one need focus only on its inputs and outputs and not on its internal complexity. Thus, paradoxically, the more science and technology succeed, the more opaque and obscure they become."

Complex interventions: our common ground

• Aspects of complexity
  – characteristics of the intervention, contextual factors, multiple outcomes, effect modifiers, package of interventions (integrated actions)

• Clarity in the question to be addressed
  – Outcomes, processes, mechanisms

• Outcomes of interest

Global policies are not “based” on evidence

- Quality of the evidence
- Values and preferences
- Balance of benefits and harms
- Resource implications
- Priority of the problem
- Equity and human rights
- Acceptability
- Feasibility

Beyond the effects of an intervention: biofortification example

- Biofortified crops: agronomic biofortification, conventional plant breeding, and bio-engineering
- Biofortified crops production, use and consumption
- Bioavailability of biofortified crops
- Models for estimating nutrient fortification levels in different biofortified crops
- Economic feasibility and impact of biofortified crops: from consumers to added productivity and economic development
- Legal framework for biofortified crops and seeds production
- Food safety and environmental considerations of biofortified crops
- Determinants of equity in access to biofortified crops
- Seed markets, trade and intellectual property
- Ethical considerations in biofortification of crops
- Country experiences and case studies
WHO/CDC logic model for vitamin and mineral interventions in public health programmes

• developed by applying principles of programme evaluation, public health nutrition theory and programmatic expertise

• Available in all six WHO official languages and is adaptable through ppt version

Challenges in the collaboration

• Need to ask for more explicit reporting of “excluded” studies – they are informative!!
• Alignment of search updates for guideline development group consensus, WHO ePublication clearance including GRC, and Cochrane publication requirements – be realistic!
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