



Public Health Nutrition Intervention Management



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Hughes R, Black C, Kennedy NP. *Public Health Nutrition Intervention Management: Logic modelling.* JobNut Project, Trinity College Dublin. 2008.

ADDITIONAL COPIES

The complete suite of 18 Public Health Nutrition Workforce Development units developed by the JobNut Project and the related Educator's Guide are available for downloading at the following website:

<http://www.medicine.tcd.ie/nutrition-dietetics/jobnut/>

DISCLAIMER

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ACKNOWLEDGEMENTS

Funding to support the JobNut Project was provided by the Leonardo Da Vinci Program, Education & Culture, European Commission.

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Intelligence

Action > Logic Modelling

Evaluation



Action

Unit 10 - Logic Modelling

Learning Objectives



On completion of this unit, students should be able to:

1. Describe the relevance and role of logic models in public health nutrition intervention management.
2. Explain the various types of logic models and the process for developing a logic model.
3. Apply logic modelling principles and processes in public health nutrition intervention design and justification.
4. Demonstrate how logic models are used to focus evaluation efforts in public health nutrition intervention management.

Intelligence



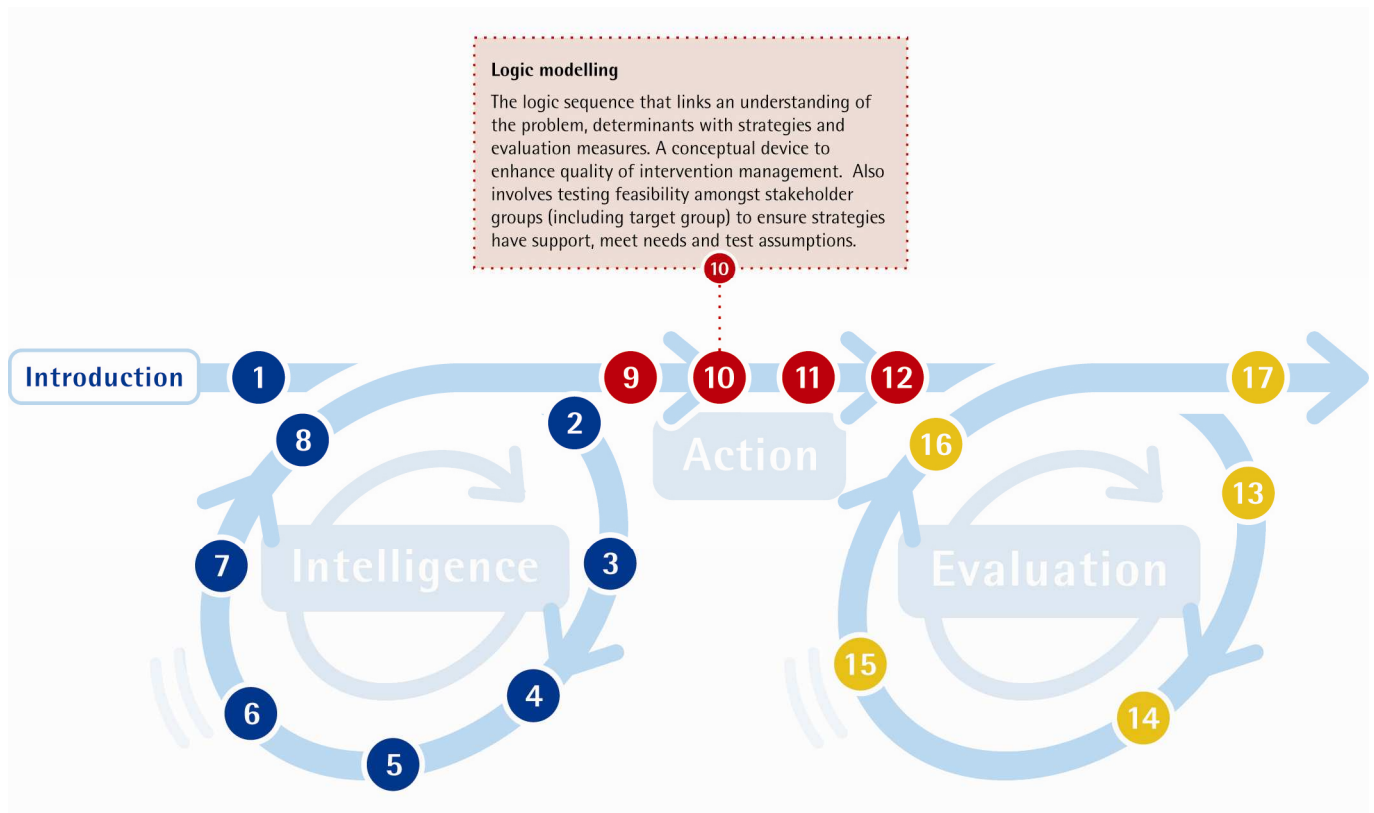
Unit Readings

- McCawley, P. *The Logic Model for Program Planning and Evaluation*. 2001. University of Idaho Extension: Moscow.
- Macaskill, L., Dwyer, J., Uetrecht, C., Dombrow, C., Crompton, R., Wilck, B. and Stone J. An evaluability assessment to develop a restaurant health promotion program in Canada. *Health Promotion International*. 2000. 15(1): 57-69.
- Dwyer, J., Hansen, B., Barrera, M., Allison, K., Ceolin-Celestini, S., Keonig, D., Young, D., Good, M. and Rees, T. Maximizing children's physical activity: an evaluability assessment to plan a community-based, multi-strategy approach in an ethno-racially and socio-economically diverse city. *Health Promotion International*. 2003. 18(3): 199-208.
- Partanen, T., Johansson, M., Aherns, W., Sala, M., Wesseling, C., Boffetta, P., Brenes, F., Font, C., Frentzel-Beyme, R., Garau, I., Janer, G., Kallas-Tarpila, T., Kogevinas, M., Loponen, M., Ostergren, L., Peltomaki, P., Soler, M., Svanstrom, L., Temple, J. and Neuvonen, K. Assessment of feasibility of workplace health promotion. *Preventive Medicine*. 2002. 35: 232-240.



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From: Hughes R, Margetts B. *Public Health Nutrition: A Practitioners Handbook*. Blackwell Publishing, 2009.



Logic Modelling

Preamble

Public health nutrition practice has a strong focus on building capacity for effective intervention. Building this capacity often requires practitioners to have advanced grant-writing and other communication skills, in order to communicate a vision for an intervention as a solution to a public health nutrition (PHN) problem. Logic models and the process of logic modelling in PHN intervention practice is a very useful device to achieve this objective.

The age-old maxim “a picture paints a thousand words” is particularly relevant to logic modelling, because the key objective involved in this process is to conceptualise your intervention into a diagram that clearly illustrates the strategy mix, assumptions and causal chain of change expected results. This will contribute to the achievement of goals and objectives.

Logic modelling is more than just an exercise in drawing, it forces us to reconsider and make transparent our assumptions and “the logic” underpinning our intervention strategy mix. This helps in the process of convincing fund allocators that our intervention as proposed, is worth investing in and makes sense. This after all, is what an intervention plan and related submission is setting out to achieve.

What is a Logic Model?

A logic model is a diagrammatic representation of an intervention. A logic model shows the assumptions underlying the intervention activities, and graphically depicts the association between the main intervention strategies, and the goals, objectives, target group, indicators and resources. A logic model represents the logic or conceptualisation upon which an intervention is based (1, 2). A well constructed logic model is like a useful road map and should explain where you are going, how you will get there and will show that you have arrived (3). The logic model will define the intervention outcome and boundaries, highlight important intervention features and show clear pathways of action. Logic models are useful tools for stakeholders to understand the overall structure and function of an intervention, and can be used to demonstrate accountability and results to funding agencies and stakeholders (4).

Logic models are a core component of intervention planning. Logic models are commonly constructed early in the intervention planning process to confirm the intervention vision and priorities, validate draft goals and objectives, and substantiate the intervention’s strategy portfolio. Logic models contribute to intervention planning by:

- Demonstrating how an intervention’s strategies contribute to the achievement of intended goals and objectives
- Identify gaps and inconsistencies within an intervention
- Provide an effective communication tool
- Involving stakeholders to participate in intervention planning
- Building a common understanding of the intervention assumptions, intentions and actions (4).

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Underlying assumptions

Assumptions are the beliefs about the intervention, the participants and how the intervention will work. These underlying assumptions can hinder intervention success or can result in poorer-than-expected results.

Logic modelling helps make assumptions explicit for a more successful intervention.

Source: (3)

Logic models are also a core component of intervention evaluation. Logic models provide the intervention description that guides intervention evaluation by identifying what and when to measure objectives. Logic models direct intervention evaluation by:

- Matching intervention strategies with associated objectives and indicators of success - providing a useful template for evaluation design.
- Being a resource for evaluability assessment - the process of determining if a program is ready to be evaluated.
- Assisting identification of success indicators that are critical for intervention evaluation.
- Showing funding agencies and stakeholders how specific program activities contribute to the achievement of intervention goals and objectives.
- Being a useful tool for engaging stakeholders in participatory evaluation.

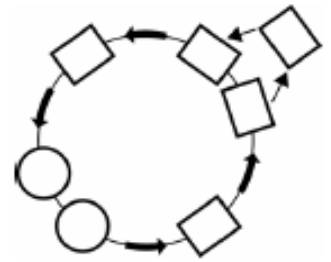
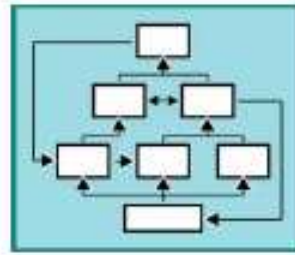
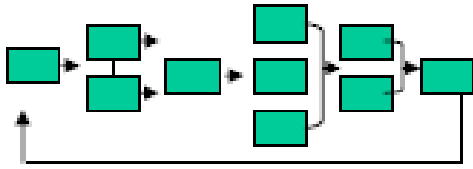
Types of Logic Models

Logic models come in various shapes and forms, depending on the nature of the intervention the needs and preferences of the stakeholders (4). Although there is no standard format for logic models, they are usually depicted in chart form, with lines or arrows delineating the relationship between key intervention features (strategies, objectives, target population, partnerships etc), usually presented in boxes or ovals.

This graphical display of boxes can be vertical, horizontal, circular or more complex and dynamic. The level of detail and use of cultural adaptations (like storyboards) are dependent upon the complexity and context of the intervention (3). Figure 1 shows various logic model layouts.



Figure 1. Example logic model layouts



Inputs	Outputs	Outcomes
1	1a	1a
2	2a	2a
3	3a	3a
4	4a	4a

Source: (3)

Very complex interventions may have multiple models that interact. **Multi-level** logic models have linked levels displaying consistency of purpose and strategy across levels. Each individual logic model is built with reference to the level above or below in relation and is presented in a cascading manner. **Multi-component** logic models detail various intervention strategies and link the strategies within a comprehensive initiative (3).

Practice Note



For PHN interventions logic models are most effective when they are displayed on a single page. Constructing a logic model within a single page ensure only the key elements of the intervention are included and stakeholders can gain a more logical and simple understanding of what the intervention is intending to achieve, how it will be implemented and what the key measures of success are.

Remember, a logic model should be a communication device and illustrate intervention characteristics of relevance, quality and impact to foster buy-in from stakeholders and articulate why the intervention is important to them.

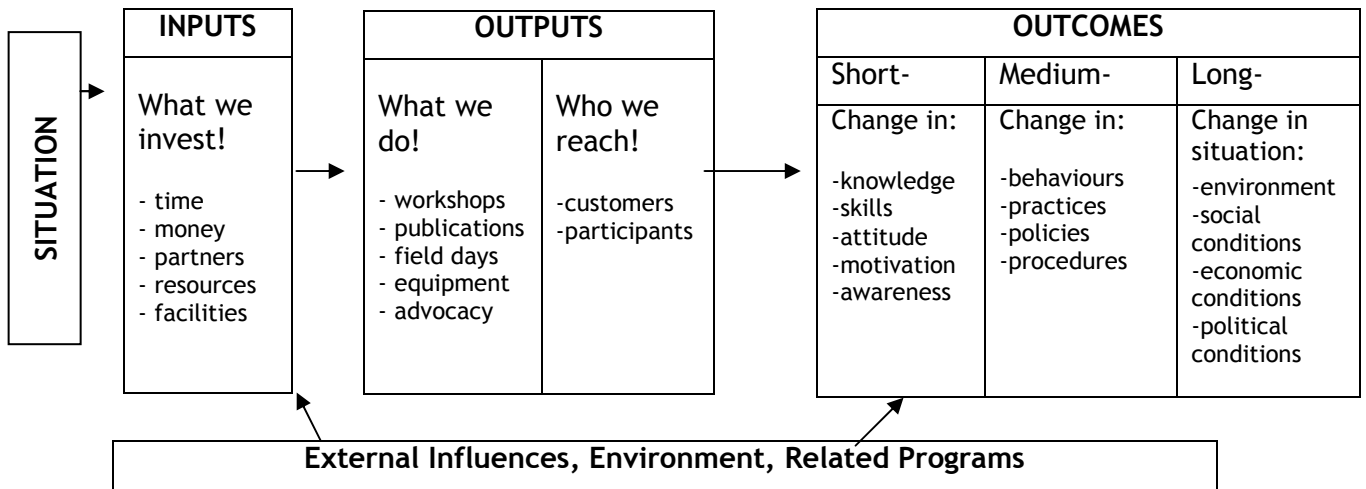
Logic Model Elements

In simple terms logic models contain several key elements that are necessary to explain the link between the problem, intervention and the impact. This may include description of the situation, inputs and outputs and the outcome. Figures 1 and 2 graphically demonstrate the key elements of a logic model in two different models.

Underlying a logic model is a series of 'if-then' relationships that express the interventions theory of change where by the output from one effort becomes the input for the next effort. In this manner, it may seem over simplified to be using a linear model to simulate a multi-dimensional process however the model can quickly become too complicated if the reality is attempted to be illustrated.

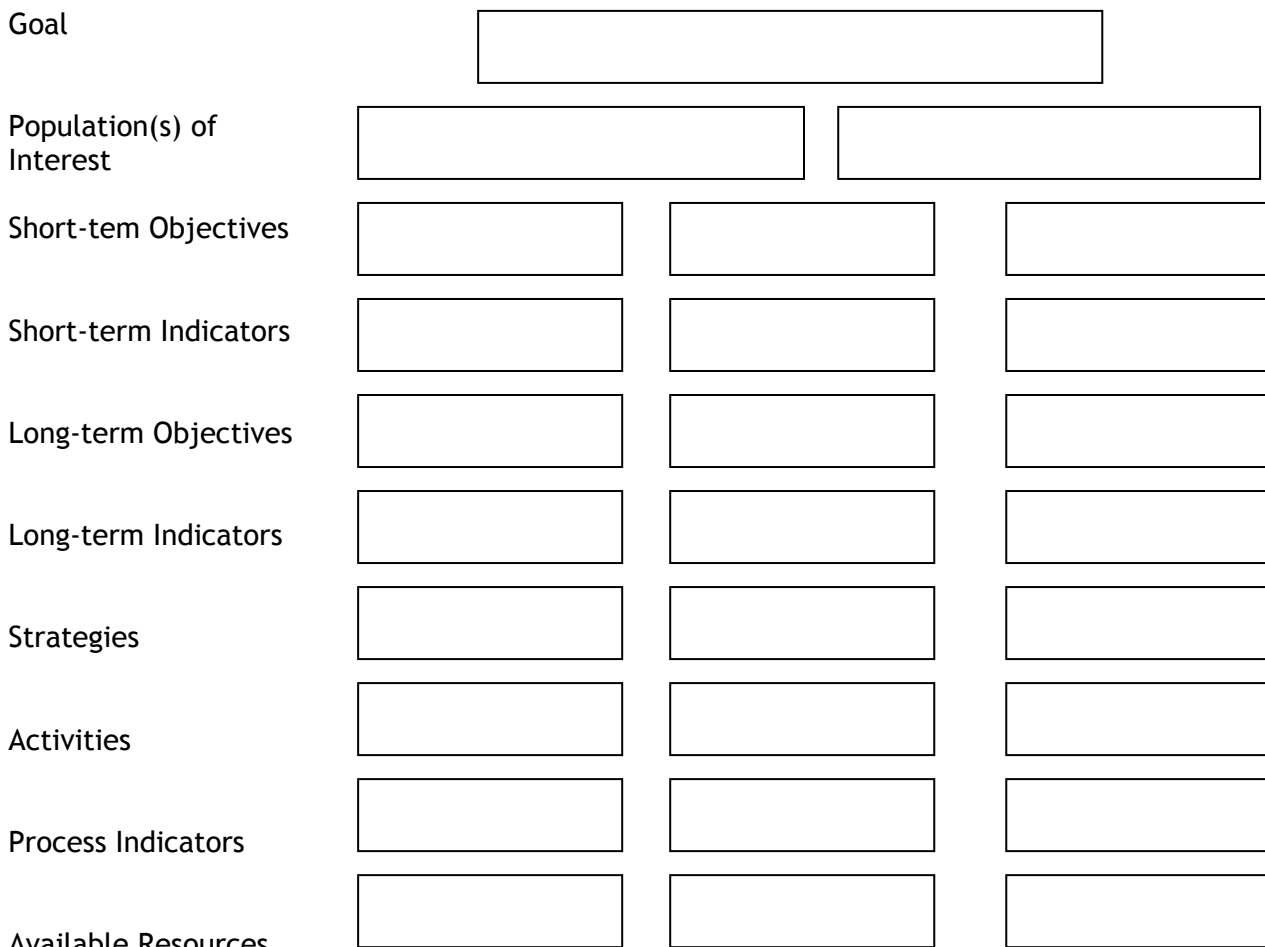


Figure 2. Elements of a logic model - logic model type 1



Source: (5)

Figure 3. Elements of a logic model - logic model type 2



Source: (4)



Elements of a logic model:

- **Situation** - the situation statement explains the relevance of the project, including a description of the problem and who is affected, and establishes a baseline for comparison at the close of the intervention. In some models this is stated as the **goal and target population** of the intervention.
- **Inputs** - the **resources** and **capacity** that is put into the intervention, including human resources (staff/ volunteer time), knowledge, skills or expertise, fiscal resources, facilities and equipment required to support the program and partnerships/collaborations involved in the intervention. Detailing inputs allows comparison of actual investments with planned investments which can be used to improve future programs and justify budgets.
- **Outputs** -the **activities** and **strategies** of the intervention, including the populations reached as well as the action. Describing outputs allows establishment of a link between the problem and the impact of the problem (intended outcomes).
- **Outcomes** - the results or intended impact of the intervention. Outcomes can be stated in terms of short-term, intermediate-term or long-term impacts and are useful to communicate the results of the investment. Intervention **objectives** and **sub-objectives** are often stated as the outcomes.
- **External influences** - documenting the social, political, physical and institutional environments that can influence the outcomes. Highlighting the external influences can help communicate the broader supporting or hindering context and issues to all stakeholders involved in the intervention. External influences are not always included in logic models and may be replaced with process and impacts evaluation indicators.

Intelligence

Reading

McCawley, P. *The Logic Model for Program Planning and Evaluation*. 2001. University of Idaho Extension: Moscow.





Logic Modelling in Public Health Nutrition Intervention Management

Logic modelling can be used in a number of ways to inform public health nutrition practice, including:

- Communicating the underlying logic and assumptions underpinning an intervention (as described above), but also:
- Engaging key stakeholders in intervention design (see the article by Dwyer et al-readings)
- Critically evaluating existing interventions (note that de-constructing interventions described in the literature into a logic model is often very enlightening) (see the article by Macaskill et al 2001).

Logic modelling in PHN intervention management draws upon the determinant analysis process completed in the Intelligence Module of the PHN intervention management bi-cycle, and provides the basis for the development of evaluation indicators (step 12 Intervention and Evaluation planning).

Figure 4 below provides a fictional example of a logic model in PHN intervention management that illustrates the link between determinant analysis and logic modelling.

Consistent with the community development and capacity building principles that should underpin effective PHN practice, logic model development should involve extensive consultation with stakeholders. Stakeholder participation tests the feasibility of the proposed intervention and creates increased agreement with the intervention design and participation in intervention implementation.

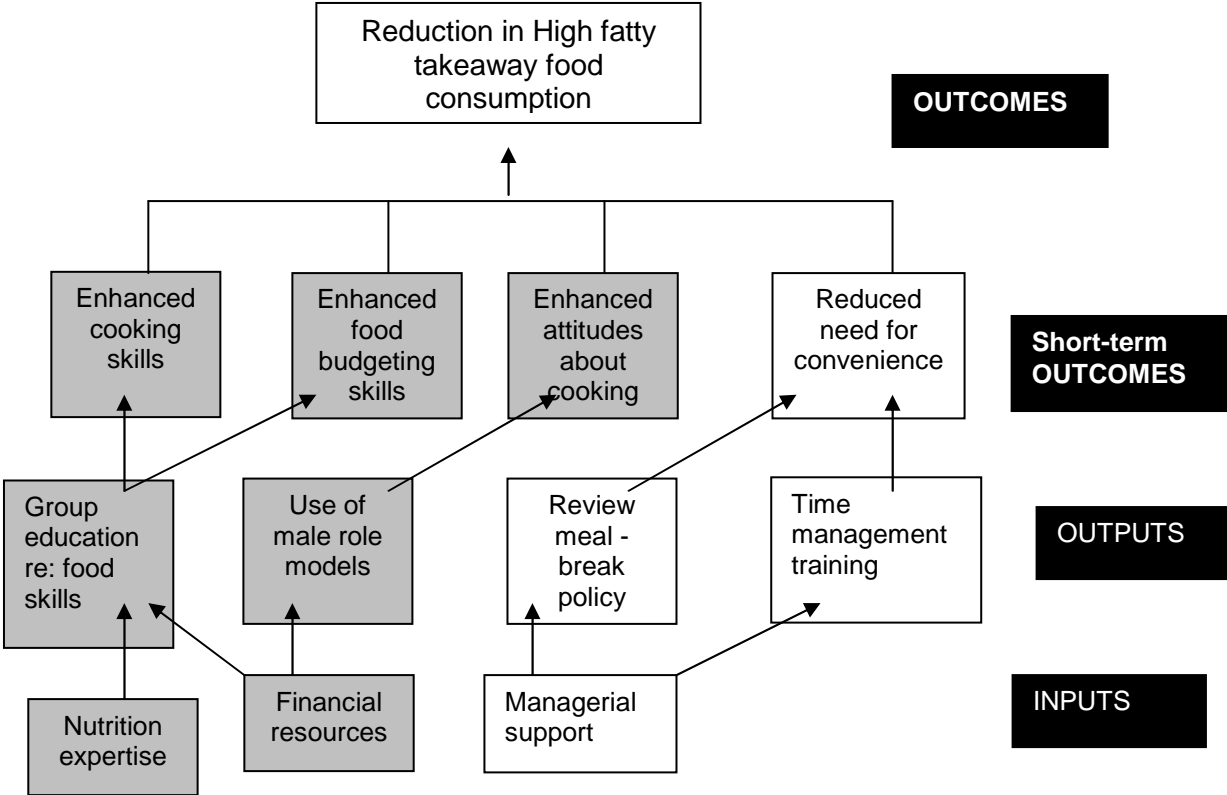
The readings by Macaskill et al (2000) and Dwyer et al (2003) provide examples of logic model development in PHN intervention management. The article by Partanen et al (2002) outlines the process of feasibility testing a health promotion intervention which can also be incorporated into logic model consultation to ensure the proposed intervention is feasible.

Figure 4. Logic model in PHN intervention management - fictional example

The Uddevalla Volvo Factor Nutrition Intervention

- Middle aged men in the Uddevalla Volvo Factory work population have high obesity rates and associated absenteeism.
- Determinant analysis has identified high consumption of high fat takeaway food amongst the Springfield power plant workforce as the major problem.
- Middle aged male workers in this population are reliant on takeaway food
- Determinants of this high takeaway consumption appear to be:
 1. Low food preparation knowledge and skills
 2. Low level food budgeting skills
 3. Attitudes that cooking is “women’s business”
 4. Time poverty or a need for convenience

SITUATION



A strategy mix that uses a Football star Lars Lithander to run cooking classes for men after work shifts could help address the shaded determinants in this model

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Reading

Macaskill, L., Dwyer, J., Uetrecht, C., Dombrow, C., Crompton, R., Wilck, B. and Stone J. An evaluability assessment to develop a restaurant health promotion program in Canada. *Health Promotion International*. 2000. 15(1): 57-69.

Dwyer, J., Hansen, B., Barrera, M., Allison, K., Ceolin-Celestini, S., Keonig, D., Young, D., Good, M. and Rees, T. Maximizing children's physical activity: an evaluability assessment to plan a community-based, multi-strategy approach in an ethno-racially and socio-economically diverse city. *Health Promotion International*. 2003. 18(3): 199-208.

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Exercise 1.



After reading the articles by Macaskill et al (2000), Dwyer et al (2003) and Partanen et al (2002), and considering your selected scenario, outline the methodology you would employ to construct a logic model for your intervention. Consider the steps you have already undertaken and how you can develop these relationships and intelligence further.

Workshop/tutorial option:

Complete the exercise in small groups followed by a whole-class debriefing

CPD option:

Conduct the above exercise in the context of your current work role and an identified nutrition problem in the community or population you are working with.

Case Study



The Growing Years Project is a community-based nutrition and physical activity promotion project that targets pregnant women and their infants, during the year either side of childbirth. Figure 5 below is the projects logic model that links the logic sequence from formative research > strategies > impacts > outcomes.

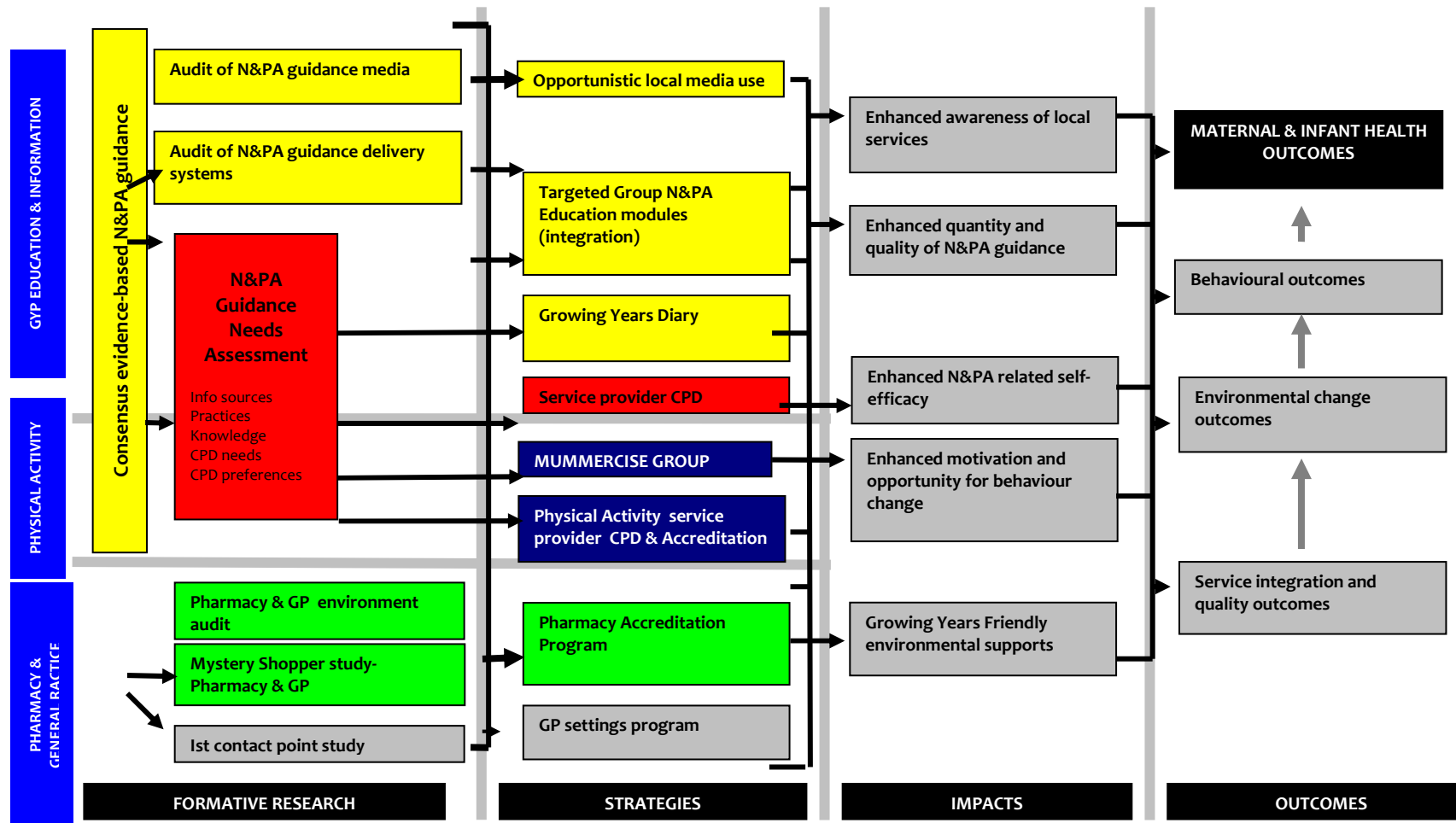
Intelligence

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Evaluation



Figure 5. Logic model from the Growing Years Project



Intelligence

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Evaluation



Developing a Logic Model

The recommended process for developing a logic model is to work through four key tasks:

- Preparing to develop a logic model
- Gathering intelligence for the logic model
- Creating a logic model
- Reviewing the logic model (4).

The first two tasks in this process have largely been fulfilled in the previous 9 steps of the PHN intervention management bi-cycle however a brief outline of each task is outlined in Table 1 below.

Table 1. Tasks involved in developing a logic model

Task	Task element	Considerations	Relevant Step in PHN intervention management
Preparation	<ul style="list-style-type: none"> • Stakeholder engagement and participation • Timeline • Capacity analysis • Decision making 	<ul style="list-style-type: none"> • Logic models should be a product of ‘collective brainstorming’ by key stakeholders. • Participatory processes can conflict with political and cost issues - set a timeline. • Assess resources available • Clarify the decision-making process - how decisions will be made and who has decision making power. 	<ul style="list-style-type: none"> • Community engagement and consultation • Stakeholder consultation • Capacity analysis
Intelligence	<ul style="list-style-type: none"> • Gathering information and intelligence re the problem, its determinants and strategy options. 	<ul style="list-style-type: none"> • Information to assist development of intervention goal, objectives, intervention strategies and evaluation indicators. 	<ul style="list-style-type: none"> • Community engagement and consultation • Stakeholder consultation • Problem analysis • Determinant analysis
Creation	<ul style="list-style-type: none"> • Decide how much information will be in the logic model and the type of model that will be used. 	<ul style="list-style-type: none"> • The logic model must be meaningful, useful and relevant for key stakeholders. • Determine the direction of information flow, the amount of text and visual layout. • Try to avoid clutter and confusion. • Review other examples of logic models. 	<ul style="list-style-type: none"> • Logic modelling



Table 1 Continued

Task	Task element	Considerations	Relevant Step in PHN Intervention Management
Review	<ul style="list-style-type: none"> Reviewing involves presenting and discussing the logic model with key stakeholders, making revisions and taking action. 	<ul style="list-style-type: none"> Review should involve assessment of: <ul style="list-style-type: none"> → Completeness → Presentation → Logic 	<ul style="list-style-type: none"> Logic modelling

Source: (4)

Exercise 2.



Considering your selected scenario and the determinant diagram you developed in unit 4, and your goals and objectives from unit 9, draft a logic model for your identified PHN problem. Try to sequence intervention elements in terms of priority.

Be explicit and make a list of assumptions underlying your strategy selection and logic. Providing this explanation is an important component of your strategy description.

Workshop/tutorial option:

Complete the exercise in small groups followed by a whole-class debriefing

CPD option:

Conduct the above exercise in the context of your current work role and an identified nutrition problem in the community or population you are working with.



Key Questions for Reviewing Logic Models

Reviewing logic models involves presenting and discussing the logic model with key stakeholders, then making revisions and taking action. Below are some questions to ask the process of reviewing and to prompt discussion about the logic model.

Completeness

- Are population of interest identified?
- Are short-term and long-term objectives identified? Are they SMART?
- Are the strategies and activities linked to the appropriate objectives?
- Are there indicators for the objectives and strategies?
- Is there a mix of strategies across health promotion action areas?
- Are there wide range of resources and important partnerships outlined?
- Have all key stakeholder concerns been addressed?

Presentation

- Are there too many boxes?
- Is it easy to follow the arrows and flow of logic?
- Is there adequate blank space?
- Can the model be followed and understood by all stakeholders?

Logic

- Will the short-term objectives lead to the long-term objectives?
- Is the selection of intervention strategies logical and appropriate for the target group?
- Are the strategies likely to result in meeting the short-term objectives?
- Are there sufficient resources to drive the intervention strategies and activities?

Exercise 3.

Conduct a review on a colleague's logic model (or an attempted objective review on your own logic model). Use the logic model review considerations listed above as a guide to enhancing your intervention logic model.



Workshop/tutorial option:

Complete the exercise in small groups followed by a whole-class debriefing



Assessment



Use your responses to Exercises 2 and 3 to complete the logic modelling section of the intervention management template. Link your logic model with the determinant analysis and action statements you have already developed and provide an explicit explanation of your underlying assumptions and strategy selection logic. Insert your logic model in the strategy justification section of the Intervention Management Template.

CPD option:

Conduct the above exercise in the context of your current work role and the community or population you are working with.

Key Points



- A logic model is a diagrammatic representation of an intervention. A logic model illustrates a sequence of cause-and-effect relationships between determinants of health problems, strategy interventions and outcomes to communicate the path towards a desired result.
- Logic models come in various shapes and forms, depending on the nature of the intervention the needs and preferences of the stakeholders. Although there is no standard format for logic models, they are usually depicted in chart form, with lines or arrows delineating the relationship between key intervention features (strategies, objectives, target population, partnerships etc), usually presented in boxes or ovals.
- Logic modelling is a core component of PHN intervention and evaluation planning. The process of developing a logic model applies the intelligence gathered during the PHN intervention management bi-cycle steps 1-9 to develop a graphical illustration of how the intervention strategies are expected to influence and address the determinants of the problem.
- Logic model development should involve extensive consultation with stakeholders.



Additional Resources and Readings

Logic modelling

- Taylor-Powell, E., Jones, L. and Henert, E. *Enhancing Program Performance with Logic Models*. 2002. University of Wisconsin-Extension. <http://www.uwex.edu/ces/lmcourse/>
- The Health Communication Unit. *Logic Models: workbook*. 2001. The Health Communication Unit (THCU): Toronto.
- Rush, B. and Ogbourne, A. Program logic models: expanding their role and structure for program planning and evaluation. *The Canadian Journal of Program Evaluation*. 1991. 6(1): 95-106.

References

1. Rossi, P., Freeman, H. and Lipsey, M. *Evaluation: a systematic approach*. 1999, SAGE Publications: Thousand Oaks.
2. Smith, M. *Evaluability Assessment: a practical approach*. 1989. Kluwer Academic: Norwell.
3. Taylor-Powell, E. and Henert, E. *Developing a logic model: teaching and training guide*. 2008. University of Wisconsin-Extension: Madison.
4. The Health Communication Unit. *Logic Models: workbook*. 2001. The Health Communication Unit (THCU): Toronto.
5. McCawley, P. *The Logic Model for Program Planning and Evaluation*. 2001. University of Idaho Extension: Moscow.