

Module 8

Evaluation of chronic disease innovations and models of care

Basic concepts

This section will provide you with tools to assist you with Assignment 2. The best way to learn these methods is to practice using them, particularly in small groups. These course notes provide multiple resources to help you do this.

It is about evaluation of prevention interventions and models of care for chronic disease. We focus on three aspects of evaluation: describing the intervention (Tidier Tool), describing the program logic, and the elements of a program that need to be assessed to identify how well that program can be sustainably adopted (RE-AIM framework).

Learning objectives



By the end of this section you will be able to:

- Describe an intervention using the Tidier Tool
- Reproduce the elements of a program logic model
- Describe the elements of the RE-AIM framework.

8.1 Describing the intervention: TIDieR

When reporting an evaluation of an intervention or program, a clear description of that intervention is necessary so that others can understand what is being evaluated and can implement the intervention elsewhere. Having noted that many published evaluations of interventions provided poor-quality descriptions of their interventions, an international team of researchers developed checklist and guide for reporting interventions. This checklist is called the template for intervention description and replication (TIDieR) [1]. In their video (see activity 1), the authors describe the tool as being like a recipe, because to replicate the intervention (or prepare the dish), you need to know about the ingredients, equipment and how to use them. A summary of the checklist is provided in **Table 1**.

An online tool is available to help you to use the TIDieR tool:

<http://www.tidierguide.org/#/author-tool>

Using TIDIER to describe interventions or programs in the prevention and management of chronic disease can be difficult given their complexity. We have recently used the tool to describe a complex intervention in a study to improve self-management support by patients with low health literacy. Excerpts of this are provided in Table 2.

Figure 1 A recipe: ingredients, equipment, directions



Source: <https://www.flickr.com/photos/steffanyf/4089539863>

Table 1 Items included in the Template for Intervention Description and Replication (TIDieR) checklist: information to include when describing an intervention

Item No	Item
Brief name	
1	Provide the name or a phrase that describes the intervention
Why	
2	Describe any rationale, theory, or goal of the elements essential to the intervention
What	
3	Materials: Describe any physical or informational materials used in the intervention, including those provided to participants or used in intervention delivery or in training of intervention providers. Provide information on where the materials can be accessed (such as online appendix, URL)
4	Procedures: Describe each of the procedures, activities, and/or processes used in the intervention, including any enabling or support activities
Who provided	
5	For each category of intervention provider (such as psychologist, nursing assistant), describe their expertise, background, and any specific training given
How	
6	Describe the modes of delivery (such as face to face or by some other mechanism, such as internet or telephone) of the intervention and whether it was provided individually or in a group
Where	
7	Describe the type(s) of location(s) where the intervention occurred, including any necessary infrastructure or relevant features
When and How Much	
8	Describe the number of times the intervention was delivered and over what period of time including the number of sessions, their schedule, and their duration, intensity, or dose
Tailoring	
9	If the intervention was planned to be personalised, titrated or adapted, then describe what, why, when, and how
Modifications	
10*	If the intervention was modified during the course of the study, describe the changes (what, why, when, and how)
How well	
11	Planned: If intervention adherence or fidelity was assessed, describe how and by whom, and if any strategies were used to maintain or improve fidelity, describe them
12*	Actual: If intervention adherence or fidelity was assessed, describe the extent to which the intervention was delivered as planned

Source: Hoffmann, T.C., et al., Better reporting of interventions: template for intervention description and replication (TIDieR) checklist and guide. 2014. 348: p. g1687.

Table 2 Example of a description of an intervention using the TIDieR tool

Why	This arose from deliberative consultations undertaken with a range of stakeholders including policy makers, healthcare providers, community members and field experts about how to improve access to healthcare for vulnerable populations in South West Sydney
What	The intervention was at two levels for general practices in low socioeconomic status areas: 1. At the level of the practice: practice staff were trained using an online training module, clinical audits were conducted on the recording and quality of care for patients with type-2 diabetes (T2D) and meetings were conducted at practices to discuss the audits and arrangements for the interventions. 2. At the patient level: at-risk patients with T2D were identified from medical records, invited by mail to participate. After a baseline phone interview the patients were invited to attend the practice for a health-check based on the 5As (assess, advise, agree, assist and arrange) during which patients were shown a website (either in English or Arabic) which provided information about self-management of T2D. They were encouraged to use the website, and then followed up 6 weeks later.
Who	The primary health network set up and hosted the codesigned website and conducted practice visits. The University developed the training modules, conducted the audits and produced the audit reports, provided resources for the health check visits. The general practice invited patients to participate, invited them attend visits, conducted health check visits using a template and arranged and provided review at 6 weeks.
How, When and how much	The Clinical Audit Tool (CAT4) was used at baseline to identify eligible patient participants with poor management of T2D or other risk factors. CAT4 was also used to conduct the de-identified audit extractions that were then used to produce reports that detailed the recording of quality measures and the levels in comparison with standards (defined by RACGP). The Training Modules (over 2.5 hours) provided the rationale for and description of the study and detail of how to conduct the health-check visits structured on the 5As. There were three practice visits about one month apart focused on: 1. recruitment and review of the clinical audit (including improving recording). 2. Organising recall and conduct of health check visits including accessing the web-portal. 3. Conducting follow up visits 6 weeks and trouble shooting.

Learning Activity 1



Read the paper and watch the video on TIDieR on the BMJ website: <https://www.bmj.com/content/348/bmj.g1687> Consider how it could be used for Assignment 2.

Read about its use and suggestions for improving the TIDieR in a paper by Cotterill [2], which is available at <https://bmcmmedresmethodol.biomedcentral.com/articles/10.1186/s12874-017-0461-y#Tab2>

8.2 Describe the logic of the intervention

Program logic models are a tool for describing the elements and logic of a program. They comprise a series of “if-then” statements that help to identify the specific steps of an intervention: If our *assumptions* are correct, *external factors* are favourable, and we use these *inputs* we will create these *outputs* that will achieve these *outcomes*. Definitions of these terms from a University of Wisconsin training guide are provided in Table 3.

Table 3 Definitions of logic model components

SITUATION: The originating problem, or issue, set within a complex of socio-political, environmental and economic circumstances. The situation is the beginning point of logic model development.
INPUTS: What goes into the program: resources and contributions that are invested? Inputs include such elements as staff, money, time, equipment, partnerships, and the research base
OUTPUTS: What we do and whom we reach: activities, services, events, products and the people reached. Outputs include such elements as workshops, conferences, counselling, products produced and the individuals, clients, groups, families, and organizations targeted to be reached by the activities.
OUTCOMES: What results: the value or changes for individuals, families, groups, agencies, businesses, communities, and/or systems. Outcomes include short-term benefits such as changes in awareness, knowledge, skills, attitudes, opinions and intent. Outcomes include medium-term benefits such as changes in behaviours, decision-making and actions. Outcomes include long-term benefits (often called impact) such as changes in social, economic, civic, and environmental conditions.
ASSUMPTIONS: The beliefs we have about: the program, the people involved, and how we think the program will work. Assumptions include our ideas about the problem or situation; the way the program will operate; what the program expects to achieve; how the participants learn and behave, their motivations, etc.; the resources and staff; the external environment; the knowledge base; and the internal environment. Faulty assumptions are often the reason for poor results.
EXTERNAL FACTORS Aspects external to the program that influence the way the program operates and are influenced by the program. Dynamic systems interactions include the cultural milieu, biophysical environment, economic structure, housing patterns, demographic makeup, family circumstances, values, political environment, background and experiences of participants, media, policies and priorities, etc. Elements that effect the program over which there is little control.

Source: Taylor-Powell and Henert Developing a logic model: Teaching and Training Guide, Handout 15, page 58 [3]

There are many different types of program logic model. The usual templates are linear, but this does not mean you have stick with a linear model. They can be circular, have multiple paths and feedback loops (see **Figure 1**).

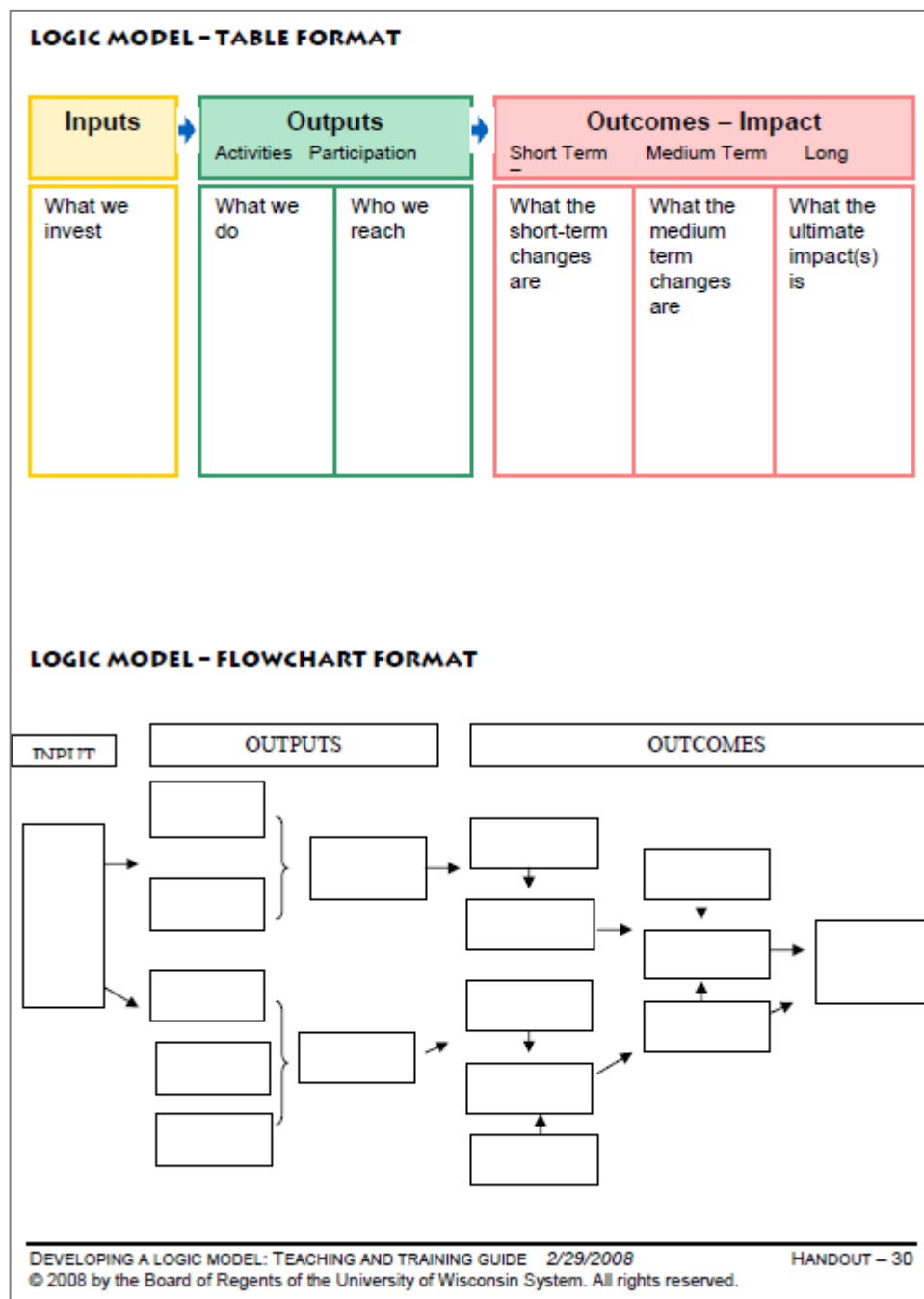


Figure 2 Example template for a program logic model.

Source: Taylor-Powell and Henert (2008) Developing a logic model: Teaching and Training Guide, Handout 30, page 72 [3]

Logic models are so useful and so commonly used for planning and evaluation that there are many free online guides, training programs and resources. A recommended guide is that developed by the W.K. Kellogg Foundation [4] available here.

<https://www.wkcf.org/resource-directory/resource/2006/02/wk-kellogg-foundation-logic-model-development-guide>

You don't need to access all of these resources, but it can be helpful to have concepts explained in different ways.

General guides:

- <https://aifs.gov.au/cfca/expert-panel-project/program-planning-evaluation-guide/plan-your-program-or-service/how-develop-program-logic-planning-and-evaluation>
- <https://sustainingcommunity.wordpress.com/2016/02/22/program-logic-models/>
- https://www.betterevaluation.org/en/resources/guides/creating_program_logic_models
- https://www.sagepub.com/sites/default/files/upm-binaries/23938_Chapter_3_Creating_Program_Logic_Models.pdf
- <https://www.cdc.gov/eval/steps/step2/index.htm>
- https://www.cdc.gov/dhdsp/docs/logic_model.pdf

Training program:

- <https://fyi.extension.wisc.edu/programdevelopment/files/2016/03/lmguidecomplete.pdf>
- <https://fyi.extension.wisc.edu/programdevelopment/files/2016/03/lmcourseall.pdf>

PLM template:

- https://fyi.extension.wisc.edu/programdevelopment/files/2016/03/LM_UW-Coop-Ext-Logic-Model_WorksheetTableformat.pdf

Example of PLM:

- <https://fyi.extension.wisc.edu/programdevelopment/files/2016/03/YouthLMwithnarr.pdf>

Learning Activity 2



Using the definitions provided in Table 3, complete the activity on page 64 (Handout 22), in this guide:

<https://fyi.extension.wisc.edu/programdevelopment/files/2016/03/lmguidecomplete.pdf>

The answers are on the next page. How many did you get right?

8.3 The elements to be evaluated: RE-AIM

Evaluation of interventions requires more than answering the simple question: did it work? The RE-AIM framework was designed to enhance the quality of public health intervention research. The framework comprises five domains that extend evaluation to consideration of translatability and public health impact:

Reach your intended target population
Efficacy or effectiveness
Adoption by target staff, settings, or institutions
Implementation consistency, costs and adaptations made during delivery
Maintenance of intervention effects in individuals and settings over time.

Addressing these five domains requires the consideration of a number of questions (Table 4).

Table 4 RE-AIM dimensions and template questions for evaluating health education and health behaviour research

RE-AIM Dimension	Questions
Reach (Individual Level)	What percent of potentially eligible participants a) were excluded, b) took part and c) how representative were they?
Efficacy or Effectiveness (Individual Level)	What impact did the intervention have on a) all participants who began the program; b) on process intermediate, and primary outcomes; and c) on both positive and negative (unintended), outcomes including quality of life?
Adoption (Setting Level)	What percent of settings and intervention agents within these settings (e.g., schools/educators, medical offices/physicians) a) were excluded, b) participated and c) how representative were they?
Implementation (Setting/agent Level)	To what extent were the various intervention components delivered as intended (in the protocol), especially when conducted by different (non-research) staff members in applied settings?
Maintenance (Individual Level)	What were the long-term effects (minimum of 6-12 months following intervention)? b) What was the attrition rate; were drop-outs representative; and how did attrition impact conclusions about effectiveness?
Maintenance (Setting Level)	a) To what extent were different intervention components continued or institutionalized? b) How was the original program modified?

Source: <http://www.re-aim.org/wp-content/uploads/2016/09/questions.pdf>

A website that is dedicated to providing resources to assist people to use the RE-AIM framework is <http://www.re-aim.org>. It is recommended that you explore this website to learn more about RE-AIM and obtain useful resources such as these:

- RE-AIM Planning Tool: <http://www.re-aim.org/wp-content/uploads/2016/09/planningtool.pdf>
- Planning and evaluation guide using the RE-AIM framework: <http://www.re-aim.org/wp-content/uploads/2018/02/Planning-and-Evaluation-Questions-for-Initiatives-Intended-to-Produce-Public-Health-Impact-Final.pdf>

Learning Activity 3



Read this article on what RE-AIM can tell us about chronic disease management. It was published in 2001. Do you think the recommendations of the authors have been heeded since that time? Glasgow, R.E., et al., The RE-AIM framework for evaluating interventions: what can it tell us about approaches to chronic illness management? *Patient Educ Couns*, 2001. 44(2): p. 119-27.
<https://www.ncbi.nlm.nih.gov/pubmed?Db=PubMed&Cmd=ShowDetailView&TermToSearch=11479052>

Suggested further reading



Glasgow, R.E., et al., RE-AIM Planning and Evaluation Framework: Adapting to New Science and Practice With a 20-Year Review. *Front Public Health*, 2019. 7: p. 64.

References

1. Hoffmann, T.C., et al., *Better reporting of interventions: template for intervention description and replication (TIDieR) checklist and guide*. *BMJ*, 2014. **348**: p. g1687.
2. Cotterill, S., et al., *Getting messier with TIDieR: embracing context and complexity in intervention reporting*. *BMC Med Res Methodol*, 2018. **18**(1): p. 12.
3. Taylor-Powell, E. and E. Henert, *Developing a logic model: Teaching and training guide*. 2008, University of Wisconsin-Extension: Madison, WI.
4. W.K. Kellogg Foundation, *Logic Model Development Guide*. 2006.