Introduction to Logic Models

What is a logic model?

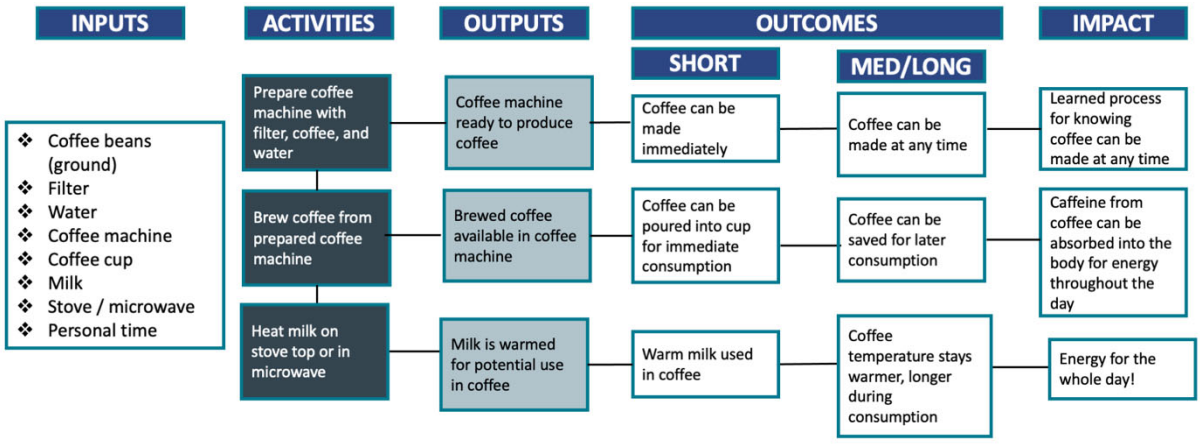
A logic model is a visualization of a program and presents the relationships between inputs (resources), activities, outputs, outcomes and impact of the program. Essentially, logic models visualize the inputs of a program and their desired effects. Logic models often have predefined categories to link resources and inputs into activities, and outputs into effects, outcomes and impacts. Logic model construction an integral component in the "Describe the Program" step in the U.S. Centers for Disease Control and Prevention's {CDC) Program Evaluation Framework (see Figure 1).[1]

Figure 1: The CDC's Program Evaluation Framework. Logic models would fall into the framework's "Describe the Program component" step.

Available at:
https://www.cdc.gov/eval/steps/step2/index.htm

A simple, everyday example of how to apply a logic model is depicted in Figure 2 below:

Figure 2: A simple example of a logic model - making coffee



[1] Logic Models. Centers for Disease Control and Prevention. Available at https://www.cdc.gov/eval/logicmodels/index.htm. [Accessed on 30 June 2020].

According to the CDC, logic models have a number of uses, listed below:

- Communicate the purpose of the program and expected results.
- Describe the actions expected to lead to the desired results.
- Become a reference point for everyone involved in the program.
- Improve program staff expertise in planning, implementation, and evaluation.
- Involve stakeholders, enhancing the likelihood of resource commitment.
- Incorporate findings from other research and demonstration projects.
- Identify potential obstacles to program operation so that staff can address them early on.

How can logic models inform performance indicators?

Performance indicators are measurable information used to determine if a program is being implemented as expected and achieving its desired effects.[2] Logic models describe the inputs, activities, outputs, outcomes and impacts of a program in discrete language. In this way the models provide a useful tool for constructing indicators tied directly to that language.

Indicators can be developed for any component of a logic model. For example, an indicator could be constructed to measure whether an activity's output has been achieved, or whether its long-term outcome has been achieved. In either case, indicators can be based directly on the logic model to measure whether program activities are being conducted as planned, and whether the program's desired effects are being achieved.

What is the purpose of logic models in the Diversity Toolkit?

The purpose of the constructed logic models is to describe activities proposed throughout the Guidance Document in discrete frameworks. These logic models should help to conceptualize activities to promote diverse inclusion within a particular clinical research domain (i.e., workforce development, site selection, etc.). Furthermore, along with the proposed indicators, the logic models should help in considering measurement of diverse inclusion activities. Essentially, **these logic models aim to help operationalize the numerous recommendations made in the *Achieving Diversity, Inclusion, and Equity in Clinical Research* Guidance Document, so that diversity-related initiatives can be seamlessly embedded into an existing clinical research program.**

Key elements to consider prior to use of these logic models:

- **Non-exhaustive** – each logic model contains a non-exhaustive list of activities pertaining to the specific domain of diverse inclusion in clinical research (i.e., workforce development, patient engagement, study design, etc.).

[2] Indicators. Centers for Disease Control and Prevention. Available at https://www.cdc.gov/eval/indicators/index.htm. [Accessed on 30 June 2020].

- **Audience** – the audience for each logic model has been defined and presented. The activities displayed in these sample logic models pertain to that particular stakeholder, though this should not limit use more broadly.
- **Scope** – all logic models emphasize activities that strive to increase the diversity of clinical trial populations. However, the scope of activities varies across each logic model provided. Some apply the lens of diversity to activities that are routine, with well-established processes (see "Logic model for Study Design"). Others include activities that are somewhat novel, recommended in the Guidance Document, and therefore their processes must be considered more carefully (see "Logic model for Workforce Development").
- **Adaptability** – as each logic model contains a non-exhaustive list with a defined audience and scope, each can be adapted to the unique needs and programs of the particular stakeholder at hand. The blank logic model is provided for this purpose.
- **Measurement definitions required** – in translating logic model components to performance indicators used for measurement, an important step is to define key terms within the logic model and/or indicators. For example, a logic model output might be that "comprehensive diversity & inclusion trainings are available at the organization," and the associated output indicator to measure the reach of the initiative is the "number of employees that received a comprehensive D&I training." In order to operationalize this measurement, a "comprehensive D&I training" must be defined. Defining concepts is an integral part of using logic models and indicators, and further allows for the adaptation of these models to a particular organization's needs.
- **Intersectionality** – note that in the aim to have a clearly defined scope, these logic models may overlook some of the intersectionality between very interrelated domains of the clinical research enterprise, within a particular organization or between organizations. Logic models may be linked, as the outcomes of one logic model might provide the inputs of another (i.e., study design materials are required as inputs during study conduct and recruitment). Again, given the adaptability of these models, these tools can be used to better capture interrelationships present at particular organizations.

As always, we welcome any and all feedback on this set of tools at mrct@bwh.harvard.edu.