

## **PROGRAM LOGIC MODELS: EXPANDING THEIR ROLE AND STRUCTURE FOR PROGRAM PLANNING AND EVALUATION**

**Brian Rush  
Alan Ogborne  
Addiction Research Foundation  
London, Ontario**

*Abstract*—Schematic representations of a program, sometimes referred to as program logic models, have been used for a number of years as a means of clarifying the purposes of the program and casual assumptions on which it is based. This paper discusses some of the benefits of expanding the structure of these logic models by clearly separating implementation and outcome objectives within the objectives hierarchy of the program. Benefits of constructing these logic models for program planning and other purposes are also discussed.

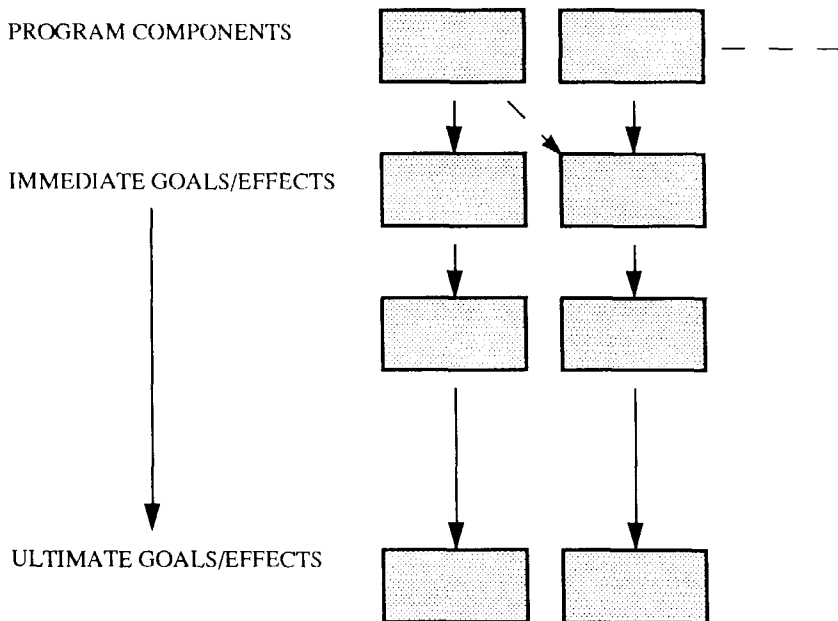
*Résumé*—Les représentations schématiques d'un programme, dites modèles de la logique du programme, ont servi depuis quelques années à éclaircir les buts du programme ainsi que les hypothèses causales de base. Cette étude présente les avantages du développement de la structure des modèles de la logique en séparant nettement les buts de la mise en oeuvre des résultats dans l'hierarchie des buts du programme. Les avantages revenant du développement des modèles de la logique à la planification de programmes et à d'autres fins sont également examinés.

SEVERAL CONCEPTUAL GUIDES AND navigational aids to the world of social action and program evaluation have been developed. Suchman's (1962) suggestion for the construction of a hierarchy of objectives is particularly useful when evaluators are presented with a host of short-term and long-term goals, and for helping program managers and evaluators make explicit their assumptions about a program's causes and effects. Bennett's (1979) model of a program's "chain of events" can also be helpful to an evaluator trying to develop a workable view of a program and identifying the type of data required for various levels of evaluation. Weiss (1972) proposed the use of a model which

elaborates a program's assumptions in considerable detail. The elements in her model were viewed as being similar to the paths in path analysis.

Wholey (1977) proposed a program model for application in evaluability assessments for the initial planning phase of an evaluation. His work was further developed when evaluability assessment emerged as an evaluation tool in its own right (Wholey, 1983). His model had two main elements: (1) program components and (2) goals and effects (Figure 1). Components were viewed as activities or sets of activities which could be conceptually or administratively grouped together, which have direct impacts on program targets and which are intended to lead to the attainment of program goals. In the pictorial representation of the model, components were displayed horizontally at the top. Arrows were used to show which components are interrelated. Goals and effects were presented vertically under appropriate components, with immediate goals placed first and longer term goals further down. Arrows were again used to show how components and goals were interrelated.

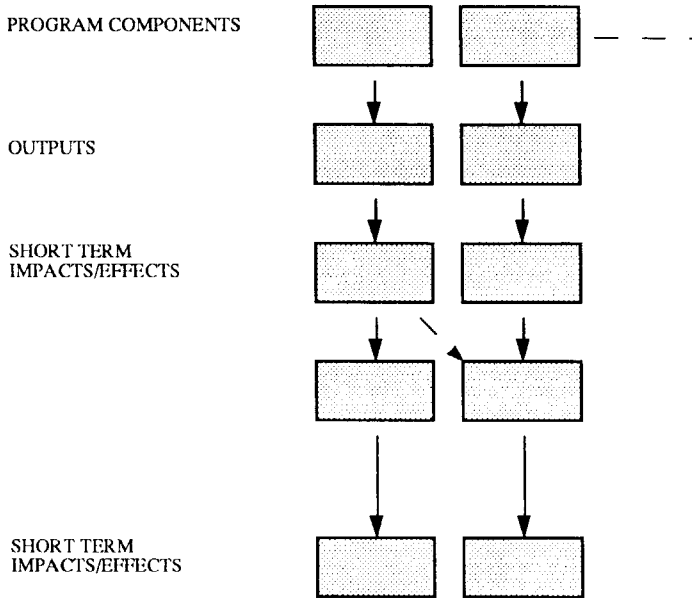
**Figure 1**  
**Basic Structure of Wholey's Program Model for Evaluability Assessment**



Although this conceptual model can be used to advantage in many situations, the major disadvantage is that it does not draw attention to the *outputs* of particular program components. Wholey (1983) defines "program performance indicators" which are similar in many respects to program "outputs," but which also concern achievement of the outcome objectives. Outputs are the goods and services generated by program activities and are the link between program activities and the immediate outcomes. For example, outputs of a training program might be the number of people trained or the amount of money disbursed in training grants. Outputs are clearly of concern to program managers and staff because they are a direct reflection of their efforts, and thus critical in performance reviews. However, outputs are also of concern to program evaluators. In certain circumstances they may be used as a proxy for client outcome (e.g., days in treatment as a proxy for treatment success). Outputs are also used to monitor program delivery and, unless outputs are as expected, goal attainment will be compromised. For example, it would be inappropriate to look for long term changes in clients of an innovative treatment program unless the expected levels of treatment had been provided to the right kinds of individuals.

Outputs are included in a variant of Wholey's model used by the Treasury Board of Canada and the Office of the Comptroller General of Canada (1981). The work of Rutman (1977) contributed significantly to the federal approach and it has recently been summarized by Corbeil (1986, 1989). As shown in Figure 2, outputs are placed between components and goals. These "program logic models" are intended to show plausible linkages among the elements of a program and to highlight the underlying logic or causal reasoning. This is an important part of evaluation assessment; the formal phase of planning for an evaluation in the federal approach. A number of other purposes are served by constructing these logic models during an evaluation assessment. When prepared as part of a broader program profile, a logic model also helps develop a common understanding of the program between managers, staff, other stakeholders and the evaluator(s) (Corbeil, 1989). A logic model also helps clarify program objectives and assists in identifying unintended consequences of the program (Wholey, 1983). It also aids in the identification of the key issues and questions that need to be pursued in the evaluation, thereby using evaluation resources efficiently and increasing the chances of utilization of results.

**Figure 2**  
**Structure of Program Model Used by the Treasury Board of Canada**



The process of developing a program logic model is an iterative one, whereby the evaluator first develops a model based on key documents (the program documents model) and then verifies and revises this with interviews with program managers (the program manager's model). This may then be followed by field work to prepare a final "evaluable program model," which would serve as a guide to planning and conducting the evaluation (Rutman, 1977). Conceptually, the end stages of this process can be seen as the beginning stages of process evaluation. However, a thorough investigation of the program's implementation and coverage is not required at this stage.

### **EXPANDING THE STRUCTURE OF LOGIC MODELS**

The authors have used program logic models for a number of years and have found them to be useful in many contexts. However, one difficulty encountered with earlier applications of logic models, as articulated at the time by Rutman (1977), and in federal documents (Office of the Comptroller General, 1981), was the problem often

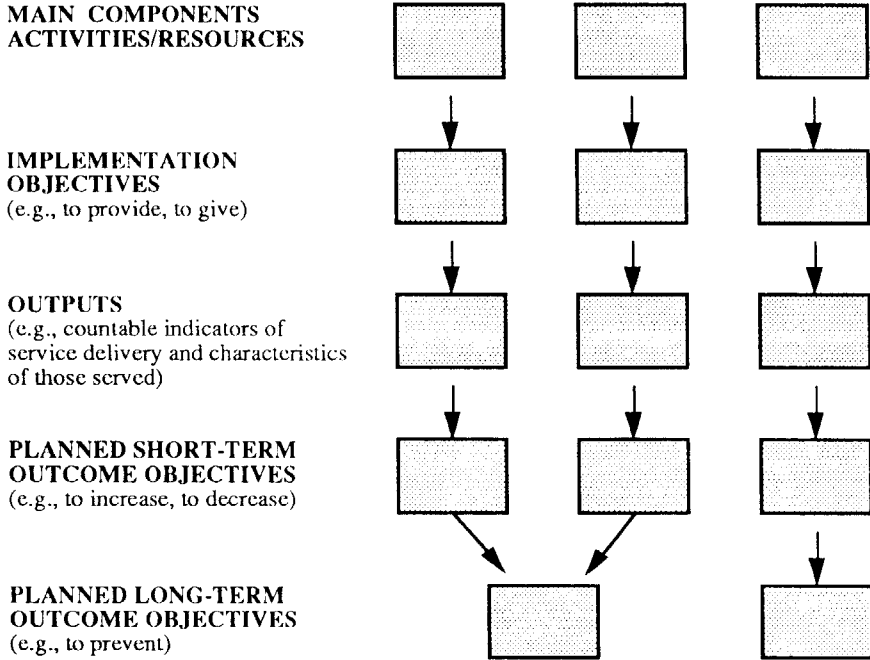
created by having *implementation* and *outcome* objectives interspersed within the objectives hierarchy. The distinction between implementation and outcome objectives is similar to that presented by others (e.g., Wholey, 1983; Patton, 1986; Marsh, 1978). Implementation objectives state what the program hopes to do; the activities it hopes to undertake; the means by which outcomes will be achieved. Outcome objectives concern the changes which the program hopes to achieve; the "ends" toward which the program is working. Since a logic model is intended to show what a program *does* (i.e., activities/components) in relation to what it hopes to *change* (i.e., outcomes/effects), many models seemed to break down when the stated "outcomes" were, in fact, service delivery, implementation objectives. This might happen, for example, if the stated objective was to provide a particular type of service to the public or a special target group.

At first the temptation to include service delivery objectives in program models was resisted. Program managers were asked to use the term "objective" only when referring to changes which their program(s) were intended to achieve. However, it is the authors' experience that program managers want to have service delivery objectives considered in evaluations of their program and, indeed, often respond to questions about their objectives with statements beginning with action-oriented phrases such as, "to establish . . .," "to provide . . .," "to train. . . ." It is not all that uncommon for implementation objectives such as these to be the *only* stated objectives, with a rather vague connection to the change or the benefit that will accrue as a result of undertaking these activities. This is the problem discussed by Wholey (1983) in his distinction between process-oriented and results-oriented management. If the program logic model contains only these implementation objectives, this does not portray a true picture of the program's purposes and it restricts the choice of evaluation methodologies by always overemphasizing process or implementation-type studies.

Implementation and outcome objectives should be clearly separated in the objectives hierarchy of the logic model and divided by the program outputs (Figure 3). This is somewhat similar to that recommended by Wholey (1977) in the separation of "program activities" from "program objectives." Our structure, however, is more formalized, separating the two different types of program objectives. In this way, what a program intends to do (i.e., the implementation objectives), is separated from what goods and services it hopes to produce

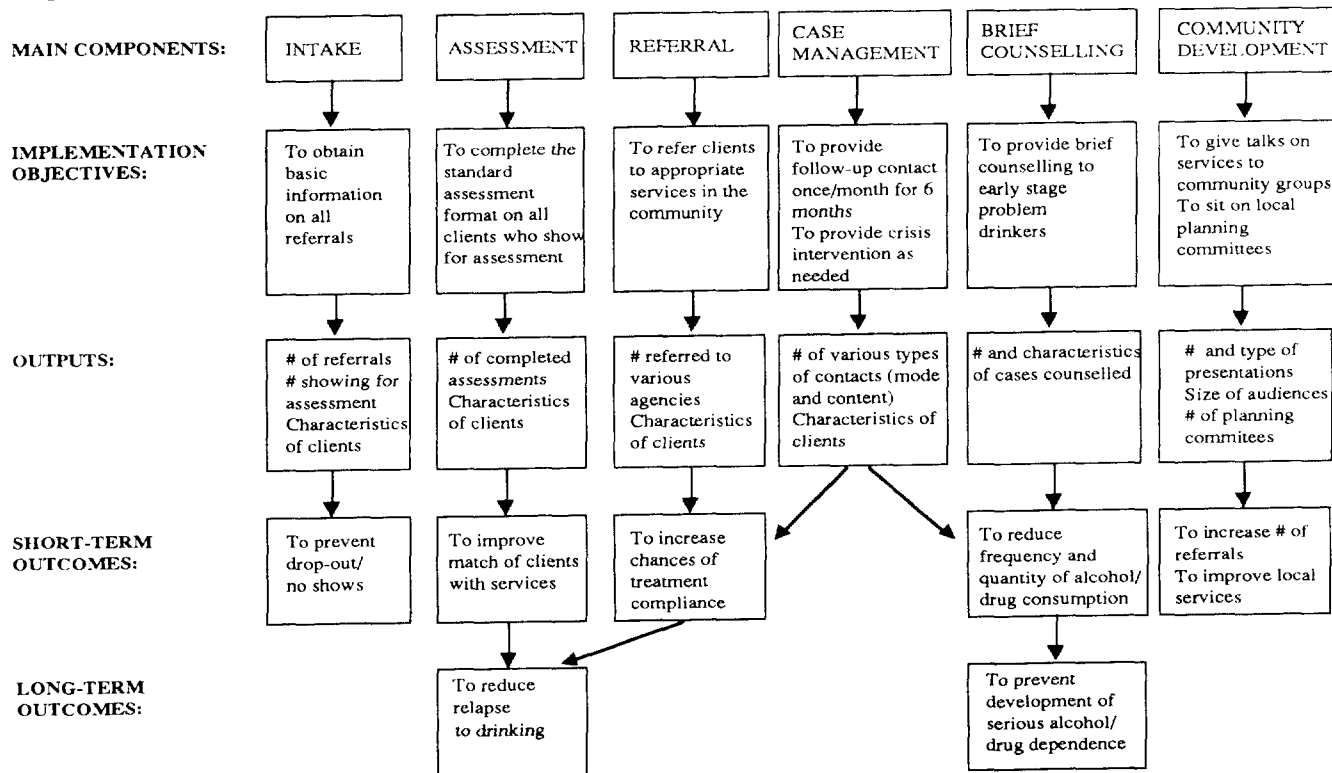
by this effort (i.e., the outputs), and what changes it hopes to achieve (i.e., the short and long-term outcomes). A complete example of this type of logic model is shown in Figure 4, for a hypothetical assessment/referral service for people with alcohol and other drug problems.

**Figure 3**  
**Basic Program Logic Model with Implementation and Outcome Objectives Demarcated**



One or more implementation objectives should be developed for each service component. This is often as simple as restating the service component in an action-oriented phrase (e.g., to refer clients to appropriate services in the community). It may, however, be more complicated if the service component is multifaceted, such as a client case management function within the context of a treatment program for mental health or alcohol/drug problems. Case management may, in and of itself, involve the provision of follow-up contact, crisis intervention, client advocacy and other services (Birchmore-Timney & Graham, 1989) each of which may warrant separate implementation objectives.

**Figure 4**  
**Program Logic Model for Hypothetical Assessment/Referral Service**



The implementation objective should also identify the target(s) of particular aspects of the service. In the example in Figure 4, one of the implementation objectives is "to provide brief counselling to early stage problem drinkers." This serves not only to clarify the intended target group for the counselling sessions but also sets the stage for an examination of the program's information system. That is, does the routine record-keeping system monitor the level of problem severity, as well as the nature and duration of all counselling contacts? The number and characteristics of clients counselled are the "outputs" in the model and, with due consideration for other aspects of process, coverage and quality of service, would serve as criteria to monitor the attainment of the implementation objectives.

### **USING THE MODEL**

Like earlier versions of program models, our modified model is intended primarily to serve as a heuristic guide to the planning of an evaluation or improving the design and delivery of a program. Thus, elements and linkages shown in the first version of a program's logic model may be deleted or modified as the inner logic of the program is elaborated in discussions with managers and other stakeholders.

When exposed to the model for the first time, program managers and staff often want to include some of the program's support functions as components of the program (e.g., staff development, performance review, fund raising). This is because these functions are important, and often time-consuming, and they want to ensure that they will be considered in a future evaluation. Inclusion of functions such as these in the logic model is usually discouraged since they are inconsistent with the working definition of a "component" as a group of activities with a common objective (or objectives) to impact on the program's targets. In addition, support functions such as these are not usually the focus of attention in program evaluations, these being more typically the concern of a program audit or operational review.

Program managers or staff often think along administrative, structural lines rather than functional lines. As Corbeil (1986, 1989) points out, managers may reflexively think of their organizational chart as their program model. Corbeil's advice to include a separate organizational chart as part of the program profile is well-taken. A problem may remain, however, when more than one part or department of the program is involved in a similar function and managers prefer to focus on the different departments rather than the common



function. This may occur, for example, with a job-training program which has several departments involved in client assessment. In such a circumstance "assessment" should be included as a *functional* component at the top of the logic model and, if necessary, further expanded upon with a series of implementation objectives, showing the provision of different types of assessment, for different types of people in the various departments.

There is also a tendency for managers to be over-inclusive in their development of their program logic model. Corbeil (1986) refers to this as "boxitis." When being developed as part of an evaluation assessment, simplicity and parsimony are important criteria since one of the basic objectives is to develop a view of the program that can be shared by all parties concerned with a future evaluation. However, logic models are extremely valuable for *program planning*, as well as evaluation, and it is for this purpose that a manager may want to develop a much more detailed version.

## **EXPANDING THE ROLE OF LOGIC MODELS BEYOND EVALUATION ASSESSMENT**

Program logic models have considerable potential as a tool for program planning since they show the basic intent of the program in functional, and sometimes structural, terms. For planning purposes, much more detail in the logic model is often warranted. For example, a more detailed version may include some of the support functions that are critical to the success of the program such as volunteer recruitment or, in some circumstances, fund raising. We have even seen these models expanded to the point where the implementation objectives begin to take the shape of staff job descriptions to ensure their consistency with the operational plan of the program. The use of these logic models for planning also facilitates the integration of program evaluation into the ongoing operation of the program. For example, a logic model shows the value of the routine record-keeping system as a means of monitoring the "outputs" of the program. In this way the value of the records for addressing basic evaluative questions concerning process and coverage of the program are more apparent to managers, staff and other stakeholders. This is an important element of results-oriented management (Wholey, 1983) and is aided considerably by developing a fairly comprehensive program logic model.

A word of caution is needed for program planners using logic models such as described here. An evaluator beginning to work with

an existing program would ask the manager and staff "What is it that you do and why do you think this will create the change that you anticipate?" An evaluator, therefore, naturally starts developing a logic model around the components of the program. A person planning a new program, on the other hand, would ask "What is it that I want to change and now, how am I going to go about it?" Thus, the inclination for a program planner is often to start with the long- and short-term program objectives (or even a broad mission statement), and move up the model towards implementation objectives and program components. A top-down approach beginning with the program components seems to work best for evaluators in the context of evaluation assessment. However, from a strictly planning perspective, the other strategy might be preferred. This would not be unlike other kinds of planning models that begin with formal consideration of the problems that need to be addressed, the etiology of these problems, and the design and implementation of the program (e.g., Green et al., 1980; Pancer & Westhues, 1989).

In addition to their role in program planning, logic models are also a useful means of communicating the basic nature and purpose of a program. They can be used, for example, as a component of a needs assessment report or a funding proposal to clearly show the potential funding agency the operational and outcome objectives of the proposed program. Funding bodies might seriously consider making a logic model of the program a *mandatory* part of all funding proposals, in order to make the applicant think carefully about the logic and feasibility of their implementation and outcome objectives. As a communications tool, a logic model can be used to describe the program to board members, the general public, other relevant stakeholders and the media. They also provide an excellent means of introducing the program to new staff members by showing them how their work will fit into the overall operation and objectives of the program. As mentioned above, the logic model of a program can also be used as the starting point for developing staff job descriptions and thereby becomes an even more useful means of bringing new staff on board and guarding against the drift away from original program objectives that sometimes happens with high staff turnover.

Finally, logic models are extremely valuable as a teaching tool, in particular, the modified version with the implementation objectives clearly delineated. The authors have used this model within university and community-based training courses as a way of introducing

the basic concepts of process, outcome and economic evaluation, as well as evaluation assessment. The top portion of the model (activities/components and outputs) is presented as the domain of process evaluation, namely program implementation, program coverage and program quality. Outputs are presented as providing the quantifiable evidence of program implementation and, conceptually, provide a bridge between program evaluation and the management information system of the program. Short- and long-term outcome objectives are presented as the concern of outcome evaluation, with the emphasis on measuring changes that are attributable to the program. Finally, economic evaluation is presented as a means of relating the program inputs (i.e., activities/components) to the outputs and outcomes, in economic terms. This may appear simplistic in many respects to those working on a daily basis with these terms and concepts. However, when students or training participants relate the basic structure of a logic model to a program with which they are familiar, they have a much better understanding of these fundamental aspects of the field of program evaluation. This also facilitates in-class tutorials that are organized around programs in which they work or with which they are familiar.

## CONCLUSION

Program models have been used for a number of years as a means of clarifying the purposes of programs and the assumptions on which they are based. Logic models help delineate the plausible linkages and the rationale underlying a program. They also assist in pinpointing vague, unrealistic or conflicting objectives and identifying the key issues and questions to be addressed in an evaluation. They are also useful for program planning, for involving managers and staff in the evaluation process, for communicating the nature and purpose of the program and for teaching some of the fundamental aspects of program evaluation. Program logic models which clearly distinguish between implementation and outcome objectives contribute significantly to all these purposes.

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