ELSEVIER

Evaluation and Program Planning 29 (2006) 106–119

EVALUATION and PROGRAM PLANNING

www.elsevier.com/locate/evalprogplan

From theory to practice: Lessons learned in the application of the ATM approach to developing logic models

Ralph Renger [a,*], Carolyn Hurley [b]

[a] *Mel and Enid Zuckerman Arizona College of Public Health, University of Arizona, 1435 N. Fremont Avenue, Tucson, AZ 85712, USA*
[b] *Department of Health Sciences, Northern Arizona University, South San Francisco Street, Flagstaff, AZ 86011, USA*

Abstract

The topic of logic models has received significant attention in the evaluation and social science literature, focusing either on the theory of logic models or methodology for program design. The evaluation and social science literature dedicated to logic models has been criticized for being overly complex and too difficult for practitioners to understand and utilize. Agencies such as the Kellogg Foundation and the United Way have championed initiatives to bridge the theory–application gap. They have done so by publishing simple, step-by-step instructions as how to create a logic model, intended primarily for those responsible for implementing human service programs. The difficulty with these prescriptive publications is that they unintentionally mislead the practitioner into believing that the task of creating a logic model is as simple as completing a one-page table. The understanding that logic modeling is a process, the results of which can then be summarized in a one-page table, is lost. This misunderstanding is partly due to the dearth of literature devoted to the logic model process. In 2002, a systematic three-step process to creating a logic model, coined the ATM approach, was published in an attempt to meet this need. Since its publication, the ATM approach has been used in a variety of settings. The purpose of this paper is to report on the practical lessons learned in the process of creating a logic model using the ATM approach.

The topic of logic models has received significant attention in the evaluation and social science literature. Articles in the evaluation literature often focus on the theoretical underpinnings of logic models (e.g. den Hayer, 2002; Goertzen, Fahlman, Hampton, & Jeffery, 2003; Julian, Jones, & Deyo, 1995; McLaughlin & Jordan, 1999; Thurston, Graham, & Hatfield, 2003). The references to logic models in the social science literature are more indirect and are often used as a methodology for program design (e.g. Bloomberg, Ganey, Alba, Quintero, & Alcantara, 2003; Dunnagan et al., 2003; Gavazzi, 2000; Levin, Weiner, Saravay, & Deakins, 2004; Stewart, Russell, & Hanna, 2004). The increased attention to logic modeling, as evidenced by the numerous references to the topic in the evaluation and social sciences literature, coincides with the increasing demand for improved accountability required by legislation at federal levels (e.g. GPRA, OMB).

Despite their increased use, the purpose and function of logic models are misunderstood among practitioners. Logic models as referenced in the evaluation and social science literature, are based strongly in theory and consist of complex elements; as a result, logic models are difficult for practitioners to understand and utilize. This creates a disparity between the theoretical underpinnings of logic models and the way logic models are applied in practice (Renger & Titcomb, 2002).

Foundations like Kellogg and United Way have attempted to bridge the theory–application gap by publishing simple, step-by-step instructions for practitioners describing how to create a logic model (Kellogg Foundation, 2001; United Way of America, 1996). The difficulty with these prescriptive publications is that they unintentionally mislead the practitioner into believing that the task of creating a logic model is simply accomplished by completing a one-page table. Though the Kellogg and Foundation Logic Model Development Guide (2001) explicitly states that developing logic models is a process through which to understand the rationale of a program, it is the authors' experience that users of the Kellogg Foundation and similar logic models view the logic model simply as a table in which to list the inputs, activities, outputs, outcomes, and impacts. The understanding that logic modeling is a process, the results of which can then be summarized in a one-page table, is lost. Distinguishing the difference between the process of logic modeling and the creation of logic model summaries can be likened to filling out a check register. The check register itself is a visual representation of financial inputs, activities, and outcomes; however, it is the process of

* Corresponding author. Tel.: +1 520 882 5852; fax: +1 310 206 6293.
E-mail address: renger@u.arizona.edu (R. Renger).

0149-7189/$ - see front matter © 2006 Elsevier Ltd. All rights reserved.
doi:10.1016/j.evalprogplan.2006.01.004

depositing paychecks and deciding where, how, and to whom money should be invested that explains the rationale behind the balances written in the check register. Though logic models are usually defined as a visual representation of a program (much like the check register), it should be emphasized that it is through the process of developing this visual representation that program planners and evaluators understand the underlying theories and rationale behind the program and the expected outcomes (Green & Kreuter, 1999; Kellogg Foundation Logic Model Development Guide, 2001; Renger & Titcomb, 2002).

When practitioners overlook the importance of the logic model process, the purpose of the logic model is defeated. Logic modeling is a process through which practitioners can understand the link between program strategies, the conditions attempting to be changed, and the expected outcomes. Simply filling out these elements within columns of a table does not convey the relationship of these elements to one another or to the overall rationale of a program. In evaluation, practitioners may be able to use the summarized logic model to show they are doing things right (the activities listed under the outputs column are being accomplished), but not to show they are doing the right things (the activities are meaningfully related to program objectives). The weakness of many published logic models is that they assume that program strategies are appropriately targeting the conditions to be changed; the links between program objectives and program strategies are not explicitly shown. Practitioners that rely on simply completing a logic model summary table for program planning and evaluation purposes are omitting the logic model's most crucial purpose: the explanation of the underlying theories and rationale of the program (Chen, Cato, & Rainford, 1998–1999; Renger & Titcomb, 2002).

Practitioners' confusion regarding the difference between the process of logic modeling and the creation of logic model summaries may be partly due to the dearth of literature devoted to the process by which to create logic models (Goertzen et al., 2003). Articles that discuss the process in which to understand the underlying theories, rationale, and assumptions of a program are lacking in the literature (Chen & Rossi, 1983); those that do exist are very abstract in nature (Weiss, 1997). Without this topic being addressed in the evaluation and social science literature, it is difficult for this knowledge to be transmitted among evaluators and other practitioners.

The recognition that there is a shortage of literature dedicated to the process of logic modeling, that many practitioners have limited knowledge of logic modeling and evaluation in general, and that logic modeling is unnecessarily complicated were major driving forces behind the development of the ATM approach to logic modeling (Renger & Titcomb, 2002). The ATM approach is a three-step process that begins with an understanding of the Antecedent conditions, or root causes, of the problem. The second step, targeting, requires that components of proposed strategies be meaningfully linked to antecedent conditions over which an agency has control to change. The final step is measurement in which the effect of intervention strategies on targeted antecedent conditions is assessed. These steps will be described in further detail below.

The advantage of using the ATM approach is that it results in a visual representation of program elements useful in program planning and evaluation and gives program planners, evaluators, and stakeholders a strong understanding of the rationale behind these program elements. This rationale is clearly depicted in the logic model summary created from the results of the ATM approach. The ATM approach allows users to explicitly state *why* certain activities are being performed, *why* certain outcomes are expected, and *how* these outcomes are to be accomplished (Renger & Titcomb, 2002). The ATM approach recognizes that logic modeling is a process for ensuring that programs have the highest probability of success and that the appropriate data is collected for program monitoring and to assess the merit and worth of programs (Mark, Henry, & Julnes, 2000).

Interest in the ATM approach has grown steadily since its initial publication. The demand for workshops and training sessions from both the public and private sector is high and shows no sign of weakening. Federally, the approach is being adopted by several of the Bureau of Health Professions programs focusing on workforce shortage issues. The states of Arizona, Alaska, and Hawaii have adopted the ATM approach to guide statewide initiatives. Select cities in Canada and Africa, as well as the states of Connecticut, New Mexico, and Texas are examples where the ATM approach is being used at a local level. The ATM approach has been successfully implemented by many smaller and non-profit organizations. For these agencies, many of the ATM steps are able to accommodate resource limitations. For example, one non-profit used the ATM approach to assess the utility of the evaluation strategies included in a model drug prevention program for only 25 students. Another non-profit used the ATM approach to determine how to best target and evaluate services for a teen self-sufficiency program catering to less than 20 single parent teen mothers.

As a result of these experiences, a great deal has been learned about the application of the ATM approach in developing logic models. The purpose of this paper is to share practical lessons learned from these experiences in developing logic models using the process of the ATM approach. This paper will share these experiences by highlighting the benefits and difficulties in working through each step of the ATM approach; where problems are presented, solutions are provided as well. The intent is that evaluators and practitioners will learn from these experiences and improve the quality of their evaluation plans and their use of the logic modeling process.

1. Explanation of ATM approach to developing logic models

1.1. Summary of step 1: identifying antecedent conditions

Step 1 of the ATM approach begins by defining the problem of interest; in the example provided in Fig. 1, the problem has been

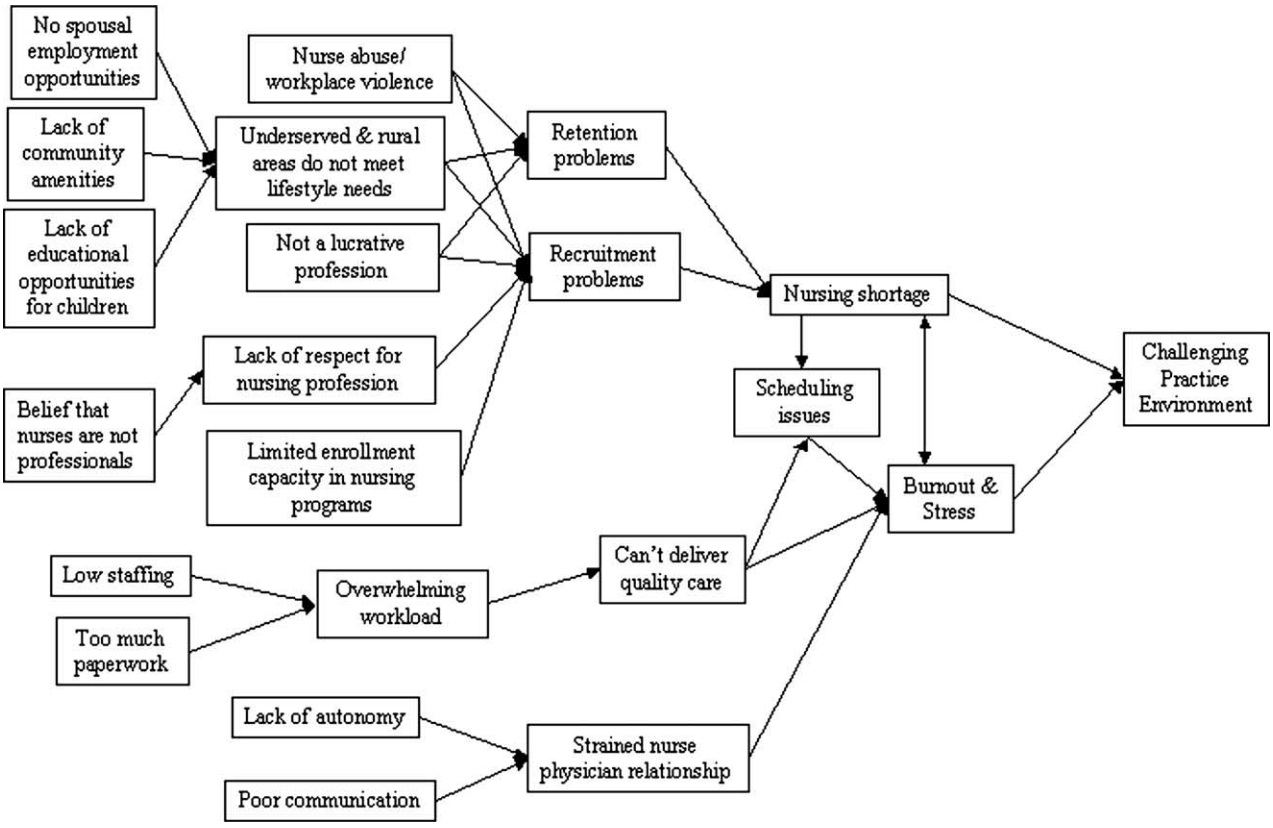

Fig. 1. Antecedent conditions underlying the challenging nursing workplace environment.

defined as a challenging working environment for nurses. Most problems are influenced by behavioral, environmental, social, and biological conditions; these factors, or antecedent conditions, must be identified and understood to know where to focus intervention efforts (Green & Kreuter, 1999). In the ATM approach, this is accomplished by conducting interviews with individuals who have content expertise in the area of the problem. Using the previous example, content experts to be interviewed might include nurses, administrative staff, nursing instructors, and patients. As shown by Fig. 1, these interviews do not stop with the primary conditions leading to the problem; instead, interviewers explore secondary, tertiary, and even more removed conditions to understand how these factors relate to one another. Each expert is interviewed individually and is asked a series of questions using the format 'why does this condition occur?' Throughout each interview, a visual map of the relationship of antecedent conditions to the problem and other antecedent conditions is developed. These maps are then integrated into a single summary map; the conditions included in the visual summary map are those that contribute the most to the understanding of the problem. This is illustrated in Fig. 1, which depicts the actual results from a project examining the antecedent conditions contributing to a challenging nursing environment. The actual process of developing this first stage of the logic model is presented below in the lessons learned section.

A review of the literature is then conducted to determine the extent to which linkages between antecedent conditions and the problem can be supported by research. In those rare instances where no research support is found, the expert interviewees are contacted to determine if they are aware of any supporting evidence and if not, whether the antecedent condition should remain in the evolving visual map. Also, on rare occasion, the literature review reveals an antecedent condition that may have been overlooked by the experts. Again, in such cases the experts are contacted and asked whether the omitted antecedent condition should be introduced into the model. Our experience has shown that supporting evidence can be found for about 90% of the linkages identified by experts. It is the combination of expert interviews and supporting research that creates an evidenced based framework from which to operate.

While most planning models include a similar stage of identifying risk factors and conditions (i.e. PRECEDE-PROCEED, MATCH, CDCynergy), this information is not provided in many logic models. The ATM approach is different from other logic models in that these antecedent conditions are explicitly shown in the resulting visual map. One purpose of representing these antecedent conditions in a visual map is to stimulate creative thinking about program planning and improvement; seeing previously unidentified antecedent conditions may lead an agency to make innovative changes to their program.

1.2. Summary of step 2: targeting antecedent conditions and program strategies

The visual map produced in step 1 of the ATM approach, depicting in some cases an upwards of 80 antecedent

conditions, can be overwhelming. Clearly, a single agency, or even a collaborative, does not have the resources and expertise to address all the identified antecedent conditions. In the first phase of targeting antecedent conditions, agencies are guided through a systematic prioritization process to establish those antecedent conditions on which a program might focus. Key decision makers are asked to respond to a series of questions, or prioritization criteria, which include, but are not limited to, whether (a) targeting the antecedent condition is within the mission of the agency, (b) the antecedent condition can be changed, and (c) there is substantiated evidence in the literature linking the antecedent condition to the problem of interest. Stakeholders vote whether each antecedent condition meets the prioritization criteria, with a majority vote required to keep the antecedent condition for further consideration. This prioritization approach allows for the engagement of stakeholders to begin identifying those outcomes held important to the agency or coalition (Renger & Bourdeau, 2004). Renger and Bourdeau (2004) have published a more detailed description of the prioritization process, which is described using the theory of values inquiry.

The prioritized antecedent conditions are then represented as shaded boxes on the visual map. In the nursing worksite environment example, the agency used the prioritization criteria to select seven conditions to target in their intervention; these seven conditions are shaded in the visual representation of the logic model summary (see Fig. 2). Some logic models include prioritized conditions in their visual representation (e.g. University of Wisconsin-Extension logic model); however, these prioritized conditions are not framed within the problem as a whole. In other words, these prioritized conditions are separated from the numerous other conditions that were chosen not to be targeted. As a result, the understanding of the complexity of the problem is lost; agencies might incorrectly assume that these prioritized conditions are the *only* factors influencing the problem. In the ATM approach, the shaded boxes are provided in the context of the remaining untargeted antecedent conditions for two reasons. First, by looking at the resulting summary map, agencies can get a sense of how much effect on the problem they should expect from their program. Second, agencies can learn which partners need to be recruited to address the remaining, unshaded antecedent conditions.

It is at this point that agencies can begin brainstorming potential strategies to target the prioritized antecedent conditions. As agencies decide on specific program strategies, they are challenged to (a) explain which of the prioritized antecedent conditions proposed program strategies target, (b) how the proposed strategies are hypothesized to produce change in the prioritized antecedent conditions, and (c) provide detailed written documentation in the form of implementation protocols. In meeting the first two challenges, programs are developed that avoid activity traps. Activity traps occur when the activities of the intervention target the symptoms of a problem rather than the conditions leading to the problem (Renger & Titcomb, 2002). Detailed implementation protocols, the third challenge, are necessary for program planners to

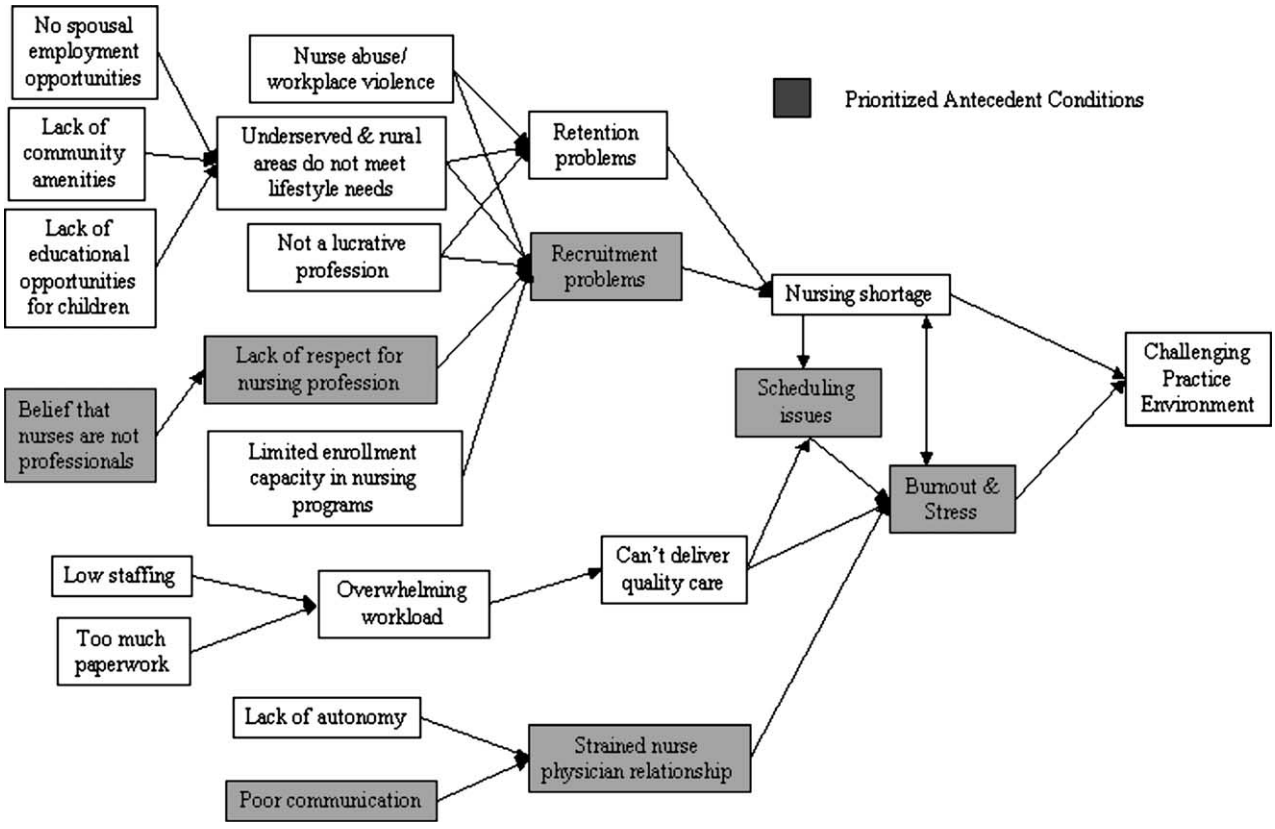

Fig. 2. Depicting Prioritized Antecedent Conditions.

ensure their program is replicable. Evaluators can also use these protocols to create an evaluation plan for program monitoring. The lessons learned section further explains the process of developing this stage of the logic model.

1.3. Summary of step 3: measurement

Steps 1 and 2 of the ATM approach are focused on planning and implementation, respectively, and are necessary in laying the foundation for step 3, measurement. The purpose of the third step is to identify program monitoring, oversight/compliance, and merit and worth measurement strategies for program activities and targeted antecedent conditions.

As one of the challenges presented in step 2, detailed program implementation protocols are developed. The detailed protocols provide the necessary information for developing the process evaluation. Knowing the *who, what, when, where*, and *how* of the proposed program assists in the development of a quality process evaluation that goes beyond the simple assessment of client satisfaction and provides the data necessary to make ongoing program refinements and assist in programmatic decision-making.

The evaluation of the impact (i.e. more immediate) and outcome (i.e. more long-term) of the program is directly derived from the first two steps of the ATM approach. As a result of step 2, it will be clear as to which prioritized antecedent conditions will be targeted by the program. It is these targeted antecedent conditions that form the core of the impact evaluation (Renger & Bourdeau, 2004). This is because they precede (i.e. are more immediate) the problem in time. The outcome evaluation is directly related to the problem statement. In the example provided in Fig. 2, the impact evaluation will measure change in the seven antecedent conditions targeted by the agency. Measurement will focus on indicators that suggest a change occurred in those conditions; an indicator that recruitment problems were lessened may be that more nursing positions was filled. The outcome evaluation will measure change in the worksite environment of nurses. Changing antecedent conditions and the problem are central to assessing the merit and worth of the program (Mark et al., 2000).

Measurement is represented in the resulting logic model summary by linking the targeted antecedent conditions with program objectives specifying *who, what, when*, and *how much* of program change (Green & Kreuter, 1999). Fig. 3 depicts this step of the ATM approach. For clarity, non-targeted antecedent conditions have been eliminated from the visual representation and objectives have only been provided for a few of the targeted antecedent conditions.

Though other logic models state the expected impact and outcome of a program, the rationale expressing why those results are expected is not visually represented. Developing a logic model with the ATM approach allows program planners and evaluators to see the underlying rationale of program objectives. In the nursing example (see Fig. 2) it is known that the nursing shortage contributes to a challenging practice environment. One factor contributing to the nursing shortage is a recruitment issue, which is in turn affected by a lack of respect of the nursing profession, which in turn is driven by an inaccurate belief system. From Fig. 3, it can be discerned that

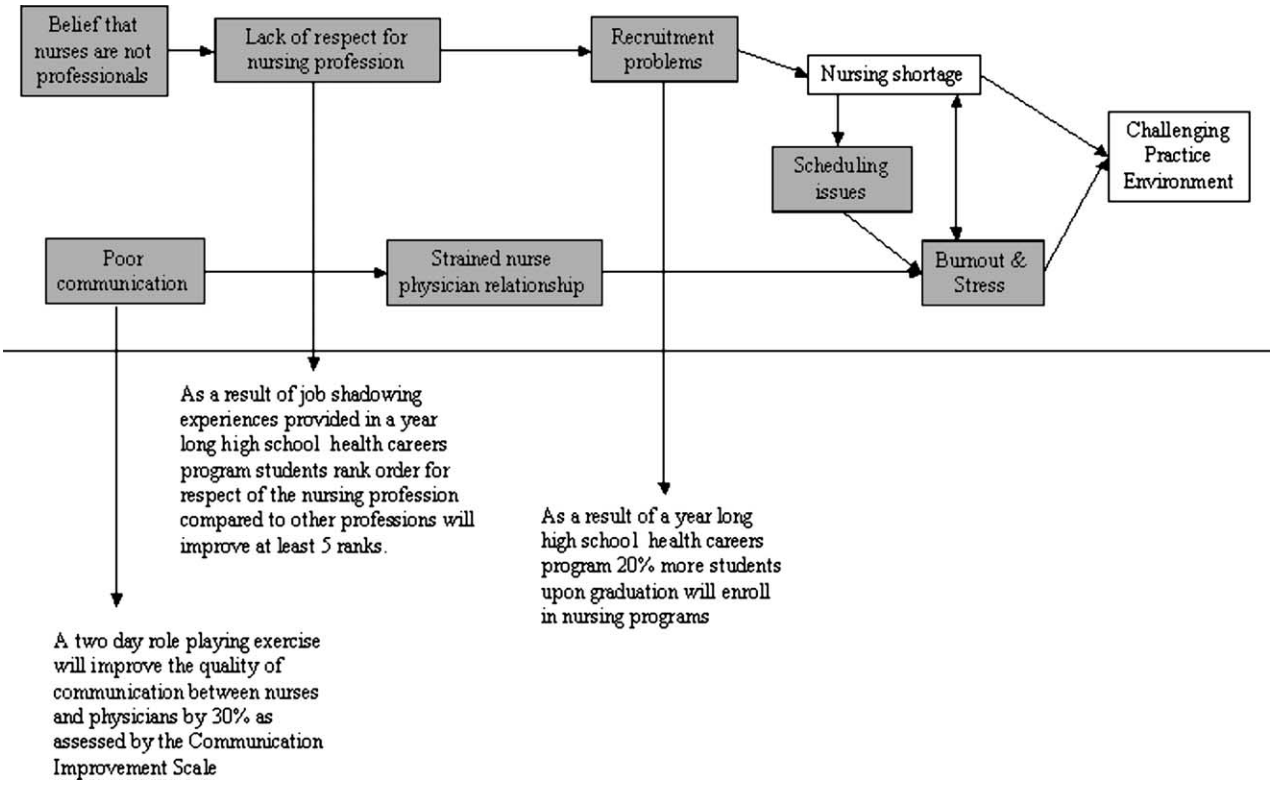

Fig. 3. Depicting Objectives within the ATM Framework.

the agency expects recruitment problems to be alleviated because the program addresses antecedent conditions known to affect recruitment problems.

Whether a change in the problem can be expected is related to how much control the agency has over that condition. From Fig. 2, it is clear that many other factors influence the practice environment; with so many uncontrolled variables, the likelihood of affecting change in the endpoint based solely on the agency's high school program is small.

1.4. Relationship of the ATM approach to logic model summary tables

The advantage of the ATM approach is that it emphasizes the process of developing logic models. The process of completing the three steps summarized above allows practitioners to understand the context of the problem and how program strategies work within that context. The ATM approach results in a visual representation that summarizes the relationships between, and the rationale behind, program elements. Not only is the resulting visual representation a functional evaluation tool, but also it is also useful for both program development and improvement. The visual map allows agencies to see what areas in which to invest their resources, what areas need more attention, and what areas could benefit from collaborative efforts with other agencies.

The resulting visual representation of the logic model summary is different than that of other published logic models. Common elements of logic models include inputs, target populations, processes/activities, and outcomes. The ATM approach is an innovative method of addressing these same elements, while producing a different type of logic model summary. Inputs/resources are not written in the resulting visual logic model summary, but are addressed in the process of working through step 2: targeting antecedent conditions. During the prioritization process, agencies must consider the resources needed to change an antecedent condition; the prioritized conditions shaded in the resulting visual map are those that the agency has adequate resources to address. The target population, rather than being listed as a separate entry on the logic model summary, is clarified in the written objectives specified in step 3: measurement. The objectives written in Fig. 3 show that nurses and high school students are the program's target population. Activities are not overlaid in the visual map, but during the process of working through step 2, agencies develop detailed protocols that state how program components link to the antecedent conditions identified on the visual map. Not including some of these elements is deliberate as it can create clutter and confusion. The expected impact and outcome of the program are represented in the logic model summary in the form of written objectives. Though not all logic model elements are expressed in the visual representation, the process of working through the ATM approach ensures these elements are understood by program planners and evaluators. If agencies wish to complete a logic model summary in a format more familiar, then they have the option to do so; using the information derived from the ATM approach to complete a logic model summary in a table format will give agencies a better understanding of the relationships between the elements of the table.

2. Lessons learned

This section provides the authors' experiences in applying the ATM approach in developing logic models for program planning and evaluation. While the previous section explained the steps of the ATM approach in developing logic models, this section provides lessons learned about actually accomplishing the ATM process. Before a logic model summary can be created, much work must be devoted to the process of identifying the program elements that will be compiled in the logic model. The way in which interviews are conducted, visual maps of antecedent conditions are integrated, antecedent conditions are prioritized, and intervention and evaluation strategies are selected all determine the quality of resulting logic model. This section details the processes and activities necessary to achieve a quality logic model representation using the ATM approach.

2.1. Lessons learned from step 1 of the ATM approach

In step 1, antecedent conditions of a problem are identified and represented in a visual map.

2.1.1. Defining the problem statement

There are several key aspects to successfully completing step 1 of the ATM approach. First, the problem statement must be clearly defined and agreed upon by stakeholders. Having a problem statement that is approved by all group members is critical because it is the point from which all investigation into the problem begins (Green & Kreuter, 1999). Differences in the definition of the problem will undoubtedly lead to the identification of very different antecedent conditions. It is common for members of the same agency to have quite different understandings of the problem they are trying to address. For example, in one federal program there was considerable misunderstanding what is meant by the phrase 'graduating students'. Some program partners felt it referred to high school seniors, while others thought it referred to college graduates. Clearly, while there are some similar issues affecting graduation for both types of students, there are many conditions that are unique. The success of programs ultimately depends on identifying and targeting the correct antecedent conditions.

Often, several hours are needed in working with groups to achieve consensus regarding the problem statement. In cases where the clients are recipients of federal or state awards, it useful to revisit the original legislative language to obtain a clear problem statement. It is surprising how many clients are either unaware of the program goals established by the legislation or have drifted away from what is mandated by law. In other instances, it is helpful to revisit the agency's mission and/or vision statements to better understand the problem of interest. After the problem has been clearly defined,

the antecedent conditions influencing the problem need to be identified to focus intervention efforts.

2.1.2. Scheduling and conducting interviews

The ATM approach emphasizes the importance of the visual representation of the antecedent conditions. As noted earlier, the development of the visual map begins by conducting individual interviews with content experts. It is helpful if members of the planning group are trained to conduct these interviews to foster a greater sense of involvement and contribution. A frequently asked question when training clients to conduct interviews is, 'what defines a content expert?' The answer to the question is quite subjective; however, suggesting that an expert is anyone who might be able to provide insight as to why a problem occurs seems to be useful response. It is important to add that the most overlooked experts are those who are directly affected by the problem. For example, when addressing the problem of a challenging nursing workplace environment, it is important to include patients as well as nurses in the interview process. In addition to content experts other key stakeholders who may be critical to the success of the program may need to be included as well. Including them in the interview process is a good method of creating buy-in to the planning process (Patton, 1997; Sanders, 1994; Weiss, 1983).

After interviewees have been identified, it must be decided in what order these interviews should take place. This is important because the interviews should be of the highest quality to obtain valuable information. Previous experience shows that no matter how intense the training, facilitators still experience a learning curve while interviewing. Interviews conducted later are typically of higher quality than interviews conducted earlier. It takes about 3–4 interviews for a facilitator to become familiar with the terminology of the content area. For this reason, it is recommended that highly knowledgeable content experts and key stakeholders essential to the success of the program be purposively scheduled after the fourth interview. Scheduling interviews in this way increases the quality of information obtained.

However, facilitator bias must also be taken into consideration when scheduling interviews (Kidder, 1981). Early in the interview process, the facilitator is on a learning curve. As more interviews are completed, the facilitator becomes better acquainted with the process, content area and terminology. In later interviews, the danger then becomes of the facilitators 'leading' the interviewees, usually by paraphrasing the interviewee's comments in terms of antecedent conditions identified in previous interviews. Outside observers can be used to recognize this problem and to ensure the quality of the interviews. To assist in quality assurance, an interview checklist for outside observers has been created and is available upon request.

Another frequently asked question is, 'how many interviews need to be completed?' This is an important question to address because scheduling and conducting interviews is a labor-intensive process. Experience suggests that there is very little utility in continuing past the twelfth interview; after this number of interviews, very few new antecedent conditions are identified and little new information is gained. This threshold usually surprises organizations as the number of interviews is expected to be much higher. Sometimes agencies will choose to conduct additional interviews for political reasons, such as including stakeholders critical to the funding or implementation of the program.

One error organizations make is scheduling several interviews in one day in an attempt to complete the interviews as quickly as possible; agencies often schedule up to six interviews a day. This is not an optimal practice, as the interview process requires incredible concentration on behalf of the facilitator. To avoid facilitator burnout and to ensure the highest interview quality, it is strongly recommended not to schedule more than two interviews per day per facilitator.

Clients often ask if the interviews can be conducted in a group setting. The driving force behind this question is an attempt to reduce the costs associated with completing interviews. Conducting group interviews is strongly discouraged. Agencies completing group interviews tend to have less comprehensive maps of antecedent conditions as compared to agencies conducting individual interviews. Further, as with any focus group methodology, there is a tendency for certain individuals and perspectives to dominate, or for other members to be reluctant in raising important perspectives that may be embarrassing. While these issues can be addressed via a skilled moderator (Smithson, 2000), experience suggests that it is still best to conduct individual interviews with key stakeholders.

Based on our experience each interview takes about 45 min to complete. Interviews work best when the facilitator begins by defining the problem statement and ensuring the interviewee understands the working definition. The problem statement is first placed on the right hand side of a whiteboard. Through a series of 'why' questions ('why does this problem occur; why does this condition occur?'), the facilitator begins to map out the interviewee's understanding of the problem. Since, by definition, antecedent conditions occur prior to the problem they are placed to the left of the problem statement. As antecedent conditions are mentioned by the interviewee, causal linkages are mapped out on a whiteboard. A whiteboard is particularly helpful because it allows the facilitator to make changes and redraw relationships. Flipcharts tend to become messy and difficult to follow. Facilitators with good computer and keyboard skills have been able to produce a clean, quality product by creating the map directly in applications such as PowerPoint.

Sometimes interviews do not flow as smoothly as a facilitator would like. As a result, when the facilitator revisits the map after the interview there are obvious gaps in the logical connection between antecedent conditions. One helpful tip for facilitators conducting interviews is to review the antecedent conditions with the interviewee by using 'if-then' statements, working back from left to right. In the nursing example, this would sound like: 'if there is a strained nurse–physician relationship, then nurses may experience more stress and become burned out'. This serves as a good check that the flow of antecedent conditions to the problem is, in fact, logical. Some facilitators have been adamant that working right to left

using 'because' statements works just as well. However, experience suggests that interviewees are more likely to become confused with this approach.

Experience shows that the term 'antecedent conditions' generates unnecessary confusion among interviewees. Phrasing the purpose of the interview as identifying 'root causes' or 'conditions leading to a problem' seems to be more intuitive and easier for some clients to understand. With this being said, one workshop participant recently insisted on making a distinction between antecedent conditions and root causes, suggesting that the root cause is the last antecedent condition (farthest to the left) identified in the series of 'why' questions. Nevertheless, clients who insist on making such fine delineations are quite rare and the term 'root cause' is generally accepted and understood.

Another problem encountered during the interview process is the tendency of the expert interviewee to be strategy-focused. Despite the well-intended efforts to make antecedent conditions explicit, some interviewees simply cannot divorce themselves from discussing the ideal solutions to the problem of interest. For example, instead of providing an answer to the question, 'why does this condition exist?' the interviewees may proceed to talk about solutions to the condition. Departure from the structured format of asking 'why?' can be frustrating to the novice facilitator. The key in this situation is for the facilitator to remain calm and attempt to work backwards—gleaning what antecedent conditions must be important given the strategy being described by the expert. For example, in an interview to understand the nursing shortage in rural Alaska, instead of giving reasons for the shortage, the expert interviewee noted that distance education was critical to solving the problem. Confronted with this situation, the facilitator asked why distance education was necessary and learned that issues of travel, expense, and being place-dependent (i.e. bound to family) were critical antecedent conditions affecting the nursing shortage in rural Alaska.

Experts are often busy and difficult to schedule. Therefore, it is essential to make the most of the time with each expert. In addition to identifying antecedent conditions, another suggestion is to ask experts, immediately following the interview, which antecedent condition(s) they believe to be most critical in affecting change to the problem. It has also proven valuable to ask experts what type of strategies might be most effective in changing the aforementioned antecedent condition. The results of this discussion are particularly useful during step 2 of the ATM process when agencies brainstorm strategies to address targeted antecedent conditions.

2.1.3. Integrating maps

The integration of individual interviews into a single summary map is a daunting task. A common mistake is to begin by simultaneously examining all interviews for common themes. This tends to lead to information overload and frustration. It is recommended to begin the process of integration by identifying the best interview and using it as a template to which more information can be added. To assist in identifying the best template, facilitators are asked to rate the quality of each interview from 1 (poor) to 10 (excellent) immediately following each interview. An excellent interview is one in which the facilitator felt he/she performed well and in which the expert was genuinely interested and knowledgeable about the content area. Each interview is then systematically compared to the template. Common antecedent conditions are noted in the template by making a small tally mark next to the linking arrow and then by crossing off the condition in the comparison interview. In this way, a rudimentary index of relationship strength is developed. New antecedent conditions are crossed off the comparison interview and added to the template.

Integrated maps can quickly become unwieldy. Experience has shown that first attempts to create an integrated map can result in over 80 antecedent conditions. This tends to occur when there is reluctance by those integrating maps to exercise judgment in identifying redundancies. For example, in one integrated map relating to healthy lifestyles, the antecedent conditions of physical inactivity and sedentary lifestyle were depicted separately. Clearly, these are the same antecedent condition. In some cases, this occurs because the person integrating the interviews lacks the terminology to identify redundancies. In other cases, this occurs because the person integrating maps is overly sensitive to wanting to keep the language of the expert interviewees. The purpose of integrating maps is to achieve parsimony, and this can only be achieved with a willingness to exercise some personal judgment in the process.

In many cases, the challenge becomes trying to depict all of the antecedent conditions on a single sheet of paper. PowerPoint has proven useful in trying to address this challenge. Each antecedent condition is depicted in a box. Relationships between boxes are depicted using the 'arrow' function. However, simply using the 'arrow' function can quickly become cumbersome because arrows must be redrawn with each box that is moved. Using the 'connecting arrows' function can avoid much frustration. This is an important feature, because as the need to move boxes arises, relationships will remain intact. Another colleague who encountered similar space issues in depicting numerous antecedent conditions has modified the ATM approach, and begins the process by placing the problem statement in the center of the page (Huntington, 2003). While this does lend itself to better space utilization, it does hamper strategy development. This is because in a left to right format, it is easier to understand that antecedent conditions on the far left tend to be those that should be targeted because those are the more immediate conditions that affect the existence of other antecedent conditions. In a circular format, this concept is harder to visualize because the antecedent conditions to be targeted are located on the circumference. Software, scheduled for release in the fall of 2005, should simplify the mapping and integration process (CPR Group, 2004).

2.1.4. Linear relationships

The process of asking 'why' questions dictates that relationships between antecedent conditions and the problem will be linear, because one condition contributes to the

existence of another. Some clients have argued that the resulting visual representation is not an accurate reflection of real life. This argument is more problematic from the standpoint of creating stakeholder buy-in than it is for developing effective programming. In terms of developing effective programming, it is a case of crawling before walking. Practitioners must first understand why identifying antecedent conditions is important, how to use the understanding of these antecedent conditions to target program strategies, and how these elements are related to measurement strategies. Once these basics are understood, then more complicated, non-linear relationships can be considered. It is also worth noting that programs developed to address linearly-related antecedent conditions still represent a significant improvement over the status quo of many programs that never address the antecedent conditions in the first place.

Non-linear relationships also pose problems related to where the point of intervention should begin and creates confusion in defining intermediate and long-term outcomes. For example, consider the implications on program planning and evaluation regarding a problem of a cyclical nature such as that of self-esteem, diet, and perceptions of being overweight. It is known that those who perceive they are overweight have a tendency to suffer from low self-esteem (Wardle & Watters, 2004). Those with low self-esteem may eat more and exercise less. This combination contributes to being overweight and the downward cycle continues. The cyclical nature of the problem explains the diversity of approaches combating obesity; these treatments range from diets, to physical activity programs, to counseling, and to medical interventions. Yet, with all the research regarding obesity interventions, there still exists a disagreement as to the best approach (Bushkin, 2002; Carlson, 1990; Lewis, Blair, & Booth, 1992). Although simplistic, the linear approach removes the ambiguity of where to intervene, because it defines the starting point among the antecedent conditions located on the far left hand side of the map.

The linearity of the ATM approach can pose problems when used in other cultures. For example, one graduate student used the ATM approach with several of the tribes in southern Arizona. Consistent with the traditional values of storytelling, the facilitator's attempts to ask 'why' were met with answers grounded in stories. Of course, listening to stories adds significant time to complete the interview. In addition to budgeting more interview time, the student facilitator had to learn how to glean the antecedent conditions from the story. Like the skill needed to glean antecedent conditions from an interviewee who is strategy-focused, working with different cultures is another example of where the facilitator needs a great deal of skill to adapt to the interviewee for the purpose of making antecedent conditions explicit.

2.1.5. Completing step 1 with limited resources

A common concern among agencies, particularly smaller agencies with limited resources, is the resources needed to conduct quality interviews. It is true that this stage is very resource-intensive and gaining client buy-in can be difficult at this stage (Renger & Titcomb, 2002; Weiss, 1997). However, experience shows that conducting these interviews are critical in establishing a solid foundation for effective programming. Agencies who invest in this initial stage have a stronger rationale backing their programs than those who do not. In other words, clients get out what they put in.

As mentioned earlier, the number of interviews necessary is much fewer than anticipated by the agency. Interviews only need to be conducted as long as new information is being produced; experience shows that a relatively small number of interviews (10–12) are needed to complete a cohesive map of antecedent conditions. While interviews are the best method of obtaining this information, if an agency is adamant about not conducting interviews, other methods can be utilized. Previous documents published by the agency or funding source may provide valuable information about antecedent conditions and the problem statement. A literature review could also be conducted to identify published antecedent conditions influencing a problem. However, the results of these methods may not provide as complete of a visual map and may not accurately represent the problems faced by the target population. Simply reviewing documents provides insufficient information to understand the theories behind a problem (Weiss, 1997).

2.1.6. Importance of step 1 in logic modelling

Step 1 is deliberately very broad in scope to identify as many antecedent conditions related to the problem as possible. This is particularly beneficial for agencies that have offered the same program for an extended period of time. Agencies that have been locked into a program tend to (a) be limited in their scope of thinking—only considering antecedent conditions related to the programs they offer, and (b) overlook other antecedent conditions that may be critical to affecting change in the problem of interest. In either instance, the result is ineffective programming. Making explicit the broad scope of antecedent conditions helps agencies (a) understand how existing programs might be improved, and (b) stimulate new program ideas for addressing previously unrecognized antecedent conditions. Thus, not only is the ATM approach useful in program development, but the resulting visual representation of the logic model summarizing the antecedent conditions can assist agencies in improving their programs by identifying areas that need to be targeted by intervention strategies.

The process described above results in the first part of the visual logic model that allows agencies to clearly understand the context of the problem; this knowledge provides a foundation from which to build a strong program. The lessons learned in assisting agencies define problem statements, training clients to conduct interviews, integrating maps of the antecedent conditions, and creating linear relationships among the conditions can support other practitioners through the process of developing the first stage of the logic model.

2.2. Lessons learned from step 2 of the ATM approach

In step 2, the antecedent conditions are prioritized and program strategies are developed that target those prioritized conditions.

2.2.1. Prioritization process

When working with a single agency, the prioritization process works well. Typically, the prioritization process can be accomplished within a single meeting lasting no longer than 2 h. Members vote on whether each antecedent condition meets the prioritization criteria: the antecedent condition is within the agency's mission, is changeable, and evidence in the literature links it to the problem statement. Conducting the prioritization process using the Internet via e-mail attachments also works quite well. When using this technology, the first prioritization criterion is sent to each agency decision-maker for input. After receiving input from all decision-makers, the results are tabulated; some antecedent conditions are excluded from further consideration, and a revised list is sent for input regarding the second criterion. Using technology to facilitate the prioritization process can take longer than face-to-face meetings, but it has proven particularly useful in regions where travel to attend meetings is cost-prohibitive, such as rural Alaska.

The prioritization process has proven more problematic when working with a collaborative (Renger & Bourdeau, 2004). More specifically, the problem occurs when multiple agencies are asked whether an antecedent condition is within the mission of each agency. The different missions held by each agency make it difficult to achieve a consensus on this criterion. This is further complicated in instances where there is unequal representation of decision-makers among agencies; larger agencies may provide more decision-makers than smaller agencies. In such cases, using the majority vote to choose antecedent conditions only serves to alienate agencies and may unintentionally undermine the collaborative. The solution to this problem is twofold. First, the prioritization procedure is modified. To be held for future consideration, an antecedent condition must fall within the mission of at least one agency. The second solution is to ensure that each agency has equal representation during the voting procedures.

In instances where the type of program is restricted by the funding agency or by law, it has proven useful to first ask whether the prioritized antecedent conditions can be targeted within the confines of the mandated program structure. Using this as the first prioritization criterion significantly expedites the process. However, the danger is that agencies may simply slip back into offering the same programs the same way without considering alternatives to improve the programs. This is because agencies feel the mandated program structure is not flexible enough to incorporate changes to a program. This can lead to agencies falling victim to activity traps—where programs are offered simply because they are mandated by law without regard to the underlying rationale of the program.

In such cases, the challenge for agencies is to examine whether the existing program can be improved through an understanding of the prioritized antecedent conditions. For example, to address the shortage of health care professionals in rural areas, numerous programs are funded federally to provide health care students with experience in working in these medically underserved areas. These experiences are called rotations. The basic premise of rotations is that students who experience the benefits of working in a rural setting will choose to practice there after graduating. After more than two decades of funding rotation programs, there has been little effect on the shortage of health care professionals in rural areas; in fact, this problem continues to grow (OMB, 2004). Despite being ineffective, agencies continue to receive funding to provide rotations and are mandated by law to do so. However, one Arizona agency has realized that by developing a logic model using steps 1 and 2 of the ATM approach, they could significantly improve the likelihood of the rotation having its intended effect while still maintaining the mandated program structure. In its original form, the rotation experience was limited to clinical time spent in health care providers' worksites. However, in working through the process in stages 1 and 2 of the ATM approach, the agency learned that perceptions of professional and personal isolation were major factors contributing to the decision not to practice in a rural setting. More specifically, concerns about the quality of local schools, spousal opportunities for employment, and autonomy in a small community prevent students from establishing a rural practice. Now, students on a rotation are engaged after clinic hours by visiting with community members who introduce them to the schools, the chamber of commerce, and other community establishments. Thus, the integrity of the rotation concept has been maintained as mandated by law, but is now enhanced through an understanding and prioritizing of antecedent conditions.

2.2.2. Developing and targeting strategies

At the end of the prioritization process, agencies are left with a subset of antecedent conditions that could potentially be targeted by program strategies. As agencies begin to develop programs, there is a tendency to believe that all prioritized antecedent conditions must be targeted. This is, of course, untrue. Agencies must be reminded that the prioritized subset represents 'potential' targets for their program(s) and those successful programs may only target one or two antecedent conditions using multiple approaches.

As agencies begin to develop programs, they must provide detailed written documentation that outlines implementation protocols. Written, detailed documentation describing how a program is to be implemented is surprisingly rare. Common sense would dictate that such documentation is necessary for the delivery of programs, yet approximately 75% of the agencies with whom the authors have worked do NOT have such documentation. The lack of such documentation does not permit the replication of programs and significantly restricts the scope of the process evaluation needed for program monitoring (Joint Committee, 1994). Our practice experience suggests that the reasons for the lack of documentation are that some agencies do not understand the importance of being able to replicate a program, do not appreciate the significance of being held accountable for the use of taxpayer dollars, do not understand the purpose of program information dissemination, or do not possess the resources or skills needed to write the necessary documentation. It is essential for the program

monitoring aspects of step 3 of the ATM approach that detailed documentation is written in step 2.

While selecting and finalizing program strategies in step 2 of the ATM approach, hidden agency agendas may surface. Sometimes, agency members are not sold on the three-step ATM process. They politely go along with 'yet another planning process' and during the program development phase, present their program idea. Often, this program idea is one that has been offered before in previous or current programs, or is an idea to which the agency member is particularly invested in. This indicates that an agency has an agenda regarding program strategies. This is problematic in that it undermines the purpose of the ATM approach in getting agencies to think creatively about how prioritized antecedent conditions might be targeted by innovative program strategies. An indicator that an agency holds an agenda regarding program development is that when asked to rationalize the relationship between the elements of the program idea and prioritized antecedent conditions, the agency will inevitably argue that the proposed program targets all of the prioritized antecedent conditions. While not impossible, it is highly unlikely that one program idea would target all prioritized conditions. This situation should serve as a red flag that an agency is not invested in the ATM approach, and is simply using the process to promote another agenda.

2.2.3. Importance of step 2 in logic modelling

Step 2 of the ATM approach has yielded several unanticipated benefits. The first relates to the utility of the visual map depicting antecedent conditions for organizational and programmatic strategic planning. By shading prioritized antecedent conditions, an agency can quickly see where potential partners may be needed to assess gaps (i.e. non-shaded boxes). In the case of a collaborative, it has proven useful to color code antecedent conditions by agency to determine the gaps and redundancies between members (see Fig. 4).

Often, agencies do not have the resources for new program development and naturally look to adopt an existing program. The visual map is very useful in providing agencies a frame of reference for deciding among the available best practice, or model, programs. Each model program under consideration can be systematically examined to determine the extent to which it targets prioritized antecedent conditions.

Agencies are often held accountable for outcomes over which they have no direct control to change (Huntington, 2002). This is especially true for long-term outcomes that are dependent on changing numerous underlying conditions. Agencies may also be held accountable for outcomes that may not be measurable because the duration of a funding cycle does not permit the time necessary to track and observe change. In addressing this dilemma, agencies have found it useful to use the shaded map of prioritized antecedent conditions in Fig. 2. From Fig. 2, it is clear that (a) there are numerous antecedent conditions related to the problem, and (b) the agency can only affect a small subset of these conditions. The visual map makes it easier to see the outcomes for which an agency should be held accountable, namely targeted antecedent conditions. It also provides information on how realistic it is for an agency to

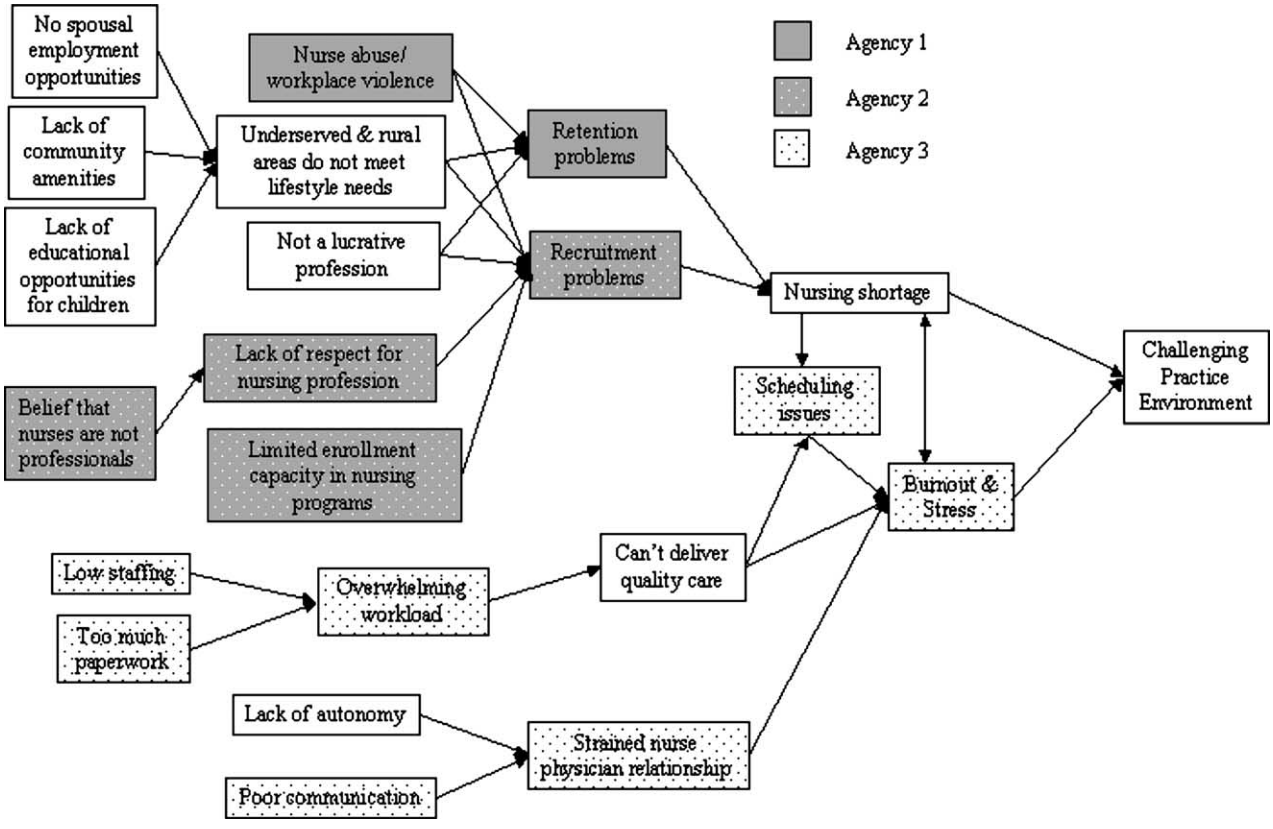

Fig. 4. Using the map of antecedent conditions as a strategic planning tool.

be held accountable for changes to long-term outcomes, shown on the far right-hand side of the map.

Finally, the visual map has proven useful in understanding where the point of intervention should begin, given the funding cycle and available resources. In general, the shorter the funding cycle and more limited the resources, the more it makes sense to focus on the conditions located on the far left of the visual map. These conditions will be more likely to show an immediate impact than the antecedent conditions in the middle and right-hand side of the map. As the funding cycle and available resources increase, the antecedent conditions further to the right can be targeted as well.

By using the lessons learned in step 2 of the ATM approach, practitioners can develop a logic model summary that can be used for strategic program planning. The process introduced in step 2 allows program planners and evaluators to identify what conditions should be targeted given available resources, to ensure intervention strategies target antecedents conditions, and to begin recognizing how much impact should be expected given program elements. In terms of program improvement, agencies can use the visual map of the logic model to identify program gaps, to create more focused intervention strategies, and to establish more realistic program outcomes.

2.3. Lessons learned from step 3 of the ATM approach

In step 3, evaluation strategies to measure the impacts and outcomes of programs are identified.

2.3.1. Writing objectives

One of the first things agencies are asked to do when applying for funding is to write program goals and objectives. Writing a goal statement is usually straightforward; the goal is easily understood and is not likely to change even with alterations to program details. This is because the goal statement directly relates to a broad problem of interest, such as diabetes, school drop-out rates, child abuse, etc. The greater challenge for agencies lies in writing objectives. These are often written and rewritten several times before the details of a program become finalized. The reason why objectives are constantly revisited is because they specify the who, what, when, and how much of program change (Green & Krueter, 1999). The problem is that these details are not understood until after there is an understanding of what is trying to be changed, why it is to be changed, and how that change will occur. Therefore, trying to write these objectives prior to program planning is futile. Using the ATM approach, objectives are written in step 3—after finalizing the details needed to write them. In this manner, objectives only need to be written once, which eliminates the confusion and frustration that stems from constantly rewriting program objectives. In step 3 of the ATM approach, the program objectives are linked visually (see Fig. 3) to the targeted antecedent conditions and in so doing provides clarity as to the relationship between targeted conditions and objectives.

2.3.2. The scope of the evaluation plan

One underlying assumption of the visual map created in steps 1 and 2 is that there is a chronology of events, which means conditions are causally related; change in one antecedent condition contributes to change in other antecedent conditions. Therefore, changing the proximal conditions, located on the left side of the visual map, results in changes of the intermediate and distal conditions, located in the center and right side of the map, respectively. Following this line of reasoning, effecting change in the proximal antecedent conditions should influence long-term outcomes.

This assumption of causality assists agencies in developing evaluation plans. With the visual representation of antecedent conditions, agencies are better able to understand the extent to which they should commit to impact and outcome evaluations, given the length of the funding cycle. If a funding agency only has one year of funding, then it should limit its evaluation plan to assessing those proximal antecedent conditions further to the left of the visual map because those conditions will be more likely to show immediate changes. We have successfully argued that an evaluation plan only measuring these proximal antecedent conditions is sufficient because these conditions have been shown from past research to lead to changes in the problem. As funding and the opportunity to track data increases, agencies can begin to invest in collecting data regarding more intermediate and distal antecedent conditions. Finally, if an agency has funding to observe changes in the endpoint across a long period of time, then it might make sense to invest in collecting data on the long-term outcome or problem statement itself.

Of course, the concept of collecting long-term outcome (endpoint) data is ingrained in many agencies, and suggesting that it might not make sense to gather that data causes distress. Often, funding agencies specifically ask that outcome data be collected. The strength of the ATM approach is that it provides agencies with a defensible position for negotiating the scope of the evaluation plan. Because the linkages are supported by research, the argument can be made that demonstrated changes to antecedent conditions earlier in the chain of events will lead to changes in more intermediate antecedent conditions, and eventually to changes in the long-term outcome. Though this is an assumption, it is a logical one made possible by the solid research foundation from step 1 of the ATM approach.

As a result of the prioritization process in step 2 of the ATM approach, some agencies believe that the evaluation plan must assess all of the prioritized antecedent conditions. This is, of course, untrue. Prioritizing antecedent conditions is needed to ensure strategies are appropriately targeted, not for determining the scope of the evaluation. The immediate impact evaluation will only assess prioritized antecedent conditions, but not all prioritized antecedent conditions must necessarily be evaluated.

2.3.3. Importance of step 3 in logic modelling

The process described in step 3 of the ATM approach results in a visual representation that includes expected immediate impacts and long-term outcomes of the program. As a result of

working through this process, practitioners can use the resulting logic model to identify appropriate targeted antecedent conditions to measure. In this way, reasonable, realistic, and efficient (Sanders, 1994) evaluation plans can be developed.

3. Conclusion

The central tenet to the ATM approach is the avoidance of activity traps—program strategies that fail to change the underlying causes of a problem. Programs that fall victim to activity traps have little success of achieving program goals and objectives; however, programs that utilize theory-based planning and evaluation, such as the ATM approach, can make better judgments about program activities (Weiss, 1997). Because the ATM approach emphasizes the process of developing logic models, agencies understand the underlying theory and rationale behind program strategies and expected outcomes. The results of this process can be summarized in a visual representation that explicitly shows the relationships between antecedent conditions, program strategies, and the expected outcomes. The ATM approach to creating logic models allows agencies to understand *why* certain strategies should be selected to change antecedent conditions and *why* that change is expected to occur. Therefore, agencies that utilize the ATM approach are better able to develop focused program strategies that target prioritized conditions. Practitioners do need to be aware, however, that though this process does improve program effectiveness, it cannot guarantee it. The ATM approach, like other logic models, is simply a tool that assists in identifying the dimensions of a program (Kellogg Foundation, 2001); care must be taken not to view the model as a 'magic bullet'.

Since its initial publication, the ATM approach has been used by local, state, and federal agencies as well as smaller non-profit agencies to improve the planning and evaluation of their programs. The ATM approach is gaining popularity because the three-step process is straightforward and user-friendly. Though the steps can be resource intensive, especially step 1, agencies that commit to the process are better able to justify their programs and to develop evaluation plans that address program components over which they have the ability to change.

The ATM approach to logic modeling is designed to help agencies in the planning and evaluation of their programs. The application of the ATM approach carries with it several benefits in developing logic models, but, like all models, also carries some nuances that practitioners must be able to address. By sharing lessons learned in applying the ATM approach, it is hoped that practitioners can recognize the model's strengths and work through the potential weaknesses. The ATM approach is not perfect, but experience is proving that it is a valuable tool for many agencies in many different contexts. Hopefully, the lessons shared here will continue to advance the application of the ATM approach and result in higher quality program evaluations.

References

Bloomberg, L., Ganey, A., Alba, V., Quintero, G., & Alcantara, L. A. (2003). Chicano-Latino Youth Leadership Institute: An asset-based program for youth. *American Journal of Health Behavior*, *27*(S1), S45–S54.

Bushkin, S. (2002). *Weight management and promotion of a healthy lifestyle*: *White paper for the Medical Society of the State of New York*.

Carlson, J. (1990). Counseling through physical fitness and exercise. *Elementary School Guidance and Counseling*, *24*(4), 298–302.

Chen, H. T., & Rossi, P. H. (1983). Evaluating with sense: The theory-driven approach. *Evaluation Review*, *7*(3), 283–302.

Chen, W. W., Cato, B. M., & Rainford, N. (1998–1999). Using a logic model to pan and evaluate a community intervention program: A case study. *International Quarterly of Community Health Education*, *18*(4), 449–458.

CPR Group. (2004). Available from: www.cprgrp.com website of product releases.

den Hayer, M. (2002). The temporal logic model concept. *Canadian Journal of Program Evaluation*, *17*(2), 27–47.

Dunnagan, T., Haynes, G., Christopher, S., & Leonardson, G. (2003). Formative evaluation of a multi-site alcohol consumption intervention in pregnant women. *Neurotoxicology and Teratology*, *25*(6), 745–755.

Gavazzi, S. M. (2000). The growing up FAST diversion program: An example of juvenile justice program development for outcome evaluation. *Aggression and Violent Behavior*, *5*(2), 159–175.

Goertzen, J. R., Fahlman, S. A., Hampton, M. R., & Jeffery, B. L. (2003). Creating logic models using grounded theory: A case example demonstrating a unique approach to logic model development. *Canadian Journal of Program Evaluation*, *18*(2), 115–138.

Green, L. W., & Kreuter, M. W. (1999). *Health promotion planning: An educational and ecological approach* (3rd ed.). Mountain View, CA: Mayfield.

Huntington, C. (2002). *Testimony to the advisory committee on interdisciplinary*, *community based linkages*.

Huntington, C. (2003). Personal communication, May 30.

Joint Committee on Standards for Educational Evaluation (1994). *The program evaluation standards: How to assess evaluations of educational programs* (2nd ed.). Thousand Oaks, CA: Sage.

Julian, D. A., & Deyo, D. (1995). Opens systems evaluation and the logic model: Program planning and evaluation tools. *Evaluation and Program Planning*, *18*(4), 331–341.

Kellogg Foundation. (2001). *Logic model development guide*.

Kidder, L. H. (1981). *Research methods in social relations* (4th ed.). New York, NY: Holt, Rinehart, & Winston.

Levin, T., Weiner, J. S., Saravay, S. M., & Deakins, S. (2004). Two-year evaluation of the logic model for developing a psycho-oncology service. *Psychiatric Services*, *55*(4), 427–433.

Lewis, V. J., Blair, A. J., & Booth, D. A. (1992). Outcome of group therapy for body image emotionality and weight control self-efficacy. *Behavioural Psychotherapy*, *20*(2), 155–165.

Mark, M. M., Henry, G. T., & Julnes, G. (2000). *Evaluation: An integrated framework for understanding, guiding, and improving policies and programs*. San Francisco, CA: Jossey-Bass.

McLaughlin, J. A., & Jordan, G. B. (1999). Logic models: A tool for telling your program's performance story. *Evaluation and Program Planning*, *22*, 65–72.

OMB. (2004). Available from: http://www.whitehouse.gov/omb/budget/fy2004/pma/healthprofessions.pdf.

Patton, M. Q. (1997). *Utilization-focused evaluation: The new century text*. Thousands Oaks, CA: Sage.

Renger, R., & Bourdeau, B. (2004). Strategies for values inquiry: An exploratory case study. *American Journal of Evaluation*, *25*(1), 39–49.

Renger, R., & Titcomb, A. (2002). A three-step approach to teaching logic models. *American Journal of Evaluation*, *23*(4), 493–503.

Sanders, J. R. (1994). *The program evaluation standards. The joint committee on standards for educational evaluation* (2nd ed.). Thousand Oaks, CA: Sage.

Smithson, J. (2000). Using and analyzing focus groups: Limitations and possibilities. *International Journal of Social Research Methodology*, *3*(2), 103–199.

Stewart, D., Russell, D., & Hanna, S. (2004). Evaluating children's rehabilitation services: An application of a programme logic model. *Child: Care, Health and Development*, *30*(5), 453–462.

Thurston, W. E., Graham, J., & Hatfield, J. (2003). Evaluability assessment: A catalyst for program change and improvement. *Evaluation and the Health Professions*, *26*(2), 206–221.

United Way of America. (1996). *Measuring program outcomes: A practical approach*.

Wardle, J., & Watters, R. (2004). Sociocultural influences on attitudes to weight and eating: Results of a natural experiment. *International Journal of Eating Disorders*, *35*(4), 589–596.

Weiss, C. H. (1983). The stakeholder approach to evaluation: Origins and promise. In S. A. Bryk (Vol. Ed.), *Stakeholder-based evaluation. New directions for program evaluation: Vol. 17* (pp. 3–14). San Francisco, CA: Josey Bass.

Weiss, C. H. (1997). How can theory-based evaluation make even greater headway? *Evaluation Review*, *21*(4), 501–524.