The Pyramid Model: An Integrated Approach for Evaluating Continuing Education Programs and Outcomes

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ABSTRACT

Recent mergers and downsizing of health care agencies have made resources for continuing education (CE) increasingly scarce. Nurse educators must demonstrate the effectiveness and sustainability of CE programs and establish the link between nursing professionalism and positive patient outcomes. The Pyramid Evaluation Model expands and enhances previous evaluation frameworks. Simple steps are outlined to evaluate CE programs and outcomes systematically and comprehensively through an impact model that examines goals, reviews program design, monitors program implementation, assesses outcomes and impact, and analyzes efficiency.

Comprehensive program evaluation is performed rarely and usually is anticipated with trepidation. However, the process of program evaluation does not have to be an arduous one. A systematic approach can provide essential information to measure program outcomes and to improve program design. Evaluation gives managers and educators the ability to distinguish effective from ineffective programs, refine existing programs, pinpoint trouble spots, and diagnose the reasons for program success and failure. Moreover, evaluation gives educators the ability to design and implement successful programs that produce desirable outcomes. Nurse educators already have much of the information needed to perform a comprehensive evaluation of educational programs. Yet many lack a systematic framework to guide the process. The Pyramid Evaluation Model (Figure 1) provides an ongoing comprehensive plan to measure outcomes of continuing education (CE) programs.

Ask any staff nurse the question: “When should you begin discharge planning for a patient?” The answer likely will be: “On the first day of admission, of course!” So it is with program evaluation. The design of an evaluation plan ideally begins during the planning stages of any health care or health education program. In reality, the evaluation process often is overlooked amid the haste to implement programs. The Pyramid Evaluation Model (Figure 1) dynamically examines each phase of program planning and pre-
PROTOTYPE EVALUATION MODELS

The major conceptual framework, which has been developed for the evaluation of health care systems, is derived from the work of Donabedian (1966) (Figure 2). Donabedian identifies three components of a health care delivery system:

- **Structure**: the availability, organization, and financing of health care programs and characteristics of the target populations served.
- **Process**: the transactions between patients and providers in the course of actual delivery of services.
- **Outcome**: the effectiveness of the interventions for enhancing health and well-being.

The model (Figure 2), developed by the authors, based on the writings of Donabedian (1966), illustrates how Structure, Process, and Outcome are linked together and influence one another in medical care systems.

Social scientists, Rossi and Freeman (1993), created a method suitable for the evaluation of social programs. They identified three foci of program evaluation:

- **Program conceptualization and design**.
- **Monitoring of implementation**.
- **Impact assessment**.

These foci are used at different stages of the development and implementation of the program. Because the art of nursing concerns itself with the biopsychosocial well-being of individuals and communities, a combination of approaches is necessary for a nursing application.

Various approaches to the evaluation of CE programs have been described in recent literature. Barg et al. (1992) described a strategy of “gaps and contract” (p. 401), which measures the transfer of new knowledge from theory to nursing practice. Turnbull and Holt (1993) examined various frameworks for evaluating CE programs for health professionals. They found that most of the articles on program evaluation for CE focused on attendance, participant satisfaction, and change in knowledge and skills, while only three articles examined patient outcomes. Using the Donabedian (1966) approach, Stein (1995) examined the components of structure, process, and outcome that included an examination of philosophy, goals, budget, curriculum, and participant satisfaction. Nolan, Owens, and Nolan (1995) evaluated CE for nurses in the United Kingdom by examining the link between CE and the application of new knowledge in a clinical practice setting. Nursing administrators, interviewed in a qualitative impact assessment for CE, identified the personal impact for nurses regarding networking, educational mobility, and career enhancement (Sherwood, 1996). At the professional level, outcomes were knowledge sharing, problem solving abilities, and improved patient care.

Varied methods of program evaluation have been presented. The Pyramid Evaluation Model (Figure 1) expands and enhances previous frameworks by designing a comprehensive systematic approach, which allows measurement of specific outcomes at every stage of program development and implementation.

THE PYRAMID EVALUATION MODEL

The Pyramid Evaluation Model (Figure 1) synthesizes the work of Donabedian (1966) and the work of Rossi and Freeman (1993) and expands the scope of each individual framework to measure the outcomes of CE. The process of evaluation begins at the inception of the program and continues throughout its
duration. The immediate effects can include changes in knowledge, skills, and attitudes, while the long-term effects can reveal changes in health care practice and degrees of productivity. For the patients, this can mean improved quality of life, additional years of life, reduced morbidity, and reduced mortality.

Using five levels of evaluation, the outcomes of CE are measured to determine overall effectiveness and to identify program areas that need to be strengthened. The five components of the Pyramid Evaluation Model (Figure 1) and their defining elements include:

- Examination of the goals of the program.
- Review of program design and reflection upon key concepts.
- Monitoring of program implementation.
- Assessment of outcomes and impact.
- Efficiency analysis.

The first step of program evaluation begins at the “idea” stage before program implementation. The evaluator examines the goals of the program and identifies the target audience. The proposal writing stage is appropriate for reviewing the program design and key concepts, which will guide program implementation. After the program has begun, the evaluator engages in the process of program monitoring, which continues throughout the duration of the program. The next step is to assess the outcomes and the impacts of CE including the short-term, long-term, and unexpected effects of the program. Analysis of efficiency reveals the cost effectiveness of resource use and helps to refine and improve a productive program.

Examination of the Goals of the Program

As Nay, Scanlon, Schmidt, and Wholey (1976) wrote, “If you don’t care where you get to, then it doesn’t matter which way you go” (p. 97). The articulation of goals communicates to all of the stakeholders what needs to be accomplished, a detailed description of the target audience, and what the indicators to measure program achievement are. Ideally, the examination of goals (Figure 1) begins early in the formative stages of program development and occurs several times throughout program implementation. The same criteria for the establishment of sound patient care goals apply to the creation of program goals. The goals must be realistic, measurable, and mutually established among all of the stakeholders (i.e., anyone with a vested interest). Stakeholders may include the funding agency, the sponsoring institution, the program staff, community partners, and the target population. The three “Cs” of goal establishment are compatibility, congruence, and complementariness.

Mutually established goals or, at the very least, goals that are compatible among the various stakeholders will encourage cooperation and commitment. Congruence of goals and objectives prevents fragmentation of delivery and improves program coherence. Sometimes the goals of one stakeholder may complement or make possible the goals of another, thereby promoting active partnership. Mutual goals decrease the tendency to produce different versions of evaluative reports for the various stakeholders, thus simplifying the evaluation process.

As an example, Healthy People 2000: National Health Promotion and Disease Prevention Objectives (United States Department of Health and Human Services Public Health Service [USDHHS PHS], 1991) were found to be congruent with the learning needs of nurses who were identified for a federally funded CE program. The learning needs included: tuberculosis, patient teaching, care of elderly individuals, legal and ethical issues, stress management, infectious diseases, case management, diabetes, nutrition, and others (Sherwood, 1995). Nurse educators in the targeted geographical area were identified as key players to form an Advisory Council to ensure goals and objectives established for the CE program were realistic, measurable, and mutually established. Continuing education programs were tailored to meet the learning needs of nurses in this geographical area, fulfill the requirements of the federal grant, and fit the criteria of the Healthy People 2000 (USDHHS PHS, 1991) goals simultaneously. The objectives for Year 1 were:

- To design programs for Year 1 based on results of the needs assessment.
- To present 15 days of onsite programs for a total of 100 contact hours, with an average attendance of 50 participants per offering.
- To present 30 hours of satellite teleconferences on identified topic areas for Project Year 1.

In reality, 14 onsite programs were offered for a total of 25 onsite days and 174.2 contact hours, with an average attendance of 60 participants per offering. Only 20 contact hours were provided via teleconference because of the unexpected increased cost of satellite time, which had tripled during the course of 18 months. While the majority of the goals were mutually established and measurable, the goal for the teleconferences was not realistic because of the price instability of satellite time.

Another aspect of goal examination is the identification of the target audience. A detailed description of the target audience regarding ethnicity, cultural background, learning needs, level of education, socioeco-
nomic status, and other factors will shape the design of the program. Information about the target audience can determine program content, level of intensity, frequency of offerings, time of day, cost to participants (if any), and location.

Review of Program Design and Reflection Upon Key Concepts

Typically, funding agencies and institutions establish a broad set of goals with general guidelines concerning the type of intervention program to be sponsored, leaving the “nuts and bolts” to the program managers and staff. The program design (Figure 1) emerges after addressing the following issues: significance of need, impact model, feasibility, and congruence of values.

Significance of Need. Scarcity of resources demands that CE programs meet significant needs. To establish a significance of need, program administrators review the literature and gather information about other similar programs in the community. They ask:

- Who perceives the need, and how significant is it?
- What is the scope of the need (i.e., how many people are affected)?

The problem description or statement then can be written based on this information.

Impact Model. An impact model is a visual representation of how a program works (Figure 3). The model explains the determinants of a problem or need and what intervention is likely to resolve it:

- Is the problem or need related to known causal factors?
- What are the latest findings regarding this problem or need?
- What are the existing theories?
- What is the behavior that needs to change?
- How does this behavior affect health outcomes?
- What are the determinants of this behavior?

- What type of intervention is likely to change these determinants, and how will the changes be measured?

After a review of the literature, building an impact model elucidates the hypothesis of causality or the cause and effect (Figure 3):

- What are the causes and effects involved in the dynamics of the impact model?
- How will they be measured?
- Are there any other intervening variables that may interact with these key elements?

Creating an impact model helps explain why the program is necessary and how the program will work to produce the desired change.

Feasibility. During the first phase of program evaluation, the program administrator asks whether the goals are realistic (i.e., “Is it possible to meet these goals?”). The issue of feasibility carries the question to a deeper level by asking:

- How will it be accomplished?
- What resources and equipment are needed to implement the program?
- Is there a location and enough space?
- Is there sufficient personnel?
- Do they need additional training?
- Are there interdepartmental cooperation and support?

The answers to these questions will be revisited again during the analysis of efficiency. A program that is implemented partially because of insufficient resources will result in little or no impact. Some would argue that if one is unable to make an impact with a “downsized” program, it is more appropriate to spend the money on something else.

Congruence of Values. Designing a program plan congruent with the mutual values of all stakeholders is challenging. Values influence policies and procedures, working styles, communication patterns, and program content. For example, hospital administrators and staff nurses both have mutual goals of economic stability and quality patient care. Yet they may not agree on how to meet the specified goals. For programs to succeed, the stakeholders must act on common visions and beliefs. The discovery and comparison of values and guiding principles can begin with a review of the mission and vision statements of the sponsoring institution and the funding sources. Nurse educators demonstrate their values and beliefs through their content choices and teaching styles. Program participants from the target population express their values through needs assessments and focus groups. After all of the values are identified, the stakeholders can
weave them into an implementation plan.

For the federally funded program described in this article, commonly held values were identified among the stakeholders and articulated in the grant proposal. They were: program effectiveness, collegial collaboration, joint sponsorship, cultural sensitivity, progressive nursing skills, and professionalism. These would become guiding principles for program implementation and would form part of the evaluation plan for the next level entitled “program monitoring.”

Monitoring of Program Implementation

Program monitoring (Figure 2) is the next level of evaluation and assists the program administrator to identify problems with day-to-day implementation. Program monitoring begins with the first individual enrolled and continues throughout the duration of the program. The review of program design as described in the previous paragraphs is no longer the primary focus during the implementation of the program. However, the program administrator may need to revisit the program design from time to time because implementation problems frequently have their roots in program design. Some practitioners traditionally have called program monitoring “quality assurance,” “quality control,” or “quality improvement.”

Program monitoring is concerned with three quality components (Table 1): coverage, fidelity, and delivery. It sometimes is helpful to create a matrix or grid to track each program element for evaluation (Table 1). The far left column lists the quality components to be evaluated, and the column headings of the matrix identify the data sources to be examined. When considering appropriate data sources, the program administrator should begin with what is available. Nurse educators commonly have rosters of attendance, evaluation forms, brochures, memos, e-mail messages, administrative reports, and meeting minutes. As mentioned before, the difficulty does not
arise from a lack of data but from a need to organize the available data and to ask appropriate questions in a systematic way. The evaluation questions are general, global questions (Table 1). A more detailed and specific evaluation plan is discussed below.

**Coverage.** Coverage relates to how the target audience gains access to the program and to what extent the marketing activities are reaching the intended audience. For example, educational content intended for RNs also may attract medical social workers. While the program planners may welcome the attendance of the social workers, they should consider them to be program participants who are not in need. To help program implementers identify the degree to which the true target audience is reached, Rossi and Freeman (1993) developed a formula to determine coverage efficiency (Figure 4). Scores for coverage efficiency range from -100 to +100. If the program reaches none of the target population, the coverage efficiency will be -100. If the program reaches every single individual in the intended audience, the coverage efficiency will be +100. A number greater than zero is desirable, with coverage efficiency increasing as the number moves higher.

The most problematic question in determining coverage efficiency is to identify the total number in need. If the CE program is within an institution, the personnel department can provide information regarding

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**TABLE 2**

**FIDELITY MATRIX**

<table>
<thead>
<tr>
<th>Quality Components As Measured</th>
<th>a. Attendance</th>
<th>b. Evaluation Forms</th>
<th>c. Program Planning Reports</th>
<th>d. Faculty Activity Reports</th>
<th>e. Content Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Program Effectiveness</td>
<td>1.a. What was the average attendance?</td>
<td>1.b. How well were the learning objectives met?</td>
<td>1.c. Were the objectives congruent with the goals of Healthy People 2000 (USDHHS, 1991)?</td>
<td>1.d. Did faculty have the expertise to meet the objectives?</td>
<td>1.e. Did content match with goals and objectives?</td>
</tr>
<tr>
<td>2. Collegial Collaboration</td>
<td>2.a. Did colleagues assist with promotional activities? In what way?</td>
<td>2.b. Were the objectives determined collegially?</td>
<td>2.c. Did the program reflect needs assessment data from colleagues?</td>
<td>2.d. Did the Advisory Board collaborate on selection of faculty?</td>
<td>2.e. Did the Advisory Board members provide input regarding content?</td>
</tr>
<tr>
<td>3. Joint Sponsorship</td>
<td>3.a. What was the attendance of nurses from the co-sponsoring agencies?</td>
<td>3.b. Was evaluation data shared?</td>
<td>3.c. Were roles clearly identified in the program planning process?</td>
<td>3.d. Did any agencies assist with recruitment or sponsorship of faculty?</td>
<td>3.e. Did joint sponsors provide input regarding content?</td>
</tr>
<tr>
<td>4. Cultural Sensitivity</td>
<td>4.a. What were the demographic data from the attendance rosters?</td>
<td>4.b. How did Hispanic nurses evaluate the programs?</td>
<td>4.c. Did program planning reflect current issues of the local culture?</td>
<td>4.d. Was Hispanic faculty from the Rio Grande Valley (RGV) used?</td>
<td>4.e. Was the content sensitive to the culture of the target patient population?</td>
</tr>
<tr>
<td>5. Progressive Nursing Skills</td>
<td>5.a. What was the attendance at the workshops for progressive nursing skills?</td>
<td>5.b. How were progressive nursing skills programs evaluated?</td>
<td>5.c. Were progressive skills identified by RGV Advisory Board members?</td>
<td>5.d. How were advanced practice faculty used?</td>
<td>5.e. Did the content of the programs contribute to the formation of progressive nursing skills?</td>
</tr>
<tr>
<td>6. Professionalism</td>
<td>6.a. Did attendance of programs indicate personal initiative for professional growth and development?</td>
<td>6.b. Did the programs assist nurses in meeting their professional objectives?</td>
<td>6.c. Did the Advisory Board members identify their own learning needs?</td>
<td>6.d. How were consultants used?</td>
<td>6.e. Did the content contribute to the professionalism of nurses?</td>
</tr>
</tbody>
</table>
the number of employees who meet the criteria for intended audience. For educational programs in the community, one may purchase mailing lists from the state board of nursing or other vendors to determine the scope of the target audience. These numbers are not entirely accurate, but they do provide a starting point to begin measurement of coverage efficiency.

**Fidelity.** Fidelity refers to the degree of faithfulness in implementation to the original intent of the program. The ongoing work is reexamined considering the values and guiding principles articulated in the program design phase of evaluation (Figure 1). The fidelity component of the matrix previously constructed (Table 1) can be expanded into a more detailed fidelity matrix (Table 2). The values and principles listed in the far left column are the same values and principles identified during the review of the program design (Figure 1). The data sources for measuring fidelity (Table 2) are listed across the top of the grid in the column headings. Again, the program administrator uses whatever data are available. At the intersection of each row and column heading, the appropriate question is asked. The process of answering these questions quickly reveals the strengths and deficits of the program.

**Delivery.** Delivery refers to the availability of services to the intended audience. When participants call to register for an offering, what help do they receive? Do they get a recording? Is a confirmation letter sent to participants who register by mail? Are the offerings given at a time that is convenient for the participants? Is the location accessible? Who pays the registration costs? If the participants are charged, are the fees reasonable? Does the intended audience receive enough advanced notice about the program to request leave from employers?

Sherwood (1996) conducted a qualitative inquiry among health care administrators regarding CE for nurses. The administrators identified certain “quality indicators” described as “the right program at the right time in the right place for the right cost” (Sherwood, 1996, p. 126). All of these indicators are delivery issues. One of the most important issues of delivery is the level of intensity of the educational program. A basic program that merely reviews the principles of patient care will be perceived as boring, and a program that is too challenging will overwhelm and demoralize the participants. The “right intensity” will produce the desired outcome and have the greatest impact.

**Assessment of Outcomes and Impact**

Before beginning this phase of evaluation, it is necessary to revisit the impact model that was constructed during the program design phase of evaluation (Figure 2). Using the matrix format, evaluation questions again can be formulated (Table 3). In the far left column, the short-term and long-term desired outcomes of the program are listed. These are the same outcomes identified in the impact model constructed earlier. The data sources for measuring these outcomes are identified in the column headings. At each intersection of row and column, the appropriate questions are presented. Although measurement of objectives met and goals accomplished is an important part of quantitative data collection, other qualitative data can give context, richness, and meaning to the quantitative data. In the formulation of questions, exploratory and open-ended inquiries should be included as well as a description of a potential case study (Mullen & Iverson, 1982).

The traditional method of measuring the outcomes of CE programs has been through the determination of how well the learning objectives were met (i.e., knowledge level). This method certainly is valid and represents a first step in the measurement of outcomes. Another indicator of CE outcomes is a positive change in attitudes and beliefs, which is more difficult to measure. Qualitative inquiry, particularly the use of focus groups, can be very helpful in determining changes in attitude as a result of CE. The examination of skills acquisition through return demonstration and checklists commonly is used for new nurses in orientation and for veteran nurses demonstrating competency.

The next aspect of outcomes measurement examines changes in practice as a result of CE. The evaluator can inquire whether the nurses have made any changes in the way they practice nursing and can elicit a description of the nature of the changes. Nurses must be aware of the need to change nursing practice to implement changes. Barg et al. (1992) implemented a strategy coined “Gaps and Contracts” (p. 401) to assist oncolo-
TABLE 3
OUTCOME AND IMPACT ASSESSMENT MATRIX

<table>
<thead>
<tr>
<th>Quality Components As Measured By</th>
<th>Focus Groups of Attendees*</th>
<th>Interviews of Agency and Institutional Managers*</th>
<th>Long-Term Professional Development Over Time*</th>
<th>Competency/ Certification*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Level</td>
<td>How has the program affected your knowledge level regarding nursing practice?</td>
<td>Do your employees seem to have gained knowledge and information as a result of the program?</td>
<td>Have attendees increased their levels of expertise over time?</td>
<td>Is there a difference in competencies between those who attend the program and those who do not? If so, describe those differences. Do program attendees pursue certification?</td>
</tr>
<tr>
<td>Attitudes and Beliefs</td>
<td>How has the program affected your attitudes and beliefs?</td>
<td>Has the program had any impact on the attitudes of employees?</td>
<td>What has been the attitude of attendees toward nursing practice over time?</td>
<td>Do the attendees exhibit more confidence in their abilities to perform and to receive certification?</td>
</tr>
<tr>
<td>Skills Acquisition</td>
<td>What skills have you acquired as a result of the program?</td>
<td>What skills have your employees acquired as a result of the program?</td>
<td>Have employees continued to expand their skills over time?</td>
<td>What skills have attendees acquired that relate directly to competence in the workplace?</td>
</tr>
<tr>
<td>Change in Practice</td>
<td>Have you changed the way you practice nursing since attending the program? If yes, how has your practice changed? If not, why not? Are there barriers to making changes in your nursing practice? What are they?</td>
<td>Have you seen any changes in the way nurses practice as a result of the program? What is the philosophy of the agency or institution regarding changes of standards and nursing practice?</td>
<td>What changes in practice have occurred over time in the professional nurses' lives?</td>
<td>How competent do you feel regarding making changes in the way you practice nursing?</td>
</tr>
<tr>
<td>Patient Outcome Studies†</td>
<td>Have you seen any changes in patient outcomes or length of stay?</td>
<td>Has the agency or institution conducted any patient satisfaction surveys? Has the agency or institution examined length of stay?</td>
<td>Have any program attendees shown interest in conducting patient outcome studies?</td>
<td>What are the perceptions of the patients regarding the nurses' competency levels?</td>
</tr>
</tbody>
</table>

* Qualitative measures.
† (e.g., length of stay, patient satisfaction, quality of life).

Gy health care professionals to identify gaps in their clinical knowledge and to apply newly gained knowledge in their work with cancer patients. The evaluator can probe into the reasons why some nurses may be unable to implement change. These changes or lack of them can be influenced by many factors. Scheller (1993) analyzed factors in the work environment which influence nurses' ability to implement changes in nursing practice as a result of knowledge gained from CE programs. Scheller (1993) identified several factors that impede nurses' ability to implement change. They are lack of time, climate of the work environment, stress of job demands, clash of values, lack of stable leadership, and lack of collegiality among nurses.

Another part of outcome measurement is the examination of patient outcomes, which occur as a result of changes in clinical practice. Patient outcomes can be measured by certain indicators (e.g., length of stay in the hospital, patient satisfaction surveys, responses from quality-of-life questionnaires). Gill and Ursie (1994) described the impact of a CE program on patient outcomes among elderly patients with hip fractures. The nurses on one of four adult surgical orthopedic units received a comprehensive CE program to prepare them for the implementation of a patient care protocol for elderly patients with hip fractures. The nurses on the other units participated in the usual CE activities. Patients on the experimental unit ambulated a half day sooner than the others and left the hospital an average of 4 days earlier. Although the study design was limited because of a selection bias, the study breaks important ground in establishing the link between CE and patient outcomes.

Another level of outcome measurement is the long-
term growth and development of the nurse as a result of CE programs. Nolan et al. (1995) assert that “Whilst the improvements to direct care figure highly, other less tangible benefits are also valued” (p. 559). These less-tangible benefits include the enhancement of the nursing profession, personal and professional development, networking benefits, increased job satisfaction, better recruitment and retention of nurses, and increased academic development. In a qualitative study, Sherwood (1996) identified other benefits of CE. She listed aspects of personal growth such as stimulation, networking, and career mobility, and aspects of professional growth such as sharing of knowledge, problem solving, and improved patient care. Earlier, Sherwood (1995) also described the implementation of a long-term CE project that resulted in the formation of a master’s degree program for nurses in a rural, medically underserved area. These outcomes can be classified as long-term impacts on the target population. Some of the effects are intentional; some are serendipitous. Long-term follow up of the participants of various programs can uncover the unintentional effects of the program as well as provide information to measure the intended outcomes.

**Efficiency Analysis**

Efficiency analysis reveals how well resources have been used to produce the desirable outcomes. Before one can analyze the efficiency of a program, positive outcomes should be evident. Data should reveal that the program is reaching those who need it and is making an impact. An organized and systematic consideration of factors involved in the funding of CE ultimately produces better outcomes than consideration based on “what we did last time,” “gut feelings,” and even “educated guesses” (Drummond, Stoddart, & Torrance, 1996, p. 6).

Another aspect of efficiency analysis is concerned with choices and alternatives. With resources so limited, which program receives funding depends on how well the implementers can demonstrate its cost effectiveness. Economic evaluation is “the comparative analysis of courses of action in terms of both their costs and consequences” (Drummond et al., 1996, p. 8).

Several types of economic evaluation exist, each one appropriate for a different kind of analysis. Cost minimization studies compare two or more programs which produce the same outcome. An example of this would be different CE programs which provide CE contact hours. The unit of measurement for the output is the same (i.e., contact hours are compared to contact hours). The cost of each program is measured in dollars. In performing this type of inquiry it is necessary to establish that the outcomes from one program to the next are the same or nearly the same. The ready availability of such information to educators and administrators make this a fairly simple and straightforward method of economic evaluation.

Cost-effectiveness analysis is similar to cost minimization in that the outcomes are of the same common denominator. However, cost-effectiveness analysis is different from cost minimization because the outcome may occur to varying degrees. For example, when examining two different educational programs that prepare graduate nurses to pass the licensure examination, Program A costs $480 per participant and has a 70% success rate, while Program B costs $620 per participant and has a 100% success rate (Table 4). The costs of both programs are measured in dollars, and the outcomes of both programs are measured as participants who become licensed after the first attempt. The differences are in the success rates. Program A is cheaper, but after comparing the cost effectiveness ratios, it is apparent that Program B is more cost effective.

Cost-benefit analysis assigns a dollar value both to the costs and benefits of the program. For example, the ability to interpret an electrocardiogram strip would be assigned a dollar value. The ability to insert a nasogastric tube would be assigned a dollar value. The knowledge of normal blood gas values would be assigned a dollar value. This type of economic evaluation is difficult and problematic and requires the assistance of an economics consultant. Beat in mind that the dollar value assigned to educational benefits will vary depending on the viewpoints of the various stakeholders. Because of the pitfalls of assigning a dollar value to less tangible assets, cost-benefit analy-
sis rarely is used for the evaluation of CE programs.

Cost utility analysis measures the costs of different programs and compares them to an outcome that is characterized by quality of life or productivity. Nurses who have sustained on-the-job injuries could be educated to become telephone health counselors or telephone triage nurses. Continuing education programs of this type could be said to increase productivity, quality of life, and enhancement of rehabilitation effectiveness for those nurses. Cost utility analysis would compare not only the number of days worked but also the productivity or quality of life as perceived by the workers.

THE PYRAMID EVALUATION MODEL: AN INTEGRATED APPROACH

It is easy to assume from looking at the Pyramid Model (Figure 1) that each successive layer of the model is somehow superior to the one below it. This is not the case. Any hierarchy implicit in the model simply reflects how each evaluation level is built on the work previously accomplished. Furthermore, each level is an integral part of the whole and is essential to the success of the program evaluation. When assessing a patient, nurses examine more than one body system to get an overall understanding of the health status of the patient. So it is with program evaluation. Asking a few of the right questions at each level of evaluation can solve many of the mysteries of how programs fail or succeed. Each level is important in its own right and yields its own significant data.

One may think that each level is distinct and separate. This is not the case either. Evaluation activity can occur concurrently on several different levels. For example, nurses continue to assess patients even after they have begun the implementation of the treatment plans. Furthermore, information obtained from one level of evaluation frequently helps explain or interpret data obtained from another level. In this way, all of the levels continue as an integrated whole, successively building on the work previously accomplished. If one level of the program is altered, it will affect all of the other levels.

Program evaluation can be incorporated into daily routine through continuous awareness of what data are needed. Asking the right questions and knowing where to find the answers are only the beginning steps of program evaluation. The other part of evaluation consists of describing the data coherently and identifying the approaches necessary for creating a more effective program. Creating CE programs to improve nursing practice is at the heart of program evaluation. Isn't it the desire of every nurse educator to have a positive impact on patient outcomes? The purpose of program evaluation is to enable the creation and implementation of programs that will ultimately improve the health and well-being of individuals.

REFERENCES


