Concepts and Rationale for Developing an Outcome-Based Evaluation Plan for the Arthritis Center of Hawaii

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HEALTH PROJECT ADMINISTRATORS must have access to valid, pertinent, and timely project evaluation information, which is continuously and systematically collected, in order to make responsible decisions for project management. Also, public health policymakers must have summations of this information on which to base top-level decisions concerning continuation of a project or future policy alternatives.

Opinions differ concerning who should design and implement an evaluation plan (*1,2*); however, administrators of small health projects often find it necessary to perform those functions. Although many Federal grants for demonstration projects and new programs include an evaluation requirement, little information is available that is of practical, utilitarian value to a health project administrator who must design an evaluation plan.

The importance of early evaluation planning with prestated objectives cannot be overemphasized (*2*). Early planning facilitates participation of other key persons in formulating the plan; this leads to a more accurate description of true project objectives. A continuing evaluation process that provides feedback information enables necessary operational revisions as the program progresses. When evaluation data are collected after the fact, much valuable information may be lost forever because the need for it was not anticipated while the data were available. Without good data, an evaluation report often becomes a subjective justification of the program with an obvious propensity toward bias.

Despite thorough derivation of prestated objectives, significant unanticipated side effects of a project usually

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occur. Identification and analysis of those side effects are necessary and desirable, but this does not lessen the need for a carefully designed and prestated evaluation plan (*3*).

In 1974 the Arthritis Center of Hawaii was 1 of 29 pilot arthritis projects established under the Regional Medical Programs. The Hawaii Center has twice received State funding, and recently (October 1978) it was designated 1 of 24 Multipurpose Arthritis Centers by the National Institute of Arthritis, Metabolism, and Digestive Diseases. During the first 4 months of operation, an evaluation plan that used a systems theory-based conceptual framework was developed for the center. Four years of experience with the evaluation plan and format has demonstrated that they are effective and adaptable in evaluating a wide range of programs.

In this paper, I discuss the theory on which the plan was based, identify the key components of the plan, and describe its format, derivation process, content, and experience with its implementation.

In the derivation of this evaluation plan, most staff members, several interested health administrators, and the Arthritis Center Steering Committee participated. The first four steps in developing the plan—objective setting, identification of performance outcomes, determination of measurement standards, and identification of project activities—are synonymous with systems planning. The next steps—identification of data required and data collection method and schedule—are similar to research design activities.

Concepts and Rationale

The following narrative explains the concepts and rationale for the evaluation plan of the Arthritis Center of Hawaii. Excerpted samples from the actual plan are presented in the box.

Goals and objectives. A goal is a broad statement of purpose, continuing through time, providing direction toward a desired future state. Objectives are observable, measurable, time-limited statements of organization purpose that are specific enough to guide action. Two components of objectives are (*a*) performance outcomes, which are descriptions of the desired results of project activities stated in terms of the services, products, or changes in target persons' health conditions, skills, knowledge, or attitudes and (*b*) measurement standards, which are predetermined statements of performance that define minimal acceptable levels of attainment; they are used for comparison with actual project performance in determining the extent to which the objectives have been reached.

When defining planning, most persons identify the derivation of goals and objectives as a major component of the process. Because both planning and evaluation are related to the careful specification of goals and objectives, their close relationship is clear. While evaluation takes place continuously, the summation of evaluation data at the end of a given period completes the planning cycle and starts the replanning cycle (*4*).

By the time an administrator has been named and begun operational project planning, a project proposal document has already been accepted; this document includes a generally stated set of goals and objectives. It can be assumed that the project proposal was based on some kind of assessment of community health care needs or problems.

A primary task of an administrator is to convert the general statements of goals and objectives of the project proposal into objectives that are specific enough to suggest operating-level project activities (*5*). For example, the major goal of the Arthritis Center of Hawaii is to "improve the quality of health care for arthritis sufferers in Hawaii, the Trust Territories, American Samoa and Guam." A more specific objective statement is "improve the health care status of arthritis patients."

The use of the word "derived" is intended to emphasize the value of cooperative, broad-based participation in the process of selecting and stating objectives. Such participation is a way to ease the introduction of a wide range of value positions into the planning process. For example, the Arthritis Center has continually sought participation in the development and revision of objectives from its staff and its advisory committee in order to obtain suggestions from both professional and nonprofessional sources (*6*).

Considerable thought must be given to selection of refined project objectives, and care must be taken in writing objectives to assure that the intent is accurately and clearly communicated. It should be emphasized that it is possible to select objectives that are not directly related to solving the health problem in question—a health project may meet objectives but fail to contribute to the solution of the problem.

Identification of performance outcomes. Perhaps the most difficult phase in developing an evaluation plan is identifying performance outcomes for each objective in the operating plan. Performance outcomes are descriptions of the desired results of project activities and must be stated in measurable, observable, and demonstrable terms. Since it is possible for several performance outcomes to be associated with one project objec-

tive, one way to start specifying these outcomes is to identify barriers and constraints between the project's current status and what the project is to achieve. For example, if facilities have physical barriers to easy access to services for arthritis patients, the desired outcome would be removal of these barriers. Also, if outreach information is not being received by target clients because of a language barrier, a performance outcome of removing the language barrier can be identified. Similarly, if a patient's current health care status differs from a professionally derived standard for the patient, elimination of the discrepancy becomes a performance outcome to be achieved. This approach to planning recognizes the differences between performance outcomes that identify and measure various input and process conditions in the project and outcomes associated with changes in a patient's health condition. In the preceding examples, changes in patients' health care status were identified and measured and referred to as performance outcomes. Although in this instance the term performance outcome refers only to changes in health care status, rather than to actual changes in patients' health, it is still an interim measure of progress that can be attributed to project activities.

Excerpts from the Arthritis Center of Hawaii Evaluation Plan

Objective 1.0: Improve the health care status of arthritis patients

Performance outcomes	*Measurement standards*
1.1 Undiagnosed patients receive diagnoses at the center	1.1 Of patients arriving without a diagnosis, 75 percent will gain a diagnosis at the center
1.2 Patients not receiving treatment for arthritis receive recommendations for treatment regimen	1.2 Of patients arriving for services not on any course of treatment, 70 percent receive recommendations for treatment
1.3 Patients already being treated for arthritis receive recommendations for additional treatment	1.3 Of patients arriving for services already on a course of treatment, 70 percent receive additional (or changed) treatment recommendations at the center
1.5 Referring physicians carry out center treatment recommendations	1.5 Referring physicians comply with 50 percent of all center recommendations

Implementation process 1.0: Provide specialized multidisciplinary diagnosis and recommendations for treatment for arthritics by operating a clinic and utilizing the "standards of quality care" derived at the center

Data required	*Data collection method and schedule*
1.1 Comparison of patients' categories on entering and leaving center services: 1. Problems identified 2. Diagnosis made 3. Therapy recommended	1.1 Information collected at intake and from center medical records; collection ongoing
1.2 As above	1.2 As above
1.3 Percent of patients who received additional (or changed) treatment recommendations at the center	1.3 As above
1.5 Record of physicians' responses regarding compliance with recommendations	1.5 Referring physicians reply to mail questionnaire annually

Objective 2.0: Increase the awareness and acceptance of services available to arthritics by conducing outreach activities —target groups include physicians, prospective patients, other health professionals, and health agencies

Performance outcomes	*Measurement standards*
2.2 Impact of program on community demonstrated by a significant number of physicians referring to center	2.2 40 percent of practicing physicians in selected specialties make referrals to center

Implementation process 2.0: Plan and implement intensive outreach program by identifying target groups, determining information needs, design and produce messages and audiovisual support, select appropriate media and activities, conduct activities

Data required	*Data collection method and schedule*
2.2 Number of physicians referring and their specialties	2.2 Recorded in log of center statistics; collection ongoing

Objective 3.0: Facilitate access to and delivery of health services to arthritis sufferers

Performance outcomes	*Measurement standards*
3.2 Referral system is effective for each inquiring prospective patient, regardless of economic status	3.2 An increasing percentage from year to year of patients being referred from the lower socioeconomic levels will indicate a positive trend in eliminating the economic barrier

Implementation process 3.0: Devise effective referral system and work toward removing language, economic, and physical barriers to access

Data required	*Data collection method and schedule*
3.2 Percentage of patients from different income levels	3.2 Social worker obtains information; collection ongoing; reported yearly

It is as important to identify and measure the interim steps in health care status as it is to measure the ultimate outcome of improvement in the patient's health condition. The benefit derived from identifying interim (sometimes called "bridging") performance outcomes is that it gives the administrator guides for action toward improving the patient's health condition and the evaluator clues to causal links between interim project performance and patient outcomes stated in terms of improved health condition.

Measurement standards. The next step in designing an evaluation plan is to determine standards against which the extent of outcome attainments can be compared. This is actually the last step in the objective-setting process; it defines what the project personnel believe is the ideal condition to be achieved.

The standards are often selected arbitrarily and reflect the values of the planning or evaluation group. No group of health professionals knows exactly what constitutes satisfactory outcomes that relate to any given set of resource inputs. In actual practice, previous experience helps to determine the suitability of the original standards. Some standards will be found unattainable, and others will be unchallenging. If after actual experience in evaluating the performance outcomes it is determined that the objectives were not reached and alternative processes will not result in attainment of the original standards, the standards may have to be revised or additional resources allocated. Similarly, if some standards are reached too easily they must be revised upward or resources reallocated to other objectives of the project.

For example, in Hawaii 79 percent of the population comes from homes where English, Japanese, or Filipino is spoken (*7*). To measure the performance outcome "spoken language is not a barrier to access to Center services," the standard selected is "access information will be available in the mother tongue of 79% of the Hawaiian population." Toward this standard, brochures and pamphlets about the center's services and arthritis were published in English, Japanese, and Filipino and distributed throughout the State. The reason for the selection of 79 percent rather than 95 percent as the measurement standard was that the remaining population groups were so small that the production of separate educational materials in each language would not have been cost effective. However, Samoan pamphlets were also printed, even though the population is small, because Samoans are known to underutilize available health services and osteoarthritis and gout appear to be common among them. The Samoan situation illustrates one method of setting arbitrary measurement standards when a purely objective method is not available.

For the performance outcome "undiagnosed patients receive diagnosis at the Arthritis Center," the measurement standard was "of patients arriving without a diagnosis, 75 percent will gain a diagnosis at the Center." When this standard was determined, the project personnel did not know precisely what a reasonable standard should be. Thus, an arbitrary standard became the target; the standard could be revised if subsequent experience proved it necessary. When performance-based evaluation plans become more common, data concerning common outcomes and their related measurement standards can be centrally collected and normative standards derived for use by many other projects.

Implementation process. The implementation process is simply a description of the specific activities conducted to achieve a given objective. This process description is an abbreviated form of the more detailed activity description in the project's operating plan. However, it is included in the evaluation plan to help users visualize the relationship between project objectives, activities, and data collection. An example of the implementation process described in the evaluation plan relating to the objective 'improve the health care status of arthritis patients" is "provide specialized and multidisciplinary diagnosis and recommendations for treatment for arthritics by operating a clinic and utilizing the standards of quality care derived at the Arthritis Center."

Data required. The data-required component of the evaluation plan simply states exactly what information must be collected and recorded in order to determine whether the measurement standard has been met. This component is included in the evaluation plan so that project personnel will identify the exact data necessary to conduct the evaluation. For example, to determine the extent to which the performance outcome "undiagnosed patients receive diagnosis at the Arthritis Center" has been reached, it is necessary to collect the following data: "comparison of patients' categories on entering and leaving Arthritis Center services. 1) Problem identified 2) Diagnosis made 3) Therapy recommended."

Data collection method and schedule. Since there are many ways to collect data, this portion of the evaluation plan calls attention to the fact that data collection methods must be determined and instruments designed and printed before the scheduled data collection is begun. Although the data section of this evaluation plan seems logical and obvious, evaluation data

often are not collected simply because attention was not paid to the details of the what, how, and when of the data collection process. For example, to collect the data necessary for determining the extent to which the performance outcome "referring physicians carry out Center treatment recommendations" was achieved, it was necessary to construct a questionnaire and mail it to all physicians referring patients during a specified time.

Conclusions

The project has used evaluation data in a number of ways. As a management control tool, the data have been used continuously to aid in identifying problems concerning the operation of the project and as a guide to making subsequent program revisions. From time to time, evaluation data have provided the necessary information for writing grant proposals for continuation of the program and to comply with the Hawaii Legislature's request for reports on the status of the project. Project administrators and the steering committee (an advisory group) rely on the evaluation data in setting project policy and making resource reallocation decisions. Also, the data have been used as a basis for conducting several small research studies.

Another significant use of the evaluation plan is to direct the collection of data in a way that assures the constant availability of information for required periodic reports, as well as for responding to unscheduled requests for program information.

A major advantage of an evaluation plan based on carefully specified performance outcomes with accompanying measurement standards is that it provides substance and content for a discussion of project purposes with valued resource persons. The plan focuses discussion on substantive issues, and such discussions have resulted in much constructive criticism that can be translated into improvement of the project. A highly beneficial and unanticipated consequence was that we received valuable suggestions for improvement from many competent people who read the evaluation report.

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SYNOPSIS

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Valid, pertinent, and timely evaluation of all types of health programs is essential to make possible rational funding decisions by public health policymakers and also to assist health program administrators in making responsible management decisions. Evaluation plans should be derived early in the program to prevent the loss of valuable data. The evaluation plan described is based on systems planning techniques and research design. The steps in the evaluation process are displayed in a conceptual framework which facilitates understanding and is a convenient reference for all staff in identifying evaluation activities. The plan and format were designed at the Arthritis Center of Hawaii in 1974.

The most important step in the evaluation process is the derivation of objectives that are directly related to solving the health problem in question and communicate the intent accurately and clearly. The process of selecting and stating objectives can be most effectively accomplished with broad-based participation of all members of the multidisciplinary team. The next step is to identify performance outcomes for each objective. They are the desired results of program activities and must be stated in measurable, observable, or demonstrable terms. It is then necessary to select measurement standards for each outcome against which the extent of outcome attainment can be compared. A brief description of the specific activities conducted to achieve a given objective is the next step (implementation process) and is followed by an explanation of the data required to make the necessary measurement of attainment. The format also includes the data collection method and the schedule for collecting it.