EVALUATING CLINICAL COMPETENCE IN THE HEALTH PROFESSIONS

MORGAN • IRBY

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PREFACE

This book is written to assist current and future health professions educators and practitioners to improve their skills and procedures for evaluating student performance in hospitals, laboratories, and health care clinics.

The task of improving clinical evaluation is complicated by variations in clinical settings (such as types of facilities, levels of supervision, diversity of patients) and by unique characteristics of each health profession (such as diagnostic problem-solving skills in medicine). In this book evaluation principles are applied to these complexities and illustrated with instruments and procedures from a variety of health professions. The book is intended to serve as a resource for those engaged in the difficult process of developing or revising clinical evaluation instruments.

Clinical evaluation refers to the process of collecting information on student clinical performance in order to make informed decisions regarding student progress and program performance. Systematic data collection with quality instruments and trained faculty should not only enhance the quality of information obtained but should also improve the adequacy of decisions made.

Evaluation involves both the systematic collection of information (referred to as measurement) and the ability to judge the adequacy or worth of a particular sample of student knowledge, skills, or attitudes (referred to as evaluation). Evaluative judgments or decisions should be based on data obtained through use of valid and reliable measurement procedures and techniques.

Specific suggestions for improving clinical evaluation are made in each of the four major sections of this book. Section I offers general directions for beginning the evaluation process and for determining how to begin and when to evaluate. It also discusses current trends in clinical evaluation.

The second section presents an in-depth examination of several dimensions of clinical evaluation. Chapters 4 and 5 review the numerous options available for evaluating student performance, including strengths and limitations of each technique. Chapters 6 through 9 address different dimensions of student clinical performance (knowledge, attitudes, skills, products) and make recommendations for developing instruments in each area. Suggestions for use of simulations and student self-assessment are also included.

Section III focuses on implementation considerations: managing an ongoing evaluation system optimally, along with utilizing the results of evaluation for grading purposes, curriculum revision, and faculty development.

The final section of the book contains examples of clinical evaluation instruments and procedures developed in nine health professions. These provide insight into the current status of clinical evaluation, as well as models for dissemination and further experimentation.

Several general observations can be made based on experience gained through writing this book, conducting workshops, and consulting with health science faculty on clinical evaluation. First, clinical evaluation is a complex and difficult task. The ideas and suggestions contained in this book should help in remedying some of the difficulties inherent in clinical evaluation, but they will not instantly solve the many concrete problems inherent in each academic program.

For this reason, long-range planning is beneficial for revising clinical evaluation instruments, as is the recognition that change rarely comes rapidly in this area.

Second, no perfect clinical evaluation method or procedure exists. Because of differing learner characteristics, diverse settings in which evaluation takes place, and varied requirements of the professions, what works in one setting and for one profession will not necessarily transfer immediately to another. Thus any evaluation technique selected will need to be adapted to the needs of the specific program.

Third, no evaluation system will ever be fully acceptable to all involved. Because of different teaching styles, personalities, and preferences, an instrument that meets the needs of some may not be acceptable to others. For example, an instrument that provides specific, useful feedback to students may be excessively long and therefore objectionable to clinical supervisors.

Fourth, evaluation results are rarely used optimally. Most clinical evaluation information is used to monitor student progress and assign grades. Rarely are those same data analyzed for implications on the curriculum, faculty development, or in-service education.

Fifth, frequently more information is collected than is needed or used. In a search for certainty in making decisions about student progress, reams of data may be collected but not used. Only the most essential information that samples the critical areas of student performance should be collected. Raising the question, "What will we get out of this information and how will it be used to make decisions?" can assist in reducing the number of items and decreasing the information collected.

Finally, the clinical evaluation instrument is a focal point of communication. It serves as a major link between academic programs and clinical supervisors in the field. It is also a central element of communication between the clinical supervisor and the student. As such, clinical evaluation instruments carry a heavy burden for both teaching and evaluation. For this reason, careful attention must be paid not only to the instrument but also to the procedures for its use.

Significant progress has been made in recent years to improve the quality of clinical evaluation in the health professions. This book documents many of these accomplishments. We look forward to the future, which should bring further blending of theory and practice as well as refinements in the clinical evaluation process.

We wish to express our appreciation to the contributors who not only wrote excellent chapters but also generously shared their clinical evaluation instruments. This created a good mix of evaluation theory with specific examples of instruments used in the health professions.

The authors of three chapters particularly express an indebtedness to Robert Brennan, Robert L. Ebel, Richard L. Ferguson, and Cynthia B. Schmeiser (Chapter 6); Kenneth J. Bender, Marilyn J. Maple, Joseph Ciezkowski, and Ronald Marks (Chapter 20); and George T. Bryan, Luther B. Travis, Donald A. Bosshart, and C. W. Daeschner (Chapter 23).

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Margaret K. Morgan
David M. Irby

CONTENTS

SECTION I

Clinical evaluation perspectives and procedures

CHAPTER 1

DETERMINING HOW TO BEGIN

Eta S. Berner and Kenneth J. Bender

In determining how to begin clinical evaluation, the health professional must first answer several questions:

1. *Who* is to be evaluated?
2. In what *context* will the evaluation take place?
3. For what *purpose* will the data be used?
4. What *effect* will the evaluation process have on the students?
5. What are the *competencies* to be assessed?

This chapter discusses issues to be considered in answering the questions listed above, with emphasis on identifying and stating competencies to be assessed. The other related questions are briefly addressed here and are explored more thoroughly in subsequent chapters.

Certain terminology should be clarified. A *test* or *measurement* becomes an *evaluation instrument* when it is used to make judgments about what is assessed. The words *objectives* and *competencies* have been used in many contexts in recent years. *Objectives* are the specific knowledge or skills the student is expected to master. *Competencies* are the knowledge and skills that are necessary for adequate performance in the profession. Ideally, objectives reflect the competencies the practitioner needs to master. In this chapter the two words are used interchangeably.

WHO IS TO BE EVALUATED

Although a given evaluation method can be applied in different settings, accurate assessment of some populations may require individualized evaluation methods. Students, for example, expect to be evaluated by their teachers. They may be anxious about the evaluation, but they are not often in a position to refuse to be evaluated. In the classroom, a specific time is usually allotted to test or evaluate students, so conflicting priorities for use of time rarely emerge. Additionally, most coursework represents a relatively small area of the field and, at any given time, student evaluation will focus only on selected competencies that are necessary to practice in the given profession.

Evaluation of practitioners is conducted differently. Since ongoing evaluation is not always a routine occurrence, such assessment is more likely to be seen as a threat and is more apt to be resisted. Awareness of this resistance will influence the choice of evaluation procedures as well as the method of introducing these procedures. In addition, any selection of competency areas for evaluation may be somewhat arbitrary and perhaps unrepresentative of those necessary for practice.

Compare, for example, evaluation of surgical competence in a third-year medical student and in a practicing surgeon. The specific competencies involved may well differ. The levels of proficiency expected of the student and of the practitioner may also differ. And the methods of evaluating student performance during a surgical clerkship—watching the student in the operating

room, questioning on ward rounds, and perhaps administering a written examination—would be impossible in terms of time, personnel, and cost for evaluating the skills of a practicing surgeon.

The objectives for student evaluation may be *process* objectives—the student should use correct techniques and demonstrate an adequate fund of knowledge about the subject. Those for the practicing clinician may be *outcome* objectives—the physician's patients should have successful results from the surgery. Both process and outcome criteria may be easy or difficult to define, but the type of objectives will be influenced by the population for whom they are written as well as by the specifications of the subject matter and the purposes of the evaluation.

THE CONTEXT OF EVALUATION

Related to the issue of who is to be evaluated is the question of the context of evaluation. Are students to be evaluated in the context of their normal activities, as in evaluating the accuracy of a medical technologist's interpretation of blood smears on a typical day, or is the evaluation to take place at a designated time with all conditions carefully controlled? If practitioners are to be evaluated, *naturalistic observations* may be necessary (that is, observing them as they work on the wards or in practice) rather than a *performance test* in which all extraneous variables are held constant. Arranging for a controlled situation for students is easier, but whether it is desirable to do so depends on the intent of the evaluation.

If *habitual behavior* is the object of the evaluation, the student's (or practitioner's) behavior should be sampled in a variety of settings over a period of time to ensure a representative data base for evaluation. If, on the other hand, *ability* rather than habitual *performance* is to be assessed, the evaluator should attempt to control the situation so that all individuals are evaluated on the same basis. For example, since an operating room nurse must maintain sterile conditions, evaluating this aspect of nursing performance is important. Two aspects of this behavior which should be evaluated are:

1. Whether the nurse is capable of using aseptic techniques in a given situation
2. Whether the nurse routinely maintains sterility during operations

The first decision is best made by devising a performance test in which all nurses are expected to go through a specific procedure with well-defined criteria for acceptable performance. The answer to the second question will come from observing the nurse during several operations. Although, again, the evaluation criteria should be clearly specified, each nurse will be assessed under different conditions (different operations, co-workers, and patients).

THE PURPOSE OF EVALUATION

The *purpose of the evaluation* influences both the evaluation procedures and the types of objectives specified. For example, to select students for a given program, the evaluation should be based on competencies that will predict success in the program. These competencies may be prerequisite knowledge or actual skills necessary for performance. If there are many applicants and few available places, the evaluation procedure should allow fine discrimination among individuals. In this case, one might include concepts that only the best applicants would be expected to know. On the other hand, if all qualified individuals could be accepted, a measure of the basic skills and knowledge would be needed to assure that all those accepted had mastered minimum criteria. The usual standardized aptitude tests used for admission to professional schools (such as the Medical College Admissions Test [MCAT]) are more suitable for demonstrating differences among individuals than for indicating exactly what competencies a given individual has mastered. Since most admissions procedures that utilize these instruments are in fact selecting a small class from a large applicant pool, use of this type of measure is appropriate.

Evaluation in the health professions may serve purposes other than selection. If the

evaluation is for promotion or certification, establishing mastery of specific objectives becomes important. When certification enables an individual to practice in the particular health profession, the evaluation procedure should consist of an appropriate sample from the stated objectives or requisite competencies. When certification designates competency in a specific skill, such as cardiopulmonary resuscitation, evaluation should be based on the behaviors involved in that skill. In either case, the evaluator wants to know that all who are certified as competent have mastered the particular objectives.

Another use of evaluation measures is to diagnose students' strengths and weaknesses. In this case, detailed objectives would be needed to identify the specific areas that have been mastered or that require improvement. For instance, in a medical technology course designed to teach students to perform blood counts and urinalyses, one might want to evaluate students' competencies in obtaining the samples, performing the analyses, and interpreting the results. Evaluation of only one part of that process would not produce the diagnostic information necessary to guide students in their studies. Therefore, the objectives for diagnostic evaluation may have to be more detailed than those for either selection or certification.

Thus the nature of the competencies to be evaluated and the types of objectives and the evaluation procedure chosen will depend on who is to be evaluated, under what conditions, and for what purposes. Additional aspects of the evaluation process, which can be considered prior to defining specific competencies and procedures, include the influence of the process on the priority that the student assigns to the subject matter selected for evaluation and on the nature of the student's relationship with colleagues.

THE EFFECT OF THE EVALUATION PROCESS

A content area or skill is emphasized for the individual when it is singled out for evaluation. This phenomenon underscores the necessity for employing techniques discussed in the next section to identify only appropriate objectives to teach and evaluate. The emphasis resulting from evaluation of an unimportant area may reinforce irrelevant behavior and result in appropriate and valuable behavior going undetected, unrewarded, and undernourished. In certain cases, the selection of competencies to be evaluated may have to be limited to those objectives that can be defined with great precision, or that can be easily evaluated. If these limitations are recognized, the appropriate administration of the procedures and interpretation of the results can be achieved.

The humanizing of the clinician may also be influenced, either positively or negatively, by the evaluation process. Interactive evaluation methods that provide immediate and realistic feedback about decisions may enhance the students' capacity to work efficiently and effectively with colleagues. A patient case presented with computer assistance or role playing may be as useful in assessing diagnostic acumen as a patient case description on paper and may be more effective in evaluating the individual's ability to elicit the necessary data in practice. While interactive instruments offer less reliability than other methodologies, the opportunity for assessing certain skills and for enhancing the clinician's capacity for effective human interaction justifies their increasingly widespread use.

Once the evaluation process has been considered from the viewpoint of who is to be evaluated, in what context, for what purpose, and with what effects, one can begin to determine what objectives are to be evaluated.

THE COMPETENCIES TO BE EVALUATED

Evaluation as well as instruction should be directed to specified learning objectives, and these should arise ultimately from clinical practice and patient care. The necessity to identify and evaluate instructional objectives in clinical education is empha-