# In-Training Residency Evaluation

John B. Corley, MD
Charleston, South Carolina

Evaluation is widely discussed yet rarely employed in residency programs. It requires a conceptual philosophy, a rational plan of implementation and an acceptable administration. An in-training evaluation model, essentially formative in character, is presented which addresses itself to these needs.

## Philosophy

"Evaluation is one of the most widely discussed but little used phenomena in today's educational systems."[1] This is unfortunate. Formative in-training evaluation enriches training programs by assessing residents' progressive mastery of professional knowledge, skills, and attitudes. It can play a significant role in upgrading a residency.

Residents are receptive to reliable information about their accomplishments. Are they acquiring desired skills and competencies? Can they be confident they are achieving their professional goals? Conscientious faculty share the same anxieties. Are they providing valid learning experiences? Can they be confident of the products of their labors?

Evaluation is, moreover, the quintessence of medical practice. Vernon Weckwerth reminds us that physicians traditionally elicit facts from histories, symptoms, physical signs, laboratory investigations, etc. They evaluate the effects of their intervention and "depending upon the outcome, either alter their therapy or reinforce their confidence in their medical judgment."[2]

A word of caution! Evaluation is a two-edged sword. Those engaged in this activity must ensure that the potential good far outweighs any foreseeable harm. The goal is to structure evaluation in such a manner that learning is enhanced while "the values of human intimacy, of creativity, of truth and of human dignity are respected."[3] Evaluation implies judgment, minimize this implication as we may.

Residents, teachers, and training programs each have, or should have, specific goals and objectives. Programs and educational experiences are developed for the achievement of these collective goals and objectives. Data from in-service evaluations provide measurements of student performance. Feedback may then be provided to the resident, to the teacher, and to the program director. Only then may residents assess their progress, teachers assess their instruction, and programs assess their goals. Figure 1 illustrates this educational process.

Such ongoing evaluation can benefit residents and residency programs best by confining itself to the measurement of progress towards specific educational goals. The insidious temptation is to clock who arrives at the finishing point first. There is no educational gain in attempting to assess who is the "best" or "who knows the most." The evaluator must be parsimonious in his judgments. His primary responsibility is to report data. It is not for him to set criteria or to establish norms. That is the responsibility of the faculty and/or resident.

All students enter their residency with individual "entering characteristics." The teaching, the instruction, the learning experience, as suggested by Hilliard Jason, constitute a bridge (Figure 2) connecting the "entering characteristics" of the residents to the "terminal goals" of the training program.

From the Department of Family Practice, Medical University of South Carolina, Charleston, South Carolina. Requests for reprints should be addressed to Dr. John B. Corley, Chief, Division of Evaluation, Department of Family Practice, Medical University of South Carolina, 80 Barre Street, Charleston, SC 29401.

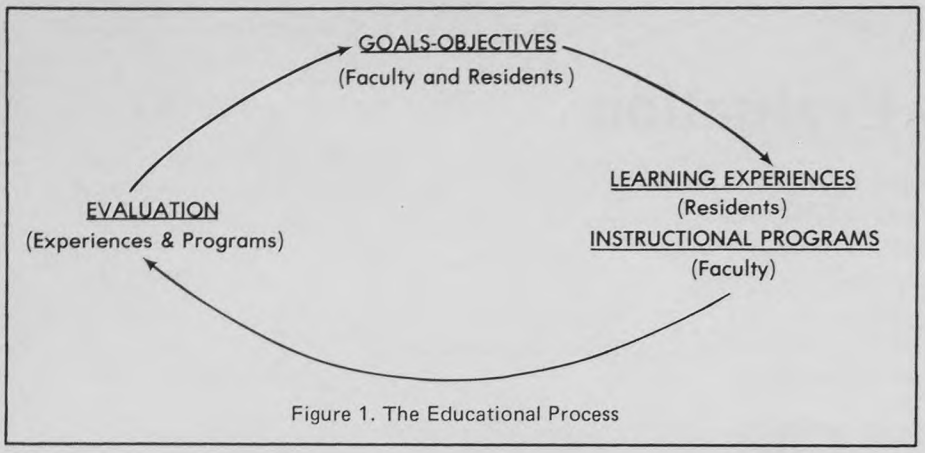


Figure 1. The Educational Process

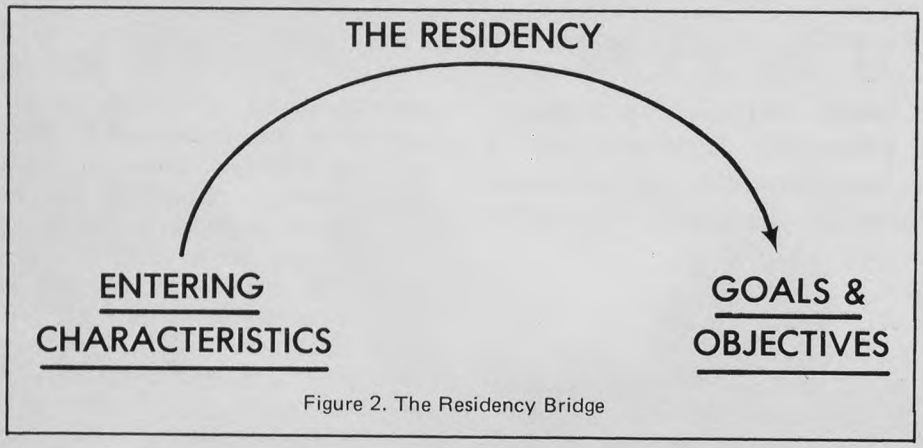


Figure 2. The Residency Bridge

Evaluation is concerned with recording these entering characteristics, measuring progress across the bridge, and reporting on the attainment of the goals. In these measurements, evaluation is as concerned with the teacher and his instruction, as with the student and his progress.

Ideally, therefore, evaluation should provide reliable and valid feedback to the resident and to the faculty. This data will permit each to identify problem areas, to assess where each resident is on the bridge at specified intervals, and finally to record if the goals have been achieved. In truth, "evaluation of learning has always been an integral part of student/teacher dialogue."[4] The obligation to do better is incumbent upon us all.

This obligation, however, cannot be honored without the active consent and endorsement of the residents. Unless residents can believe that evaluation is implemented to make their residency more profitable while respecting their individualities, it will be a futile exercise. The purpose is to critique not criticize. Evaluation must be perceived by the student as something to be desired.

Effective evaluation is a common sharing of goals. This implies that the faculty knows the resident's goals and expectations and vice versa. If conflicts or incompatibilities exist, they must be ventilated and resolved at an early date. Moreover, as Dr. Jason observed, residents must know for themselves how they will be evaluated, "Partly as a basis for the required trust needed from one another, partly so they will know how to provide the data that will be needed, but mainly so they will acquire the most important skill of all – the capacity to honestly and appropriately evaluate the quality of their own work"[4] long after they have completed their formal studies.

While measurements of human behavior can never attain the same precision as measurements of physical phenomena, educational research has found many ways to improve the reliability and validity of behavioral measurements. Until recently most medical faculty were unaware that this research has been recorded. Leading educators – Hilliard Jason of Michigan State,[4] George Miller of Illinois,[5] Stephen Abrahamson of Southern California[6] – have made the point that clinical competence can now be measured with sufficient precision to be useful.

## Implementation

Should a residency program decide to implement in-training evaluation, ten considerations are worthy of review if the evaluation is to be valid and reliable and if it is to prove acceptable to those whom it is designed to aid.

### *I. An Overall "Blueprint"*

Evaluation becomes profitable only when addressed to specific targets, applications, beneficiaries, foci, and purposes. Table 1 presents one such "blueprint."

### *II. Initial Data Base – Ultimate Validation*

Ongoing evaluation must be an-

chored to a firm data base and be ultimately validated by the educational product. The entering characteristics of the residents must be identified and recorded. A data base of their attitudes, expectations, goals, knowledge, and skills must be accurately compiled. In-service evaluation must begin with such a data base and finally be validated, or invalidated, by two terminal assessments: (1) the skills, competencies, and attributes of the graduates; and (2) the quality of medical care they subsequently provide their patients. Too often, internal evaluations neglect to assess either the raw material or the finished product.

**Table 1. Overall Blueprint for Evaluation**

| Target | Application | Beneficiary | Focus | Purpose |
|---|---|---|---|---|
| Previous training | Entrance into residency | (1) Resident<br>(2) Curriculum | Present status | Initial assessment |
| Progress | In-training | (1) Resident<br>(2) Teacher<br>(3) Curriculum | Acquisition of skills | Guidance |
| Achievement | Termination of residency | (1) Resident<br>(2) Program | Mastery of skills | Assessment of achievement |
| Graduate practice patterns | Medical practice | (1) Graduate<br>(2) Program<br>(3) Community | Office & hospital practice | Maintenance of competence |

### *III. Parameters, Domains, and Competencies*

Before evaluations can be initiated, what is to be evaluated must be identified. One cannot measure that which is neither defined nor described. The following parameters of assessment may be valid: (1) the entering characteristics of the residents; (2) the goals and objectives of the program; (3) the curriculum developed by the faculty; (4) the professional and personal development of the residents; (5) the effectiveness of faculty intervention; and (6) the practice patterns of the graduates.

The domains of graduate medical education are well known, if not always acknowledged: (1) the cognitive or intellectual, (2) the psychomotor or manipulative, and (3) the affective or interpersonal and behavioral. Too often evaluations worship at the shrine of cognitive skills, neglecting the other domains.

And what are the qualities of medical proficiency amenable to assessment? John Senior suggests six:[7] (1) the management of the patient's health problems (effectively identifying, investigating, diagnosing and managing the problems with which patients present); (2) the avoidance of iatrogenic problems; (3) the recognition of additional, co-existing problems; (4) the anticipation and prevention of impending problems; (5) the minimizing of cost, time, risk, and discomfort to the patient; and (6) the achievement of patient satisfaction and understanding, and of personal satisfaction for the physician himself.

### *IV. Recognition of the Inherent Threat of Evaluation*

In-training evaluation can be employed successfully only with the endorsement of those to be assessed. It should be implemented only if it can be maturely perceived as helpful to learning, not as punitive to the learner or harassing to the ego. Specific techniques are helpful to counter these fears: (1) do not permit residents or faculty to be ranked; ongoing evaluation should reflect progress towards goals and objectives, nothing more; (2) wherever possible, keep all evaluation data confidential; the specifics of a resident's progress or of a teacher's effectiveness should be treated as confidentially as a patient's record, shared only with the patient himself and with those few consultants who, on rare occasions, must review the data if appropriate remedial action is to be instituted; and (3) do not permit ongoing assessments to contribute to the final grade in a program; that is the role of terminal certification, ie, of summative evaluation. The purpose of in-training (formative) evaluation is to enhance learning. Program directors often find the limitations of formative evaluation difficult to accept.

### *V. Assess Only Performance*

The depth of an individual's knowledge is difficult to measure accurately. His professional attitudes can, at best, only be inferred from his actions. His psychomotor skills must be demonstrated to be assessed. Observed performance is the key to reliable evaluation. But to observe, teachers must be present. Their physical presence in a consulting room is undesirable; third parties intrude upon the privacy of a medical interview. The resident must learn to make his/her own decisions, to personally handle difficult problems. Yet his/her performance must be observed if it is to be assessed. One-way mirrors and closed-circuit TVs are only some of the methods by which this difficulty can be circumvented. Ingenuity can

develop many others. Patient records should not be neglected.

### *VI. Multiple Observations*

Performance should be observed from as many vantage points as possible. Reliability is a function of numbers. Several observations of a resident's performance by an individual observer will be more reliable than a single observation. Multiple observations by multiple observers further enhance reliability. Attending physicians in the clinics, clinical faculty and senior housestaff on the wards, preceptors who have residents in their practices, nurses who work with the residents in their offices, even patients themselves, are all sources of useful data on performance.

### *VII. Systematic Recording*

Observations must be recorded in a carefully predesigned format, with criteria for performance clearly defined. This is essential if numerous observers are involved in the assessments. Without these precautions, data arduously collected will not lend itself to meaningful interpretation.

### *VIII. Supplemental Objective Assessments*

Evaluation of a more objective nature than the subjective observations discussed above should also be considered. There is a need for searching in-training examinations to augment annually the day-to-day in-service assessments. Periodically, residents and faculty should focus a critical spotlight upon current performance in the domains and qualities of professional competence. A gamut of assessment techniques may be employed to sample professional performance: simulated patients, role-playing examiners, patient management problems, multiple-choice papers, etc. Knowledge, techniques, and behavioral skills can then be scrutinized intensively. In this exercise residents will see their current strengths and weaknesses themselves. Faculty will observe what skills and competencies have or have not been acquired. All of this implies no threat of terminal failure; no one passes or fails, yet all the residents are subjected to a rigorous exercise to provide them with insight into their progress. If the results are thoughtfully and confidentially reported, residents will value the experience.

### *IX. Feedback*

The most critical requirement of internal evaluation is the provision for effective feedback. All data must be shared directly and privately with the resident himself. In-service assessment, without prompt and confidential feedback, is an exercise in futility.

### *X. Graduate Audit*

The test of a cook is the meal. The validation of an educational program lies in the professional practices of its graduates. Only in retrospect can program strengths be appreciated and program deficiencies recognized. Provisions for on-site visits and practice audits of alumni should be carried out. Opportunities for the graduates to voice retrospective critiques of their training should also be provided.

## Administration

When the basic requirements for in-training evaluation have been met, there remain four facets to the successful administration of such a program: (1) acceptance, (2) feedback, (3) analysis, and (4) reporting.

Meticulous planning for each facet must precede implementation. Feedback must be given promptly in an informative and non-judgmental format. Data must be analyzed continuously for estimates of reliability, validity, and usefulness. Reports of the evaluation studies must be prepared periodically for those responsible for the quality of the residency program.

An administrative structure which has gained acceptance while providing feedback in a format satisfying many resident and faculty needs will be sketched.

The first step is to create a Division of Evaluation, which may consist of a single faculty member who is prepared to accept this responsibility. A formal Review Committee is then created within a specific frame of reference: (1) the Review Committee has active resident participation and the Chairman of the department is not a member; (2) the Committee approves all evaluation programs and processes, and assesses their validity and utility; and (3) the Committee reviews unsatisfactory evaluations and recommends remedial experiences, when appropriate.

Such a Committee may consist of four residents: two senior residents from the third year (eg, the Chief Resident and a colleague chosen by the class), and a resident nominated by his or her peers to represent each of the two junior years. One member of the department may adequately represent the faculty. The Committee may then be chaired by the Head of the Division of Evaluation, making a total membership of four residents and two faculty. All proposed evaluation techniques and procedures can then be presented to the Committee for their approval, modification, refinement, or rejection. Only when endorsed by the Committee should specific evaluation proposals be presented to the faculty.

This administrative organization can help gain resident acceptance of evaluation. New proposals tend to be greeted with a healthy skepticism by the resident representatives. Fruitful discussions usually ensue. Invariably the residents offer modifications which improve the instrument, or facilitate acceptance, or both. Occasionally the discussion illuminates undesirable features of a proposal, and it can then be quietly dropped.

Feedback presents problems. The solution can be to appoint faculty advisors for each resident and to channel feedback confidentially through these advisors. Such a program could be entitled "Appraisal of

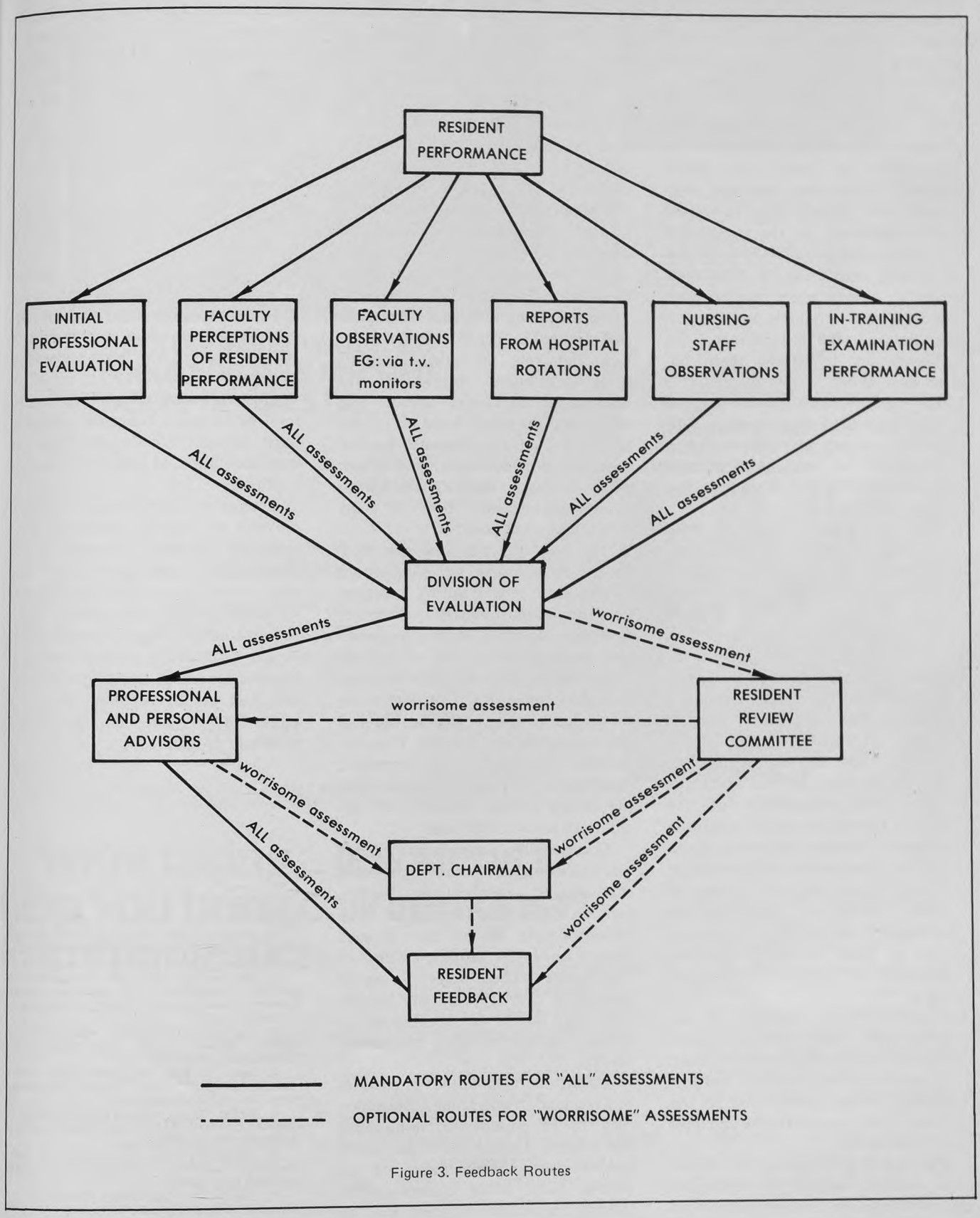


Figure 3. Feedback Routes

Self: Professional." It might have three broad objectives: (1) to enable the resident to attain his or her professional goals through provision of an ongoing, regularly scheduled, one-to-one faculty-resident interaction which involves both monitoring and support of professional growth and development; (2) to inculcate early the habit of seeking counsel and comfort in an atmosphere of trust and confidentiality which may ease and even prevent the mental and emotional strain engendered by the vicissitudes of medical practice; and (3) to furnish the faculty with feedback about their residents' feelings about the program that will keep it flexible and open to new ideas and productive change.

Techniques to attain these objectives could be:

1. Each new resident may be assigned to a medical faculty member with whom he or she meets for a minimum of one hour once a month during the three-year residency training.
2. The format and content of these monthly scheduled meetings may be varied and flexible. They may include feelings about clinical rotations; observations about work in the Family Practice Unit; discussion of the resident's performance on the In-Service Training Examination; an opportunity to discuss the resident's concerns, frustrations, satisfactions derived from present work; selection of electives; and projections of the resident's plans after completion of the formal training period. It would be intended that this experience would lead to a realization by the resident that it is safe and even helpful to share feelings of occasional inadequacy and disappointment as well as those of satisfaction and awareness of professional development.
3. Suggestions for changes or improvements in the training program may be solicited from the resident. These should be explored and forwarded, when appropriate, to the faculty for consideration and possible adoption.

The overall goal would be to have each resident assigned to a faculty member whom he or she respects, with whom he or she is as comfortable sharing problems as successes, and through whom he or she will receive feedback on performance, confidentially and privately, as assessed by others.

The residents should be encouraged to nominate their own advisors, and every effort made to meet their requests. Annually, however, residents and faculty advisors should be asked confidentially whether each is happy with his or her assignment. Each year one or two faculty or residents may express a desire for a change and reassignments can be quietly arranged.

Figure 3 displays an organizational structure whereby all recorded evaluation observations are channelled through the Division of Evaluation. There they can be initially scrutinized and recorded in files that remain under lock and key, the original reports being distributed weekly to the resident via his faculty advisor. Normally only the resident and his faculty advisor should see the data. Its purpose is to provide resident and advisor with feedback on the resident's current performance, from as many vantage points as possible.

The only exception to this feedback route would be observations faculty may record during a patient encounter (eg, one-way mirrors or television cameras). These assessments lose much of their value if delayed. They can be gathered each morning and photostated; the photostats being forwarded to the faculty advisor and the originals to the resident. Thus, the resident may review any recorded observations of patient contacts while the details of that patient's visit are still fresh in his or her mind.

Occasionally, assessments will be received from one source or another that suggest unsatisfactory performance. Within the Division of Evaluation, a note can be made of such reports under the heading of "w" or "worrisome." These notations can be ignored if they appear only sporadically but should be reported to the Review Committee when the pattern persists.

Within the Committee, discussions of a resident's "worrisome" assessment tend to be considerate, responsible, and helpful. Usually his or her fellow residents are already aware of the general facts. Their comments frequently contribute a great deal to illuminate the problem. Several options are then available to the Committee:

1. To withhold further discussion until more data has been received from future assessments.
2. To request the Chief Resident to discuss informally the apparent problem with the resident and report the gist of the discussion to the Committee before any action is recommended.
3. To review the concern with the resident's faculty advisor or directly with the resident.
4. To review the problem with the resident and his faculty advisor together.
5. To formulate specific recommendations to the resident, to the faculty advisor, to the departmental chairman, or to a combination of these parties, whichever seems most appropriate.

Most "worrisome" problems can be resolved by using either the second or third option. Occasionally, however, implementation of option five may be required.

Formative in-training evaluation provides an ongoing assessment of a residency program. Residents and faculty may then move "truer and more certainly to their goals."[8] Yet formative evaluation requires a major commitment. Basic considerations should be carefully reviewed before it is implemented. A prototype has been described which has proven reasonably successful in one family practice residency program.

**References**


1. Worthen BR, Sanders JR: Educational Evaluation: Theory and Practice. Worthington, Ohio, Charles A Jones, 1973
2. Weckwerth VE: An evaluation: A tool or a tyranny — 11 comment series. Systems Development Project, University of Minnesota, 1975
3. Marinker M: Medical education and human values. J R Coll Gen Pract 24:445-462, 1974
4. Jason H: Individual supervision in the clinical setting. Ohio Family Physician News, pp 15-16, March 1973
5. Miller GE: Teaching and Learning in Medical School. Cambridge, Mass, Harvard University Press, 1962
6. Abrahamson S: Evaluation in continuing medical education. JAMA 206:625-628, 1968
7. Senior JR: Evaluating Medical Competence, Invitational Conference, National Board of Medical Examiners, Philadelphia, March, 1972
8. Glass GV: A paradox about excellence of schools and the people in them. Educational Research 4(3):9-13, 1975