Special Communication

Feedback in Clinical Medical Education

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• In the setting of clinical medical education, feedback refers to information describing students' or house officers' performance in a given activity that is intended to guide their future performance in that same or in a related activity. It is a key step in the acquisition of clinical skills, yet feedback is often omitted or handled improperly in clinical training. This can result in important untoward consequences, some of which may extend beyond the training period. Once the nature of the feedback process is appreciated, however, especially the distinction between feedback and evaluation and the importance of focusing on the trainees' observable behaviors rather than on the trainees themselves, the educational benefit of feedback can be realized. This article presents guidelines for offering feedback that have been set forth in the literature of business administration, psychology, and education, adapted here for use by teachers and students of clinical medicine.

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"WE ARE training a group of physicians who have never been observed," Ludwig Eichna, MD, wrote after he courageously took a second turn at being a medical student before stepping down as a department of medicine chairman.[1] Dr Eichna's observation is accurate but his statement identifies only part of the problem. Not only are clinical skills infrequently observed, but when they are, the information so obtained does not get to where it can be most helpful—back to the trainees themselves. How widespread a concern is this? One needs only to poll a few medical students or house officers, or think back to one's own training, to appreciate how little attention is given to feedback during clinical training.

The problem of how best to inform trainees about their performance is not unique to medicine; in fact, guidelines already exist in the business administration, organizational psychology, and education literature. This article draws on these sources, along with published research and opinion on medical education plus some personal observations and considers the special role of feedback in clinical medical education. The purpose here is threefold: first, to provide teachers of clinical medicine and their students with an understanding of the feedback process; next, to analyze both the barriers that interfere with feedback as well as the consequences for clinical training if feedback is ignored or handled poorly; and, finally, to provide practical guidelines for offering feedback as a part of clinical medical education.

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The Nature of Feedback

The concept of feedback—information that a system uses to make adjustments in reaching a goal—was first appreciated by rocket engineers in the 1940s and has since been applied in many fields. The father of cybernetics, Norbert Weiner,[2] was one of the first to extend the concept to the humanities:

> Feedback is the control of a system by reinserting into the system the results of its performance. If these results are merely used as numerical data for criticism of the system and its regulation, we have the simple feedback of the control engineer. If, however, the information which proceeds backwards from the performance is able to change the general method and pattern of the performance, we have a process which may very well be called learning.

The importance of feedback in the acquisition of clinical skill follows from the nature of the clinical method. As a compendium of cognitive, psychomotor, and affectual behaviors, clinical skill is easier demonstrated than described. And, like ballet, it is best learned in front of a mirror. Feedback occurs when a student or house officer is offered insight into what he or she actually did as well as the consequences of his or her actions. This insight is valuable insofar as it highlights the dissonance between the intended result and the actual result, thereby providing impetus for change.[3] It is what happens when an attending physician observes a student or house officer performing a history and physical examination, presenting a patient on rounds, mak-

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ing decisions about a patient's therapy, or interacting with other members of the medical team and then transmits the information back to the trainee in a manner that is useful for the trainee's future performance in that same activity.

Feedback and evaluation are often used interchangeably—a mistake that accounts for much of the confusion surrounding feedback. Distinct from evaluation, feedback presents information, not judgment.[4] Feedback is formative. As an integral part of the learning process, it allows the student to remain on course in reaching a goal. Evaluation, on the other hand, is summative. It comes after the fact and presents a judgment, usually the teacher's, about how well or poorly a student met a given goal, often in relation to the performance of peers. Evaluation is expressed as normative statements, peppered with adverbs and adjectives; feedback is neutral, composed of verbs and nouns.

Those are the theoretical differences between feedback and evaluation. If students were more like rocket ships and clinical performance more akin to numerical data, the distinction would probably be just that straightforward. Actually, there is almost always a judgment assigned to feedback information. Somehow, on the wards, positive feedback sounds "good," negative feedback sounds "bad." There is simply no way that you can inform a student that a differential diagnosis did not include the most likely disease without causing some disappointment or embarrassment. This does not mean that you shouldn't bring such information to the student's attention but, rather, that it should be done with some skill and understanding of the process. For the most part, the hazards of providing feedback are not as great as they may seem.

Vanishing Feedback

There are many explanations for the paucity of feedback in clinical medical education. Whether these explanations are valid is another question. The first and most obvious explanation is the failure to obtain the data, ie, to make firsthand observations of a trainee's performance. Observations are the currency of feedback and without them the process becomes "feedback" in name only. The observer must be committed to the process; moreover, he or she must have well-formed standards (goals) of clinical competence.[5] It is important to realize, however, that the observed activity need not be a full history and physical examination, and the format need not be a scheduled session. Less formal observations are valuable also. The contact among members of a ward team, for instance, is often sufficient to afford opportunities for observations that can then become the basis for very useful feedback. One must be certain that the observations are valid—obviously; but the many opportunities for providing feedback that are available as part of routine activities in a clinical setting should not be overlooked.

Even if the data are at hand, there are still factors that confound the feedback process. Central to most concerns about feedback is that it will have effects beyond its intent. Both parties, the student and the teacher, make this mistake. The capacity of feedback to elicit an emotional reaction has already been discussed. Experiences with feedback that was handled poorly, in which the techniques for limiting the emotional reaction were not appreciated, may inhibit giving, or receiving, feedback in the future. The teacher may be concerned that the student will be hurt by negative feedback; that it will damage the student-teacher relationship, or the teacher's popularity; that it will result in more harm than good. The student may view feedback as a statement about his or her personal worth or potential. Students may ostensibly want information about their performance but only insofar as it confirms their self-concept. In that sense they want feeding, not feedback.[6]

Such concerns and misconceptions often result in what is called in the field of personnel management "vanishing feedback,"[7] a term that seems to apply to medical education as well. Anxious about the impact of the information on the trainee, but committed nonetheless to the need for feedback, the well-intentioned teacher talks around the problem or uses such indirect statements as to obfuscate the message entirely. The student, fearing a negative evaluation, supports and reinforces the teacher's avoidance. The result is that despite the best of intentions, nothing of any real value gets transmitted or received. Even worse, concerns about the impact of feedback may lead to no feedback at all.

Clinical Education Without Feedback

In clinical medical education, the importance of feedback extends beyond pedagogy. The goal of clinical training is expertise in the care of patients. Without feedback, mistakes go uncorrected, good performance is not reinforced, and clinical competence is achieved empirically or not at all.

There are also some less obvious consequences of a system of medical education that does a poor job of providing feedback. To a greater or lesser degree, all students are beset with uncertainty when they begin their clinical clerkships.[8] Without feedback the sense of being adrift in a strange environment is amplified. Students seem to react in a very human way: they generate their own feedback by attaching inappropriate importance to internal and external cues. A raised eyebrow then implies "I'm not performing up to standards." A brusque response from a resident means "I am really out of place here." A queasy stomach confirms "I am scared stiff." This is not terribly worrisome, but as a substitute for feedback, it is hardly reliable and definitely risky. The less forceful student may come to feel totally lost. The student whose reaction to uncertainty is one of overindependence or arrogance may gain a totally unwarranted sense of approval.

Eventually most students do manage to cope with their new environment, but the consequences of inadequate feedback continue. It is easy to see how, in such a system, the importance of written examinations becomes inflated; after all, that is the only way students learn how they are doing. Clinical skills then become secondary to memory skills for students intent on demonstrating their ability. This affects all students—both the strong and the weak. Moreover, for the weaker student, the absence of feedback allows for the

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additional jeopardy of learning only after a course of instruction or clerkship has finished that his or her performance had been substandard.

House officers reveal another disturbing consequence of clinical education that fails to provide adequate feedback. In one longitudinal study, house officers confirmed the near total absence of feedback from attending physicians.[9] To fill this void, the house officers, not unlike the students, generated a system of self-validation, largely based on unintended cues. But unlike the students', their system developed in tandem with their own sense of mastery. As they began to feel more and more confident, they also began to feel more capable of judging their own performance. Unfortunately, their system of self-validation excluded evaluation from external sources. In fact, much to the amazement of the investigators, the house officers seemed to employ a whole barrage of defenses for dealing with criticism from superiors: they disparaged the source; they regarded the issues as irrelevant; they attributed the criticism to differences in style; or they concluded the criticism was no longer relevant to their current level of performance. Freidson[10] believes these attitudes can endure beyond the training period:

> In essence during the course of the postgraduate education, young professionals develop the tendency to fix their standards of performance in such a way as to resist efforts by others to change them. . . . Furthermore, as a tendency developed in school, one can visualize it [the residents' resistance to external validation] being carried out in practices which are organized in a characteristically individualistic manner, sustained by reinforcing rules of professional etiquette.

But the problem is not that students are necessarily insecure or that house officers are inherently arrogant. The problem is that their educational environment has failed to provide them with a model of constructive, nonevaluative performance appraisal. If feedback continues to be either embarrassing praise or humiliating criticism,[11] or fails to exist at all, we will continue to see the sorts of reactions that have been described.

When used properly, feedback can be a powerful tool in clinical medical education. It provides the trainee with vital information on his or her performance, thereby setting the stage for improvement. It is phenomenologic and therefore gets at an aspect of the clinical process not readily examined by tests of cognitive skills. Finally, it conveys an attitude of concern for the progress and development of the person in a real sense, not only as a function of grades or test scores.

Guidelines for Giving Feedback
Feedback should be undertaken with the teacher and trainee working as allies, with common goals
Feedback should be well-timed and expected
Feedback should be based on first-hand data
Feedback should be regulated in quantity and limited to behaviors that are remediable
Feedback should be phrased in descriptive nonevaluative language
Feedback should deal with specific performances, not generalizations
Feedback should offer subjective data, labeled as such
Feedback should deal with decisions and actions, rather than assumed intentions or interpretations

Guidelines for Giving Feedback

Anything that helps the trainee see feedback for what it really is—an informed, nonevaluative, objective appraisal of performance intended to improve clinical skills—rather than as an estimate of a trainee's personal worth will help the process. When feedback fails it is usually because it led to anger, defensiveness, or embarrassment on the part of the trainee. The guidelines presented in the Table are considered standard in the fields of personnel management,[3,6,12] group dynamics,[13,14] and education.[4,15,16] They are adapted here for use in a clinical medical setting.

It is preferable for the teacher and trainee to work together as allies, without necessarily obscuring the hierarchy of control. Feedback should occur in a relaxed atmosphere; attention to the setting, and even the seating arrangements, can be helpful. The time, place, and scope of the session should be negotiated, not dictated by the teacher.

At the very outset, both parties should come to an agreement about the trainee's overall performance by first deciding how well the student or house officer fared in a general sense and then considering possible hypotheses to explain any agreed on shortcomings. The student's performance should be measured against well-defined goals. These goals need not be stated formally, as written learning objectives, but they must be meaningful for both parties, and they must be shared. The trainee should take an active part in the process; the teacher's open-ended questions can help break the ice. For example, an attending physician, after hearing a student's presentation, may begin by asking, "How did you think it went?" and then moving on to items like, "What aspects did you think were successful? What aspects need improvement?" If both parties can reach agreement on these questions, they then will have an agenda for the remainder of the discussion. The actual feedback comes when the attending physician shares his or her perceptions of the student's performance with the student. The student's "compliance" with the teacher's recommendations will be that much more effective if the student accepts the "diagnosis" and appreciates the goals of the "therapy."

Feedback works best when it is solicited rather than imposed. In any case, it should not take the trainee by surprise. This does not mean that feedback necessarily should be restricted to scheduled sessions designed solely for the purpose of performance appraisal. On the contrary, the most effective feedback often is that which occurs on a day-to-day basis, as part of the flow of work on the ward, and as close to the event as possible. The point is that the trainee should understand and accept when, where, and how feedback will be given. Feedback that comes unexpectedly, especially if it is negative, almost always is met by an emotional reaction impeding the processing of the information.

Who should give the feedback? Generally it should be given by anyone who is in a position to make a valid observation of the trainee's performance and who is experienced enough with the clinical problem and

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the pedagogic problem to offer feedback effectively. The hierarchy of the teaching hospital—attending, resident, intern, and student—allows for an orderly flow of information. (Of course, the flow need not be unidirectional.) Anyone responsible for a subordinate's evaluation should also be obligated to provide that subordinate with useful feedback. Ironically, the person least able to offer effective feedback is often the person administratively in charge of the educational experience, eg, the clerkship coordinator, director of house staff training, department chairman, or dean. Unless there is an actual observation of the trainee in action, the source of feedback will be secondhand or thirdhand data, gleaned from rating sheets. This usually results in information like, "Dr Smith said your fund of knowledge was alright but your ability to analyze and synthesize clinical data needs a bit more work." Dreadful as this sounds, such information passes for feedback all the time.

Any important part of the trainee's overall job is worthy of including as feedback. A case presentation, the performance of a history and physical examination, a progress note, or observations made about a trainee's ability to conduct work rounds are all very appropriate. These are observable behaviors and can be assessed against performance goals. On the other hand, personality traits, unless they are manifested in behaviors that can be observed and reviewed, are not appropriate for feedback. The amount of information should be regulated so as not to be overwhelming. In addition, care should be taken to limit the feedback to only those behaviors that are remediable. If behaviors are observed that are not within the trainee's power to change, these should not be included as feedback. Such deficits, if they are substantial, mean that the trainee should alter his or her goals, not the process by which he or she attempts to meet a goal.

The language of feedback is descriptive and nonevaluative. Statements like "The differential diagnosis did not include the possibility of tuberculosis" are preferable to "Your differential diagnosis is inadequate." The information should deal with specifics, making use of real examples. Generalizations, such as references to a trainee's organizational ability, efficiency, or diligence, rarely convey useful information and are far too broad to be helpful as feedback. The information that is fed back to the trainee should deal with actions, not interpretations or assumed intentions. Not only are data based on actions more accurate, but, also, such data allow for psychological distance, so important when the feedback is negative or the trainee insecure. For example, "The antibiotic regimen chosen did not provide coverage for enterococcus" is less likely to offend than would "Your choice of antibiotic indicates a lack of appreciation for the possibility of enterococcal infection." Focusing on the decision, not the decision maker, allows for a dispassionate review by both parties.

Subjective data are perfectly appropriate for feedback about clinical skills. After all, physicians are judged more often by the impressions of patients and colleagues than by objective data. When included as part of the feedback, however, subjective data should be clearly labeled as such. When dealing with personal reactions and opinions, "I" statements should be used. "Watching this video tape, *I* began to feel that you were not comfortable talking about the patient's cancer" allows the trainee to view the assessment as one person's reaction. "You looked uncomfortable talking about the patient's cancer" suggests that the trainee broadcasted a sense of discomfort for all to see. Better still is to focus on the specific behavior: "I saw your hand shaking; you abruptly changed the subject." This will allow the student to interpret the behavior. Particularly with subjective data, but also with any source of feedback, the teacher should always verify that the message has been received. Having the trainee paraphrase the feedback is helpful, as is inviting discussion or questions.

Finally, the hazards of positive feedback should be appreciated also. Appropriate positive feedback lets the trainee know that the job was done correctly. All too often this comes out as "Gee, what a great job you did," or worse "You're terrific!" Such language carries the perils of praise.[17] It implies that the person, rather than his or her work, is under scrutiny. Often, personal praise—as opposed to positive feedback—is downright embarrassing. The really first-rate trainee then withdraws a bit, concerned about appearing to covet the teacher's favorable reactions. It is safer to bolster pride in a job well done and let a trainee's self-image develop accordingly. Statements like "That case presentation gave me a very detailed and useful picture of the patient's problem," will allow for this. Statements like "You were great when you presented that case," may not. Also to be avoided is the incessant "good," "excellent," "that's perfect" responses to a trainee's every statement that approximates a correct answer. Such a steady diet of praise can be addicting.

At first glance some of these guidelines may seem overly fine, as if giving feedback requires one to "walk on glass." Actually, using precise and objective language is not that difficult. It may require some practice, but the benefits clearly justify the effort. Such language allows one to broach areas that are often avoided. All too frequently, physician-teachers, concerned that their criticism will be taken personally, fail to point out mistakes that could be corrected. Equally often, they pass over opportunities to offer positive reinforcement, once again because of concern that their comments will be taken personally. Both sorts of omissions deprive the student or house officer of what is likely to be an important learning experience.

Conclusion: Feedback in Perspective

The important things to remember about feedback in clinical medical education are that (1) it is necessary, (2) it is valuable, and (3) after a bit of practice and planning, it is not as difficult as one might think. It is important, also, to place feedback in its proper perspective within the total process of learning clinical skills. The process begins with exposure to clinical problems. In general, this is handled well in our present system of student and house staff training. No other profession offers its trainees such intense hands-on experience. The process also requires well-defined and readily visible goals. The return of the generalist to the teaching hos-

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pital, functioning as both clinician and "role model,"[18,19] is a step in the right direction. The rush of enthusiasm for performance-based learning objectives as written statements of what the trainee should be able to do is another way, admittedly a less vital way, of highlighting the goals of clinical education. But clinical experiences on the one hand, and role models and learning objectives on the other, are not enough. The process also requires interaction, trial and error, and direction—that's where feedback comes in.

Ensuring adequate feedback for students and house officers should be an important concern for curriculum and departmental committees when they review and revise their training programs. Feedback should not be a goal of any program; the goal should be improving clinical skills. Feedback can, however, be used as an important indicator of how well a given program is fulfilling its charge. A program that provides sound feedback for its trainees is also one that is staffed by physicians who are skilled observers and able enough as clinicians and teachers to know when a trainee needs a midcourse correction. Such physicians would be dedicated toward improving the clinical skills of their trainees; they would not function as repositories of information or as judges. The trainee's reaction to the feedback would also be a valid indicator of the program's success. Like giving feedback, receiving it properly is not always a simple passive act. It requires maturity, honesty, and selfless commitment to the goal of improving clinical skills—traits that are certainly worth cultivating in our future physicians.

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AMERICAN SECTION ON CANCER CHEMOTHERAPY

The International Society of Chemotherapy is the primary worldwide organization for those interested in chemotherapy. The society sponsors the International Chemotherapy Congresses, which are held every two years, the next ones being scheduled for Vienna, Aug 28 to Sept 2, 1983, and Kyoto, Japan, summer and fall 1986. About 7,000 persons attend the congresses, and one third of the material deals with cancer chemotherapy. There is no official American affiliate of the International Society of Chemotherapy, and US participation has accordingly been low. The International Society has authorized the formation of an American affiliate to improve international communication and increase involvement in the International Society and Congresses. A section of Microbiologic Chemotherapy is being organized by a committee under Dr Jack Frankel. A committee for the United States is studying the need for a Section of Cancer Chemotherapy in the Americas. Members of the committee include Drs Giulio D'Angio, Emil Freireich, Denman Hammond, B. J. Kennedy, and Larry Nathanson. The acting secretary is Dr Thomas C. Hall, Cancer Center of Hawaii, 1236 Lauhala St, Honolulu, HI 96813; telephone, 808-548-8421.

Benefits of membership could include membership in the International Society, membership rates for *Chemotherapy,* the publication of the International Society, membership registration rates for their International Congresses, participation in proposed small-focus US meetings on special cancer subjects every other fall, and group travel rates. This would not be an organization competing with the American Society of Clinical Oncology and American Association for Cancer Research. The annual membership fee is $15, part of which would be used to sponsor travel of young investigators to the International Congresses.

Please inform the acting secretary if you would be interested in joining such an American affiliate of the International Society of Chemotherapy at the previously noted address. (If you wish to receive information about the 13th International Chemotherapy Congresses in Vienna from Aug 28 to Sept 2, 1983, please so state.)

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