The CAST Model: Enhancing Medical Student and Resident Clinical Performance Through Feedback

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When a new patient presents to the hospital, a first-year resident obtains the patient's medical history and performs a cursory physical examination. The resident writes an admission note and enters some basic orders. Soon afterward, the attending physician calls the resident back to the patient's bedside to review the resident's work. The resident's note reports that the patient's lung fields are bilaterally clear to auscultation. The resident neglected to identify and document that the patient has a right-sided, superior-lobe lung mass that is causing partial small airway obstruction with resultant inspiratory wheezing.

The attending physician has options for providing feedback to the resident that include:

- (A) Mentioning to the resident in private, "You missed the localized wheezing."

- (B) Joking with several residents, students, and nurses during rounds, "Here is yet another example of how incompetent first-year residents can be."

- (C) Reviewing the anatomy of the lungs at the patient's bedside with the resident, focusing on the nature of the division of the lung fields by the oblique fissure into the superior and inferior lobes and pointing out how listening only posteriorly during a quick physical examination can result in a pathologic condition in the superior lobe being overlooked.

The transition from novice learner (ie, medical student) to expert physician cannot occur simply by logging a certain number of patient encounters. Learners need to practice their patient interviewing and examining skills under the watchful eye of a faculty member who can provide effective feedback—which includes more direction than whether the learner's actions were "right" or "wrong."

The Importance of Strong Feedback

Feedback has long been recognized as one of the essential elements needed to guide students toward expected performance.[1] Through practice, novices become experts; formative feedback guides this process over time. In our experience and according to research[2] on college students, the learners who gain the most benefit from formative feedback tend to be the lowest performers.

Feedback has been defined operationally as:

Specific information about the comparison between a trainee's observed performance and a standard, given with the intent to improve the trainee's performance.[3]

We have observed, as described by others in various classroom settings,[1] that clinical faculty commonly provide only verification feedback to learners, or label their answers to questions and behaviors as either "right" or "wrong." Learners want and need more information; faculty can and should provide more information.

A plethora of research studies, models and frameworks, and lists of "things to do" and "things to avoid" on the topic of feedback are available.[1] The most effective feedback does the following[4]: (1) focuses on the task, not the learner; (2) does not overwhelm the learner; (3) is specific and clear; (4) is unbiased and objective; (5) occurs frequently and in a timely manner; (6) is based on direct observation, not hearsay; and (7) includes an action plan that will be monitored.

The impact of feedback on changing behavior is related to how the feedback is provided. Researchers report that the feedback's effectiveness is related to the type of feedback provided.[1,3] Weak feedback, defined as simply an explanation of what should be changed, has minimal effect on subsequent behavior. Moderate feedback, described as providing suggestions for improvement, results in a more positive impact on learning. Strong feedback, or suggestions for modification of specific activities that already exist or

recommendations regarding the acquisition of new skills, causes the greatest change in behavior.[1]

Traditional Feedback Models

A number of models, frameworks, and approaches are described throughout the literature on how to provide effective feedback, including the stop doing – keep doing – start doing, or SKS, process; the feedback sandwich; and the Pendleton rules.[5-7]

The SKS process encourages learners to actively and regularly seek feedback from a support network.[5] By asking colleagues, "What should I start doing, keep doing, or stop doing?" learners create an opportunity to reflect on their behaviors, skills, and choices. Because this process begins with the learner, developing a network of trusted peers can be time consuming. Listening to the opinions of coworkers and close friends can also be anxiety provoking and, at times, downright painful.

Many faculty members are familiar with the feedback sandwich.[6] This model of providing feedback is a 3-step process. The faculty member initiates the delivery of feedback with a positive comment (the top layer of bread), then provides constructive criticism (the meat of the sandwich), and ends the encounter with a positive comment (the bottom layer of bread). This technique allows faculty an opportunity to provide constructive guidance for improvement in a manner that is comfortable for the learner. Although it has its strengths, this technique can result in learners missing the point, as they tend to walk away from this type of feedback embracing the positives and dismissing the negatives. Thus, the opportunity to change behavior and improve performance is missed.

The Pendleton rules involve a 4-step framework in which positives are presented first, followed by areas of weakness.[7] After a learning experience is completed, the learner discusses what was positive (ie, what went well) (step 1). The faculty member then presents positive comments based on her or his observations (step 2). After an exchange of the positives, the learner discusses what he or she could do to improve (step 3). Finally, the faculty member closes the session by presenting areas that could benefit from improvement (step 4). The format of this model provides a safe learning environment, thus reducing the defensiveness of the learner and promoting a more constructive educational experience. This model can be critiqued, however, for being too rigid in format, inefficient in its use of time, and occasionally more judgmental than formative in tone.

The CAST Model

Each of these feedback approaches presents varied degrees of effectiveness and barriers to implementation, which is why we developed a simple, 4-part feedback model that we have used with notable success. We refer to our model as the CAST model:

C = **C**ontinue to do these things (maintain the positives).

A = **A**lter these behaviors (address things that are not yet strengths but could be).

S = **S**top (discontinue the activities that do not add value or are erroneously applied).

T = **T**ry this approach next time (offer a new skill to apply and practice).

Gaining insight into which cognitive and clinical skills are appropriately used, which ones require modification, whether behaviors should be discontinued, and which new skills need to be learned and practiced can be markedly enhanced through the use of this simple, transformative feedback approach.

On the basis of our experiences with learners and the previously described barriers to traditional feedback models, we advocate for the widespread use of the CAST model, which we have successfully used with our students and residents. The CAST model expands on the SKS process

by adding a fourth dimension (ie, altering behaviors) and shifts the responsibility for feedback from the learner to the educator. We have found the model to be quick and easy to use, engaging for learners—who rarely receive the commentary as mixed messages—and not too rigid in format. We have also found it useful in providing feedback in a multitude of situations including:

- providing guidance on how to prepare for licensing examinations
- reviewing physical examination skills
- refining interviewing skills during mock interviews for residency programs
- teaching psychomotor skills (eg, suturing techniques)

Success of this technique has been evidenced through improvements in examination scores during repeated attempts, commentary provided during focus group discussions, and various survey results.

After observing students or residents, we engage them in dialogue that encourages reflection on the event, including how they felt (emotional), how it went (positive and not-so-positive outcomes), and how they intend to approach comparable situations in the future. Using this model, educators can offer learners timely and formative feedback on behaviors that were directly observed (ie, **C**ontinue, **A**lter, **S**top), as well as feedback on specific behaviors that need to be acquired (ie, **T**ry).

Returning to the case example presented at the beginning of the article, the third option (C) approximates the CAST model but could be improved upon. Specifically, the attending physician could have confirmed that the resident's placement of the stethoscope was correct for evaluating the posterior (inferior) lobes (**C**ontinue), while pointing out that asking the patient to inhale through only his or her mouth (not the nose) would reduce the likelihood of extraneous sounds (**A**lter). In addition, the physician could have advised the resident that a cursory evaluation of only the posterior (inferior) lobes is inadequate (**S**top) and that future examinations must include an evaluation of the anterior (superior) lobes. Finally, the physician could have concluded with a recommendation that the resident percuss the thorax and assess for egophony when evaluating patients with respiratory complaints (**T**ry). The other feedback options are not as desirable, as the first approach (A) provides weak feedback and the second (B) focuses on the learner, not the task.

By focusing on the behaviors observed and not the learner, and by longitudinally monitoring the learner's subsequent performance followed by additional CAST feedback, teachers can ensure that learners will receive more of what they want and need as their performance improves. (doi:10.7556/jaoa.2015.041)

References

1. Wiliam D. What is assessment for learning? *Stud Educ Eval.* 2011;37:3-14. doi:10.1016/j.stueduc.2011.03.001.

2. Pintrich PR, Zusho A. Student motivation and self-regulated learning in the college classroom. *SOTL High Educ.* 2007;731-810.

3. van de Ridder JM, Stokking KM, McGaghie WC, ten Cate OT. What is feedback in clinical education? *Med Educ.* 2008;42(2):189-197. doi:10.1111/j.1365-2923.2007.02973.x.

4. Shute VJ. Focus on formative feedback. *Rev Educ Res.* 2008;78(1):153-189.

5. DeLong TJ, DeLong S. The paradox of excellence. *HarvBus Rev.* 2011;89(6):119-123,139.

6. LeBaron SW, Jernick J. Evaluation as a dynamic process. *Fam Med.* 2000;32(1):13-14.

7. Chowdury RR, Kalu G. Learning to give feedback in medical education. *Obstet Gyn.* 2004;6(4):243-247. doi:10.1576/toag.6.4.243.27023.