Resident identification of feedback and teaching on rounds

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ABSTRACT

Feedback and teaching occur regularly on teaching hospital wards. Although feedback has important implications for resident learning, residents often report that they receive little feedback. The significant overlap of teaching and feedback in clinical education may contribute to resident difficulty with feedback identification. We sent a survey with seven scenarios to internal medicine residents across the country. Two of the scenarios contained teaching, two contained feedback, and three contained combined teaching and feedback. From October 2017 to April 2018, 17% of residents (392/2346) from 17 residency programs completed the survey. Participating residents correctly identified both feedback scenarios 89% of the time, both teaching scenarios 64% of the time, and all three combined teaching and feedback scenarios 38% of the time. Interns were less likely than upper-level residents to correctly identify combined teaching and feedback scenarios ($P = 0.005$). Residents may have difficulty identifying feedback in the context of teaching. This confusion may contribute to residents' perceptions that they receive little feedback.

KEYWORDS Feedback; resident education; teaching

Feedback provides learners with information related to their performance intended to guide future thinking and behavior.¹ Despite its importance in the development of clinical skills, learners often report receiving little feedback.^{1–6} One proposed reason for this discrepancy is that learners fail to recognize feedback, specifically in the context of teaching.^{6,7} Feedback and teaching overlap significantly in the apprenticeship model used in medical education. Teaching also provides learners with information based on their identified learning needs.⁸ Yet feedback requires that a learner act and receive information within the context of that action, whereas teaching can be delivered with or without such context. Given the significant overlap of these concepts, we utilized a survey to understand whether residents can identify feedback when it co-occurs with teaching during rounds. We hypothesized that residents would be able to identify isolated feedback and isolated teaching in clinical scenarios but that they would have more difficulty distinguishing teaching and feedback when they occurred concurrently.

METHODS

Surveys contained seven clinical scenarios representing feedback, teaching, and combined teaching and feedback alongside demographic questions such as age and prior formal teaching experience (e.g., Teach for America). The survey link was emailed once to a convenience sample of 17 American internal medicine residency programs through residents or faculty at each institution.

Residents consented to participate by reading an explanation of the project and clicking the survey link. Scenarios were displayed in a randomized order for each respondent. The Partners Healthcare institutional review board exempted this study.

To develop the scenarios, one of the authors (MM) spent 2 weeks observing new-patient rounds on an inpatient medicine teaching service. She took written notes on scenarios that fit the aforementioned definitions of teaching and feedback. This included examples that were mostly feedback, mostly teaching, and combined teaching and feedback.

Three clinical educators reviewed 20 of these clinical scenarios. The three educators included the senior author

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Table 1. Survey scenarios

Domain	Scenario number	Content
Feedback	1	At the end of an intern's presentation, the attending said: "I love the way you broke things down. I was able to see what your thought process was."
	2	At the end of a presentation, an attending told an intern: "Thank you for putting the information about the studies in Sweden in your admission note; that was excellent."
Teaching	3	While waiting to discuss a new admission, a supervising resident noted that a patient's blood pressure was high and said to the team: "Some doctors say that you should maximize the dose of a first drug before adding a second drug for hypertension."
	4	While walking between patient rooms, an attending noted that a patient's potassium was low and said to the team: "If the magnesium is low, you have to replete the magnesium before you replete the potassium, because otherwise you won't be able to bring the potassium up."
Combined teaching and feedback	5	While reading an electrocardiogram, an intern said there were T-wave inversions in the lateral leads without commenting on any other aspects of the electrocardiogram. The attending responded: "Usually when we're reading electrocardiogram, we look systematically at rate first, then rhythm, then axis."
	6	During a night shift, an intern wrote an order for a patient to receive nitroglycerin as needed for chest pain. After the intern's presentation on rounds the next morning, the supervising resident said: "We typically don't write patients for as-needed nitroglycerin while they are in the hospital, because we want to know about it if patients are having chest pain and evaluate them prior to administering treatment."
	7	An intern suggested giving a patient a diuretic out of concern for volume overload. When the supervising resident asked the intern how much Lasix to give, the intern responded: "I would give 40 mg IV for a goal net output of -1 L of fluid today." The supervising resident responded: "I like your goal, but I think it would be better to give 10 mg IV instead. We typically take the patient's home dose and give that dose IV when they come into the hospital."

(DW, not blinded to study hypothesis) and two other educators (blinded). The three educators are medical education leaders with more than 40 combined years of experience working full-time with students and residents.

We asked the three educators to identify whether each scenario represented mostly feedback, mostly teaching, both teaching and feedback, or neither teaching nor feedback. At least two educators agreed on all 20 scenarios; all three educators agreed on 10 of the scenarios.

Of these 10 scenarios, we chose seven representative scenarios to minimize survey length. This included two examples of mostly feedback (scenarios 1 and 2), two of mostly teaching (scenarios 3 and 4), and three of combined teaching and feedback (scenarios 5, 6, and 7) (*Table 1*). Subsequently, these scenarios are referred to as feedback, teaching, and combined teaching and feedback.

The 17 participating residency programs had a total of 2346 residents who were eligible to take the survey. We ran a sample size calculation with a 95% confidence level and a 5% margin of error, which indicated that we would need 331 survey respondents for our findings to generalize to our sample.

We summarized continuous variables using means with standard deviations and categorical variables using counts with percentages. For each scenario, we compared the percentage with correct responses across demographic groups using chi-square tests. Combined teaching and feedback scenarios were compared pairwise to make consistent

comparisons to the two feedback and two teaching scenarios. We used repeated measures analysis with the generalized estimating equations technique to examine differences by variables such as formal teaching experience and year in training. All analyses were performed using SAS version 9.4. A two-sided P value of ≤ 0.05 defined statistical significance.

RESULTS

From October 2017 to April 2018, 392 residents from 17 residency programs completed the survey (392/2346, 17%). Participants were on average 29 years old, and 49% were women. Most (77%) had no formal teaching experience. Residents participated from all regions of the country and spanned 4 years of training (fourth-year residents included those in combined programs such as internal medicine and pediatrics) (*Table 2*).

Residents correctly identified each feedback scenario 93% (scenario 1) and 95% (scenario 2) of the time. Eighty-nine percent of residents identified both feedback scenarios correctly. Among the residents who misclassified scenario 1, they were most likely to identify it as neither teaching nor feedback (81%). For scenario 2, they were most likely to misclassify it as both teaching and feedback (67%).

Residents correctly identified teaching scenario 3 72% of the time and teaching scenario 4 86% of the time. Most residents (94%) correctly identified at least one of the scenarios, and 64% were able to correctly identify both teaching

scenarios. Among the residents who misclassified scenario 3, they were most likely to identify it as neither teaching nor feedback (67%). For scenario 4, they were most likely to misclassify it as both teaching and feedback (75%).

Residents correctly identified the combined teaching and feedback scenarios 59% (scenario 5), 73% (scenario 6), and 76% (scenario 7) of the time. Although 94% were able to correctly identify at least one of the three scenarios, only 38% of residents correctly identified all three combined teaching and feedback scenarios. When misidentifying the combined

teaching and feedback scenarios, residents were most likely to consider these scenarios to represent teaching (53%) (Table 3).

Overall, residents were best able to identify the two feedback scenarios (89%), followed by the two teaching scenarios (64%), followed by each of the two sets of combined teaching and feedback scenarios (47% scenarios 5 and 6, $P < 0.001$; 46% scenarios 5 and 7, $P < 0.001$; 58% scenarios 6 and 7, $P < 0.001$).

Comparing interns to upper-level residents, interns were less likely to correctly identify scenarios that represented combined teaching and feedback (scenario 5, 52% vs 63%; scenario 6, 67% vs 76%; and scenario 7, 70% vs 78%; overall $P = 0.005$) (Table 4).

Residents with formal teaching experience more frequently identified the combined teaching and feedback scenarios 6 and 7 correctly (83% vs 74%, 80% vs 71%), although this difference did not reach statistical significance ($P = 0.08$). There was no difference between residents with and without formal teaching experience in the other scenarios.

DISCUSSION

Although feedback is an important aspect of resident training and development, it may be challenging for residents to identify feedback when it co-occurs with teaching. Importantly, residents were frequently able to identify isolated feedback and isolated teaching. However, when feedback and teaching co-occurred, residents sometimes missed the feedback and misclassified the scenarios as only teaching.

This difficulty in identifying feedback when it coexists with teaching may explain in part why learners feel they do not receive feedback in clinical settings. This is concerning, given that a significant proportion of resident feedback is provided in clinical settings and not recognizing feedback may impede using the feedback to improve performance. It may also represent a missed opportunity to improve learners' perceptions of the learning environment.⁹

There may be some modifiable factors that can aid residents in identifying feedback in the context of teaching,

Table 2. Key participant characteristics ($n = 392$)

Participant characteristic	Mean (SD) or N (%)
Age	29.1 (2)
Sex	
Male	197 (51%)
Female	192 (49%)
Formal teaching experience	
Yes	92 (23%)
No	300 (77%)
Postgraduate year of training	
1	132 (34%)
2	106 (27%)
3	118 (30%)
4	36 (9%)
Residency location	
Northeast	126 (32%)
Midwest	37 (9%)
South	102 (26%)
West	90 (23%)
Unanswered	35 (9%)

Table 3. Participant survey responses

Domain	Scenario	N	Response				Percentage correct
			Both	Mostly feedback	Mostly teaching	Neither	
Feedback	1	392	4	365	1	22	93%
	2	392	12	374	0	6	95%
Teaching	3	391	24	12	281	74	72%
	4	392	41	7	337	7	86%
Combined teaching and feedback	5	391	231	84	64	12	59%
	6	391	287	46	50	8	73%
	7	392	297	9	76	10	76%

Table 4. Comparison of the percentage of correct responses across domains and scenarios between interns and residents

Domain	Scenario	Intern (N = 132)	Resident (N = 260)	P value
Feedback	1	89%	95%	0.038
	2	96%	95%	0.59
	Overall			0.26
Teaching	3	69%	73%	0.45
	4	86%	86%	0.88
	Overall			0.53
Combined teaching and feedback	5	52%	63%	0.051
	6	67%	76%	0.056
	7	70%	78%	0.08
	Overall			0.005

because higher-level residents were better able to identify these scenarios than interns. Formal teaching experience may also be beneficial in identifying feedback, although this outcome did not reach statistical significance.

Limitations of our study include generalizability, because we utilized a convenience sample of residencies. We also had a low response rate. However, our sample size calculation indicated that we had sufficient respondents to generalize our sample to within a 5% margin of error.

Finally, the medical educators who validated the survey only all agreed on 10 of the 20 scenarios, which raises the concern that confusion surrounding feedback exists not only among residents but among faculty as well. However, we believe that our results were strengthened by our decision to use scenarios in which all three educators agreed on the classification.

This study offers initial evidence that residents may have difficulty identifying feedback in the context of teaching. Because feedback plays a central role in physician development, future work should further explore resident perceptions of feedback as well as interventions that increase learner identification and implementation of feedback.

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