Peer-Assisted Analysis of Resident Feedback Improves Clinical Teaching: A Case Report

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Anesthesiologists play an important role in educating future clinicians. Yet few residency programs incorporate teaching skills into faculty development. Consequently, many anesthesiologists have limited training to supervise and educate residents. In turn, these attendings may receive negative feedback and poor evaluations from residents without a means to effectively improve. Peer-assisted teaching between faculty members may serve as a strategy to improve teaching skills. We report a case of peer-assisted analysis of resident feedback to identify specific areas of concern that were targeted for improvement. This approach resulted in improved teaching scores and feedback for the faculty member. (A&A Case Reports. 2017;XXX:00–00.)

Anesthesiologists are educated during their residency program to be clinicians and perioperative consultants. Few programs offer formal teaching about medical education during residency training. Consequently, professional development related to teaching is left to the individual faculty member, who typically turns to lectures, workshops, and simulation experiences to improve his or her skills in supervision and clinical teaching. In addition, clinical teaching in the operating room is seldom witnessed by peers, and few faculty members visit their colleagues' classroom to observe and share ideas about teaching techniques. Thus, many faculty members confront the dilemma of receiving negative feedback from residents and poor clinical teaching evaluations without a means to effectively improve.

Peer-assisted learning techniques may help to solve this problem and have been recognized in the field of education as beneficial for improving teaching.[1] Peer-assisted learning is a term used to encompass an umbrella of cooperative-learning models, such as peer coaching.[1] Peer coaching has successfully fostered professional development in elementary school and higher education for more than 30 years[2,3] and has gained popularity in medical, nursing, and allied health education during the last decade.[4,5] Such coaching usually occurs between a pair of colleagues who observe each other and share self-evaluation, reflection, and feedback in a collegial, noncompetitive manner.[6,7] These techniques focus on formative dialogue between peers to improve and enhance teaching skills, rather than rendering summative evaluation.[8] There are limited articles in the anesthesia literature that demonstrate peer-assisted teaching as a method to help anesthesiologists improve their clinical teaching skills.

We report a case of peer-assisted teaching between a faculty member (C.M.) and a senior peer colleague anesthesiologist (K.B.), which resulted in improvement in C.M.'s teaching scores and written feedback.

CASE DESCRIPTION

Methods

In February 2014, C.M. sought peer coaching from senior faculty member K.B. with the goal of improving her teaching scores and her relative-rank order among her faculty peers. C.M. was motivated and earnestly endeavoring to improve her teaching using her own strategies for the past 3 years but without success. After an initial consult, K.B. assembled all written feedback comments made by residents regarding C.M.'s clinical teaching.

The Accreditation Council for Graduate Medical Education requires residency programs to provide trainees the opportunity to evaluate their supervising faculty members. Our residents evaluate their supervising faculty members in a confidential process using a web-based program, New Innovations (New Innovations, Inc, Uniontown, OH). They provide both evaluation scores and formative comments. The clinical teaching evaluation form has 7 assessment categories: overall, time spent, clinical supervision, quality of teaching, quantity of teaching, role model, and encourages thinking about the science of anesthesia.[9] Each item is rated on a Likert scale (0–10), with 10 representing the highest score. (Teaching scores are calculated by summing up the 7 individual scores [ie, 0–70 range].) Free-text comments are entered in 3 separate boxes: strengths, areas for improvement, and additional comments. Teaching reports are distributed every 6 months, and each faculty member is provided with aggregate clinical teaching score data and all comments that residents wrote.[9]

Three years of data (n = 50 free-text comments) were reviewed by K.B. for themes of "better-than and worse-than average" clinical teaching based on the study by Haydar et al.[10] C.M. and K.B. met on 3 separate occasions after the initial meeting. During the first meeting (2/3/2014), 3 recurrent themes were identified and various teaching interventions were discussed. K.B. acted as a facilitator to help C.M. interpret and reflect on her feedback[11] and design strategic changes in C.M.'s teaching behaviors. After discussion, C.M. self-identified actionable techniques she felt comfortable implementing. Over the next few months, C.M. enacted these interventions without the residents' knowledge of her motivation to enhance her teaching abilities or

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K.B.'s presence during her perioperative teaching activities. At the second meeting (5/21/2015), C.M.'s progress was reviewed. At the third meeting (7/8/2015), after the intervention had been implemented for >17 months, K.B. reviewed C.M.'s teaching scores and noted positive improvement in both scores and written feedback.

We followed C.M.'s teaching scores for a total of 2 years (four 6-month time intervals) after the initial meeting to compare the teaching scores and feedback before and after our teaching intervention. Our outcome measures were mean teaching scores and relative-rank order for C.M. for each 6-month period from November 1, 2010, to May 31, 2015. Quantitative data were analyzed with Excel Version 2003 (Microsoft; Redmond, WA). *P* values were 2-sided, and a $P < .05$ was considered significant. All participants' data have been deidentified. The Massachusetts General Hospital institutional review board determined that this study was exempt.

RESULTS

We used the feedback from residents to C.M. to identify themes that were amenable to change and that were associated with better-than average and lower-than average teaching scores.[9] We identified 3 recurrent themes in C.M.'s teaching evaluations: (1) intervening prematurely without involving the resident in a decision or a procedure (ie, micromanagement); (2) providing teaching that is overly limited in scope or clinically irrelevant; and (3) not teaching to the appropriate level of the resident. We then developed targeted and strategic approaches to improve teaching in these 3 areas. The 3 strategic changes were (1) decrease amounts of micromanagement by allowing the residents to practice their clinical skills, such as performing an anesthetic induction, while providing real-time feedback and being less hands-on; (2) increase amounts of evidence-based teaching by providing relevant journal articles to the residents and discussing how the literature applies in the clinical realm; and (3) focus teaching on the needs of the learner by asking the residents what they wanted to learn about.

We evaluated C.M.'s clinical teaching evaluations before (n = 50 free-text comments) and after (n = 39 free-text comments) the collaborative teaching intervention and documented the impact on C.M.'s teaching scores (Figure) and written feedback (Table). C.M.'s mean teaching scores improved significantly after reflection and implementation of actionable strategies (52.8 [SD = 4.2] to 57.0 [SD = 0.7], effect size d = 1.1, unpaired *t* test, $P = .04$), as did her mean relative-rank order (0.87 [SD = 0.15] to 0.54 [SD = 0.06], effect size d = 1.6, unpaired *t* test, $P < 0.001$). Her written feedback corroborated improvement in each of the 3 targeted areas (Table).

DISCUSSION

In academic medicine, clinicians play an important role in educating future physicians. Unfortunately, improving clinical teaching skills of experienced clinicians is a challenging endeavor. Although C.M. was motivated and earnestly endeavored to improve her teaching using her own strategies, she was unable to create significant improvements. It was only after identifying themes and designing effective strategies in consultation with K.B. that her teaching scores improved.

The approach leading to improvement of C.M.'s scores and feedback can be applied generally to other motivated faculty with low scores who endeavor to improve their teaching scores. A requirement for applying this approach is ample written feedback to identify themes to be targeted for improvement. In addition, adult learners are well known to have significant difficulties with taking existing information and solving novel problems, a process known as analogical transfer.[12,13] External scaffolding provided by a clinician educator can help the learner to see the solutions to the problem, which otherwise may be invisible to them.[14] Examples of external scaffolding include working through an example problem together or providing explicit tips that may help the learner recognize a solution to the problem.[13,14]

Within the past decade, peer-assisted learning has gained popularity in nursing and allied health education. It has been shown to improve teaching, strengthen

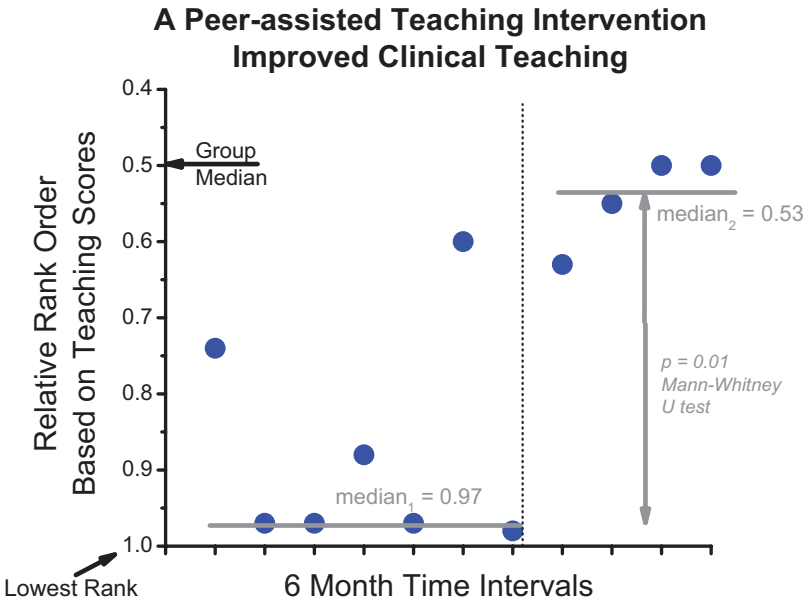

Figure. C.M.'s relative-rank position (based on mean teaching scores) improved after a peer-assisted teaching intervention. Rank order positions are represented as relative-rank positions (0 is best, 1 is worst, 0.5 is average) for each 6-month period. The mean rank position for the 7 periods (3.5 years) before peer coaching was 0.87 (SD = 0.15), which then increased to 0.54 (SD = 0.06) in the 4 periods (2 years) after the intervention (unpaired *t* test, $P < .001$). This analysis was repeated using medians and a significant result was again obtained ($P = .01$; Mann-Whitney *U* test). The vertical black dotted line represents the beginning of the peer-assisted intervention.

Table. Written Feedback From Residents Showed Improvement After Peer Coaching and Teaching Interventions

Verbatim Resident Comments Before Peer Coaching	Intervention: Teaching Strategies	Verbatim Resident Comments After Peer Coaching
Theme 1: Micromanagement		
• Attending micromanages too much, even in areas in which teaching is not needed. This distracts from ability to produce quality work. • A little more hands-on than other attendings, which can feel overbearing.	Decrease amounts of micromanagement. Examples: 1) Allow residents to independently practice anesthetic induction and give real-time feedback. 2) Allow residents the opportunity to create their own anesthetic plan without dictating the plan for them.	• Love the autonomy she encourages in decision-making and having us do our own inductions (hands-off, no direct assistance)—this is super helpful. • Strikes a balance between resident autonomy and appropriate level of supervision without hand-holding.
Theme 2: Use of Primary Literature to Support Teaching		
• Needs to explain her reasoning for refusing certain plans, using certain agents versus others. • I don't agree with her techniques in anesthesia, which is not a problem, but the issue is her justifications are extremely weak.	Increase amounts of evidence-based teaching. Examples: 1) Provide resident with relevant journal articles that pertain to the case. 2) Discuss how the literature applies in the clinical realm.	• I appreciate you taking the time at the end of the day to teach and go over several topics specifically URI and outcome studies. • She asked me what I wanted to learn about at the beginning of the day, and then gave me a relevant lecture appropriate to my level intra-op, and then gave me handouts in my mailbox afterwards.
Theme 3: Teaching to the Appropriate Level of the Resident		
• I've noticed several times she will impromptu start a teaching point or discussion without first assessing a resident's baseline knowledge on the subject…you can skip ahead efficiently to either topics the resident needs help with our move past a teaching topic that a resident is already familiar. • I felt she had a hard time finding the right level for her to provide teaching…I felt she either assumed I didn't know basic things about the patient, anesthesia machine, OR flow, or not explain things at all regarding new procedures.	Focus teaching on the needs of the learner. Examples: 1) Identify the resident's year of training and perform a needs-based assessment with the resident. 2) During the phone conversation the night before, ask the resident what topics or clinical skills they want to focus on during the case the next day.	• She carefully considers what level of autonomy would be appropriate for each case given my level of training and she tailors her supervision accordingly, which I think is great! • I appreciate you asking what I want to learn from you the night before, it is helpful to have a set agenda for the next day.

professional development, enhance reflection, and empower confidence.[15,16] These benefits appear to outweigh the risk of embarrassment and anxiety of being observed, which are the most common reasons for avoiding peer sharing.[3] Other barriers to implementation of peer-assisted learning programs include time commitment, busy clinical workload, and lack of funding resources.[15,16] Because anesthesiologists tend to work in isolation, the use of aggregate written feedback from residents allows faculty members to know how their clinical teaching skills are being perceived by residents.

There have been several studies documenting the benefits of peer coaching, which include bolstering self-confidence, enhancing empowerment, and encouraging self-awareness.[5–7] Necessary conditions for successful peer-assisted learning include participant trust, collegial respect, a voluntary relationship, and feedback seeking behavior.[17] This approach to faculty development allows for professional and personal growth through openness, reflection, and curiosity. Our report demonstrates how the peer-assisted partnership between 2 anesthesiologists significantly improved the clinical teaching skills of a motivated faculty member. Medical educators can use peer-assisted learning to foster adoption of teaching strategies that improve clinical teaching skills as measured by enhanced teaching scores, a significant increase in rank order position within the teaching faculty, and receipt of more positive written feedback from residents. We recognize that our case report is limited by not objectively demonstrating that residents learned more when C.M.'s teaching scores increased.

DISCLOSURES

Name: Christine L. Mai, MD, MHPE.
Contribution: This author helped write and edit the manuscript.
Name: Keith Baker, MD, PhD.
Contribution: This author helped write and edit the manuscript.
This manuscript was handled by: Raymond C. Roy, MD.

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