Teaching and learning in the operating room is a two-way street: Resident perceptions

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Abstract

**BACKGROUND:** The transformation of a trainee into a surgeon is influenced strongly by communication patterns in the operating room (OR). In the current era of limited educational opportunities, elucidation of teaching and learning strategies in this environment is critical. The aim of this study was to further understand the elements of an effective communicative instructional interaction (CII) as perceived by surgical residents.

**METHODS:** Qualitative research methodology was used to explore University of British Columbia surgery residents’ perceptions of what constitutes an effective CII in the OR. Purposeful sampling was used to select participants from various years of training. Eighteen residents participated in semistructured interviews to facilitate reflection of their OR experiences. Interviews were transcribed, analyzed, and fed back to residents to confirm their accuracy. Independent coding and analysis led to the development of key emergent themes.

**RESULTS:** Themes represented the interplay of ideals expressed by the residents. The primary emergent theme was that both teacher and learner play a major role in the creation of an effective CII. The ideal teacher had an instructional plan, facilitated surgical independence, and showed support and empathy for the surgical resident. The ideal resident was receptive, prepared, and acknowledged limitations. The contextual constraints of the OR played a central role in learning, and residents identified ways to maintain educational value despite primarily nonmodifiable contextual elements (ie, time constraints).

**CONCLUSIONS:** In a unique environment such as the OR, both teacher and learner may benefit by an enhanced understanding of the elements of an effective CII. © 2008 Elsevier Inc. All rights reserved.

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The less time available for surgical training,\textsuperscript{1,2} the less opportunity the surgical resident has for deliberate surgical practice. Thus, new approaches to surgical education are being sought to instill the requisite competencies.\textsuperscript{3–5} Good communication in the operating room (OR) fosters learning.\textsuperscript{6,7} To promote the education of surgical residents, open communication is imperative.\textsuperscript{8} Conversely, poor team communication can increase safety risks to patients,\textsuperscript{9} and have a negative effect on the training of the novice surgeon.\textsuperscript{7,10} For the purpose of this study, a communicative
instructional interaction (CII) has been defined as imparting or exchanging of information, verbal or nonverbal, that occurs between the surgeon and resident in the operating room. What constitutes an effective CII is ill-defined, and establishes the impetus for this study.

Qualitative research has been used successfully to develop theories regarding complex social interactions.7,11–13 Hence, qualitative methods were deemed most appropriate in this investigation.

Methods

Data collection

We used qualitative research methodology to investigate what constitutes an effective CII in the operating room as seen through the lens of the surgical resident. A purposive sample14 of surgical residents (n = 18) from the University of British Columbia General Surgery program was selected. All residents were invited to participate, however, to obtain a representative sample, an equal range of participants was selected from residency years 1 to 6, with an equal distribution between the sexes. Informed consent was obtained from the participants and ethics approval was obtained.

Individual semistructured interviews (Table 1) were performed and transcribed by 2 researchers (E.A.V. and T.V.M.). Interviews explored participants’ understanding of what constitutes effective CII.

Data analysis

Systematic coding of the transcripts was used to identify themes that emerged based on the elements described as characterizing an effective CII. Systematic coding of all transcripts (E.A.V.) followed by immersion of 12 transcripts was undertaken to identify themes and ensure exhaustion of any new themes.14 Codes and themes were identified based on the elements described by the participants as representing an effective CII. The coding framework was developed based on a modified grounded theory approach.14 Pratt’s15 General Model of Teaching was used to assist in the development of a coding framework. Transcripts were fed back to study participants to confirm their accuracy and were reviewed and analyzed indepen-
dently by co-investigators to ensure consensus on major themes.

Results

Eighteen interviews were performed, transcribed, and names were removed to ensure anonymity from February to April 2006. The interviews generated 286 pages of text used for analysis. Emergent themes were organized using the 3 elements of teacher, learner, and context from Pratt’s General Model of Teaching.

Teacher

An element that emerged when discussing the category of teacher was the issue of an educational versus a service role. The key characteristic of effective teachers was their recognition of an educational role regardless of the service demands put upon them. This was accomplished in 3 ways: having a clearly articulated instructional plan, facilitating surgical independence, and showing support and empathy.

Have a game-plan (instructional plan)

The residents consistently expressed that it was important that the surgeon have an approach to the educational interaction. Residents identified that it was important to them to go through a process of preoperative, intraoperative, and postoperative discussion that included goal identification and debriefing. “Dr. Y did a very good thing that no one else did . . . before he goes into the OR he talks to the senior resident and he says, ‘what is your game-plan— what is your plan of attack?’ And it makes you think about, what is your plan of attack?”

Residents commonly expressed that explicit instructions that were objective generally had more permanence, “(it is ineffective) if you just say to people over and over again ‘No, do not do it like that, do not do it like that, do not do it like that.’”

Giving it back (facilitating surgical independence)

Effective CIIs were those in which residents were given the opportunity for experience and deliberate surgical practice. Within a case, residents believed that they should have some surgical independence. Residents commonly described ineffective experiences as those in which the surgeon took away cases as an alternative to explaining to the resident what they should be doing, “(it is) disheartening when that demonstration evolves into the surgeon becoming the primary operator,” and “the thing in surgery is that we never have goals, we are never told what is appropriate for our level.”

Residents reported that loss of surgical independence could be ameliorated if the educational role of the surgeon continues through explanation and understanding of the resident’s frustration.

Come to our defense (support and empathy)

The final significant element that residents identified as being important in a surgeon was an ability to support and understand a resident’s particular circumstances, “you look back at being a medical student and it is very hard to remember exactly what that was like, right? But people who are really good teachers, they can always try to put themselves in that position,” and “they see it as their responsibility to help that person become a good surgeon, or become a good physician.”

Learner

Under the thematic category of learner the residents recognized the importance of reciprocity in that they too played a role in the process. In making for an effective CII the ideal resident was receptive, prepared, and acknowledged limitations.

Be open to feedback (receptive)

Residents recognized this reciprocal exchange through their expression that they too play a part in the instructional plan by being receptive to critique, “you have to be open to being criticized.”

Show interest (prepared)

The resident recognized that part of an effective CII meant that they also should be prepared and engaged and should recognize their role in setting goals for the procedure, and preparing for discussion, “the onus is definitely on the resident to come ready to learn,” and “residents, come ready to learn, be prepared, and as tired as you may be, try and put on a game-face and at least feign interest.”

It is part of the deal (acknowledge limitations)

Residents showed an ability to be self-critical in that not only did they report recognizing their own limitations, but they also recognized the limitations of the ideals that they identified for their instructors, “never get too high on yourself . . . you never get perfect at anything,” and “it is the reality of the situation so you try to sort of get something out of it other than a headache.”

Context

The elements of the distinct context of the OR that residents identified as important in an effective CII were safety and high stakes, hierarchy, and time constraints.
Patient safety comes first (safety and high stakes)

Safety was identified as superseding teaching and learning in the surgical context. Residents were fully aware of the limitations of this unique context as shown by these quotes: “understand the acuity of the situation and the goal of the surgery,” and “realize within safe boundaries what you can let someone learn.”

It is like the military (hierarchy)

The hierarchy in surgery was believed to be explicit, and generally less prominent in smaller community hospitals. Although the negative aspects of the hierarchy were established, residents recognized a positive role for hierarchy in modifying contextual elements of the CII, “I think there are some surgeons who thrive on the hierarchy and who . . . humiliate you to either put you in your place or to make themselves feel better or whatever it is,” and “if the staff person says something—that is going to happen . . . if other people say something, you know 5 people in the room will ignore it,” and “while a lot of organizations have flattened their hierarchy, surgery has not . . . hierarchy is a good thing . . . it is a protective thing . . . it just reflects the graded responsibility.”

How much longer? (time-constraints)

Although time constraints were cited frequently as negatively influencing the CII and generally believed to be nonmodifiable contextual elements, residents recognized that there was a balance between time pressures and education and suggested that in fact the surgeon had the capacity to influence these contextual elements, “I think some surgeons who thrive on the hierarchy and who . . . humiliate you to either put you in your place or to make themselves feel better or whatever it is,” and “I think some backup from the staff (is needed) . . . ‘hey, this is a teaching institution, this is what we do here.’”

The interplay among all of the thematic categories played a significant role in the participants’ deliberations and is represented in Fig. 1.

Comments

Medical educators increasingly are recognizing that training is not solely about knowledge transfer. There exists a significant body of literature contributing to the evidence base of communication in teaching and learning in medicine16,17 and its influences on safety and education7. Communication has been identified as an important component by which surgeons guide the training of surgical residents4 and promote the development and socialization of novice surgeons7 into the surgical expert. Observational studies suggest that good team communication in the OR fosters learning7. To better inform what constitutes effective communication in this distinct environment, we investigated the CII between the surgeon and the resident.

The primary theme is that an effective CII requires reciprocity among teacher and learner. Residents described both how they learn most effectively and how they would prefer to be taught. The second most significant theme emerging from the data was that of the educational role. Residents believed that, for both parties, simple attendance in the OR was not good enough. The surgeon’s role as educator often was overlooked and subsequently inferior to their role as service provider.

The intent of this study was to serve as an initial step in defining effective communication in this unique learning environment. Given the exploratory nature of inquiry used, there were some limitations that may influence the application of this study’s results to other settings. Although rich and descriptive data were garnered from this study, only the learners’ perceptions were explored. Although the results of this study are reflective only of this particular study group and setting, it is possible that elements of the effective CII identified in this study may be transferable to other training programs that can identify with these common themes.

Future research could endeavor to further understand the nature of the CII by addressing the perceptions of the surgeons and perhaps groups outside of the surgical realm. These varying perspectives may help to inform our own practice and enable us to achieve a better understanding of our current surgical education approaches.

References

Discussion

Karen Kwong, M.D. (Portland, Oregon): Surgery programs are striving for a formalized curriculum which would include the competencies as well as a curriculum of knowledge and skills. Therefore this study, which seeks to understand the elements of effective communicative instructional interaction (CII) is both timely and relevant. The topic also encompasses almost all areas of the competencies as well as surgical skills in the OR, and in the context of “the teachable moment.”

The paper raises several issues.

1. Optimal CII from the resident perspective distills into an interaction and discussion of the game plan and appropriate feedback to a prepared resident, as well as kindly verbal coaching of the teacher, rather than demonstrating (or taking the case).

What measures should we use to evaluate the efficacy or success of increased learning or skills in the learner and effectiveness by the teacher? (eg Global ratings? 360-degree assessments?). Are there clues from the data as to specific ways to achieve this?

2. Were there differences in gender or residency level in the residents’ responses?

3. What evidence suggests that the results were reliable? What did the authors mean when they stated that they use logic rather than frequency of mention to identify emergent themes?