

Radiology Trainees' Comfort With Difficult Conversations and Attitudes About Error Disclosure: Effect of a Communication Skills Workshop

Stephen D. Brown, MD^{a,b}, Michael J. Callahan, MD^a, David M. Browning, MSW^c,
Robert L. Lebowitz, MD^a, Sigall K. Bell, MD^{b,d}, Jisun Jang, MA^e,
Elaine C. Meyer, RN, PhD^{a,f}

Purpose: The aim of this study was to assess the effect of communication skills training on radiology trainees' (1) comfort with communicating directly with patients and family members about unexpected or difficult diagnoses ("bad news"), radiologic errors, and radiation risks and (2) attitudes about disclosing radiologic errors directly to patients and their families.

Methods: One hundred nine radiology trainees from 16 US programs were asked to complete questionnaires immediately before and after attending an institutional review board–exempted, full-day communication workshop. Questionnaires assessed (1) comfort communicating with patients and their families generally and about bad news, radiologic errors, and radiation risks specifically; (2) attitudes and behavioral intent regarding a hypothetical vignette involving a radiologic error; and (3) desire for additional communication training.

Results: All trainees completed the questionnaires. After completing the workshop, more trainees reported comfort communicating with patients about bad news, errors, and radiation risks (pre vs post, 44% vs 73%, 25% vs 44%, and 34% vs 58%, respectively, $P < .001$ for all). More also agreed that the radiologist in the error vignette should discuss the error with the patient (pre vs post, 84% vs 95%; $P = .002$) and apologize (pre vs post, 78% vs 94%; $P < .001$). After participation, fewer trainees reported unwillingness to disclose the error despite medicolegal concerns (pre vs post, 39 vs 15%; $P < .001$). Despite high baseline comfort (92%) and low stress (14%) talking with patients in general, most respondents after participation desired additional communication training on error disclosure (83%), general communication (56%), and radiation risks (80%).

Conclusions: This program provides effective communication training for radiology trainees. Many trainees desire more such programs.

Key Words: Communication, professionalism, diagnostic errors, education, radiology

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INTRODUCTION

Radiologists face mounting expectations to communicate directly with patients. Such expectations are driven by evolving radiologic practices, cultural changes within medicine, technological advances, medicolegal exigencies, and revised understandings of radiologists' professional roles [1-6]. Radiologists' accountability to patient-centered

and value-based care is being asserted by major professional organizations, such as the ACR and the RSNA [7,8]. Such accountability includes ensuring that patients receive timely and clear diagnostic information [1,2,4-6], discussing radiologic errors with patients directly and honestly [9-12], and communicating effectively about radiation exposure [13,14]. The Diagnostic Radiology Milestones

^aDepartment of Radiology, Boston Children's Hospital and Harvard Medical School, Boston, Massachusetts.

^bInstitute for Professionalism and Ethical Practice, Boston Children's Hospital, Boston, Massachusetts.

^cDepartment of Social Work, Massachusetts General Hospital, Boston, Massachusetts.

^dDepartment of Medicine, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, Massachusetts.

^eClinical Research Center, Boston Children's Hospital, Boston, Massachusetts.

^fDepartment of Psychiatry, Harvard Medical School, Boston, Massachusetts.

Corresponding author and reprint requests: Stephen D. Brown, MD, Children's Hospital Boston, Department of Radiology, 300 Longwood Avenue, Boston, MA 02115; e-mail: stephen.brown@childrens.harvard.edu.

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established by the ACGME and the ABR now require that graduating radiology trainees be able to communicate “complex and difficult information, such as errors, complications, adverse events, and bad news” [15,16].

Radiologists face considerable barriers to meeting these standards. Even veteran physicians experience substantial stress communicating with patients about unexpected or difficult diagnoses [17,18]. When errors occur, stress may be compounded by patient anger and physician shame [10,11,17,19,20]. Involved physicians may fear causing further harm or harbor apprehensions about their own vulnerability [20,21]. Radiologists also face complex challenges communicating with patients about radiation [22]. Such conversations must overcome considerable public anxiety and a historical lack of scientific consensus. These conversations all become more challenging for radiologists who have not previously met the patients with whom they must communicate. Without baseline relationships, many radiologists and patients have not had the opportunity to establish the trust key to navigating challenging conversations.

Despite emergent communication standards for radiologists and barriers impeding effective radiologist-patient communication, few educational programs exist to help radiologists cultivate communication skills. Ideally, such programs would provide a rationale for these conversations that will help radiologists transcend their historically reticent culture, tools to enhance confidence and skills, and strategies for approaching challenging conversations with patients and families in the context of routine workflow.

Evidence suggests that traditional didactic models for teaching communication to physicians are insufficient to meet this complex demand [23-25]. Newer communication training programs in medicine, pediatrics, and surgery now combine didactic methods with simulation, role play, group discussion, and video presentations [21,25-32]. Such approaches improve physicians' skills as assessed in educational settings, although it remains uncertain whether such learning translates to better communication or improved outcomes in actual clinical practice [27,28].

In this article, we describe an experiential communication workshop customized for radiology. The program prioritizes adult pedagogy, relational learning, an emphasis on patient and family perspectives, realistic enactments with professional actors, self-reflective practice, observation, and feedback [24,33]. The program was adapted for radiology after validation for communication training in other disciplines [29-32,34]. Our objectives were to assess the effect of this communication skills training on radiology trainees' (1) comfort with communicating directly with patients and family members about unexpected or difficult diagnoses (“bad news”), radiologic errors, and radiation risks and (2) attitudes about disclosing radiologic errors directly to patients and their families. We explored these questions by analyzing workshop participants' responses to

a questionnaire completed immediately before and after attendance at the workshop.

METHODS

Overview

Twelve daylong communication skills workshops were held over 2 years. A pre-post study design evaluated how the workshop influenced radiology trainees' comfort with and attitudes about direct patient and family communication. Participants completed confidential immediate preworkshop and postworkshop questionnaires after signing permission for videotaping of case enactments and use of questionnaires for education and research. This project was exempted by the institutional review board.

Workshop Participants

Participants included 109 radiology residents and fellows from 16 US programs, 24 practicing radiologists from 17 centers, 8 nonradiologist physicians (1 pediatric urologist, 1 pediatric pulmonologist, 2 pediatric hematology and oncology fellows, 1 pediatric palliative care physician, and 3 internists), affiliated radiology personnel (19 technologists, 8 nurses, and 1 child-life specialist), 10 medical interpreters, and a professional patient advocate. Radiology trainees in the department were required to attend. Other participants were directly invited or recruited through *RSNA News*.

Each workshop was cofacilitated by a pediatric radiologist with bioethics training (SDB) and a psychologist or social worker (ECM, DMB). Other faculty members included parents of patients and radiologists with expertise in radiation safety and department leadership (MJC, RLL).

Each workshop included 5 professional actors trained in improvisation and in medical enactments.

Intervention

Pedagogical Philosophy and Approach. General details of this program have been described [33]. The workshop combines didactic and media presentations with improvised enactments between workshop participants and actors. The pedagogy emphasizes safe, collaborative learning that integrates diverse perspectives.

Workshops are held in a conference room, with enactments conducted in a separate private space that mimics a clinical consultation room. Closed-circuit video cameras allow conference room participants to view real-time enactments. Scenario participants and actors share their reactions and receive feedback from others, augmented by video playback.

Workshop Content. Each workshop features 3 modules.

Module 1: bad news. After participants recount difficult conversations they have experienced with patients, they watch a video of a sonologist and an expectant couple discussing an unforeseen miscarriage. The film serves to trigger

group conversation about communicating bad news. The enactment and debriefing follow. In the scenario, a radiologist (workshop participant) must convey to a 6-month-old child's parents (workshop actors) that the child's ultrasound unexpectedly demonstrates a probable hepatoblastoma.

Module 2: medical errors. Videos featuring patient, family, and physician testimonials about medical errors are used to generate discussion about error disclosure [35,36]. A lecture covers principles of error disclosure, medicolegal information, and issues particular to radiologists. Contemporary "best practice" approaches to disclosure are discussed that feature transparent institutional investigations after serious errors; carefully coordinated teamwork among institutional stakeholders; open disclosure, apology, and compensation offers when appropriate; disclosure coaches; and published guidelines [10,19,21,37-40]. Specific practical recommendations are then described [39]. Before each enactment, we hold mock "coaching sessions" in which the involved radiologist meets with the department chair, oncologist, and disclosure coach. In the scenario, the radiologist must discuss with a young child's parents how a newly diagnosed metastatic hepatoblastoma was, in retrospect, present but missed on a previous abdominal ultrasound. The oncologist has informed the parents about the error, and they have asked to meet the radiologist. The radiologist and oncologist meet together with the parents.

Module 3: radiation risks. A lecture provides review of CT radiation risks and mitigation. The enactment involves a discussion between a radiologist and an anxious mother about radiation risks from her child's abdominal CT study. Postenactment discussion includes radiologists' roles in managing requests for radiologic procedures, disagreements with clinical providers, and conversations with anxious patients.

Each scenario was written by program faculty members and revised after piloting. Family members' characters were defined, and potential reactions were anticipated. Enactments are improvised to accommodate authentic responses in live conversation. One or two volunteers (a radiologist sometimes joined by a nurse or technologist) participates in each enactment.

Questionnaire Content

The questionnaire included demographics and questions regarding previous communication educational opportunities. To assess the workshop's effectiveness as an intervention to enhance radiologists' confidence with difficult conversations, participants were asked immediately before and after to judge their comfort communicating with patients generally and around bad news, medical errors, and radiation risks. They were also asked whether they desired further communication training.

To assess impact on attitudes about error disclosure, participants were asked questions regarding a previously published hypothetical vignette in which a breast imager

concluded incorrectly that mammographic calcifications were decreasing rather than increasing because prior examinations were viewed in reverse order [10]. The questionnaires also probed attitudes regarding well-described barriers to disclosure [19,20,37,38,40].

Analysis

We analyzed trainee responses only. Too few practicing radiologists participated to allow comparison. We recorded responses using a 5-point Likert scale (ranging from "strongly agree" to "strongly disagree"), dichotomized them to "agree" ("strongly agree" and "somewhat agree") or "disagree" ("neutral," "somewhat disagree," and "strongly disagree"), and used McNemar's test to examine changes in preworkshop and post-workshop responses.

We performed conditional logistic regressions to assess whether demographic variables (gender, years of experience since earning professional degree, and race [white vs nonwhite]) contributed to changes. None demonstrated significance; we excluded them from further analysis.

We used SAS version 9.3 (SAS Institute Inc, Cary, North Carolina) to perform analyses and *P* values < .05 to test significant associations.

RESULTS

All trainee participants (*n* = 109) completed preworkshop and postworkshop questionnaires. Table 1 summarizes demographics.

Prior Communication Learning Opportunities

Respondents reported mixed experiences with previous communication training (Fig. 1). Nine reported no prior training. More than half reported prior coursework and simulation training. Fewer than half reported practical experience or training opportunities during residency. Few reported continuing educational opportunities.

Comfort With Communication

Both before and after participation, most respondents were generally comfortable talking to patients (Table 2);

Table 1. Demographic characteristics of radiologists in training (*n* = 109)

Variable	Value
Age (y)	31.06 ± 2.5 (27–38)
Years of experience since earning professional degree	3.7 ± 1.9 (2–13)
Gender	
Female	41 (37.6%)
Male	67 (61.5%)
Missing	1 (0.9%)
Ethnicity	
White	70 (64.2%)
Black or African American	4 (3.7%)
Asian or Pacific Islander	23 (21.1%)
Mixed racial background	4 (3.7%)
Other	4 (3.7%)
Missing	4 (3.6%)

Note: Data are expressed as mean ± SD (range) or as number (percentage).

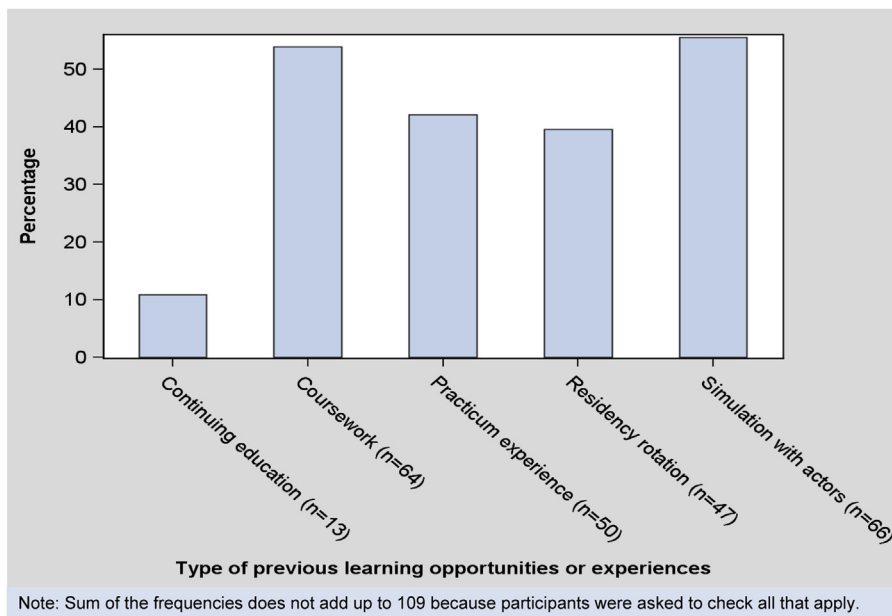


Fig 1. Previous learning opportunities or experiences among radiologists in training (n = 109).

relatively few found talking to patients generally stressful. Before participation, however, only a minority reported comfort communicating with patients about bad news, medical errors, or radiation. Afterward, significantly more were comfortable with all 3 elements ($P < .001$ for each). Nonetheless, even after training, no change was demonstrated in the majority who wanted more communication training in general. Most trainees desired further training in radiation risks and error disclosure, in particular.

Attitudes About Error Disclosure

Regarding the hypothetical vignette (Table 3), a majority of respondents agreed on preworkshop questionnaires that the radiologist should both discuss the error with the patient and offer an explicit apology. Nonetheless, significantly more agreed with both of these statements after workshop participation ($P = .002$ and $P < .001$, respectively). Trainees were also asked how they would proceed if they were the involved radiologist.

On postworkshop questionnaires, compared to preworkshop questionnaires, $>50\%$ fewer agreed that they would be less likely to disclose the error if they thought the patient would not understand ($P < .001$). Similarly, after workshop participation, $>50\%$ fewer agreed that they would be less likely to disclose the error if they thought they might get sued ($P < .001$). After participation, more than twice as many trainees indicated that they would be less likely to disclose the error without another clinician present who knew the patient ($P < .001$). Significantly fewer reported after participation that they would be less likely to disclose the error if they thought the patient was unaware of the error ($P = .029$) and without additional disclosure training ($P = .005$).

DISCUSSION

Validated approaches to communication training in radiology are essential to help radiologists meet new standards for direct patient communication. Effective

Table 2. Radiology trainees' agreement with statements regarding communication with patients (n = 109)

Statement Regarding Communication With Patients	Pre-session		Post-session		McNemar's Test	
	Agree	Disagree	Agree	Disagree	Test Statistic	P
Talking to patients is stressful for me in general.	13.8%	85.3%	17.6%	81.5%	1.1	.285
I am comfortable...						
talking to patients in general.	91.7%	7.3%	90.7%	9.3%	0.5	.480
discussing radiation risks with patients.	33.9%	65.1%	58.3%	41.7%	14.5	$<.001^\dagger$
communicating with patients about new unexpected, or "bad news" that I diagnose.	44%	55%	73.1%	26.9%	23.4	$<.001^\dagger$
communicating with patients about medical errors.	24.8%	74.3%	44.4%	55.6%	12.6	$<.001^\dagger$
I would like more training on...						
medical error disclosure.	78.9%	20.2%	83.3%	15.7%	0.7	.414
communication with patients in general.	57.8%	41.3%	55.6%	43.5%	0.4	.505
communication about radiation risks.	89.9%	9.2%	79.6%	20.4%	8.0	.005*

* $P < .01$.
 $^\dagger P < .001$.

Table 3. Radiology trainee attitudes regarding a hypothetical mammographic error scenario (n = 109)

Statement Regarding the Hypothetical Scenario About a Mammographic Error	Pre-session		Post-session		McNemar's Test	
	Agree	Disagree	Agree	Disagree	Test Statistic	P
Disclosing the error will increase the likelihood that the patient will sue the radiologist.	22%	78%	13.9%	85.2%	3.2	.072
The radiologist should...						
discuss this error with the patient.	83.5%	16.5%	95.4%	4.6%	9.9	.002 [†]
offer an explicit apology for the error.	78%	22%	93.5%	5.6%	16.2	<.001 [‡]
I would be less likely to disclose the error...						
if I think the patient would not understand what I was telling her.	43.1%	56.9%	19.4%	79.6%	16.9	<.001 [‡]
if I think the patient would not want to know about the error.	29.4%	69.7%	19.4%	78.7%	4.5	.034 [*]
if I think I might get sued.	39.4%	60.6%	14.8%	85.2%	23.5	<.001 [‡]
if I think the patient is unaware an error happened.	19.3%	78.9%	11.1%	87%	4.8	.029 [*]
if I think the patient would be angry with me.	16.5%	82.6%	9.3%	90.7%	3.6	.059
if I did not know the patient very well.	17.4%	82.6%	10.2%	89.8%	3.6	.059
if I thought nothing could be done to prevent the error from happening again.	14.7%	84.4%	12%	88%	0.5	.491
if I were not asked to directly by the referring physician.	14.7%	85.3%	15.7%	84.3%	0.1	.819
without there being another clinician in the room who knew the patient.	12.8%	87.2%	34.3%	64.8%	14.3	<.001 [‡]
without my having more time for conversations with patients in general.	36.7%	63.3%	28.7%	69.4%	2.5	.117
without my having a more suitable place than I currently have to meet with patients.	35.8%	64.2%	29.6%	70.4%	1.5	.223
without more formal education/training than I currently have on medical error disclosure.	33.9%	66.1%	18.5%	80.6%	8.0	.005 [†]

*P < .05.
†P < .01.
‡P < .001.

training about challenging communication practices requires interventions that teach necessary skills, tackle traditional barriers, and provide practical processes for implementation in systems workflow [29]. We designed this program to meet these needs. Our data suggest that this workshop is an effective approach to communication skills training related to bad news, radiologic error disclosure, and radiation risks.

After participating in a single workshop, radiology trainees reported significantly more comfort with these 3 specific conversation scenarios, each historically challenging, and each of which trainees identified prospectively as more difficult than speaking to patients in general. Regarding the conversation trainees identified as most difficult, discussing errors, our results suggest that trainees who completed the workshop were more likely to accept that, for the scenario presented, such disclosure should occur despite litigation concerns, a major historical barrier to disclosure [20,39]. The workshop also ameliorated concerns about patient misunderstanding or unawareness. After completing the workshop, significantly more respondents were unwilling to disclose a significant error without a clinician present who knew the patient, which suggests that participants learned the importance of teamwork and mutual respect among stakeholders.

Our results illuminate critical gaps in radiology training curricula. Trainees were particularly uncomfortable with specific conversations for which the ACGME and ABR require proficiency. Many participants desired additional

training in these “higher stakes” discussions despite attending a workshop that significantly enhanced their comfort. Although >90% of respondents felt comfortable with communication in general before and after workshops, over half afterward desired more training in general communication, a proportion that did not change significantly. These data suggest that trainees sensitized to the importance and complexity of good communication will require ongoing learning opportunities to achieve comfort with, if not mastery of, the array of difficult patient-related conversations in radiologic practice. Exposure through the workshop to what trainees did not appreciate about challenging conversations may have deepened their appreciation for the complexity of such discussions and piqued their desire for further training. The course may even have increased some participants’ anxieties around direct patient communication, given that slightly more respondents felt after workshops that talking to patients was stressful in general. Although many reported prior learning opportunities to prepare for difficult conversations, few reported opportunities during residency or through continuing education. This suggests that prior training mostly occurred in medical school and that radiology trainees need continued communication training during residency.

Several features of this pedagogic model may help training programs develop their own curricula. Effective learning generates not only from direct participation in enacted conversations but also from observation and

collaboration with interprofessional colleagues of varying experience levels [30-32]. Multiple teaching approaches accommodate varied learning styles and sustain interest. Including patients or family members alongside radiologists fosters mutually insightful dialogue. Although standardized actors are commonly used for various purposes, improvisational actors are particularly prepared to react to contextual circumstances and provide critical feedback normally missing in actual clinical encounters. Finally, our faculty expertise collectively encompasses the clinical, psychosocial, and ethical issues that make radiologist-patient communication challenging, which augments our credibility with learners [20,30-32,39,41].

The implementation of programs such as this requires funding for actors, faculty members, and administrative assistance. Although radiology faces mounting fiscal constraints, funding for such programming would ideally reflect the prioritization of professionalism and interpersonal communication as 2 of 6 ACGME competency domains. Trainees' reported desire for additional communication training has spurred us to consider low-cost periodic "booster" sessions, which we have held successfully across our hospital's critical care units. These rounds focus on actual communication challenges that arise in clinical settings and provide a regular forum to reinforce workshop learning, advance communicative competency, and contribute to clinical practice change.

This study's limitations include social desirability bias. Required attendance may temper true opinions. Self-report responses about what the radiologist in the vignette should have done may not reflect actual practices in similar situations. Self-reported comfort with communication may not correlate with real skills with patients and their families, which the workshop did not assess. Instruments exist for objectively measuring communication skills, but the development of such tools specifically for radiology remains a major unaddressed challenge. Finally, long-term follow-up would help us assess how learning extended to experiences later in practice and inform further program development.

CONCLUSIONS

This program is an effective educational initiative for enhancing radiology trainees' comfort when communicating with patients and their families. Few such initiatives exist, yet they are crucial for helping radiology trainees meet new standards. The significant gaps that persist in preparing radiologists for difficult conversations with patients and families represent a major challenge for radiology as it matures toward patient-focused care.

TAKE-HOME POINTS

- Many radiology trainees report comfort communicating with patients in general.

- Substantially fewer radiology trainees report comfort communicating with patients and their families about bad news, errors, and radiation risks.
- Radiology trainees' comfort with these difficult conversations can be enhanced through participation in a communication skills workshop.
- Radiology trainees' attitudes about error disclosure can be modified through participation in a communication skills workshop.
- Radiology trainees need more communication training than their programs currently provide.

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