American College of Radiology™

Radiology Communication Skills Curriculum

Introduction

Effective communication is a cornerstone of high-quality patient care, even in specialties like radiology where direct patient interaction may be less frequent but critically important. The **Radiology Communication Skills Curriculum** is designed to equip radiology professionals and trainees with the skills needed to navigate diverse communication scenarios with clarity, empathy and professionalism.

This comprehensive curriculum blends didactic lectures, interactive simulations, participant surveys and case-based exercises to foster both foundational knowledge and practical application. Whether discussing imaging results with patients, addressing incidental findings, navigating emotionally sensitive conversations or collaborating with referring physicians, this curriculum prepares participants to handle a wide range of real-world encounters with confidence and compassion.

By integrating structured learning with experiential practice, the curriculum encourages reflection, adaptability and the development of personalized communication styles that enhance patient trust and interprofessional collaboration. Through this program, we aim to elevate the standard of communication in radiology — transforming it from a procedural interaction to a meaningful connection that supports patient-centered care.

For more information:
Carolynn M. DeBenedectis, MD, et al.
Coming Out of the Dark: A Curriculum for Teaching and Evaluating Radiology Residents' Communication Skills Through Simulation
2016 American College of Radiology 1546-1440/16, http://dx.doi.org/10.1016/j.jacr.2016.09.036

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Communication Curriculum Outline and Objectives

This curriculum helps to fulfill the ACGME milestones of communication and interpersonal skills.

Version 12/2012

Interpersonal and Communication Skills

ICS1: Effective communication with patients, families, and caregivers					
Has not Achieved Level 1	**Level 1**	**Level 2**	**Level 3**	**Level 4**	**Level 5**
	Communicates information about imaging and examination results in routine, uncomplicated circumstances Obtains informed consent	Communicates, under direct* supervision, in challenging circumstances (e.g., cognitive impairment, cultural differences, language barriers, low health literacy) Communicates, under direct supervision, difficult information such as errors, complications, adverse events, and bad news *see ACGME definition of direct supervision in the Program Requirements	Communicates, under indirect* supervision, in challenging circumstances (e.g., cognitive impairment, cultural differences, language barriers, low health literacy) *see ACGME definition of direct supervision in the Program Requirements	Communicates complex and difficult information, such as errors, complications, adverse events, and bad news	Serves as a role model for effective and compassionate communication Develops patient-centered educational materials
☐	☐	☐	☐	☐	☐
Comments:					

Possible Methods of Assessment/Examples:

- End-of-Rotation Global Assessment
- 360 Evaluation/Multi-rater/Peer
- Simulation/OSCE
- Direct observation and feedback
- Self-Assessment and Reflections/Portfolio

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Reference: http://www.acgme.org/Portals/0/PDFs/Milestones/DiagnosticRadiologyMilestones.pdf?ver=2015-11-06-120532-380

Curriculum Learning Objectives

1. Define the essential elements of communication skills.
2. Provide examples of good and poor communication skills and provide a framework to practice communication skills.
3. Use tools to evaluate communication skills.
4. Understand the relationship between communication and patient experience.

Curriculum Outline

1. Learning About Effective Communication Skills Module
    a. Lecture on the essentials of communication.
    b. Resource: Radiology Communication Skills Training Module (video)
    c. Resource: Carolynn M. DeBenedectis, MD, et al. *Coming Out of the Dark: A Curriculum for Teaching and Evaluating Radiology Residents' Communication Skills Through Simulation*

2. Practicing Communication Skills Module

    a. Use the twelve Communication Scenarios provided to run live simulations or hold discussions using the provided videos.

    b. Scenario topics for videos and live simulations:
        i. Error and apology (x2)
        ii. Radiation risk (x2)
        iii. Breaking bad news in breast imaging (x2)
        iv. Breaking bad news in pediatric radiology (x2)
        v. Changing or canceling an image guided procedure (x2)
        vi. Telephone skills/angry referring clinician (x2)

    c. Live Simulated Exercises Resources:
        i. Running a Communication Simulation Instructions
        ii. Simulation Scenarios Set 1 and Set 2
        iii. Evaluate trainees with the provided KalRads tool
        iv. Provide trainees with the Simulation Survey

3. Evaluating Communication Skills Module
    a. Discuss tools for assessing communication skills in trainees and use KalRads tool to guide discussion.

    b. Resources:
        i. KalRads tool
        ii. Resources: Article - Brown SD, et al. *Development of a Standardized Kalamazoo Communication Skills Assessment Tool for Radiologists: Validation, Multisource Reliability, and Lessons Learned*

4. Learning About the Patient Experience Module

    a. Patient Letters: Use patient experiences in training either with the patient letters provided and/or by having patients from your institution come to talk about their experience in the radiology department.

        i. Resources:
            1. Patient-centered Care Facilitators Guide
            2. Three sympathy letters from patients discussing their general experiences about their physician.
            3. Seven radiology specific scenarios about handling the unexpected.
            4. Article - Miller MM, et al. *Teaching Principles of Patient-Centered Care During Radiology Residency*

    b. Handling the Unexpected or Poor Outcome: Use the provided facilitators guide and student scenarios to engage in group discussion.

        i. Resources:
            1. Handling the Unexpected or Poor Outcome Facilitators Guide
            2. Handling the Unexpected or Poor Outcome Student Scenarios

5. Communication Curriculum Survey

Learning About Effective Communication Skills Module

Trainees not only need to learn to diagnose and treat medical conditions— they must also develop one of the most critical skills in patient care: effective communication.

In clinical practice, communication isn't just about delivering information. It's about building trust, showing empathy, understanding patient concerns, and making shared decisions. How we speak, listen, and respond can dramatically influence a patient's experience, their understanding of their condition, and even their outcomes.

In this lecture, you'll explore the principles of patient-centered communication, common challenges in clinical conversations, and practical strategies for improving your interactions with patients. From breaking bad news to addressing cultural and language differences, our goal is to help you feel more confident and capable in every patient encounter.

This isn't just about what you say, it's about how you make patients feel heard, respected, and cared for.

The included video provides a PowerPoint lecture from University of Massachusetts Medical School introducing the concepts of effective communication.

Radiology Communication Skills Training Module Instructions

1. Didactic lecture: 60 – 90 minutes
    a. Lecture on the essentials of communication.
    b. Allow for discussion / Q&A to respond to trainees' questions.
    c. Resource: Radiology Communication Skills Training Module (video)

Practicing Communication Skills Module

Whether it's conveying critical findings to referring clinicians, discussing imaging results with patients, or navigating difficult conversations—such as delivering unexpected or bad news—our ability to communicate clearly, compassionately, and confidently is essential.

This module is designed to help you develop and refine those skills through realistic simulation scenarios. You'll have the opportunity to practice key conversations, receive structured feedback, and reflect on your own communication style in a safe, supportive environment.

The goal is not perfection, it's progress. As you go through each scenario, focus on being present, empathetic, and intentional in your communication.

Use the twelve Communication Scenarios provided to run live simulations or hold discussions using the provided videos.

Running the Communication Simulations

Pre-Work:

1. If a simulation center is present and the residency has adequate resources:
    a. Procure patient-actors either paid or volunteer.
    b. Confirm actor preparation by providing the written script(s). Each scenario must include background information, enactment / script, and notes to the acting patient.

2. The training session should be staffed by a professional acting coach, actor as well as one of the faculty raters to allow for maximum acting preparation and understanding of the simulation.

3. Faculty with prior communication skills training are meant to be a facilitator, not a teacher/professor during the simulations.

4. A maximum of 6 trainees are involved at a time completing 6 scenarios each. There are two sets of scenarios available on the website in the event an institution would like to repeat simulations in a second session or prefer one set of scenarios over the other (scenario set two is more difficult).

5. If possible, videotape each interaction for each trainee (preferred but not required).

6. The Learning About Effective Communication Skills Module using the Communication Skills Learning Module PowerPoint should be completed by the trainees prior to participation in the simulations.

Day of Simulation Instructions**:**

1. Allow trainees to review the PPT the week before the simulation activity.

2. On the day of simulation, the trainee reads the scenario before entering the simulation room (2-3 minutes). The simulation scenario should run approx. 10 - 12 minutes.

3. A 2-minute warning is given to allow the trainee to complete the scenario interaction.

4. Immediately after, the trainee fills out self-evaluation and the actor must complete the trainee evaluation (10 minutes) using the Kalamazoo Communication Skills Assessment Tool.

5. The trainee completes the post-survey on communication simulation.

Simulation Debrief**:**

1. The debrief session should be 1.5 - 2 hours.

1. At completion of all scenarios, faculty gathers teaching points via review of videos, if available, and trainee evaluations from actors. Faculty reviews each trainee's 6 simulation interactions and grades utilizing the KalRads tool (refer to the section on the KalRads tool).

2. For each scenario, discuss the following:
    a. Discuss actor's evaluation and teaching points.
    b. Emphasize strengths and areas for improvement.
    c. Allow for trainee discussion.

2. A post-survey on communication simulation is given to the trainees.

3. Trainees are provided with all their evaluations from the acting patients, faculty evaluator(s) and their self-evaluations so they can see how they did and learn from the experience.

Simulation Scenarios Set 1

Scenario 1-1: Error and Apology Set 1

Background:

A 40-year-old female with abdominal pain for 2 months presents to the radiology department for a CT of the abdomen and pelvis with IV contrast. The CT technologist begins to administer the IV contrast, and the patient begins to complain of hives and shortness of breath. The CT technologist immediately calls the radiology resident to evaluate the patient and stops the contrast infusion. The 2nd year radiology resident arrives at the scanner to find the patient covered in hives, wheezing, with a pulse of 110 bpm, and a blood pressure of 80/50. The resident gives the patient oxygen by nasal cannula. Given that the patient is hypotensive, and the bronchospasm is getting worse the resident decides to give IV epinephrine. The resident starts to slowly inject 1mL of epinephrine into the patient's IV. As the resident is doing this the 4th year resident comes in and realizes that the resident drew up the epinephrine that was 1:1000, not the appropriate IV concentration of 1:10,000. The 4th year resident tells the 2nd year resident to stop injecting. The 2nd year resident has only injected 0.2mL of the 1:1000 epinephrine. Despite only a small amount of the wrong concentration of epinephrine being given the patient goes into cardiac arrest and a code is called. The code team comes and stabilizes the patient, subsequently taking her to the ICU. The patient is now on a ventilator and receiving pressors, but her vital signs have stabilized.

Enactment:

You are the second-year radiology resident, and you must go talk to the patient's husband, who is in the waiting room, and tell him what has happened.

Notes for Acting Patient:

Your wife has come into the hospital for an outpatient imaging exam (CT scan), you are expecting her to have a CT scan that takes 20 minutes but instead you have been in the waiting room for about an hour. A second-year resident comes to tell you that there has been a complication, and your wife is in the ICU. You are shocked because this was supposed to be a simple outpatient test and now your wife is on a ventilator in the ICU. You are clearly upset but remember to take your anger down a notch each time you feel like the doctor addresses your questions and is empathetic.

Scenario 2-1: Breast Imaging Set 1

Background:

A 45-year-old female presents for a diagnostic mammogram and ultrasound for a palpable mass in her left breast. Mammogram and ultrasound show a 2cm spiculated mass in the upper outer quadrant and left axillary adenopathy highly suggestive of breast cancer.

Enactment:

You are the breast imaging radiologist, and you have to discuss the findings of the imaging study with the patient as well as tell her she needs a ultrasound guided core biopsy of the mass and FNA of the axillary lymph node.

Notes for Acting Patient:

You are a 45-year-old female with 3 children under the age of 10 years old. The radiologist tells you that you have a mass in your left breast and left axillary adenopathy. The radiologist also tells you that you need a biopsy of the mass and an FNA of the lymph node. You are scared and worried you have cancer and automatically think of your 3 children and what happens if you die from this.

Scenario 3-1: Telephone Skills Set 1

Background:

You are an MSK radiologist. Your practice recently got Powerscribe for dictating and there have been some problems with reports getting lost and IT is working on it, but the problem is still occurring from time to time.

Enactment:

You are an MSK radiologist reading MR in the reading room. The phone rings and your answer to find an angry orthopedic surgeon on the other end. The orthopedic surgeon is angry because he sends his
patient for an MR of the left knee 2 weeks ago and there is still no report in the system. The

orthopedic surgeon is very angry as the patient is a VIP and the orthopedic surgeon says he is going to take his business to completing radiology practice since your practice is incompetent.

Notes for Acting Patient:

You are an orthopedic surgeon who sent your VIP patient to have an MR of their left knee 2 weeks ago. There is still no report in the system and the patient is very angry. The lack of report is delaying the patient's possible surgery. You find this situation unacceptable, and you are considering taking your business to another radiology practice because of this incident. It is important to remember that you should become less angry if the resident apologizes and offers to read and dictate the report to you ASAP.

Scenario 4-1: Pediatric Radiology Set 1

Background:

A 6-year-old patient is brought to the Emergency Department (ED) by his mother because he has been having right-lower quadrant pain and loss of appetite for 2 days. Today he developed nausea and vomiting which prompted his mother to bring him into the ED. You are the pediatric radiologist on call and the pediatric ED physician calls you to perform an ultrasound on this patient to look for suspected appendicitis. You perform the abdominal ultrasound, and you find a non-compressible appendix measuring 9mm in diameter consistent with acute appendicitis. The mother is in the room with her son as you are scanning and is asking what is wrong with her son and what you see on the ultrasound.

Enactment:

You need to give the mother of the patient the results of the ultrasound and discuss them with her.

Notes for Acting Patient:

You are the mother of a 6-year-old child who has abdominal pain, loss of appetite, and nausea/vomiting. You brought your son to the Emergency Department (ED), and he has just had an ultrasound of his abdomen. The ED physician told you that it is probably constipation and that you can take your child home after the ultrasound is done. No one told you what the ultrasound is looking for or that it could be serious (i.e. require surgery). The radiologist tells you it is appendicitis, and you are very concerned. You ask what appendicitis is and how it is treated. When you find out he needs surgery you are very upset because he is just a little boy, and you are worried about him having surgery.

Scenario 5-1: Cancel/Change

Procedure Set 1 Background:

A 60-year-old female has a screening mammogram at an outside facility which shows new calcifications in her left breast. The patient has magnifications views at the outside facility and the radiologist there recommends a stereotactic biopsy of the calcifications. The patient

presents to your facility for a stereotactic biopsy. You consent the patient and the patient is placed on the stereotactic biopsy table and a scout image is obtained. You look at the scout image and the calcifications are all clearly displaying layering, consistent with benign milk of calcium. On re-review of the magnification images some of the calcifications were displaying layering at that time. As the radiologist you cancel the biopsy because the calcifications are clearly benign.

Enactment:

You as the radiologist need to explain to the patient that you are canceling the stereotactic biopsy recommended by the outside radiologist because the calcifications are benign and do not require biopsy.

Notes for Acting Patient:

You are confused about why the radiologist at the other facility was worried about the calcifications and thought they needed a biopsy and now you are telling her they are benign and do not need a biopsy. You wonder how you know which radiologist is correct? You are upset that you are getting conflicting information from the two radiologists and want to know how this happened.

Scenario 6-1: Radiation Risk Set 1

Background:

A 22-year-old male presents to the Emergency Department (ED) with new abdominal pain, fever, and nausea and vomiting. The patient is found to have an elevated white count, and the ED physician suspects possible Crohn's disease with an abscess. The ED physician orders an ultrasound which is normal. The ED physician orders a CT scan to look for signs of Crohn's disease or an abscess given the negative ultrasound and his high clinical suspicion. The patient previously read about CT scans and too much radiation on the internet and expresses concern about having CT scan to the CT technologist and asks to speak to the radiologist. You are the radiologist on call and the CT technologist comes to you and tells you the patient would like to speak with you about getting a CT scan and radiation risk. You look up the patient and see that the patient has not had any previous CT scans.

Enactment:

You must discuss the risks associated with having a CT scan with the patient, answer his questions and come up with an appropriate plan.

Notes for Acting Patient:

You are concerned about having a CT scan after reading about the risks of radiation from CT scans on the internet. You want to know if there are any alternatives to a CT scan to diagnosis your current condition. You also want to know what the real risks of a CT scan. You should become more amenable to the study once the actual risk has been explained to you.

Simulation Scenarios Set 2

Scenario 1-2: Error and Apology Set 2

Background:

A 35-year-old female who had a C-section 2 weeks ago presents for a CT guided drainage of a pelvic abscess. Given her recent post operative state and infection it is hard to differentiate bowel from the abscess on the pre-procedure images. As the radiologist you target what you think is the abscess and place a pigtail catheter in it. While the CT technologist is performing the post procedure scan one of your colleagues comes in and happens to see the images and tells you that he thinks you put the pigtail catheter in the bowel, not the abscess. When you inject some contrast into the catheter it confirms that the catheter is in the bowel not the abscess. You subsequently place a second catheter into the abscess. For the time being you leave the malpositioned catheter in place. The consequence of this malpositioned catheter is an additional catheter for 8 weeks, possible enterocutaneous fistula, and possible surgery.

Enactment:

You need to tell the patient that you placed the catheter in the bowel by mistake.

Notes for Acting Patient:

You are angry because now you have 2 catheters, and one is in the wrong place. You are also upset because you have a new baby at home and this error may result in you having to have more surgery. You are clearly upset but remember to take your anger down a notch each time you feel like the doctor addresses your questions and is empathetic.

Scenario 2-2: Breast Imaging Set 2

Background:

A 56-year-old female who recently had a screening mammogram is called back for magnifications views of calcifications in her right breast. Magnification views show grouped amorphous calcifications. You are recommending a stereotactic biopsy for these indeterminate calcifications and must discuss these findings and the need for biopsy with the patient.

Enactment:

The radiologist discusses the findings of the magnification views with the patient and the need for stereotactic biopsy of the calcifications with the patient.

Notes for Acting Patient:

You are finding out you have calcifications in your right breast that need biopsy. You are worried about not only having the biopsy but also scared that the calcifications might be cancer.

Scenario 3-2: Telephone Skills Set 2

Background:

A neurosurgeon has a patient in step down with an acute change in mental status and orders a head CT at 9pm. The inpatient CT scanner is down thus there is only one operating CT in the hospital, in the Emergency Department (ED). This one CT needs to service all the in-patients and the ER patients. It is an extremely busy night in the ED with multiple traumas coming in requiring CT scan. Due to the high ED volume the inpatient scans are not getting priority. It is now midnight, and the head CT scan the neurosurgeon ordered at 9pm has still not been done.

Enactment:

The phone rings in the ED radiology reading room, the on-call radiologist answers it and on the other end is the neurosurgery attending on call who is irate because the head CT he ordered 3 hours ago has not been done yet.

Notes for Acting Patient:

You are a neurosurgeon on call for the night and your patient with acute mental status changes has been waiting 3 hours for a head CT and you are irate when you call the radiologist on call to see why the head CT has not been performed. You have a declining patient who should be a priority and needs a head CT, and you find it unacceptable that the head CT has not been done for 3hrs. You should become less angry if the resident apologizes for the delay in the scan and offers to expedite the patient getting
the scan right now.

Scenario 4-2: Pediatric Radiology Set 2

Background:

An 8-month-old female has been unusually fussy for the last couple hours. The baby will start crying and pulling her knees up then is fine then 15-20 minutes later the crying occurs again. The baby's mother went to change the baby's diaper and found blood and mucus. The mother panics and brings the baby to the Emergency Department (ED). The pediatric ED physician suspects intussusception and orders an abdominal ultrasound. You are the pediatric radiologist on call, and you perform an abdominal ultrasound looking for intussusception. While performing the ultrasound you see a target sign classic for intussusception.

Enactment:

You must tell the mother of the 8-month-old baby that the baby has intussusception and discuss this with her. Explain the intussusceptions reduction procedure, as well as the risk and benefits.

Notes for Acting Patient:

Your baby has been sick, and you came to the ED after finding blood in the baby's diaper. You are extremely anxious and scared. The pediatric radiologist tells you your baby has intussusception and that the baby will need a procedure to reduce the intussusception. You are scared because your baby is so little and needs a procedure.

Scenario 5-2: Change/Cancel

Procedure Set 2 Background:

A 45-year-old male has a thyroid ultrasound at an outside hospital which finds a 1.5cm nodule in the right lobe of the thyroid gland for which the outside radiologist recommends FNA. The patient presents to your hospital for FNA of the right thyroid nodule. The patient brings the outside images, and you review them before doing the procedure. You are not convinced that the nodule is real, and you note that they were using the incorrect type of ultrasound probe at the outside hospital. You go into the procedure room and rescan the patient's thyroid. There is no nodule, thus you need to cancel the procedure.

Enactment:

You as the radiologist need to tell the patient that you are canceling the procedure because there is no nodule to FNA.

Notes for Acting Patient:

You are confused because you do not understand how a thyroid nodule can just disappear. You also question if this new radiologist is correct or if the other radiologist is correct. You are nervous because what if this radiologist is wrong and there is a nodule. You may be angry that the outside radiologist was wrong and wasted your time coming for an FNA you did not need.

Scenario 6-2: Radiation Risk Set 2

Background:

A 65-year-old female with a history of breast cancer in the right breast presents for her diagnostic mammogram. The radiologist sees new calcifications in the left breast and tells the technologist to get magnification views of these calcifications. The technologist tells the patient she needs additional magnification views, and the patient says she does not want to have additional views because of the extra radiation. The technologist comes and tells you this and you go talk to the patient.

Enactment:

You must discuss with the patient that the radiation risk from the magnification views is minimal and that you need these views to determine if the calcifications need a biopsy or not.

Notes for Acting Patient:

You are concerned about having extra mammogram views because of the extra radiation you will get from them. You are especially concerned because you had a lumpectomy and radiation therapy for your right breast cancer and want to minimize the amount of radiation you get due to this. You should become more amenable to the study once the actual risk has been explained to you.

KalRad: Kalamazoo Communication Skills Assessment Tool – Radiology

How well does the participant do the following:

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
A. Overall ability to establish rapport					
Greetings and shows interest in the patient and the patient's family	○	○	○	○	○
Uses words that show care and concern throughout the interview	○	○	○	○	○
Uses tone, pace, eye contact, and posture that shows care and concern	○	○	○	○	○
Responds explicitly to patient and family statements about ideas and feelings	○	○	○	○	○
Comments about establishing rapport:					

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
B. Overall ability to open the discussion					
Allow patient and family to state their understanding of why they are here	○	○	○	○	○
Asks "is there anything else?" or another open-ended question to allow space for patient to express concern	○	○	○	○	○
Explains and/or negotiates an agenda or reason for the visit	○	○	○	○	○
Comments about opening the discussion:					

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
C. Overall ability to seek/elicit further information					
Addresses patient and family statements using open-ended questions	○	○	○	○	○
Clarifies details as necessary with more	○	○	○	○	○

specific or "yes/no" questions					
Summarizes and gives family opportunities to correct or add information	○	○	○	○	○
Transitions effectively to additional questions	○	○	○	○	○
Comments about addressing the patient's and family statements using open-ended questions:					

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
D. Overall ability to understand the patient's and family's perspectives					
Asks about/addresses life events, circumstances, other people that might affect how they receive or process the information being conveyed	○	○	○	○	○
Elicits/allows space for patient's and family's beliefs, concerns, expectations about their immediate situation	○	○	○	○	○
Comments about understanding the patient's and family's perspectives:					

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
E. Overall ability to share information					
Assesses patient's and family's understanding of problems and desire for more information	○	○	○	○	○
Explains using words that family can understand	○	○	○	○	○
Clearly conveys immediate next steps	○	○	○	○	○
Asks if family has any questions	○	○	○	○	○
Comments about sharing information:					

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
F. Overall ability to reach agreement					
Includes/assists family in any immediate decisions that must be made	O	O	O	O	O
Checks for mutual understanding of immediate further steps to be taken	O	O	O	O	O
Asks about acceptability of immediate further steps to be taken	O	O	O	O	O
Identifies additional resources as appropriate	O	O	O	O	O
Comments about reaching agreement:					

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
G. Overall ability to communicate accurate information					
Accurately conveys the seriousness of the patient's condition	O	O	O	O	O
Explains other participating clinicians' input	O	O	O	O	O
Clearly presents and explains possible immediate next steps	O	O	O	O	O
Gives enough information to assist with informed decision-making	O	O	O	O	O
Comments about communicating accurate information:					

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
H. Overall ability to demonstrate empathy					
Clinician's demeanor is appropriate to the nature of the conversation	O	O	O	O	O
Shows compassion and concern	O	O	O	O	O
Identifies/labels/validates patient's and family's emotional responses	O	O	O	O	O

Responds appropriately to patient's and family's emotional cues	○	○	○	○	○
Comments about demonstrating empathy:					

	1 Poor	2 Fair	3 Good	4 Very Good	5 Excellent
I. Overall ability to provide closure					
Asks if the patient and family have questions, concerns or other issues	○	○	○	○	○
Summarizes	○	○	○	○	○
Clarifies/reiterates the immediate next steps—where they are going and/or who they will see next	○	○	○	○	○
Provides appropriate contact information—for radiologists or clinical team—if interim questions arise	○	○	○	○	○
Acknowledges patient and family, and closes interview	○	○	○	○	○
Comments about providing closure:					

Contact: Stephen D. Brown, MD - Stephen.Brown@childrens.harvard.edu.

What did this clinician do the best at? (Please pick three choices)

- ☐ Builds a Relationship
- ☐ Opens the Discussion
- ☐ Gathers Information
- ☐ Understands the Patient's and Family's Perspective
- ☐ Shares Information
- ☐ Reaches Agreement
- ☐ Provides Closure
- ☐ Demonstrates Empathy
- ☐ Communicates Accurate Information

Why did you choose those particular answers?

What could this clinician improve on? (Please pick three choices)

- ☐ Builds a Relationship
- ☐ Opens the Discussion
- ☐ Gathers Information
- ☐ Understands the Patient's and Family's Perspective
- ☐ Shares Information
- ☐ Reaches Agreement
- ☐ Provides Closure
- ☐ Demonstrates Empathy
- ☐ Communicates Accurate Information

What could they have done better?

Learning About the Patient Experience Module

Patient-centered Care Patient Letters Facilitator's Guide

What makes a physician truly effective in the eyes of a patient? Beyond clinical knowledge and technical skills, patients consistently value qualities such as empathy, active listening, integrity, and respect. These human-centered attributes build trust and form the foundation of meaningful, therapeutic relationships.

This session invites you to explore the values and qualities that matter most to patients—and to reflect on your own beliefs, behaviors, and aspirations as a future physician. By gaining insight into patient perspectives and examining your own professional identity, you will be better equipped to align your practice with the principles of patient-centered care.

By the end of this session, you will have a deeper understanding of the professional attributes that not only meet patient expectations but also enhance your development as a compassionate, reflective, and trusted physician.

1. The goal of the session is to better understand what qualities patients value in physicians and to reflect on one's own values and beliefs to become a patient-centered physician. By the end of the session, trainees will learn which professional attributes will likely best serve them as physicians.

2. Prior to the Session:

    a. Trainees will read the three attached letters that were written by patients about their deceased physician to the surviving spouse. Trainees will be instructed to spend time reflecting on what qualities patients value, whether these or other values are of importance, how to apply these values to the practice of radiology, and how to develop these skills during residency.

3. Session (approx. 90 minutes):

    a. Circle the chairs to facilitate openness and equality.
    b. Faculty is a facilitator, not leader.
    c. Discussion focus:
        i. Respect for patient values and preferences
        ii. Coordination of care
        iii. Physical and emotional comfort
        iv. Continuity of care
    d. Session format:
        i. During the first half of the session discuss the assigned reading (patient letters).
        ii. During the second half of the session discuss case scenarios utilizing the thoughts discussed in the first half.
        iii. Provide open discussions for trainees to discuss any personal patient experiences.
        iv. End – faculty facilitator summarizes themes discussed.

4. Part 1: Discussion of the patient-centered letters

    Typical facilitating questions:

"What general thoughts did you have about the letters?"
"What qualities did you like or dislike about the doctor-patient relationship described in the letters?"

"Are any of these qualities good or bad in radiology context?"

5. Part 2: Group discussion of the radiology-specific case scenario provided below or other appropriate scenario.

Patient-entered Care Letters

Patient-Centered Care Letters to Mrs. S, June 2006

Dear Mrs. S. and family,

I am so thankful that my family was privileged to have Dr. S. in our lives. It was truly a blessing from God. Dr. S. has been my family's surgeon for 40 years. When my Mom was diagnosed with cancer in 1997, it was Dr. S. with his superior intellect, kindness, and honesty who helped us to cope as a family until she passed in 1999 just 3 months after Dad died. I will never forget how Dr. S. encouraged her to continue working and living each day to the fullest. In the last month of her life he was like a Dad to me. His care did not stop when she died. He made himself available to me to talk and cope with my loss. How well I remember when Dr. and Mrs. S. were invited to the Oscars by composer John Barry. Dr. S. along with two other doctors, saved his life. John won the Oscar for the music he composed for the movie, "Dances with Wolves." When he accepted his award, he thanked the 3 doctors by name and the Academy. What a thrill it was that such a humble man as Dr. S. was now known to the world. Please know that Dr. S. will live on in the hearts of so many of us who were his patients. We are lost but I take comfort in knowing that he did not suffer and that for sure he is with the Lord. I know we will meet again.

With love,

Dear Mrs. S.,

I just felt that I should write and let you know how important Dr. S. was to me and my mother. It was approximately twenty-six years ago when I met Dr. S. and became his patient. At that time I needed medical attention because of a nasty cut on my chin. It was a nurse in the Emergency Room who referred him. The result of twelve stitches he administered was so successful that I returned to Dr. S. for other minor surgery on my face. Sixteen years ago when my mother needed breast surgery, it was only natural that we chose your husband to perform the operation. In time it proved to be a success because the cancer never returned. As the years passed, my mother came to trust her doctor's decisions regarding her health. She looked forward to her visits to the doctor's office more and more in recent years. She especially found comfort and reassurance when she unburdened her anxieties to Dr. S. He had a wonderful way of making her feel much better as he chuckled when he empathized with her. My mother is now ninety-two years old. I do believe that the medical care she received from Dr. S. has contributed to her long life. I must tell you; she took the news of his death very badly when she called to make her customary appointment. For sure we will miss him very much. I do feel comforted by the fact that he was our doctor for so many years.

We send our sincere sympathy to the family.

Dear Mrs. S.

I am happy to have this opportunity to express my utmost gratitude to you and your family for having had Dr. S. as our family physician. The most wonderful humanitarian doctor that we will ever encounter. I probably could write a book myself about Dr. S. as we have shared many memories. I will only touch a few. I was introduced to Dr. S. in September 1987, by my brother N.L. as a doctor with golden hands. My mother at the time was diagnosed with ovarian cancer, I was ready to have her

cared for by a gynecologist in Manhattan. My brother insisted that our mother would merely be a number but with Dr. S., she would not only have the best care but would be treated like a family member. N. was so right, and we became a part of his family. He always gave my mother comfort and hope. I recall one day at Best Care Hospital a patient asked me if Dr. S. was my mother's son. When I questioned her curiosity, she said: "I have never seen such a devoted doctor, he checks on her three times a day, I figured they had to be related." Such devotion to patients is indeed rare. In 1999, I remember Dr. S. with so much respect, his compassion as a doctor was remarkable. I had asked for his help with my niece that was born here, but moved to Italy after her father (my brother) died, she had no medical insurance in the U.S. She was diagnosed as having cancer of the spleen. After he examined her, he was 100% sure that she did not have cancer. He helped me get Medicaid for her. After several weeks of testing by several other doctors, my sister-in-law informed me that my niece was going to be taken care of by a doctor at Good Care Hospital. Dr. S. did not agree with her decision. He called me on a Sunday night on his way home from visiting his daughter in Massachusetts. He told me that he was sad that my niece at such a young age would have to go through unnecessary procedures and informed me that he would take care of her gratis. I was so touched by his kindness and generosity, where do you find a doctor or anyone that would do anything for free? I thanked him with all my heart, but unfortunately it was not my decision to make. Dr. S. was so right, at Good Care Hospital not only did they remove my niece's spleen, but they did exploratory surgery when they found no cancer. At 25 she is full of scars. He always asked me about her.

I have so many other stories, but the last one is the most recent. On June 3, 2006, my father G.L., a patient of Dr. S., was celebrating his 100th birthday and my youngest son J. was graduating from high school. On June 2nd J. developed a rash on his body. Four years ago, he had the same kind of rash and was diagnosed with Steven Johnson disease. Doctors at S. Hospital concluded that he was allergic to Zythromax. This time the doctor had given him Amoxicillin. Upon calling his doctor, I was informed that he could not help as he was going to a party and to take my son to the emergency room at a hospital. It was 10:30pm when we were on our way to Best Care Hospital. My first instinct was to call Dr. S. My oldest son said to me, "Let's be reasonable, it's 10:30pm no doctor is going to call you back at this time." I told my son, "You don't know Dr. S., he will call me back within 15 minutes." Both my sons were shocked when Dr. S. called me on my cell and told me exactly what to expect in the emergency room, and if I was not satisfied, to call him back and he would be at the hospital within minutes. I felt reassured by his kind words and guidance, as my son's life was in danger. All went well. My son J. attended his graduation and was at my Dad's 100th celebration. On Monday June 5th Dr. S. called me to find out how my son was doing. J's doctor never even called. Dr. S. was a great man.

The last time I saw him was on June 9th. I always joked selfishly with J. (his administrative assistant) and Dr. S. about retiring, how we would all be in a state of turmoil if he did, and sure enough this is the way we feel, even after 2 months of hearing the devastating news. I need to thank Dr. S. for helping my niece S. as without Dr. S. our beautiful N. would never have been born. Thank you for your patience with my 100-year-old father and for taking great care of us and many other members of my family.

You are truly missed Dr. S. Wishing you strength, peace, happiness and health so that you may enjoy your family.

Respectfully,

Handling the Unexpected or Poor Outcome Facilitators Guide

Delivering unexpected or poor outcomes to patients is one of the most challenging responsibilities faced by healthcare professionals. These conversations require not only clinical knowledge but also a deep understanding of empathy, ethics, and effective communication strategies. How we share difficult news can significantly impact a patient's emotional well-being, their trust in the care team, and their overall healthcare experience.

This module is designed to equip healthcare providers with the tools and techniques necessary to navigate these conversations with sensitivity, clarity, and compassion. You will explore key principles of honest disclosure, patient-centered communication, and emotional support, while also reflecting on your own role in fostering a culture of transparency and trust.

Suggested Session Length: 90 Minutes

Before the Session:

1. The session should occur after patient letter discussion.
2. No pre-work is required for this session.
3. Prepare copies or provide during class the scenarios:
   Handling the Unexpected or Poor Outcome _ Student Scenarios document.
4. Guidelines during group discussion:
   a. Circle chairs or prepare area to facilitate openness and equality.
   b. Faculty is facilitator, not leader.

During the Session:

1. Introduce the topic:

   "Just like other physicians, radiologists may encounter challenging situations where a patient's outcome has been less than optimal. By the end of the session, we hope to improve patient communication skills and understand when apology may be helpful during patient care."

2. Provide the 7 radiology-specific case scenarios of unexpected/poor outcomes.

3. Begin group discussion:

   a. Discuss each of the scenarios.
   b. Focus the discussion on the following:
      i. Respect for patient values and preferences.
      ii. Physical and emotional comfort of the patient.
      iii. Feelings of the radiologist, attending or other professional.
   c. Near the end of the session, open discussion for learners to discuss any personal patient experiences.

   Typical facilitating questions:

   "What general thoughts did you have about the scenario?"

"What roles do the principles of patient-centered care play in these situations?" "How would you handle this situation?"

"Has this type of situation ever happened to you?"

4. End – faculty facilitator summarizes themes discussed.

Handling the Unexpected or Poor Outcome

Just like other physicians, radiologists may encounter challenging situations where a patient's outcome has been less than optimal. These situations place physicians at risk and how they are handled can directly impact a patient's care either positively or negatively. In this session, we will discuss several radiology-specific scenarios where unexpected or poor outcomes have occurred and how best to handle them. By the end of the session, we hope to improve patient communication skills and understand when apology may be helpful during patient care.

Instructions:

For each of these scenarios, several possible responses are included, some or none of which may be appropriate. Consider each scenario and select the best response(s) for group discussion.

Radiology-specific scenarios:

Scenario 1

A trainee and an attending both missed a fracture that could have been treated with a cast. The patient then returns several weeks later with a displaced fracture that now requires surgery. What should you do?

a. Do not mention the previous study as a comparison.
b. Visit the patient and apologize profusely for making an error.
c. Say nothing to anyone.
d. Contact risk management about what happened.

Scenario 2

A trainee pre-dictated a chest radiograph and failed to detect a subtle nodule in the lung apex. The attending points out the finding and suggests that the patient returns for an apical lordotic view or dedicated chest CT. The trainee makes a note of this change, but in the chaos of multiple telephone calls, the piece of paper is inadvertently misplaced, and no change is made to the dictated report. Six months later, the patient returns with a large peripheral lung mass. What should the trainee do?

a. Do not mention the previous study as a comparison.
b. Mention, in the area of the now-obvious mass, there was a questionable nodule on the previous image.
c. Describe the findings on the current study with no mention of whether there has been a change.
d. Visit the patient and apologize profusely for making an error.
e. Say nothing to anyone.
f. Contact risk management about what happened.

Scenario 3

A high-risk patient has been undergoing yearly mammography, and no abnormality has been detected. However, on the most recent study, you notice an asymmetry which clearly has been there for at least 4 years but to your eye, is suspicious. You recommend a biopsy which confirms cancer. The patient asks you whether it was on the prior mammogram. How should you respond?

a. Tell the patient that it was not visible.
b. Tell the patient that the asymmetry was there but "missed".
c. Apologize to the patient that it was "missed".
d. Explain how in retrospect, it can be easy to "see" the cancer, but it probably could not have been picked up prospectively.
e. Contact risk management about what happened.

The patient now wants to know why no one told her to get MR screening since her lifetime risk is > 25%. She is convinced that the cancer would have been found sooner if she had undergone the MR screening. What should you say to the patient?

Scenario 4

A trainee injects contrast material into a patient with no allergic history, but the patient has an anaphylactic reaction and dies. What should the trainee do?

a. Let someone else (such as the technologist, attending, or primary care physician) talk to the patient's family.
b. Visit the family and express deepest sympathy and explain that this was a rare complication that could not have been anticipated.
c. Say nothing to anyone.
d. Contact risk management about what happened.

Scenario 5

The referring physician orders a non-contrast CT on a patient for staging of a malignancy (but does not specify the exact type). The technologist asks the covering trainee for a protocol and the trainee requests a contrast-enhanced study. Contrast is administered. The study is dictated appropriately. Two days later, the referring physician contacts you and is very upset because you changed his request, and he tells you the patient now cannot receive their radioactive iodine treatment for their thyroid cancer for at least several months. What should you do?

a. Call the patient and apologize profusely.
b. Explain to the referring physician how imaging protocols are decided.
c. Apologize to the referring physician.
d. Contact risk management about what happened.

Scenario 6

A trainee performed their first MR-guided core biopsy of a suspicious enhancing area in the right breast. At the end of the procedure, the patient experienced some bleeding, but compression for 10 minutes seemed to give adequate control. The patient was sent home. Two hours later, the patient calls saying that blood is soaking through her bandage and clothing. You tell her to apply pressure for

10-15 minutes and if the bleeding does not stop to go to the emergency room. You do not hear back from the patient. The biopsy comes back positive for mucinous cancer, so you appropriately recommend surgical excision of the area. Two weeks later, you overhear one of the breast surgeons complaining that the surgery is delayed due to the large hematoma and now there is concern that the entire area may be seeded with tumor. What should you do?

a. Explain to the referring physician that hematomas are not uncommon.
b. Explain to the patient that this was an expected complication.
c. Apologize to the patient because she had such a large hematoma and that her surgery is delayed.
d. Say nothing to anyone.
e. Contact risk management about what happened.

Scenario 7

A trainee inadvertently punctures a major abdominal vessel during an image-guided interventional procedure. The patient survives emergency surgery and a prolonged hospital course. What should the trainee do?

a. Visit the patient and explain how sorry they are is for this iatrogenic complication.
b. Say nothing to anyone.
c. Contact risk management about what happened.

Communication Curriculum Simulation Post-Survey

Regarding your simulation experience today, please rate the following statements:

1. Practicing my communication skills boosts my ability to perform/communicate.	☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree ☐ Not Applicable
2. Educational sessions using medical simulation are enjoyable.	☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree ☐ Not Applicable
3. It is OK to make mistakes using simulated patient experiences.	☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree ☐ Not Applicable
4. I receive useful educational feedback from the training sessions.	☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree ☐ Not Applicable
5. The acting patients simulate situations realistically.	☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree ☐ Not Applicable
6. Practicing my communication skills boosts my self-confidence.	☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree ☐ Not Applicable

7. Practice sessions in the simulations are a good use of my time.	☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree ☐ Not Applicable
8. Practice sessions in communication skills should be a required component of clinical training.	☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree ☐ Not Applicable
9. Practicing my communication skills with simulated patient encounters help me become a better doctor.	☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree ☐ Not Applicable
10. The controlled environment in the simulations help me focus on challenging patient interactions.	☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree ☐ Not Applicable
11. Difficult patient encounters presented in the simulations are engaging.	☐ Strongly Disagree ☐ Disagree ☐ Agree ☐ Strongly Agree ☐ Not Applicable
Comments/observations from your simulation experience today?	

Coming Out of the Dark: A Curriculum for Teaching and Evaluating Radiology Residents' Communication Skills Through Simulation

Carolynn M. DeBenedectis, MD, Jean-Marc Gauguet, MD, PhD, Joseph Makris, MD, Stephen D. Brown, MD, Max P. Rosen, MD, MPH

INTRODUCTION

The purpose of this pilot is to develop and implement a curriculum to teach radiology residents communication skills through simulation. Communication skills are a core competency for which radiology residents must be evaluated. As the practice of radiology evolves into a more patient-centered model, the importance of effective communication skills will continue to increase. There is evidence that effective communication skills can be acquired through appropriate training [1]. However, very few residency programs provide formal training and evaluation programs for teaching effective communication skills. The task of training radiology residents in effective communication skills is challenging, as this cannot be achieved by merely adding additional didactic lectures to our standard curriculum. Simulation has been shown to be an effective, and long-lasting, method for teaching physicians communication skills [1]. To our knowledge, there is no program that has been created to both teach and assess radiology residents' communication skills [2].

METHODS

Creating the Curriculum

The curriculum was developed and run in collaboration with our interprofessional Center for Experiential Learning and Simulation (iCELS) staff, who helped plan out the simulations, develop the teaching module, the individual scenarios, pre- and postsimulation evaluations, and resident evaluations. A teaching module was created based on the Gap-Kalamazoo Communication Skills Assessment Form (GKCSAF). It was designed as a self-teaching module using 19 PowerPoint slides (Microsoft, Redmond, Washington) that reviewed the essential elements of effective communication.

Two sets of six common radiology communication scenarios were created: (1) disclosing and apologizing for a medical error, (2) conveying bad news in breast imaging, (3) canceling an image-guided procedure, (4) radiation risk counseling, (5) communicating results in pediatric imaging, and (6) talking to an angry referring physician on the telephone. Two different versions of each scenario were needed for the pilot, as there would be a pretraining simulation (simulation 1) and a posttraining simulation (simulation 2). Each scenario included background information, enactment, and notes to the acting patient. A radiology faculty member trained in communication skills (faculty evaluator) and an acting coach coached each acting patient before the simulations about each scenario to make the simulation as realistic as possible.

A survey was administered postsimulation to assess how the residents felt about the training experience, as well as to assess any potential impact of the training on their comfort level with their communication skills (Appendix). An evaluation form, based on the GKCSAF, was also created to rate each resident on his or her competency on a 5-point Likert scale (1 = poor to 5 = excellent). The form included the ability to enter free text to allow comments on positive actions and areas to improve [3].

Implementing the Curriculum

The study population was composed of first-year (N = 5) and fourth-year (N = 3) radiology residents (postgraduate year 2 and postgraduate year 5). Residents each participated in two rounds of simulations as part of the pilot study (Fig. 1). The first simulation session was conducted before any communication skills training. Before participating in the second set of simulations, the residents participated in the debriefing sessions and underwent

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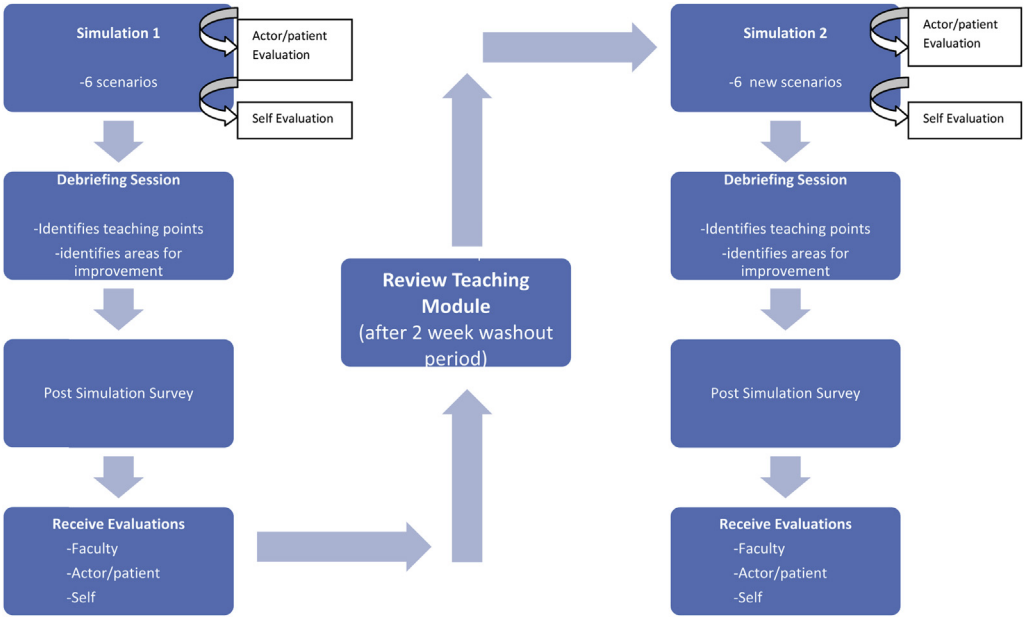

Fig 1. Flow chart describing the simulation-based communication skills curriculum.

our communication skills training module (Fig. 1).

The patient-actors prepared by reviewing a written script and attending a 4-hour training session. The training session was staffed by a professional acting coach, as well as one of the faculty raters, to allow for adequate preparation for the scenarios.

Before the first simulation, the residents completed an anonymous electronic survey about communication/simulation using Learning Space (CAE Healthcare, Quebec, Canada) software, which allows integration of the audiovisual component of simulation-based learning with performance assessment tools for health care education. The simulation took place as follows: (1) the resident is given 5 minutes to read the details of the scenario on a computer outside the simulation room before the simulated scenario, (2) the resident enters the simulation room and begins the simulation with the patient-actor, (3) simulation concludes and the resident leaves the simulation room, (4) the resident completes a self-evaluation and the patient-actor fills out an evaluation of the resident's performance (10 minutes). Twelve minutes were allocated for each scenario. The residents all participate in the simulation at the same time; however, each resident is doing a different scenario. Thus when resident 1 is doing scenario A, resident 2 is doing scenario B, etc. After completing each scenario, the resident advances to the next station, until all residents have participated in all six scenarios.

During the simulation, a single faculty evaluator watched one video for each scenario, involving different residents, and made written notes on the resident's performance. The video was then shown during the debriefing, in conjunction with the feedback from the faculty member. Immediately after completion of all six scenarios, the residents returned to the debriefing room to watch the six videos in which they participated. Teaching points from each debriefing were identified and recorded. Each resident participated in the six communication scenarios with trained professional actor/patients. Resident performance in each scenario was evaluated by the three faculty evaluators after the simulation concluded. The residents also performed self-evaluations after each scenario. The residents received their actor/patient and faculty evaluations for review before the next simulation.

After a 2-week washout period, the residents participated in a second simulation with six new scenarios. The second set of new scenarios covered similar topics to the first. The residents again performed a self-evaluation and were also evaluated by both the patient-actors and faculty. A second debriefing session ensued. Again, the residents received their patient-actor and faculty evaluations for review. After both parts of the simulation/training were completed, the residents again filled out the anonymous electronic survey.

OUTCOMES

The results of the postsimulation survey showed that all eight residents agreed that practicing their

communication skills boosted their ability to communicate and that the educational feedback from the training sessions was useful, which contradicts their self-evaluations (Appendix). Seven of the eight residents agreed that practicing their communication skills boosted their self-confidence and that practicing their communication skills with simulated patient encounters helped them become better doctors (Appendix). After training, resident scores improved for all individual scenarios, except breast imaging. The "cancel procedure" and "radiation risk discussion" scenarios saw the largest improvement in scores. The average GKCSAF score for all residents improved from 74% (range 65%-82%) to 79% (range 66%-86%) (Fig. 2). As part of the concept of a "360" evaluation, residents were evaluated by the faculty and the patient-actors, as well as by completing a self-evaluation. The average overall score provided by the faculty evaluator increased from 75% to 85%. The average overall score provided by the patent-actors increased from 80% to 83%. The average self-reported score did not change: average of 71% pretraining and 71% posttraining.

Increasingly, radiologists are being encouraged to communicate directly with patients and referring clinicians. The quality of these communications has the potential to improve patient satisfaction [4]. Traditionally, communications training has not been a routine component of radiology resident education. The ACGME now requires that communication and interpersonal skills training be incorporated into the resident curriculum and evaluated for each resident. In our experience, communications training is best accomplished through simulation. The effects of simulation-based communication skills training have been shown to be long lasting, with evidence of the training still seen in physicians' practice 12 months posttraining [1]. Additional communication skills training has been shown to change physicians' attitudes and beliefs about the importance of effective communication in patient care, thus increasing their use of effective communication skills in clinical practice [5]. Even with this evidence and the new emphasis to increase patient contact and communication, little communication skills training has been implemented in radiology at the residency level. Lown et al [6] demonstrated that an educational curriculum incorporating communication skills training for communicating mammography results to patient-teachers (also known as patient-actors) and evaluation of these skills can be implemented in a radiology residency program.

However, participating in an isolated simulation alone is not sufficient to truly improve resident communication skills, as a key aspect of simulation-based training is the postsimulation debriefing. During the postsimulation debriefing session, the resident's performance is reviewed and teaching points identified. Postsimulation debriefing sessions have been identified as a feature of simulation-based training that leads to effective learning [7]. The debriefing session allows the

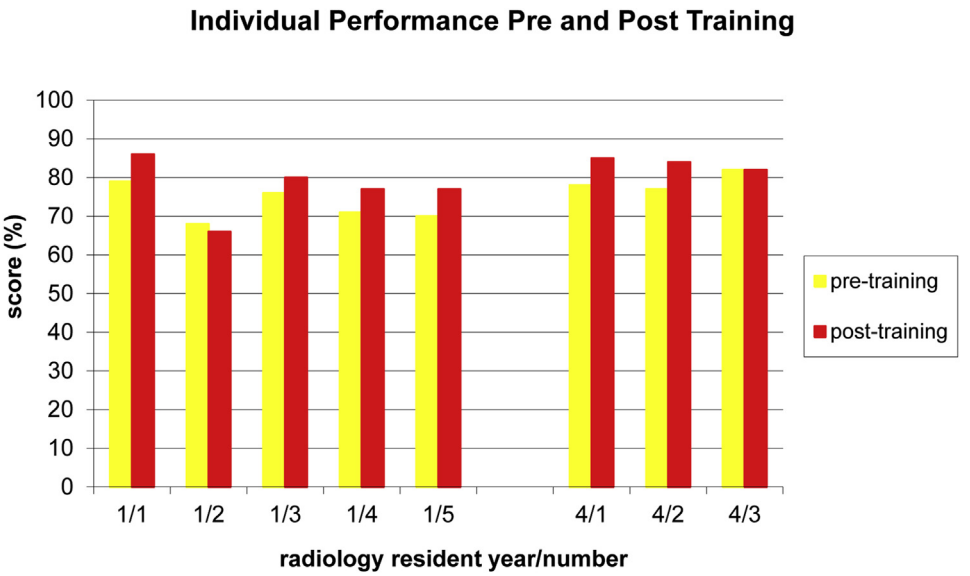

Fig 2. Individual resident overall pre- and posttraining performance scores (average of all evaluators).

residents to learn what they did well and what they can improve on.

Another important mode of feedback for the residents is a written evaluation. The residents in our workshop received written feedback from both the faculty evaluator and the acting patient for each simulated scenario. The written evaluation is in the form of the GKCSAF, by which residents are rated on how well they executed the nine essential elements of communication. Written feedback on the GKCSAF not only provides feedback in qualitative form, compared with simple verbal feedback, but also provides the residency program director a quantitative assessment of the resident's communication skills and facilitates compliance with the ACGME requirements for residency programs to both train and evaluate their residents' communication and interpersonal skills. Residents also perform a self-evaluation after each simulated scenario. Overall, the residents had higher scores posttraining than pretraining when the faculty, patient-actors, and self-evaluation scores were averaged together (Fig. 2). It has been shown that having individual faculty, patient-actor, and self- (360-degree) evaluations are valid and reliable ways to assess a resident's competency in communication/interpersonal skills [8].

Both faculty and patient-actors saw an improvement in the residents' communication skills after training. When analyzing resident scores based on each individual scenario, we found that the posttraining score improved compared with the pretraining score for all but the breast imaging scenario. Interestingly, the residents scored themselves lower on both pre- and post-simulation evaluations than the faculty or patient-actors. Despite their self-evaluation scores not reflecting an improvement after training, posttraining surveys showed that all eight residents agreed that practicing their communication skills boosted their ability to communicate and that the educational feedback from the training sessions was useful, which contradicts their self-evaluations. Seven of the eight residents agreed that practicing their communication skills boosted their self-confidence and that practicing their communication skills with simulated patient encounters helped them become better doctors. These results echo those found in the literature which states simulation helps improve communication skills and boosts self-confidence in physicians' ability to communicate [9].

In conclusion, simulation is a promising method for teaching and evaluating residents' communication skills.

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APPENDIX

Results of the Posttraining Survey

Survey Question	Strongly Agree	Agree	Disagree	Strongly Disagree	N/A
1. Practicing my communication skills boosts my ability to perform /communicate	3	5			
2. Educational sessions using medical simulation are enjoyable	2	5	1		
3. It is ok to make mistakes using simulated patient experiences	5	2		1	
4. I receive useful educational feed back from the training sessions	5	3			
5. The acting patients simulate situtations realistically	2	6			
6. Practicing my communication skills boosts my self-confidence	2	5	1		
7. Practice sessions in the iCELS are a good use of my time	2	5	1		
8. Practice sessions in communication skills should be a required component of clinical training	3	4	1		
9. Practicing my communication skills with simulated patient encounters helps me become a better doctor	3	4	1		
10. The controlled environment in the iCELS helps me focus on challenging patient interactions	3	5			
11. Difficult patient encounters presented in the iCELS are engaging	2	6			

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Development of a Standardized Kalamazoo Communication Skills Assessment Tool for Radiologists: Validation, Multisource Reliability, and Lessons Learned

OBJECTIVE. The purpose of this study was to develop and test a standardized communication skills assessment instrument for radiology.

MATERIALS AND METHODS. The Delphi method was used to validate the Kalamazoo Communication Skills Assessment instrument for radiology by revising and achieving consensus on the 43 items of the preexisting instrument among an interdisciplinary team of experts consisting of five radiologists and four nonradiologists (two men, seven women). Reviewers assessed the applicability of the instrument to evaluation of conversations between radiology trainees and trained actors portraying concerned parents in enactments about bad news, radiation risks, and diagnostic errors that were video recorded during a communication workshop. Interrater reliability was assessed by use of the revised instrument to rate a series of enactments between trainees and actors video recorded in a hospital-based simulator center. Eight raters evaluated each of seven different video-recorded interactions between physicians and parent-actors.

RESULTS. The final instrument contained 43 items. After three review rounds, 42 of 43 (98%) items had an average rating of relevant or very relevant for bad news conversations. All items were rated as relevant or very relevant for conversations about error disclosure and radiation risk. Reliability and rater agreement measures were moderate. The intraclass correlation coefficient range was 0.07–0.58; mean, 0.30; SD, 0.13; and median, 0.30. The range of weighted kappa values was 0.03–0.47; mean, 0.23; SD, 0.12; and median, 0.22. Ratings varied significantly among conversations ($\chi^2_6 = 1186$; $p < 0.0001$) and varied significantly by viewing order, rater type, and rater sex.

CONCLUSION. The adapted communication skills assessment instrument is highly relevant for radiology, having moderate interrater reliability. These findings have important implications for assessing the relational competencies of radiology trainees.

The American Board of Radiology and Accreditation Council for Graduate Medical Education (ACGME) include interpersonal and communication skills among the radiology-specific core competencies that must be taught and assessed during radiologic training [1–3]. Graduating trainees are expected to show competence in communicating "complex and difficult information, such as errors, complications, adverse events, and bad news" [1].

To our knowledge, no standardized validated method exists to assess such competencies within radiology. A number of radiology programs have implemented innovative communication skills exercises for their trainees that use either direct engagement with actual patients or simulations with professional actors or trained patients [4–8]. However, each program has applied somewhat different metrics for rating trainees' communication skills. The ACGME, American Board of Radiology, and others have advised that numerous approaches exist for assessing communication skills, and it seems likely that no single method will capture the full array of relational qualities that characterize patient-related communication competency [1, 2, 9]. Nonetheless, now that the ACGME Next accreditation system requires programs to provide summary reports for their residents, the development of standardized, electronic, and generalizable core competency evaluation tools has been recommended to facilitate the broadly available ACGME Milestones assessment and analysis [10].

One potential tool for achieving standardization for communication skills is the Gap-Kalamazoo Communication Skills Assessment Form (GKCSAF), a Kalamazoo Consensus Statement assessment instrument [11–

13]. The Kalamazoo Consensus Statement was developed by 21 medical education leaders and communication experts from the United States and Canada [14]. The group delineated a set of essential elements in physician-patient communication to facilitate teaching and assessment of communication skills at all levels of medical education and subsequently created the Kalamazoo Essential Elements Communication Checklist [13]. Two additional iterations of the Kalamazoo checklist followed: the Kalamazoo Essential Elements Communication Checklist—Adapted and the GKCSAF [11–13, 15–17]. The original Essential Elements Communication Checklist and the Kalamazoo Essential Elements Communication Checklist—Adapted (modification with a Likert scale) identified seven essential communication competency domains, each of which incorporated multiple specific subcompetencies [13, 14, 17]. The GKCSAF subsequently recognized nine essential domains with 34 subdomains, and it entailed a multirater method with gap analysis, which is used for individual, interdisciplinary, and team assessments [11–13, 15].

The Kalamazoo instruments have been broadly used in medical education and have been validated for various clinical circumstances [11–15, 17]. Some radiology programs have used partial items from the instrument [6] or used a Kalamazoo instrument to establish its proof of concept as a potential tool [8]. However, the instrument was developed to assess communication skills outside of radiologic practice, and its validity has not been determined specifically for radiology. This would be a key next step if the instrument is to be adapted broadly for radiology, insofar as the conversations that radiologists have with patients and the settings in which they are conducted are distinct from other clinical realms.

The purposes of this study were to adapt a communication skills assessment tool well established elsewhere in medicine—the GKCSAF—for relevance specifically to radiology and to test its reliability in a standardized setting. We first validated the tool by applying the Delphi method to revise and achieve consensus on the various domains of the instrument among an interdisciplinary team of carefully chosen individuals. These experts assessed the applicability of the instrument to the evaluation of conversations between radiology trainees and trained actors portraying concerned parents using enactments video recorded during a communication workshop. We then assessed interrater reliability by using the revised instrument to rate a series of enactments between trainees and actors video recorded in a hospital-based simulator center.

Materials and Methods

The Boston Children's Hospital institutional review board determined that this project represented a departmental quality assurance and performance improvement initiative and was therefore exempt from review. We validated the adapted tool for radiology in two phases: three rounds of relevance testing using the Delphi method and one round of testing of interrater reliability.

Phase 1: Adaptation and Validation of Relevance for Radiology

In phase 1 of our study, we started with the GKCSAF, using the Delphi method to determine the relevance of the GKCSAF specifically as an evaluation instrument for radiologist-to-parent communication about bad news and to revise it accordingly. The Delphi method is a process of organizing consensus on a focused domain and has been used widely for generation of assessment tools [18–20].

For each round in phase 1, nine independent reviewers were asked to watch a video recording of a simulated bad news conversation between a radiologist and actors portraying the parents of an infant. The reviewers were two pediatric radiologists and a breast imaging specialist, all with substantial experience with simulation-based communication skills training; two pediatric radiology training program directors; an adolescent medicine specialist with fellowship training in medical humanism and professionalism; a clinical psychologist at a school for children with special needs who had substantial experience with simulation-based communication skills training for health care providers; a critical care nurse-psychologist who founded and directs an interdisciplinary health care communication skills training institute; and a pediatrician expert on medical education, physician competency assessment, health care communication, and medical humanism who was a primary architect and adapter of the GKCSAF.

For each separate round of phase 1, a different video enactment of the same bad-news scenario was shown, each featuring a different radiology trainee. In the scenario, the radiologist conveys to the actor-parents that their infant's abdominal ultrasound shows a probable liver cancer. The videos were previously recorded at workshops of the Boston Children's Hospital Program to Enhance Relational and Communication Skills for radiologists [4]. All video-recorded radiologists provided consent to having the videos used for educational program development.

For each round of phase 1, after viewing the video together, the reviewers used a 5-point Likert scale (1, poor; 2, fair; 3, good; 4, very good; 5, excellent) to independently score the relevance of each GKCSAF domain and subdomain as they pertained to the video-recorded conversation. Reviewers also provided written comments on the items and suggestions for new items. Once they completed their comments independently, the reviewers discussed the instrument, domains, subdomains, and the scenario as a group, and the discussion group conversation minutes were recorded.

In total, there were three rounds of review. After each round, the results of the reviewer ratings were combined and analyzed with the SPSS statistical program (version 23.0 for Apple Macintosh, IBM). Domains and subdomains were assessed as relevant if they were rated, on average, as 4 or higher on the 5-point scale. Most items with consistent ratings of relevance were left unchanged, and small edits were made to a few items according to discussion group deliberations. All items rated less than 4 were edited primarily with language that seemed more relevant for radiology, and some changes were made to the order of domains or the placement of subdomains. No further revisions were made after the second round.

In addition, during the third round, raters were asked to assess the relevance of the instrument for assessing communication competencies for two additional and different video-recorded conversations. In one conversation a radiology trainee discussed with an anxious parent the risks of radiation from a CT examination to be performed on a 7-year-old child with suspected appendicitis. In the other, a radiologist discussed a missed ultrasound finding that resulted in a 3-month delay in a cancer diagnosis. As with the original bad news scenario, these videos were recorded during Program to Enhance Relational and Communication Skills for radiologists workshops.

Phase 2: Assessing Interrater Reliability of the Adapted Instrument

We named the adapted instrument the Kalamazoo Communication Skills Assessment Tool—Radiology (KalRad). Once the relevance of KalRad was established for the bad-news radiology scenario, we assessed variation among raters (interrater reliability) in using the tool to assess communication competencies among a cohort of radiology trainees. Using the Boston Children's Hospital simulator program, seven pediatric radiology fellows using a different bad news scenario from that in phase 1 were independently recorded in simulated enactments with professional actors portraying the child's parents. In this scenario, the physicians explained to the parents of an 8-year-old boy that a posterior fossa mass and hydrocephalus were found on an outpatient MRI examination performed because the boy had headaches. The

seven different interactions between physicians and actor-parents were video recorded. Eight of the nine original team members viewed the video-recorded enactments and used KalRad to rate the fellows' communication skills. Raters completed the surveys independently of one another. Surveys were administered to raters in both paper-based and electronic form, according to rater preference. Data were entered and analyzed with SPSS version 23.0 statistical software.

Statistical Methods

Each of the eight raters watched all seven video-recorded conversations and rated the quality of each radiologist's communication in 43 domains and subdomains. Rater agreement for each item was assessed with the Fleiss weighted kappa statistic for multiple raters and intraclass correlation coefficient. Generalized estimating equations (Proc GENMOD, SAS version 9.3, SAS Institute), a regression method appropriate for correlated observations, was used to assess the effect of each of the following on mean rating: video conversation (n = 7), viewing order at two levels (conversations 1 to 7 [n = 5 raters], conversations 7 to 1 [n = 3 raters]), rater type at three levels (radiologist [n = 5], nonradiologist physician [n = 1], nonphysician [n = 2]), and rater sex (female [n = 6], male [n = 2]). In post hoc tests, Tukey adjustment was used to control for chance differences due to multiple comparisons.

Results

Phase 1: Delphi Results

Figure 1 shows the results of each round of rating and revision in the Delphi process among nine reviewers. After two rounds of revision, analysis of round 3 responses revealed that 42 of the 43 domains and subdomains (98%) had an average rating of very good or excellent relevance (i.e., 4 or greater on the 5-point scale) with moderate variation in responses across raters (Table 1).

Table 1 shows reviewers' mean ratings of the relevance of the revised instrument for radiologist-parent conversations about error disclosure and radiation risk. For both of these conversations, 43 of 43 items were rated as very good or excellent. The one item that was rated below 4 for the bad news conversation (item D.1, Asks about/addresses life events, circumstances, other people that might affect how they receive or process the information being conveyed) was retained, because it was rated as relevant for the other two conversations. The resulting adaptation, representing the final tool, contained nine essential domains and 34 total subdomains, for a total of 43 items.

Phase 2: Interrater Reliability Results

To assess the reliability of KalRad, the ratings from the eight raters about the seven conversations (each conversation representing a different trainee) were used to compute intraclass correlation coefficients and weighted kappa statistics for each of the finalized 43 items.

Rater agreement measures—Reliability and rater agreement measures for most items were only moderate with intraclass correlation coefficient values ranging from 0.07 to 0.58 (mean, 0.30; SD, 0.13; median, 0.30). Weighted kappa values ranged from 0.03 to 0.47 (mean, 0.23; SD, 0.12; median, 0.22). As an example, Table 2 shows ratings for a single item (item H.1 in Table 1) and is representative of results for items with higher reliability. Raters were consistently able to identify a better conversation (conversation 2) and a poorer conversation (conversation 1), but ratings for the other five conversations exhibited considerable variation. For item H.1, the intraclass correlation coefficient was 0.54 and the weighted kappa value 0.45, making it one of the more reliably rated items.

Mean item ratings for combined conversations—For the seven conversations as a whole, the mean ratings for 41 of the 43 items were between 3 (good) and 4 (very good). The two exceptions were the item asking about life events and circumstances that may affect how the parent receives or processes information (item D.1; mean, 2.98; SD, 1.2), and the item explaining other participating clinicians' input (item F.2; mean, 4.03; SD, 0.77).

Comparison of ratings across conversations—Ratings varied significantly among conversations (χ^2_6 = 1186; p < 0.0001) (Fig. 2). The lowest mean ratings were found for conversation 1 (mean, 2.48; SD, 0.98) and the highest ratings for conversation 2 (mean, 4.59; SD, 0.65). Conversation 2 also had the lowest variation in ratings, indicating a high level of rater agreement about the conversation. The SDs of ratings of the other six conversations ranged from 0.94 to 1.12.

In regression models, the video conversation was the most significant predictor of rating. In pairwise post hoc comparisons of mean ratings, ratings for conversation 1 were significantly lower (i.e., worse) than the ratings for all conversations except conversation 6 (mean, 3.06; SD, 0.94). Ratings for conversation 2 were significantly higher than the ratings of all other conversations except conversation 4. Ratings also varied significantly by rater type; the one nonradiologist physician gave lower ratings (β = –0.30; p = 0.004) than the average of the four radiologists. Rater sex approached significance; women raters gave lower ratings than men did (β = –0.22; p = 0.058).

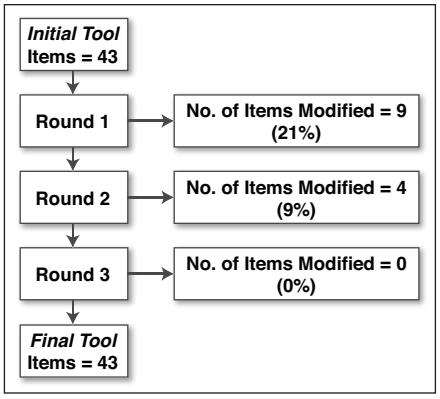

Fig. 1—Chart shows results with Delphi method in three iterative rounds. Revisions were made after rounds 1 and 2.

Comparison of ratings by viewing order—The effect of viewing order on mean rating was assessed by use of a viewing order–by–conversation interaction, which tested whether ratings for a conversation depended on viewing order. This interaction was highly significant (χ^2_6 = 765; p < 0.0001). Pairwise comparisons showed that conversation 1 was rated significantly lower when viewed first than when it was viewed last (mean rating viewed first, 2.12; viewed last, 3.06; p < 0.006). For the highest-rated conversation (conversation 2), ratings were not significantly different whether the conversation was viewed second or second-to-last. Conversation 7 was rated marginally lower when viewed first than when viewed last (mean rating viewed first, 3.22; SD, 1.04; viewed last, 4.02; SD, 1.06; p = 0.07).

Discussion

In this study, we used a simulation-based method to develop and validate a well-established standardized communication skills assessment tool (GKCSAF) for use in radiology. The revised instrument, KalRad, exhibited strong relevance for radiologist-to-patient communication and moderate interobserver reliability. Our group of reviewers found it straightforward to use with an approximately 10- to 15-minute average completion time per encounter. We anticipate similar times for those familiar with assessing communication competencies. KalRad is readily available (Supplement S1,

TABLE 1: Kalamazoo Communication Skills Assessment Tool—Radiology (KalRad): Final Validation Among Nine Reviewers for Bad News, Error Disclosure, and Radiation Risk

Skill	Bad News		Error Disclosure		Radiation Risk	
	Mean	SD	Mean	SD	Mean	SD
A. Overall ability to establish a rapport	4.88	0.35	4.71	0.49	4.75	0.46
1. Greets and shows interest in the patient and patient's family	4.78	0.44	4.67	0.5	4.67	0.50
2. Uses words that show care and concern throughout the interview	4.89	0.33	4.78	0.44	4.67	0.50
3. Uses tone, pace, eye contact, and posture that show care and concern	4.89	0.33	4.78	0.44	4.78	0.44
4. Responds explicitly to patient and family statements about ideas and feelings	4.89	0.33	4.78	0.44	4.78	0.44
B. Overall ability to open the discussion	4.67	0.52	4.67	0.52	4.83	0.41
1. Allows patient and family to state their understanding of why they are here	4.78	0.44	4.44	0.53	4.78	0.44
2. Asks "is there anything else?" or another open-ended question to allow space for patient to express concerns	4.56	0.53	4.67	0.500	4.44	0.73
3. Explains and/or negotiates an agenda or reason for the visit	4.00	1.00	4.22	0.97	4.11	1.05
C. Overall ability to seek/elicit further information	4.57	0.53	4.29	0.76	4.57	0.53
1. Addresses patient and family statements using open-ended questions	4.56	0.53	4.33	0.71	4.44	0.53
2. Clarifies details as necessary with more specific or "yes/no" questions	4.44	0.73	4.22	0.67	4.44	0.53
3. Summarizes and gives family opportunity to correct or add information	4.67	0.50	4.44	0.73	4.56	0.53
4. Transitions effectively to additional questions	4.33	0.71	4.25	0.71	4.56	0.73
D. Overall ability to understand the patient's and family's perspectives	4.40	0.89	4.50	0.55	4.29	0.76
1. Asks about/addresses life events, circumstances, other people that might affect how they receive or process the information being conveyed	3.67	1.22	4.44	0.53	4.11	0.78
2. Elicits/allows space for patient's and family's beliefs, concerns, expectations about their immediate situation	4.11	0.60	4.56	0.53	4.22	0.67
E. Overall ability to share information	4.83	0.41	4.75	0.46	4.75	0.46
1. Assesses patient's and family's understanding of problems and desire for more information	4.78	0.44	4.78	0.44	4.67	0.50
2. Explains using words that family can understand	4.78	0.44	4.78	0.44	4.78	0.44
3. Clearly conveys immediate next steps	4.56	0.53	4.67	0.5	4.78	0.44
4. Asks if family has any questions	4.71	0.49	4.67	0.5	4.78	0.44
F. Overall ability to reach agreement	4.29	0.76	4.88	0.35	4.71	0.49
1. Includes/assists family in any immediate decisions that must be made	4.33	0.71	4.67	0.50	4.78	0.44
2. Checks for mutual understanding of immediate further steps to be taken	4.44	0.73	4.89	0.33	4.78	0.44
3. Asks about acceptability of immediate further steps to be taken	4.22	0.67	4.89	0.33	4.56	0.53
4. Identifies additional resources as appropriate	4.22	0.44	4.89	0.33	4.33	0.50
G. Overall ability to communicate accurate information	4.57	0.53	4.71	0.49	4.71	0.49
1. Accurately conveys the seriousness of the patient's condition	4.67	0.50	4.67	0.50	4.56	0.53
2. Explains other participating clinicians' input	4.67	0.50	4.78	0.44	4.67	0.50
3. Clearly presents and explains possible immediate next steps	4.44	0.53	4.78	0.44	4.56	0.53
4. Gives enough information to assist with informed decision-making	4.44	0.53	4.67	0.5	4.56	0.53
H. Overall ability to demonstrate empathy	4.71	0.49	4.86	0.38	4.71	0.49
1. Clinician's demeanor is appropriate to the nature of the conversation	4.78	0.44	4.88	0.35	4.78	0.44
2. Shows compassion and concern	4.78	0.44	4.88	0.35	4.56	0.53
3. Identifies/labels/validates patient's and family's emotional responses	4.56	0.53	4.75	0.46	4.67	0.50
4. Responds appropriately to patient's and family's emotional cues	4.56	0.53	4.75	0.46	4.56	0.53
I. Overall ability to provide closure	4.67	0.52	4.83	0.41	4.67	0.52
1. Asks if the patient and family have questions, concerns, or other issues	4.56	0.53	4.75	0.46	4.67	0.50
2. Summarizes	4.44	0.53	4.88	0.35	4.67	0.50
3. Clarifies/reiterates the immediate next steps—where they are going and/or who they will see next	4.44	0.53	4.88	0.35	4.78	0.44
4. Provides appropriate contact information—for radiologist or clinical team—if interim questions arise	4.44	0.53	4.75	0.46	4.56	0.53
5. Acknowledges patient and family, and closes interview	4.67	0.50	4.75	0.46	4.78	0.44

Note—Values are ratings on a 5-point Likert scale (1, poor; 2, fair; 3, good; 4, very good; 5, excellent).

which can be viewed in the *AJR* electronic supplement to this article, available at www.ajronline.org).

The moderate interobserver reliability in our study is striking given that our raters met on numerous occasions to achieve consensus on what constituted effective and strong communication skills for radiologists. This variation likely reflected the diverse backgrounds of our reviewers, who may have held contrasting perspectives concerning particular competencies of specific communicators. Ratings may also have been influenced by how well reviewers knew those being assessed, sex differences, and differences in radiologists' and nonradiologists' personal or professional expectations of radiologists. Other studies conducted with multisource feedback in medical education, including within radiology, have shown significant differences in competency evaluations between assessor groups [7, 21, 22]. Nonetheless, our use of disparate representative stakeholders as reviewers and raters was consonant with beliefs that interdisciplinary collaboration is optimal for assessing competency in communication and interpersonal skills and that those with expertise in humanistic and psychosocial aspects of health care bring uniquely valuable insights into the evaluation process [11, 15, 22, 23]. Such an interdisciplinary approach may be particularly important for assessing communication and relational skills in radiology, in which no established standards for excellence exist, few validated communication skills programs have been developed, and faculty development remains largely ad hoc. The use of multisource feedback for assessing clinical competencies has been further endorsed for its recognition that health care delivery is becoming increasingly interdisciplinary and team based and that this trend requires assessors from a variety of perspectives [11, 15, 22, 24]. This is of substantial relevance to radiology, the value of which is becoming increasingly tied to its embeddedness within disparate health care system domains [25–28].

Previous studies of interrater reliability specifically for Kalamazoo instruments have had mixed results [12, 17]. Among cohorts of faculty, standardized patients, and students in one study, Joyce et al. [17] found high consistency within each group for ratings of the students' communication skills but lower correlation between groups, in particular students' self-assessments compared with their assessments by faculty and standardized patients. Using the instrument from which ours was specifically adapted, Peterson et al. [12] reported high interobserver reliability in ratings from faculty and peer observers while scoring simulated conversations between standardized patients and the participants being assessed. However, that study was designed to help create a communication skills curriculum rather than primarily to test interrater reliability. Before completion of the assessment tool, all raters participated in postsimulation debriefings with other observers, participants, and actor-patients, which, the authors noted, could have substantially influenced the raters' assessments. In our study, to maintain purity of perspective, no cross communication occurred among raters with other raters or participants before the completion of ratings.

One further potential limitation to our study was that the instrument was validated specifically for bad news conversations, which are only one sort of difficult conversation in radiology. However, our final phase of validity testing showed the relevance of the tool for assessing communication with patients about radiation risks and diagnostic errors. It would be impractical to develop different instruments for every imaginable scenario, although we would welcome further validation in other arenas of radiologic communication. Certainly many, if not most, of the relational skills accounted for within the instrument are relevant to other types of difficult conversations in radiology, although given how extensive the Kalamazoo instrument is, it may be difficult to provide deeply informed ratings for each domain, especially for short physician-patient and physician-parent interactions.

Overall, our experience points to some key lessons to be considered for leaders within radiology programs that are developing initiatives to assess trainees' communication skills. First, if multiple individuals are being evaluated serially, the order in which they are observed may influence observers' ratings. This is important to keep in mind even for programs in which order randomization may be impracticable. Most important, to be fair to both trainees and the process, our results suggest that assessment of radiology trainees' communication skills should be performed by interdisciplinary teams whose members represent the disparate perspectives of those who interact with radiologists

TABLE 2: Number of Ratings for Instrument Item H.1: Clinician's Demeanor Is Appropriate to the Nature of the Conversation

Video Conversation	Poor	Fair	Good	Very Good	Excellent	Total No. of Ratings
1	2	5	1	0	0	8
2	0	0	0	1	7	8
3	0	2	2	2	2	8
4	0	1	0	2	5	8
5	0	0	4	3	1	8
6	0	1	5	1	1	8
7	0	0	2	2	4	8

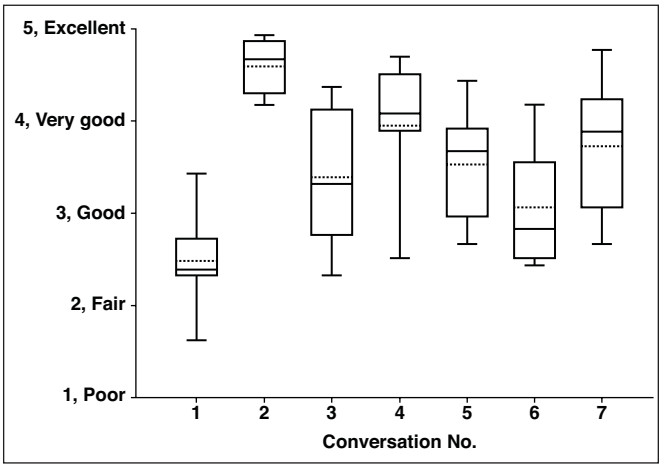

Fig. 2—Plot shows distribution of mean ratings for eight raters of enactments between actors and seven different trainees for same bad news conversation. Statistically significant variation was found in ratings among conversations. Reliability was highest for highest-rated conversation. Extremes of whiskers denote 5th and 95th percentiles.

as peers, mentors, and patients. Although our data suggest that most observers will mutually recognize the best examples of communication, to avoid various potential biases in assessment, such a team of observers might optimally include those who know the trainees well and those who do not. Training programs should be aware of the potential for bias in assessing communication skills that is related to both the rater characteristics and the assessment process itself.

Communication skills assessment instruments such as ours are not intended for use in grading trainees any more than we would provide such metrics for diagnostic interpretive skills. For a competency and field in which standards of excellence are not yet clearly established, the benefits of the assessment process may therefore be threefold: to document standardized core competency, to provide formative feedback to trainees, and to allow trainees to hear (and appreciate) the disparate subjective perspectives of various stakeholders. With its intrinsic subjectivity recognized, a standardized process for assessment of communication skills would ideally allow learners to better understand their strengths and weaknesses, identify the actions necessary to improve their clinical effectiveness, and track their progress over time.

Programs that want to provide standardized assessment of communication competencies may want to establish teams that, like ours, work together to gain mutual understanding of the instrument and expected competencies. The videos created during simulation exercises proved highly valuable for this purpose. The ability to assemble a constant mix of raters will likely be challenging for many programs. Nonetheless, many institutions may have reasonably accessible resources, including other clinical programs that have developed or are interested in developing communication skills training curricula, and various programs for chaplaincy, social work, ethics, family services, medical humanism, and interpreter services. We have tapped into many such resources at our institution to assemble our communication skills training and assessment program.

Our study results underscore the value of using simulation in assessing the communication skills of radiologists and, in doing so, build on a burgeoning experience within radiology. Early experiences assessing radiology trainees' competencies entailed direct observation of residents in actual clinical encounters with real patients [7] and in simulated encounters with patients specifically trained to enact difficult conversations, make assessments, and provide feedback [6]. More recently, DeBenedectis et al. [8] reported on the use of video-recorded simulated enactments between radiology residents and trained professional actors. Those investigators found potential for evaluating and teaching skills for a variety of difficult conversation scenarios. Similarly, our program uses video-recorded simulated enactments between trainees and trained professional improvisational actors, which allowed our raters to view and assess the videos remotely and at their convenience. It also allows the training program directors to assess performances independently and to review the videos with trainees, each of whom receives feedback both from the program directors and from the actors. As with the other programs that have been described, performance of the assessments provides an important opportunity for learning.

Although simulation is not the only means of assessing the array of relational and communication skills that radiologists must possess over the range of conversations they must hold with patients, the method has many powerful attributes for the development of robust communication training curricula. We and others have found the value of assessing those skills. With the development of this adapted Kalamazoo Communication Skills Assessment Tool, radiology now has a standardized method not only for assessing and providing feedback on communication and relational skills but also for testing any educational innovations that may be implemented.

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