Reflective Writing:

A Potential Tool to Improve Interprofessional Teamwork with Radiologists

David M. Naeger, MD, Ethan W. Hua, MS, Bren Ahearn, MA, Emily M. Webb, MD

Rationale and Objectives: Studies show that problems with interprofessional collaboration can result in adverse patient outcomes. These problems are common in the field of radiology, where technology has decreased opportunities for direct communication and collaboration with referring physicians. To our knowledge, critical reflection has not been studied as an intervention to better understand one's own and/or others' roles in the context of an interprofessional team, or more specifically, to improve interprofessional collaboration between radiologists and other physicians.

Materials and Methods: We trialed a reflective journaling assignment in our fourth year medical student general radiology elective. Student journal content was scored by percentage of comments reflecting on elective experiences versus recounting events. Content was categorized as "reflection" using an established measurement tool. Reflective content was evaluated to identify common themes.

Results: A total of 31 journals (178 entries and 26,749 words) were analyzed. Reflective content accounted for 43% of overall content and was subdivided into three categories: insight into one's own role and responsibilities as an ordering physician (20%), insight into a radiologist's role and responsibilities (12%), and thoughts on improving interprofessional collaboration with radiologists (11%).

Conclusions: Reflective writing allows students to explore their own role and responsibilities in the context of an interprofessional team and may improve interprofessional teamwork with radiologists.

Key Words: Reflective writing; teamwork; interprofessional education; medical student education.

Diminished collaboration between radiologists and other physicians is an unfortunate side effect of computer-based interpretation via picture archiving and communications systems, systems which are now commonplace in most health care systems (1–3). Radiologists and other members of the health care team no longer need to gather in the same location to review films, given they are now readily accessible online. Imaging examination results are also increasingly communicated electronically (4). These trends have caused concern amongst radiologists who worry that their decreased visibility is harming interprofessional collaboration and communication with their physician colleagues (1–3). The problem is further exacerbated by the overall poor penetration of radiology education in medical school curricula in the United States (5); medical students do not consistently learn about the role of radiologists on the health care team during their education, and that knowledge gap can carry over into clinical practice (6).

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From the Department of Radiology and Biomedical Imaging, University of California, San Francisco, 505 Parnassus Ave., M-391, San Francisco, CA 94143-0628. Received May 7, 2015; accepted July 17, 2015. The authors received no financial support, and the authors have no conflicts of interest to disclose. **Address correspondence to:** D.M.N. e-mail: david.naeger@ucsf.edu

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Many studies have demonstrated that problems with interprofessional collaboration can result in adverse patient outcomes (7–10). Recognized barriers to effective interprofessional collaboration include 1) problematic power dynamics, 2) poor communication patterns, and 3) lack of understanding of one's own and/or others' roles and responsibilities (7–12). Studied interventions to improve interprofessional collaboration, such as interprofessional rounds, have focused predominately on improving communication among team members (11).

It has been shown that practicing "critical reflection" can improve interprofessional teamwork (13–15). Sandars defined "reflection" as an activity "occurring before, during, and after situations with the purpose of developing greater understanding of both the self and the situation so that future encounters with the situation are informed from previous encounters" (16). Demonstrated positive outcomes of practicing critical reflection in an interprofessional team setting include improved learning and communication (14). Such benefits have led to its growing implementation in medical education curricula (17). To our knowledge, however, reflection has not been well studied as a potential intervention to better understand one's own or others' roles in the context of an interprofessional team, or more specifically, as a tool to improve interprofessional collaboration between radiologists and other physicians on the basis of these insights. Herein, we describe an easy-to-implement curricular innovation to our fourth year medical student radiology electives that addresses these gaps in interprofessional education.

MATERIALS AND METHODS

Although students at our institution are exposed to approximately 50 hours of radiology content in years 1–3 in our longitudinal integrated curriculum, most students opt to take one of several fourth year electives as well.

We developed a reflective writing assignment for our 4-week, fourth year general radiology elective. This course teaches the basics of radiology, focusing mostly on information pertinent to appropriate imaging examination ordering and utilization. The target audience for our general radiology elective is future ordering (nonradiologist) physicians, and approximately 100 of 150 students elect to take the course. Students were surveyed as to their plans for residency specialization before placement into an elective to determine the best course for their needs. This 4-week elective is predominately classroom based, and comprised lectures and small group teaching sessions (>70 hours), electronic teaching modules, a presentation assignment, two half-day reading room observation sessions, and an examination. The reflective writing assignment was initially piloted in this general course because, as future ordering providers, these students might derive particular benefit from reflection on their experiences with radiologists as part of the health care team. It was introduced as a make-up assignment for students who exceeded the maximum number of absences as allowed by our school's attendance policy (1 day). Our attendance policy is strict and rigorously enforced. Of note, all allowed absences were for interviews, other medical school obligations, or personal emergencies and were preapproved by the course director. No student had more than three absences.

Subsequently, the assignment was introduced to all students in our fourth year reading room electives as a routine course requirement. Reading room electives at our institution are targeted to students with career interest in radiology or students with focused interest in a related subspecialty (for example, a student with career interest in neurology taking a neuroradiology elective or a student with interest in general surgery taking an abdominal imaging elective). These electives are generally 4 weeks, and include a combination of reading room observation and electronic modules. Students attend some lectures, but most time is spent in a clinical setting.

The full text of the assignment as it was provided to the students is shown in Figure 1. To emphasize the ongoing nature of the assignment, the assignment was titled a "journal," and instructions specifically highlighted it was to be a "running document." There was no required minimum or maximum length and no required number of journal entries. Although the journal assignment was required of these students, its content did not count toward their course grade. Of note, students were not specifically asked to address interprofessional interactions per se, mainly in an attempt for the assignment to be an open and personal process, although many did. Reflection is not necessarily an intuitive process for learners (18). However, students at our institution receive formal instruction in using reflection during their core medical education and are practiced in the technique from implementation into a variety of educational settings (19). The instructions did remind students that the intent of the journal was *reflection* rather than *recounting*.

Keep a radiology journal, which you'll turn in at the end of the elective -- journaling is an effective tool to help one process day-to-day situations. So, keep a running Word doc in which you write your reflections about your experiences in this elective. Some possible topics to write about are:

A. Some applications of what you're learning this session to your future career.
B. Some "Wow, I never thought of that" moments.
C. Thoughts on what kept you engaged this term vs. what didn't keep you so engaged.

There's no right or wrong in journaling. Just write. I've found from my own experience in journaling that it has helped me process what was going on and make sense of it all.

In response to the question of how long does the journal have to be, there's no minimum or maximum. This being said, we expect reflection, and not just a retelling of activities that happened.

Figure 1. Text of the reflective writing assignment.

We used a previously established and validated tool, to measure the "level of reflection" in student journals, previously established by Wong et al (20) and based on the prior work of Mezirow and Boud et al (21,22). Using this tool, content was categorized as reflective if it included "attending to feelings, association, integration, validation, appropriation, or outcome of reflection" (20). Reflective content was evaluated to identify common themes. A word count was performed to quantify the percentage of comments in each category. To address potential variability between students' writing style, journal content was evaluated using a qualitative content analysis (23,24). Journal content was coded and categorized into themes. The frequency of each theme was counted to quantify the percentage of journal content dedicated to each theme.

Journal entries were scored by two authors with disagreements addressed in a consensus fashion.

RESULTS

A total of 31 journals (178 entries and 26,749 words) were submitted and reviewed as part of this assignment. The mean length of the submitted assignments was 870 words (standard deviation, 546 words). Journals contained a mean of 5.6 entries per journal (range, 1–18). Ten journals were submitted from our general classroom-based radiology elective and 21 from our reading room electives. The reported career plans of the students from each elective are presented in Table 1.

By word count, journal content was categorized as "reflective" (43%), "recounting" (47%), or other (10%) which included opening and/or closing and/or transitioning text. Students focused a substantial proportion of their assignment on reflective content highlighting roles and responsibilities of radiologists and interprofessional communication. A summary of the assignments' content is reported in Table 2.

Reflective content was further subcategorized into three theme categories:

1. Insight into one's own role and responsibilities as a future ordering physician (16%):