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Editorial

Restructuring Our Approach to Peer Review: A Critical Need to Improve the Quality and Safety of Radiation Therapy



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Chart rounds with peer review has long been a standard (some would say historical) practice in radiation oncology, and generally has been a feasible and effective quality control tool. Within radiation oncology, chart rounds remains a requirement by the American Society for Radiation Oncology, American College of Radiology, and the American Association of Physicists in Medicine.¹ Chart rounds with peer review commonly is a weekly meeting where treatment plans of patients who are in their first week of treatment are peer reviewed; that is, a retrospective quality control measure. The effectiveness of this approach has never been prospectively assessed.

In this issue of *Practical Radiation Oncology*, Talcott et al from the Yale School of Medicine, Department of Therapeutic Radiology report “A Blinded, Prospective Study of Error Detection During Physician Chart Rounds in Radiation Oncology” to address this knowledge gap.² Twenty treatment plans with simulated errors were covertly presented at their weekly chart rounds over 9 weeks. The types of errors were selected from the Radiation Oncology Incident Learning System database and thus were realistic (eg, wrong target identified, normal structures not spared, inadequate target coverage, dose/fractionation pattern incorrect, previous treatment not considered, and problem with imaging used for planning)—in other words, the usual suspects that keep us awake at night. Plus, most of the errors were designed to be “highly detectable.” Only 55% of the errors were detected. This is a sobering and critically important contribution to our field, and the investigators should be commended for their work.

Although there are some methodological issues that one can note, these should not be used to minimize the importance of these findings. For completeness, and for those who want to cling to the mistaken belief that this traditional approach to peer review is effective, we note these shortcomings to include (1) the study was only partially blinded, with an increasing number of attendings becoming aware of the study during its conduct, which may have affected the results (ie, the error detection rate increased during the study period from 33% [weeks 1-5] to 73% [weeks 6-9]); (2) most of the errors were placed in “palliative cases” (for good reasons to avoid possibly treating a living patient with an erroneous plan), but this may have effectively lowered the overall detection rate (eg, physicians thinking that such cases do not need a rigorous peer review); (3) that their chart rounds were limited mostly to attending and resident physicians (ie, not multidisciplinary and with a limited number of participants); and (4) on average only 75 seconds were spent peer reviewing each case. Despite these methodological issues, we believe that this study should be (yet another) wake up call to our field to do better with peer review.

The authors discuss several factors that may have contributed to their findings. Their chart rounds were long, and attendance was sometimes low (with some people leaving during the meeting for other responsibilities); indeed, the detection rate was higher during the first 30 minutes of their chart rounds versus the last 30 minutes (75% vs 25%). Furthermore, the lack of robust multidisciplinary participation may have emphasized the “power differential” between the attendings and residents, perhaps hindering the resident’s willingness to speak up. The high work load (~48 cases reviewed in 60 minutes) may have limit the quality of the review. And of course, apathy of the attendees may have been a factor: “Okay we are here, let’s go through the motions and check the box.” We have experienced these same issues with traditional chart rounds and postulate many of you have as well.

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We believe that the findings reported by Talcott et al are representative of what is happening in many, if not most, of our field's centers: that traditional chart rounds are often an ineffective safety barrier and are seen by many as "a waste of time." In our opinion, we strongly believe that peer review in radiation oncology currently largely happens too late in the planning or delivery process. Why do we consider traditional chart rounds to be a safety barrier if it allows for errors to reach the patient? Several studies report that the frequency of recommendations/modifications of treatment plans ranges from ~10% to 40%, with the frequency being higher when peer review is done pretreatment.³⁻¹³ Not only is the willingness to make changes, or even recommend them, lower at late peer review, but the risk associated with rushed work to replan creates its own set of issues for error-free treatment.¹⁴ The horse is already out of the barn, so to speak.

We propose that early peer review (eg, conducted after the planning computed tomography, image fusion, and image segmentation, but before treatment planning) is a much more effective safety barrier. The discovery of errors upstream and discussion with all stakeholders eliminate many of the typical plan problems discovered at (late) chart rounds. Further, we believe that treatment planning should not commence until any issues related to the treatment prescription and contours are resolved (by a hard stop). To avoid delays, peer review sessions should be frequently held (eg, daily), allowing for a shorter meeting (less cognitive burden than a longer weekly meeting). Further, attendance should be encouraged and multidisciplinary (therapists, nurses, physicists, dosimetrist, administrators, students, physicians, residents, etc). An effective peer review session requires a culture where everyone, regardless of their stature, provides feedback and asks questions. Building this culture can be challenging, as the practice of medicine often promotes a hierarchical structure. Nevertheless, both of our respective institutions have demonstrated success in implementing this cross-sectional dialogue, even if from time to time it can be a bit testing.

As an early developer or adopter of 3-dimensional treatment planning, and thus in the use of newer beam shapes or orientations, the University of North Carolina has had a long-standing tradition of pretreatment physician-to-physician peer review. Roughly 10 years ago, we (B.C., L.M.) extended this to be a more formal daily multidisciplinary meeting addressing a broad array of issues (eg, treatment intent, field design, technique, contours, prescription, systemic therapies). Presently, at the University of North Carolina we review ~4 to 10 cases per day in ~15 to 30 minutes at our Chapel Hill campus, with >20 people regularly in attendance. The frequency of effective comments and suggestions is high,¹⁵ and most recommendations (59%) lead to changes in the plan.¹³ We also discuss the day's clinic schedule and

anticipated challenges, and all are able to raise concerns, make announcements, and so forth. We like to think that these meetings preempt chaos. A very similar daily meeting occurs in our community-based centers as well. The vast majority of attendees report that these meetings are helpful, are collegial, promote education, smooth clinical operations, and foster our safety culture.

At Northwell Health (L.P.), we implemented a similar preplanning daily multidisciplinary peer review case conference in 2010 with video links to our community practices to evaluate treatment decisions, prescriptions, and contours. In fact, having our disease specialists review community cases (and vice versa) adds to the review opportunities.¹⁶⁻¹⁸ In close to 12,000 peer reviewed cases over 5 years, 28% required a modification before planning.¹⁷ Further, the percent of cases needing modification did not change from year to year, indicating that modifications have become routine without being a reflection of performance or competence. In fact, many changes reflect "good catches" with one-third having a change to target or normal tissue volumes and one-third having a prescription-contour mismatch defined as a mislabeled structure set relative to the intended target doses.¹⁷ Moving peer review upstream of treatment planning reduces the inhibition of suggesting changes after treatment has started and mitigates many of the biases associated with traditional charts rounds (eg, expectation, confirmation, and anchoring biases). Although our peer review process reflects the average of opinions, this average represents a significant "third eye" review that can identify potentially serious issues and opportunities for minor, but still meaningful, modifications of even simple cases.

We are absolutely convinced that this is an obvious opportunity for our field; it's time to cut bait and say (once again) that preplanning peer review should be our standard—period. Others have said, "This might work for you, but we cannot do this because our staff are in too many locations, there is no good time, we are too busy, etc." No more excuses. Our accrediting groups (eg, American Society of Radiation Oncology, American College of Radiology, and American College of Radiation Oncology) should mandate preplanning peer review. In the coronavirus disease 2019 era, where video conferences have overnight become the norm (with participants down the corridor, across town, and around the world), the excuses for not implementing preplanning peer review are fading fast. In fact, attendance is often greater, image review easier, and there can often be improved participant engagement with video conferences versus face-to-face meetings (all leading to meaningful changes for all our patients). Think of it this way: treatment planning is akin to the motion of the surgical knife, but now the entire multidisciplinary experience of the department is in the operating room critiquing each other's every move. Wouldn't you want that for your treatment plan (hoping that

is never the case)? Why wait until after the fact to rush and fix things? Making changes is hard, and no doubt this will require a change in department operations and calendars, but if the coronavirus disease 2019 crisis has taught us anything, it is that we are more resilient to make appropriate change (and change more quickly) than we ever thought.

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