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Multidisciplinary Oncology Education: Going Beyond Tumor Board

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Oncology is arguably the most multidisciplinary area of medicine, as most patients with cancer receive treatment with multiple modalities during the course of their illness. Whether one works in an academic or community setting, communication among specialties is critical to coordinating a high level of patient care, and understanding the capabilities of other specialties is critical to making appropriate referrals and directing patients toward the most appropriate treatment approach from the outset. Unfortunately, the medical literature offers many examples of how referral patterns may negatively affect care. For instance, post-mastectomy radiation therapy for breast cancer is underutilized in the United States, and its use is directly correlated with a surgeon's level of knowledge of it [1]. Whether prostate cancer is ultimately treated by prostatectomy or radiation therapy is highly dependent on whether a patient has discussed treatment with a urologist, radiation oncologist, or both before initiating treatment [2], and involvement of a medical oncologist up front has been shown to increase rates of active surveillance [3]. Patients with locally advanced lung cancer are more likely to undergo standard treatment if referred to multidisciplinary specialists [4]. Missed opportunities to cure early-stage, low-grade lymphomas are common because of a lack of multidisciplinary referral [5,6]. Palliative radiation therapy is particularly underutilized in elderly patients despite its efficacy and low side-effect burden [7]. Perioperative chemotherapy is underutilized in patients with bladder cancer because of lack of referral to a medical oncologist [8]. Disparities in referral to a variety of specialists greatly affect subsequent treatment of newly diagnosed hepatocellular carcinoma [9].

Financial, social, and medicolegal obstacles may indeed influence decision making by some physicians, but one must assume that most physicians want to offer the best patient-centered care that they can, and as such, inadequacies in multidisciplinary management must arise at least in part from a lack of basic knowledge of what oncologic specialties outside one's own

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have to offer. This naturally led me to question what the national requirements for multidisciplinary oncology education actually were.

The ACGME reviews and accredits residency and fellowship programs in the United States. Requirements for radiation oncology, medical oncology, surgical oncology, palliative care, and other surgical subspecialties that commonly treat patients with cancer, such as urology, otolaryngology, and gynecologic oncology, all fall within the auspices of the ACGME [10]. Although the language differs for each specialty's ACGME program requirements, a common theme of the surgical, medical, and radiation oncology requirements is that each of these services should be available as resources at the teaching institution and that residents and fellows should demonstrate knowledge of the principles, indications for, and limitations of each modality in the treatment of cancer. None of the program requirements elaborate on how this knowledge is assessed, and the prescribed methods to acquire such knowledge differ markedly across specialties. For instance, surgical and radiation oncology requirements give the option of either spending time in other relevant oncologic fields or providing alternative experiences, such as attendance at multidisciplinary patient disposition conferences. However, the percentage of residents or fellows in the United States who fall into each of these categories is unknown. The medical oncology requirements, on the other hand, make no mention of multidisciplinary experiences. The same can be said for surgical subspecialties such as colorectal surgery, musculoskeletal oncology, neurologic surgery, and urology. Palliative care fellows and otolaryngology residents must have at least 1 month of elective time, though this can be used in a variety of fields, oncologic and nononcologic, depending on the resident's interests or an individual program's specifications. The musculoskeletal oncology and neurologic surgery requirements are the only ones to describe didactics or a core curriculum that ensures instruction in aspects of oncology outside of their own. In summary, none of the ACGME requirements for any program mandate spending time working in other oncologic fields, though surgical oncology and radiation oncology seem to encourage multidisciplinary exposure more than do medical oncology, palliative care, or any of the surgical subspecialties.

In many ways, these ACGME requirements seem to violate common sense. For instance, how can a palliative care provider, who will engage in managing the end-of-life needs of many patients with cancer, be expected to be able to comment on the risks and benefits of palliative chemotherapy and radiation therapy, or go so far as to recommend discontinuing these treatments, without ever having spent time in a radiation oncology or medical oncology department? Conversely, Shouldn't all oncologists participate at some point in their careers in palliative care rounds or understand the dying process from direct encounters? Just as a radiation oncologist should learn from a surgeon about ways to repair the adverse outcomes of radiation therapy, a surgeon should learn from a radiation oncologist about nonsurgical approaches to cancer management and their potential quality-of-life benefits.

Of course, not all medical education takes place during residency or fellowship, and a broader experiment is expected from medical school and internship. For instance, a future radiation oncology resident has the choice of internal medicine, family medicine, obstetrics and gynecology, surgery or surgical specialties, pediatrics, or a transitional year for the first

year of postgraduate training. Because a portion of this year generally includes elective time, it is highly likely that future radiation oncology residents will choose at least one elective in the oncologic subspecialty of these other fields. In contrast, medicine and surgery residents do not have this preliminary or transitional year. They spend the entirety of their postgraduate training within their own fields and are less likely to get firsthand exposure to other areas. Furthermore, many future medical and surgical oncologists will not decide to pursue oncologic fellowships until they are already in residency, whereas future radiation oncology residents know during medical school that they will be entering an oncologic field, which may lead them to take more electives in other areas of oncology that the future medical and surgical oncologists have not yet thought to explore. Finally, most medical students will at baseline have more exposure to medical and surgical oncologists than radiation oncologists, simply because medicine and surgery are required rotations whose clerkship directors are more likely to incorporate oncologists from their own respective fields into the clinical and didactic curriculum [11]. Conversely, students are unlikely to have exposure to radiation oncologists unless they actively seek them out. For all of these reasons, it seems likely that radiation oncologists will end up with broader exposure to other areas of oncology than most other oncologists will have to any area of oncology outside of their own.

There are limited data directly linking the undergraduate and graduate medical education experiences of oncologists to practice deficits, with the exception of a Canadian study that positively correlated knowledge level among family physicians with the appropriate utilization of palliative radiation therapy [12]. It is certainly plausible, though, that a similar correlation would hold true for other types of cancer treatments among oncologists in the United States. It may be tempting to blame those who lack multidisciplinary knowledge for their own deficits, but we all must look in the mirror to see that the root cause to this problem lies with the teacher more so than the pupil. At our own institutions, we need to be proactive and invite the opportunity to be educators for residents and fellows outside of our own fields. If the ACGME requirements do not mandate multidisciplinary rotations or didactics, then individuals should take personal responsibility to offer these services in whatever way they can. On the national level, perhaps the development of ACGME requirements and milestones would benefit from more dialogue among the different fields. We should ask ourselves specifically what we want physicians in specialty X to know about specialty Y, and then find ways to achieve these aims. We should collect data on the actual experiences of residents and fellows, considering that the ACGME requirements are so open ended. Is a required 2- to 4-week rotation in an oncologic specialty outside one's own so detrimental to learning one's own specialty or in providing adequate coverage of one's own service? How can we justify the common allowance of dedicated research time but not multidisciplinary education if the primary goal of graduate medical education is clinical? Is requiring didactics across disciplines too much to ask of our colleagues? If all programs must already provide access to other oncologic subspecialties in order to justify a program in the first place, why not use those specialists for educational purposes?

In a field of medicine as complex, evolving, and multidisciplinary as oncology, there is an urgent need to produce graduates who not only have high-level understanding of their own specialties but also some basic understanding of the principles of the other specialties with which they interact. Going beyond tumor board as the primary venue of multidisciplinary

oncology education by addressing the discrepancies and inadequacies in the ACGME requirements for residents and fellows, and setting standards for how oncology should be taught to medical students, would help move toward that end.

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