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Future of Telemedicine in Radiation Oncology

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Telemedicine allows providers and patients to communicate without being in the same room through video platforms or telephone. Like the increased use of telework for businesses, telemedicine exploded during the pandemic. While many workplaces and clinics have returned to some level of in-person interactions, the convenience and comfort have given telemedicine staying power. Patients can be seen from the comfort of their homes; family members can join from the same or a different location. Driving, obtaining childcare, or taking time off from work is unnecessary. Pediatric patients' parents can pull them into the conversation at appropriate times and avoid the awkwardness of having them leave for portions of the discussion. Because virtual visits are more efficient for everyone, they can often be scheduled sooner than an in-person visit. While not every visit can be done without the patient physically with the provider, many can. This is particularly true for cancer patients, who often have several visits with multiple providers. For immunocompromised patients, there is an added benefit of avoiding exposure from travel and a hospital visit. Oncology and radiation oncology practices have widely adopted telemedicine. While legal and logistical barriers exist in some areas of the world, these are sure to be resolved to make this medicine feasible for all in the modern era.
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Introduction

The COVID-19 pandemic prompted significant technological changes that touched many aspects of our lives. The explosion in video conferencing for working and socializing, first necessitated by a desire to stop infection, has become a permanent part of our lives because of its myriad additional benefits. Video conferencing allows people to connect on a platform without commuting, enables meetings across great distances, decreases the need for office space, improves work-life balance, and decreases carbon emissions. Like many sectors of the economy, hospitals and doctors were quick to adopt this video technology in the form of telemedicine. The rapid incorporation of tele-technology allowed us to bring visits to the home to protect patients and staff from exposure. In so doing, it taught us that many provider-patient interactions can be performed just as well through video cameras in the comfort of our homes for our patients. Telemedicine reduces financial toxicity and anxiety for many patients, especially those requiring frequent visits.[1] It allows family members to join so patients do not need to be alone and gives providers a glimpse of a patient's home environment.[2] While telemedicine has helped to alleviate access issues in rural areas, expanding the technology at a time of relaxed licensure requirements made us recognize the benefit of broader access to specialty care, such as oncology care. Though there was a trickle of telemedicine prior to COVID, its forced expansion, along with advances in video technology, have given it potential staying power.

Digital health innovation is moving forward but still faces significant obstacles. Barriers are mainly related to a payment structure and licensure laws not well suited for 21st-century medicine, where distance disappears over the internet and phone, allowing us to reach patients anywhere. Reimbursement

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practices that favor in-person visits may lead hospitals to limit televisits even when such visits may be entirely sufficient and less costly for patients. These barriers are not insignificant and will require substantial and thoughtful decisions and efforts from health policymakers, lobbyists, and the government to ensure telehealth remains a viable option for appropriate patients. It will also necessitate that data for telehealth continue to demonstrate its quality and cost-effectiveness.

In the U.S., Although some pandemic-based flexibilities have remained temporarily in place, most U.S. state licensure restrictions have been reinstated, limiting a physician's ability to reach out-of-state patients. While some flexibilities are anticipated to continue past 2024, much regulatory uncertainty remains. There is little serious legislative motivation to re-examine state licensure requirements for telemedicine in the U.S. Because the patient's location is considered the location of the practice of medicine, doctors must once again be licensed in the state where the patient is physically located during a video visit or telephone call. While a limited number of states have introduced simpler pathways less than licensure for out-of-state doctors who wish to practice telemedicine across state lines, the vast majority of states are back to requiring that physicians go through the costly and time-consuming process of obtaining full licensure.[3]

Telemedicine is of significant interest to radiation oncologists. Radiation oncology patients have frequent visits on and after treatment that may be done remotely in select circumstances. Cancer patients seek clinical trials or advanced radiation modalities, such as proton therapy, that may be available only at institutions far from home for many. To receive most treatments, these patients must travel, but some frequent check-ins can be quickly done by telemedicine, as can follow-up visits following this treatment. Telemedicine allows for continuity of care for patients who might be too far away to pay for travel or too ill to travel; it may also decrease the number of patients lost to follow-up on all-important clinical trials.

In the subsequent paragraphs, we explore the ways that telemedicine can integrate into the critical, complex care that radiation oncologists provide.

Consultation

The first step in the treatment pathway for cancer patients undergoing radiation is always and necessarily an initial consultation, most frequently in an office setting. The relevant Current Procedural Terminology (CPT) codes for these new visits are 99202-99205. The appropriateness of billing for these codes is, in part, determined by whether the patient has previously visited a partner in the practice within a prespecified time point (e.g., within 3 years).

The Centers for Medicare and Medicaid Services (CMS) has permanently added these codes to the list of allowable telehealth services under the Physician Fee Schedule. But that is the bare minimum of steps necessary to ensure continued access to telehealth initial visits for radiation oncology patients. Multiple additional issues could undermine the availability of telehealth consultations.

First and perhaps foremost is the oft-expressed concern over the quality of such visits. Here, the data suggests essential equivalence to the in-person consultative counterpart. The majority of patients in the available studies rated telehealth consultations as similar to prior in-person visits.[4,5] And these findings were recapitulated in studies looking specifically at radiation oncology consultations.[6] The accumulated data led to the issuance of ASCO guidelines in 2021 that determined telehealth a "reasonable option" for new patient consultations.[7]

A second looming threat to the availability of telehealth consultations is planned rollbacks of the pandemic-era telehealth flexibilities. In some cases, an extension of the current flexibilities would require only additional rulemaking by the relevant agencies. For instance, CMS (Centers for Medicare & Medicaid Services) could use its regulatory authority to permanently remove providers' obligation to report their home address/location. However, extending the Medicare Telehealth Provisions, set to expire on December 31, 2024, will necessitate congressional action. These reforms, such as permitting patients to engage in telehealth consults from their homes, removing geographic limitations, and allowing audio-only telehealth services, have been critical to the technology's expansion. As of the writing of this article, multiple pieces of proposed legislation are winding their way through Congress that would, if passed, make permanent these flexibilities so critical to the success of telehealth consultations; the Telehealth Modernization Act, having just been passed out of committee, is the furthest along of these congressional efforts.

The third potential roadblock for telehealth consultations is more than making these telehealth permissions permanent: pay parity. Some U.S. states have adopted coverage payment parity, but this coverage is inconsistent and with caveats.

For the professional component of E/M services, CMS pays through the Medicare Physician Fee Schedule — either at a facility or a nonfacility rate. A facility rate is for professional services delivered from a facility (e.g., hospital-based) setting. In these settings, professional fees for *in-person* services are accompanied by a separate hospital facility fee paid through the Outpatient Prospective Payment Systems (OPPS), which covers any overhead associated with the professional charge. However, with the expiration of the "Hospitals Without Walls" initiative at the end of the Public Health Emergency (PHE), hospitals lost the ability to charge this facility fee when physicians were conducting telehealth from hospital outpatient locations.

Nonfacility professional rate payments are provided when professional services are delivered outside a hospital setting (e.g., private practice locations). These rates are higher to account for the overhead of delivering these services outside of a hospital setting since there is no accompanying facility fee. A facility rate payment is about 80% of a corresponding nonfacility rate payment. Currently, CMS, through the 2024 Physician Fee Schedule, is paying for telehealth E/M services at the higher nonfacility, regardless of whether the telehealth consultation is done by hospital-based or office-based physicians.

Some researchers have argued that telehealth should be paid less than in-person care because it is less costly to

Table Comparison of Cost Categories for Telehealth vs In-Person E/M Services

Cost Component	Applicable to In-Person Visit?	Applicable to Telemedicine Visit?
Clinician direct and indirect time with patient	Yes	Yes
Scheduling	Yes	Yes
Electronic Health Record Use	Yes	Yes
MyChart Messaging Before and After Visit	Yes	Yes
Overhead for Clinician Space (e.g., Office)	Yes	Yes
After Visit Support by Staff	Yes	Yes
Staff Taking Vital Signs	Yes	**No**
Physical Exam Room Use	Yes	**No**
Telemedicine Video Platform	**No**	Yes
Telemedicine Support Staff	**No**	Yes
Out-of-State Licensure Costs	**No**	Yes

provide.[8] We suggest that payment at the nonfacility rate should continue for 2 reasons: First, in a hybrid care environment, like an academic medical center, where patients receive care in person and via telehealth, the overhead associated with care delivered through different modalities is quite similar (Table). Second, when payment rates are set for services, the value these provide to patients and physicians should be considered, not just the underlying costs of delivery. Patients and doctors value the ability to use telehealth: when clinically appropriate, it allows patients to "visit" their physicians without the hassle and expense of travel to an outpatient facility. In a healthcare environment where providers and healthcare teams are already drowning in work with long wait times and strained financial margins, telehealth professional reimbursement rates at the lower facility rate will inevitably lead to decreased telehealth access for patients.

A final barrier to the continued availability of telehealth is the reimposition of state licensure barriers. During the pandemic, many states granted licensure reciprocity for physicians who possessed out-of-state licenses in good standing. These states waived the requirement that out-of-state physicians undergo the lengthy and expensive process of obtaining an in-state license to provide telehealth consultative services to in-state residents. Because of that, the number of inter-state telehealth consults surged. This proved especially useful in underserved rural areas of the country.[9] With the return of the pre-COVID licensure landscape, physicians licensed in their home states once again risk licensure loss and, in some states, criminal sanctions if they conduct consultations with patients located in states in which they are not licensed. A variety of state and federal legislative reforms have been proposed.[10] State-based efforts that focus on licensure reciprocity (as currently exists for driver's licenses) would require the agreement of state medical boards, whose concerns often focus on keeping out the very competition these changes would invite.[11] Amongst the more popular state-based legislative options is the Interstate Medical Licensing Compact. While an increasing number of states have chosen to join the compact, this agreement does not represent true reciprocity and still requires physicians to obtain licenses in every individual state where they aim to practice, with all the attendant fees and time that come with such applications. Resultantly, only a small fraction of eligible physicians have used the compact's services. Ultimately, because of the protectionist instincts of state medical boards, efforts at federal legislation may prove more successful. That said, proposals like the TELE-MED Act of 2013 and bills creating a parallel national licensure option have failed to garner significant support.

Treatment

Radiation oncology is perhaps unique amongst medical specialties in that many of the elements of the treatment pathway could be facilitated by tele-technology. Perhaps the most important example of this is the weekly on-treatment management provided by the physician (CPT 77427). The work of on-treatment management involves myriad elements, including review of on-treatment imaging, chart review or dosimetry, coordination of multidisciplinary care, evaluation of patient treatment set-up, review of labs and medications, and a "face-to-face" encounter. And it is this final element—the weekly face-to-face encounter with the patient—that can likely be safely performed via telehealth using approved audio-visual technologies in select circumstances left to physician discretion.

Currently, 77427 is listed as provisional on the list of Medicare telehealth-eligible codes. CMS is actively considering making the code's inclusion on the list permanent. There are a variety of factors that the agency looks at when trying to make such a change, including whether the code is separately payable under the Physician Fee Schedule (PFS), whether the relevant element of the code can be furnished using interactive telecommunications, whether the service is analogous to a code that has already been made permanent, and whether there is clinical equipoise comparing the in-person versus virtual service.

There is data on the issue of clinical equipoise.[12] The authors of a recent study utilized telehealth, face-to-face visits for a substantial portion of their patients as part of their on-treatment management during the COVID-19 pandemic. They performed an in-depth safety analysis of these 2,817 patients who, at the discretion of their treating physician, had these telehealth visits. The hypothesis was that the telehealth face-to-face visit would be functionally equivalent to the in-person, face-to-face visit.

In this large cohort of nearly 3000 patients who, from October 2020 to October 2022, exclusively utilized telehealth and face-to-face encounters as part of their weekly radiation treatment management, 99.7% of the safety events reported did not "reach the patient or cause harm" to them. Most importantly, this distribution of safety events was similar to patients who had in-person, face-to-face visits in our department, indicating no significant physical or treatment delivery-related risks to patient safety from telehealth care. This finding in patients receiving radiation is consistent with multiple publications that show no detriment to telehealth management for patients receiving systemic (chemo)therapy.[13,14] Thus, It was concluded that telehealth for the face-to-face encounter element of 77427 is as safe and equivalent to the in-person variant. CMS will soon weigh in on whether to include 77427 on the list of permanent telehealth codes.

Outside of utilizing telehealth for weekly on-treatment management, many radiation oncology practices have used virtual direct supervision for treatment oversight. Supervisory flexibilities allow radiation oncology departments and practices to load-level deployment of key personnel and ensure appropriate access to treatment for the patients they serve. Since January 2020, CMS has permitted general supervision for radiation treatment in the hospital outpatient setting. However, the ability to fulfill the availability obligations via telemedicine proved especially popular for free-standing facilities, which are still subject to direct supervision. However, virtual direct supervision, like other telehealth flexibilities, is set to expire at the end of 2024. Numerous professional organizations, including the American College of Radiology (ACR), have urged CMS to extend direct virtual supervision. In notable contradistinction, ASTRO has opposed the extension of virtual direct supervision and advocated for reversion to direct supervision in the hospital outpatient setting. This position proved unpopular with its members, with only 4% endorsing such an extreme view in the town hall ASTRO conducted on April 4, 2024.[8] ASTRO's substantive, albeit speculative, concerns centered mainly on issues related to reimbursement and job market implications. Importantly, no safety data pertaining to virtual direct supervision was proffered. Outside of the reaction of professional organizations, we also must note that CMS supervisory requirements represent a floor. Some states' relevant regulations, insofar as they mandate direct supervision and do not explicitly provide a virtual option, may also present significant barriers to telehealth expansion.[15]

Conclusions

Ultimately, there is little doubt that telemedicine will play a role in the future of cancer care; the question is how significant this role will be. The need for specialists, including oncologists, in remote areas is increasing. Still, due to various factors, the Association of American Medical Colleges predicts a shortage of up to 124,000 doctors over the next decade, with expected geographic maldistribution to remain a significant issue.[16,17] Telehealth is poised to provide a partial solution to this looming crisis.

Recognizing this, the Biden Moonshot and the National Cancer Institute (NCI) have invested in building a national network of telehealth research centers to examine the use of telehealth and ensure that findings are quickly adopted into effective and equitable practice. The National Cancer Institute's Telehealth Research Centers of Excellence (TRACE) Initiative funds 4 centers focused on: "rapidly developing an evidence base of telehealth approaches to cancer care, spanning prevention to survivorship; identifying and addressing disparities in access to and use of telehealth services for cancer-related care; fostering innovations to improve cancer care delivery using new tools, research methods, and technologies; and evaluating the changing policy and payment environment and its impact on the delivery of telehealth for cancer care." TRACE centers are at the University of Pennsylvania, Memorial Sloan Kettering, New York University/Veterans Administration, and Northwestern. Activities of the Centers are guided by an integrated conceptual model named the Framework for Integrating Telehealth Equitably (FITE).[18] The FITE model draws from key constructs of communication science, including the Patient-Centered Communication Framework[19] and the Health Equity Implementation Framework.[20] This model is developed to target communication processes and evaluate multilevel determinants shaping the effectiveness and equity of proposed telehealth care delivery strategies. This research should provide much-needed data on the impact of telehealth services in the oncology setting and help with its intelligent implementation.

We have made significant progress in integrating telemedicine into radiation oncology care, but much work remains. Regulatory and payment modifications must occur to ensure telehealth's continued utilization. Appropriately deployed, teletechnology can help solve issues of access, financial toxicity, care equity, and physician burnout.

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