

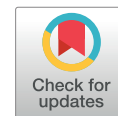


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TELEMEDICINE

Telemedicine for Radiation Oncology in a Post-COVID World



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National payment and privacy policies instituted during the COVID-19 pandemic have accelerated the incorporation of telemedicine into routine radiation oncology practice for many institutions. Although telemedicine has the potential to revolutionize radiation oncology, it is unclear what role it should play moving forward, especially once these temporary policies expire and the risk of COVID-19 transmission falls. Existing literature suggests that telemedicine broadly improves access, saves time and money, and is well regarded by patients and providers. These benefits must be counterbalanced by the technical and administrative burden posed by new technology and the physical examination restrictions posed by the physically separated interaction. We describe a model for a hypothetical “Virtual Radiation Oncology Clinic” workflow that would minimize the number of visits patients must make to a physical radiation oncology facility. We also examine qualitative clinical, operational, and economic implications of shifting toward a remote practice. Now that the technology and pathways to virtual care have been developed, they are likely here to stay in some capacity. It is crucial that we generate and rely on evidence to inform policy and to determine how to best incorporate telemedicine to benefit patients and advance clinical practice.

Introduction

The introduction of social distancing policies in response to the COVID-19 pandemic has transformed the way people interact with the world around them. States have issued orders to restrict personal travel, closed nonessential businesses, and advised people to stay at home to reduce the spread of disease.¹ Health care facilities have similarly been advised to use remote work technologies to protect patients and providers from the risk of coronavirus transmission.²

Although the technology required to facilitate remote audio/video visits has existed for years, the most important recent catalysts driving telemedicine adoption have been payment and privacy policy adjustments from the Department of Health and Human Services (HHS).³ In March 2020, the secretary of HHS used the power afforded by the 1135 waiver authority and the Coronavirus Preparedness and Response Supplemental Appropriations Act to waive several key telehealth restrictions for Medicare patients until the end of the COVID-19 public health emergency.⁴ This waiver allowed Medicare providers to bill for telehealth visits at the same rates they would in-person visits. It

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also allowed patients to access telemedicine from home and eliminated restrictions limiting telehealth visits to rural patients. Finally, it temporarily waived HIPAA violation penalties for providers using widespread audio/visual programs such as Skype and FaceTime, which reduced the perceived liability risk (an established barrier to telemedicine dissemination)³ and allowed providers without custom-built telehealth infrastructure to participate.

These sweeping policy changes, although temporary, have led to the rapid incorporation of telemedicine into medical practice nationwide.^{5,6} Although limited reports of telemedicine in US radiation oncology practices existed before the COVID-19 outbreak,⁷ rapid incorporation of virtual platforms has since been reported.⁸ One academic medical center reported that within 2 weeks of requiring the majority of attending physicians to work remotely, more than 90% of weekly on-treatment visits were being performed via a telemedicine platform.⁹ At the MD Anderson Cancer Center, during the first 8 weeks of implementation, more than 1500 follow-up visits and on-treatment visits were conducted via a telemedicine platform, which represented about a quarter of each visit type during this period.

It is unclear how this brief experience with telemedicine will change the landscape of radiation oncology moving forward. Clinical workflows have been established. Technological solutions such as electronic medical record–based video visits have been developed and deployed. Patients and providers have learned firsthand about the benefits and limitations of telemedicine, and it is difficult to rationalize returning to a world without these capabilities.

Arguments For and Against Telemedicine

Given that the COVID-19 pandemic accelerated the ongoing telemedicine revolution, it is no surprise that many of the benefits of telemedicine are related to minimizing the impact of COVID-19 and other infectious diseases. Patients with cancer, immunocompromised owing to their disease process or oncologic therapies, are at greater risk of severe COVID-19 infections.^{10,11} Furthermore, the novel coronavirus is anticipated to circulate in the community until herd immunity develops (via infection or vaccine), which will be several months at the earliest.¹² It is therefore critically important that the benefits of in-person encounters be weighed against increased exposure risks for patients and providers as social distancing in cancer care settings is relaxed in the immediate future.

Existing literature suggests telemedicine provides practical benefits beyond limiting infection risk. With broadly defined telemedicine interventions, including virtual visits, home monitoring devices, and email or phone communication, studies have described cost savings, improved communication, decreased travel time, increased access, and decreased readmissions.¹³⁻¹⁵ There are also numerous reports of patient and provider satisfaction with telemedicine

solutions in multiple contexts, with many patients reporting that they prefer video visits to in-person encounters.¹⁶

Several challenges to telemedicine implementation also exist. Providers hesitant to adopt telehealth solutions have reported concerns about a lack of training, a lack of technical support, and an increased administrative burden.^{17,18} Others noted concerns about the loss of patient-physician interaction required to build rapport. The physical examination is also limited with current video solutions, which increases in relevance as radiation oncology trends toward increasingly precise plans and hypofractionated courses. In addition, the current billing and regulatory framework for telemedicine is tenuous. As previously noted, the existing telehealth waivers will expire once the COVID-19 public health emergency is declared over.⁴ Coverage for telehealth visits and limitations on out-of-state practice and licensing vary by state and payer,⁶ and the degree that telemedicine is incorporated into clinical practice will be heavily influenced by the regulatory environment moving forward.

Implications of the “Virtual Radiation Oncology Clinic” Model

With a billing and regulatory environment conducive to telemedicine, radiation oncology clinics may be able to shift a significant amount of their operations to a virtual model. [Table 1](#) outlines a hypothetical patient’s progression through the radiation oncology treatment pathway and possible virtual solutions that would limit the number of encounters required at a specific physical radiation oncology clinic. Although many multisite practices already rely on a virtual workflow for several of these steps (eg, virtual peer review¹⁹), some of these are conceptual at this time. Although the consequences of wide Virtual Radiation Oncology Clinic (VROC) adoption will depend on the regulatory environment, patient and provider acceptance, and the technological innovations needed to support this model, we will explore some possible implications.

Because of the limitations of relying on a purely virtual workflow for patient care, we only recommend selective incorporation of telemedicine in limited clinical settings. For example, patients at high risk for complications or recurrence would not be ideal candidates for virtual visits because of physical examination limitations. However, a virtual assessment could potentially be supplemented with a “joint visit” and thorough physical examination provided by a trained provider located closer to the patient.

Even if 20% of processes could be shifted to the virtual setting, telemedicine models could have significant operational implications for brick-and-mortar oncology practices. For example, fewer clinic rooms would be needed for a given number of patients, and shared workstations could be used for the rare occasions that remote employees need to work onsite. Conversely, facilities may not need to invest in physical construction to expand services. Telemedicine may enable centers with specialized expertise to care for

Table 1 Example virtual patient pathway

Patient pathway	Potential virtual solutions
New patient consult	Video call cofacilitated (or not) with a local provider's physical examination; laboratory tests and imaging locally
Multidisciplinary discussion	Scheduled conference calls; individual phone calls and emails
Simulation	Virtual direction and standardized patient indexing at satellite radiation oncology locations or remote diagnostic imaging facilities
Contouring/treatment planning	Facilitated by remote desktop software; communication with off-site/centralized dosimetrists with screen sharing technology, phone calls, or email
Quality assurance	Remote scheduled peer review/quality assurance with screen sharing
Treatment delivery	Patients will need to be present at a radiation therapy facility to receive their radiation
Weekly visits/OTVs	Video call cofacilitated (or not) with a local provider's physical examination; laboratory tests and imaging locally
Follow-up visits	Video call cofacilitated (or not) with a local provider's physical examination; laboratory tests and imaging locally

Abbreviation: OTV = on-treatment visit.

more patients, thereby increasing access to clinical trials and geographically limited technologies.²⁰ Additionally, employees may be more productive with less time spent commuting to or between clinics and may derive increased satisfaction from work-from-home arrangements.²¹

The overall economic impact of a virtual clinic is unclear because the fraction of encounters that could be performed remotely will likely depend on individual patient and provider circumstances. Even if the overall costs to payers are unchanged, virtual clinics could assist patients with the financial toxicity of cancer care. The convenience of decreased travel time and decreased disruption of work and childcare may allow some patients to receive guideline-concordant care that they would otherwise elect to forgo.

The VROC model, in combination with supervision requirement changes,²² could also transform the radiation oncology workforce as we know it. A survey of recent graduates concluded that there exists a misalignment of geographic preferences (including regional preferences and city size) and job opportunities.²³ Although the American Society for Radiation Oncology recommends a board-certified radiation oncologist be present to supervise radiation therapy delivery in nearly all circumstances, less stringent CMS regulations have opened the door to the possibility of greater remote work for radiation oncologists, which could allow physicians to live closer to their desired locations while maintaining reasonable levels of patient access. Indeed, the impact of telemedicine is most likely to be evident in rural practices with marginal patient volumes; a single radiation oncologist could potentially oversee treatment for patients at multiple sites. The combination of reduced supervision requirements and increased efficiency afforded by virtual platforms may therefore reduce the number of radiation oncologists needed for any given number of treated patients. Although current policies requiring direct supervision are likely to constrain the impact of the VROC model on the workforce, it is possible to imagine a future in which rural sites are overseen largely

by remote providers. Nonetheless, the allure of improved access, economic efficiency, and workforce redistribution must be carefully weighed against the potential safety risks posed by inadequate virtual assessments.

Conclusion

Telemedicine is a powerful tool with the potential to revolutionize the way radiation oncology is practiced. Temporary policies enacted to combat the COVID-19 pandemic have provided a preview of what a virtual clinic could look like, and they have accelerated the development of technologies, workflows, and strategies for practicing radiation oncology remotely. Although we are better equipped to incorporate features of the VROC into our practices today, we must carefully weigh the risks and benefits of these strategies and judiciously use telemedicine to improve patient access while minimizing the potential negative impact on the safety and quality of clinical care. We are currently performing research on patient and provider attitudes regarding telehealth in radiation oncology clinics and expect these results to inform the discussion regarding how virtual encounters are incorporated moving forward. Although we have rapidly adopted telemedicine on a temporary and emergent basis out of clinical necessity, we must rely on the data to guide how to best harness virtual strategies in a post-COVID world.

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