

# E-Health and Telemedicine in Otolaryngology

## Risks and Rewards



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### KEYWORDS

- E-Health • Telehealth • Telemedicine • Business of medicine • Consultation
- Smart phones

### KEY POINTS

- CMS has made significant changes to telemedicine rules in response to the current pandemic to allow doctors to safely care for patients.
- Smartphones, the Internet, and other advanced technology combined with sweeping changes to regulations has led to the wide adoption of telemedicine over the course of the last year.
- Telemedicine has the power to expand otolaryngologic services to underserved areas and populations.
- There are several challenges, including access to high-speed Internet, the need for special tools/technology, documentation, and patient privacy.
- Further improvements in technology could further expand the use of telemedicine in otolaryngology to include endoscopic examination, otologic examination, audiologic assessment, and speech therapy assessment from a remote setting.

### INTRODUCTION

Telemedicine has been present in various progressive forms since the invention of the telegraph, the telephone, and radio transmission in the late nineteenth century. In the 1920s, an article published in *Science and Invention Magazine* by Hugo Gernsback heralded telehealth.<sup>1</sup> He described a device called a “teledactyl” that used radio communication that would allow doctors to see their patients through a viewscreen and touch them from miles away with spindly robot arms.<sup>1</sup> The rapidly changing communications landscape of the early twentieth century brought about the connectivity of

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the general population and the progression of the use of these technologies for remote medical access and practice. In the 1950s, radiologic images were transmitted via telephone, and in the 1960s, interactive two-way television was used to send physical examinations and provide distanced health services. However, it was not until the interconnectivity of the general population via the Internet in the late twentieth century that telehealth came into more widespread usage. Internet-based technological growth enabled the full potential of telehealth to start to be realized.<sup>2</sup> Although telemedicine was initially created as a way to treat patients in remote locations away from local health facilities or in areas with shortages of medical professionals, more recently it is increasingly used as a tool for convenient medical care and to limit patient contact, thus decreasing infectious disease risk.<sup>2,3</sup> As such, telemedicine implementation and use rapidly accelerated during the recent coronavirus disease 2019 (COVID-19) pandemic when lockdown restrictions limited patient care to virtual visits.<sup>4</sup> Rapid regulatory, legislative, and health insurance coverage changes ensued, which immediately expanded telemedicine services.<sup>5-7</sup> Between mid-March and mid-October 2020, more than 24.5 million out of 63 million Medicare beneficiaries and enrollees received a Medicare telemedicine service.<sup>5</sup>

### **DIFFERENCES BETWEEN TELEHEALTH, eHealth, AND TELEMEDICINE**

With the interrelated fields of digital health, mobile health information technology, and telemedicine so frequently overlapping, the terms “telehealth” and “telemedicine” are often used interchangeably.<sup>2</sup> However, telemedicine is a more limited subset of telehealth. Telemedicine refers to delivering remote clinical services over a distance, such as medical education, remote patient monitoring, patient consultation via videoconferencing, wireless health applications, and transmission of imaging and medical reports.<sup>8</sup> Telehealth has a broader definition and can also include nonclinical activities, such as provider training, administrative meetings, continuing medical education, and public health functions. According to the World Health Organization, the term digital health is rooted in eHealth, which is defined as “the use of information and communications technology in support of health and health-related fields.”<sup>9</sup> The World Health Organization further defines mobile health (mHealth) as a subset of eHealth and is defined as “the use of mobile wireless technologies for public health.”<sup>9</sup> The term digital health was introduced as “...a term encompassing eHealth (which includes mHealth), as well as emerging areas, such as the use of advanced computing sciences in ‘big data,’ genomics and artificial intelligence.”<sup>9</sup>

### **TELEHEALTH AND THE COVID-19 PANDEMIC**

During the COVID-19 pandemic, there was an unprecedented adoption and use of telemedicine.<sup>10</sup> Many rapid regulatory, legislative, and health insurance coverage changes ensued with COVID-19. In February 2020, the Centers for Disease Control and Prevention issued guidance advising persons and health care providers in areas affected by the COVID-19 public health emergency to adopt social distancing practices, explicitly recommending that health care facilities and providers offer clinical services through virtual means, such as telehealth. On March 6, 2020, the Centers for Medicare & Medicaid Services announced telehealth policy changes and regulatory waivers in response to COVID-19. Telehealth provisions followed this as part of the US Coronavirus Aid, Relief, and Economic Security (CARES) Act, effective March 27, 2020.<sup>11</sup> These emergency policies included improved provider payments for telehealth, allowance for providers to serve out-of-state patients, authorization for multiple types of providers to offer telehealth services, reduced or waived cost-sharing for

patients, and permission for federally qualified health centers or rural health clinics to provide telehealth services.<sup>11</sup> The waivers also allowed for virtual visits from the patient's home rather than in a health care setting.<sup>11</sup> During the COVID pandemic, several health policies and rates were temporarily altered at the federal and state level.<sup>12</sup> During that time, the Centers for Medicare & Medicaid Services increased telehealth reimbursement rates from \$14 to \$41, to \$46 to \$110 per visit.<sup>12,13</sup> Aetna, Anthem, Cigna, Humana, and United Healthcare also announced that they would pay physicians who conduct telehealth visits the same as their in-person rate in addition to paying claims for in-network and out-of-network physicians.<sup>12</sup>

As a result, there was an immediate increase in the number of telemedicine visits, with most encounters being from patients seeking care for conditions other than COVID-19.<sup>11</sup> There was a marked overall increase in the use of telehealth services and a concomitant sharp decline in the use of emergency departments.<sup>11,14–16</sup> These changes in telehealth were needed to increase access to patients. For various reasons, access to in-person health care was increasingly scarce. Patients with COVID19 could safely be cared for via telemedicine. Doctors' offices and clinics closed or severely reduced in-person capacity in response to safety concerns and stay-at-home orders. Additionally, patients avoided seeking in-person care during the pandemic. Overall, an estimated 41%–42% of US adults reported having delayed or avoided seeking care during the pandemic because of concerns about COVID-19, including 12% who reported having avoided seeking urgent or emergency care.<sup>11,14–16</sup> This rapid shift from in-person to virtual visits resulted in providers and patients gaining experience with telemedicine quickly. A study recently published by the American Academy of Otolaryngology-Head and Neck Surgery Telemedicine & Telehealth Working Group, found that of the survey respondents who answered questions about practice volume, 99% reported increased use of telemedicine during the pandemic.<sup>4</sup> Although telemedicine was generally well-accepted by patients and providers, this rapid expansion of telemedicine taught us all a great deal regarding its challenges, risks, limitations, and rewards.<sup>4,11</sup>

## BENEFITS

Telemedicine demonstrated multiple rewards for individual and public health during the COVID-19 pandemic that continue to provide benefit. Remote screening and management of persons who needed clinical care for COVID-19 and other conditions increased access to care when many outpatient offices were closed or had limited operating hours.<sup>11</sup> The increased availability of telemedicine services reduced disease exposure for staff members and patients, preserved scarce supplies of personal protective equipment, and minimized patient surges on facilities.<sup>11,17</sup> In addition, many patients seeking telehealth in the early pandemic period were managed at home, which reduced large volumes of patients seeking care at health care facilities that were in the midst of a surge of COVID-19 cases.<sup>11</sup> Access to telehealth services was also valuable for patients who were reluctant to seek in-person care, had difficulty accessing in-person care, or had chronic conditions that placed them at high risk for severe COVID-19.<sup>11</sup>

Telemedicine has the power to break down geographic barriers to care access and allow patients with mobility issues to see providers from their homes. Telemedicine consultations can also allow for increased access to specialists in locations or facilities that are underserved. Additionally, increased telemedicine access can potentially reduce health care spending and such problems as medication nonadherence and unnecessary emergency room visits.<sup>2</sup>

The rewards of telemedicine extend beyond the COVID-19 pandemic. Telemedicine has the capacity to expand access to quality patient care, especially to remote rural regions and underserved populations.<sup>2</sup> Patients live in an increasingly technologically connected world. Telemedicine allows for a different kind of care experience.<sup>2</sup> With the increased access and flexibility for patients, patient convenience and engagement with telemedicine are rewards and driving forces.<sup>2</sup>

## RISKS AND CHALLENGES OF TELEMEDICINE

Although there are multiple benefits in the judicious use of telemedicine, it is not without risks, challenges, and limitations. Several studies have shown that the socio-economic status of a country, and an individual, can limit telemedicine access and feasibility.<sup>18,19</sup> It has been clear that much of the limited access to telemedicine is related to limited access to the Internet or technology devices, such as computers, smartphones, or tablets.<sup>11,20</sup> Additionally, unfamiliarity with technology or disabilities that limit or prohibit the use of these technologies are potential barriers for some patients.<sup>11,20</sup> In addition, virtual visits might not be best for some persons based on level of medical acuity or necessity to conduct an in-person physical examination or diagnostic testing.<sup>11</sup>

Telemedicine platforms require training, software and possibly equipment purchases.<sup>2</sup> Additionally, more extensive inpatient telemedicine platforms used between doctors requesting consultations and consulting specialists usually require more training and the purchase of a telemedicine cart and various mobile health devices.<sup>2</sup>

The scalability of telemedicine opens the door for on-demand care from consumer-facing companies, where a patient can log in and request a visit with a random provider. However, that provider likely does not know the patient nor has the ability to have the patient follow-up with them in person should the visit necessitate a physical examination.

In otolaryngology, a thorough examination of regions that require specific tools, such as the ears, nose, sinuses, and throat, is difficult to conduct remotely. Additionally, palpation by the clinician to examine structures is not available via telemedicine encounters, thus delaying diagnosis of a known or occult mass. Other medical specialties that do not require as much patient touch or direct examination of luminal structures may be more amenable to telemedicine, such as teleradiology, telepathology, telepsychiatry, and teledermatology. However, new technology could greatly expand the use of telemedicine in otolaryngology. Otolaryngology can be adapted to telemedicine because of the use of endoscopic images and videos. Tools can be developed to be used in the remote office or even at home to allow improved visualization. Also, smartphones are revolutionizing telemedicine. Smartphones may be used one day for a variety of applications, such as screening for hearing loss and voice analysis. Further validation and study are needed before widespread adoption of endoscopic and smartphone applications in telemedicine.

With the use of new technologies for telemedicine, clinicians face challenges following the usual protocols, quality assurance, and institutional norms.<sup>21</sup> Continued appropriate documentation, follow-up, adverse event reporting, and patient privacy protocols must be observed.

## TYPES OF TELEMEDICINE CONSULTATIONS

There are three primary types of telemedicine: (1) remote monitoring, (2) store-and-forward, and (3) real-time interactive visits.<sup>22</sup> Remote monitoring also includes self-testing and self-monitoring and uses a range of technologies to monitor patients

remotely. This type of telemedicine is used extensively to manage some chronic diseases, such as asthma, diabetes mellitus, and cardiovascular disease.

Store-and-forward or “asynchronous” telemedicine uses stored information, such as images, laboratory results, recorded videos, or history reports, which is sent to a physician at a different location who need not be communicating with the patient at the same time. This type of telemedicine is common in the fields of dermatology, pathology, and radiology.<sup>22</sup>

Real-time or “synchronous” telemedicine services are live interactions between a health care provider and a patient or another provider and offer a virtual alternative to an in-person visit. This is accomplished via audio-only, video, or both using a variety of communication devices. There are constantly changing regulations and insurance payer policies with regards to how these services are reimbursed. Again, providers should check with their respective payers to confirm authorizations of reimbursable telemedicine services and restrictions on the site requirements of the patient and the provider.

## LICENSURE AND MALPRACTICE CONSIDERATIONS

If one is licensed in the state where the patient is located, there are generally no additional telemedicine licensure requirements. If one is not licensed in the state where the patient is located, the circumstance varies according to the state where the physician and the patient are located.<sup>23</sup> During the COVID-19 pandemic, Centers for Medicare & Medicaid Services issued waivers for Medicare patients, temporarily waiving requirements that out-of-state providers be licensed in the state where they are providing services when they are licensed in another state. Physicians are still bound by their state licensing requirements.<sup>24</sup>

Many states have temporarily relaxed licensure requirements related to physicians licensed in another state and retired or clinically inactive physicians.<sup>23</sup> This includes waiving licensure requirements or offering a temporary expedited license for out-of-state physicians. Many but not all of these measures apply to physicians providing telemedicine across state lines. Additionally, since the COVID-19 pandemic, there has been significant growth in the number of states participating in the Interstate Medical Licensure Compact.<sup>25</sup> This is an agreement among participating US states to work together to significantly streamline the licensing process for physicians who want to practice in multiple states. Please contact your state board of medicine or department of health for up-to-the-minute information. Regarding medical malpractice insurance considerations, check with your malpractice insurance carrier to ensure your policy covers providing care via telemedicine. Malpractice insurance carriers may not cover multiple states and often must be notified when out-of-state consultation is contemplated.

There is also variability between states with respect to requiring health care providers to obtain informed consent to use telemedicine.<sup>2</sup> Whether or not a state requires this, it is always good practice for providers. One should consider explaining the telemedicine protocols and policies for virtual visits, prescribing, and care coordination and any limits on patient confidentiality.<sup>2</sup>

## SUMMARY

In the wake of the catastrophic impact of COVID-19, innovative solutions and implementation in telemedicine have created a transformation in health care.<sup>18</sup> The response to the pandemic provided a unique opportunity to see the role that telemedicine can play in health care. With the resultant expanded access, improved

reimbursement policies, and acceptance by patients and health care providers, telemedicine will likely serve as an important modality for delivering care even after the pandemic.<sup>11</sup> There is compelling evidence to suggest that telehealth may have a significant effect on advancing health care in the future.<sup>18</sup> In otolaryngology, this can certainly serve as an adjunct to in-person care to increase patient convenience, access, and engagement. Because the head and neck region's unique anatomy often requires palpation and specific tools to examine and surgically treat luminal structures in the ears, nose, and throat, today's available technology limits how much of the scope of otolaryngology can presently be performed remotely.

## DISCLOSURE

The authors have nothing to disclose.

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