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# Implementation of Telemedicine in a Laryngology Practice During the COVID-19 Pandemic: Lessons Learned, Experiences Shared

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**Summary: Objectives.** The novel coronavirus disease 2019 has posed significant limitations and barriers to providing in-person healthcare. We aim to provide a summary of learned experiences and important considerations for implementing and offering telehealth to provide laryngology subspecialty care during the COVID-19 pandemic and thereafter.

**Materials and Methods.** Four laryngologists and a voice-specialized speech-language pathologist from a tertiary-care academic Voice and Swallowing Center were engaged in a structured group consensus conference. Participants shared input, experiences, and practice patterns employed via telemedicine (via telephone or video-communication) during the early COVID-19 era.

**Results.** Key identified areas of consideration when offering telemedicine included (1) how to set up and structure a telemedicine visit and maintain patient confidentiality, (2) patient examination and treatment initiation, (3) optimization of the tele-visit, (4) limitations and recognition of when a tele-visit is insufficient for patient care needs, (5) billing/reimbursement considerations. Group consensus for the aforementioned topics is summarized and discussed.

**Conclusion.** During the COVID-19 pandemic, a telemedicine model can be effectively employed to improve patient access to subspecialty laryngology care, including a multidisciplinary care approach, with initiation of various therapeutic interventions. A major limitation given the preclusion of in-person assessment is the lack of access to laryngoscopy, which can likely be delayed safely in the majority of individuals.

**Key Words:** Telemedicine—Laryngology—COVID-19—Video visit—Coronavirus—SARS-CoV-2.

**Abbreviations:** COVID-19, Coronavirus disease 2019—SARS-CoV-2, Severe acute respiratory syndrome coronavirus 2—PPI, Personal protective equipment—SLP, Speech-language pathologist—UCSF, University of California, San Francisco—PROM, Patient reported outcome measure—MBSS, Modified barium swallow—EMST, Expiratory muscle strength trainer—PMI, Personal meeting identification—VHI-10, Voice Handicap Index-10—RSI, Reflux symptom index—CSI, Cough severity index—DI, Dyspnea index—EAT-10, Eating assessment tool-10—TEP, Tracheoesophageal voice prosthesis—FEES, Flexible endoscopic evaluation of swallowing.

## INTRODUCTION

The novel coronavirus disease 2019 (COVID-19) caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has created an unprecedented challenge for healthcare delivery. This crisis has placed extraordinary demands on hospitals, emergency departments, and healthcare offices both nationally and worldwide. The Centers for Disease Control and Prevention has recommended healthcare systems reduce face-to-face contact to promote physical distancing, slow

disease transmission, and preserve supplies and personal protective equipment.<sup>1</sup> As the pandemic unfolded in March 2020, the American Academy of Otolaryngology-Head and Neck Surgery recommended otolaryngologists limit both inpatient and outpatient care to individuals with time-sensitive, urgent, and emergent medical conditions.<sup>2</sup>

As a result, healthcare providers have adopted telehealth models to provide ongoing access to healthcare. Telemedicine is defined as the provision of healthcare services from a distance.<sup>3</sup> Technological advances enable patients to access medical services without the provider being in the same room, for both urgent and nonurgent complaints. In general, telehealth improves patient care access and may improve compliance due to greater convenience of follow-up.<sup>4-7</sup> However, telemedicine carries clear limitations related to the ability to conduct thorough physical exam and other investigations (eg, laryngoscopy).<sup>7-11</sup> There may be reduced personal connection between provider and patient. Technical challenges may limit access to care by the elderly or socioeconomically disadvantaged.

While televisits allow healthcare providers an opportunity to offer ongoing specialty care during this pandemic, there are challenges in translating a subspecialty care model from

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the office to the virtual realm. For laryngology, medical history can be accurately obtained through telehealth platforms, but the ability to complete a comprehensive head and neck exam, stroboscopy, instrumental swallow exam and acoustic/aerodynamic voice analyses is markedly limited.<sup>9,11</sup> Furthermore, many laryngology centers employ a multidisciplinary assessment approach by including a speech-language pathologist (SLP) for most encounters. This model requires precise schedule coordination and may be more challenging to continue via telehealth in the COVID-19 era.

Herein, we reflect on our early experience of using telehealth to provide laryngology subspecialty care during the COVID-19 pandemic. Collective knowledge and best practices surrounding COVID-19 continue to evolve rapidly. We hope that the following information provides useful insight to other otolaryngology providers to maximize effectiveness of telehealth visits and optimize patient care through a new “routine” healthcare access model.

## MATERIALS AND METHODS

In preparation for this review, four laryngologists and a voice-specialized SLP engaged in a structured group consensus conference in early April 2020. All participants are routinely involved in the delivery of laryngology subspecialty care at the UCSF Voice and Swallowing Center (VSC), a tertiary-care laryngology practice. All participants actively contributed to sharing and discussing their experiences and practice patterns employed via telemedicine (via telephone or video-communications) during the early COVID-19 era. Barriers and challenges experienced to date were explored, and potential solutions for these difficulties proposed.

Of note, the UCSF VSC has been offering video-telemedicine visits since June 2017, representing nearly three years of experience with the video-visit telemedicine model. These visits were, however, limited to follow-up therapy sessions; all initial joint laryngologist-SLP patient visits and initial SLP therapy sessions were previously completed in-person. Prior to March 2020 (ie, COVID-19 era), laryngologists at the UCSF VSC did not offer telemedicine services.

## RESULTS

Based on the input and discussion from UCSF VSC’s telemedicine consensus conference, several key areas of consideration were identified for implementing and adopting telemedicine in a multidisciplinary, tertiary-care laryngology practice. These key areas included (1) how to set up and structure a telemedicine visit and maintain patient confidentiality, (2) patient examination and treatment initiation, (3) optimization of the tele-visit, (4) limitations and recognition of when a tele-visit is insufficient for patient care needs, and (5) billing/reimbursement considerations. These topics are discussed individually in the following discussion.

## DISCUSSION

### Setting up a telemedicine visit

Telemedicine video visits are provided through the Zoom for Healthcare platform (Zoom Video Communications, Inc., Version 4.6.10) at the UCSF Voice and Swallowing Center. Other vendors that provide HIPAA-compliant video communication products include Skype for Business, Updox, VSee, Doxy.me and Google G Suite Hangouts meet.<sup>6</sup> In order for these platforms to meet HIPAA-compliance, several general requirements must be in place for video conferencing. These obligations include: (1) ensuring the confidentiality, integrity, and availability of all electronic protected health information the covered entity creates, receives, maintains, or transmits; (2) protecting against any reasonably anticipated threats or hazards to the security or integrity of such information; (3) protecting against any reasonably anticipated uses or disclosures of such information that are not permitted or required under the privacy regulations; and (4) ensuring compliance by its workforce. Specifics on how these requirements are met and maintained are well detailed online within the Zoom for Healthcare HIPAA-Compliance Guide.<sup>12</sup> Institutions and clinician providers should check with the specific vendors that allow video-communication to ensure the above HIPAA-compliance measures are met as well for the specifics on how the requirements are guaranteed.

Platforms like Zoom offer virtual “waiting rooms” from which the clinician “admits” the patient; this safety measure protects patient privacy as the clinician controls who is allowed to enter the visit. Multiple people can be admitted simultaneously (eg, interpreters, additional family members, or scribes) as authorized by the clinician.

A flowchart to demonstrate our protocol at the UCSF VSC for arranging, preparing for, and conducting telemedicine visits is shown in [Table 1](#). Patients are contacted by telephone in advance to confirm their interest, willingness, and ability to participate in a telemedicine video visit. Patients are informed about the benefits and limitations of a telehealth visit. Importantly, the patient is also notified that the video visit is a billable encounter, and thus insurance copay may be applied. A previsit check-in is performed by the clinical nursing team 1-3 days before the appointment. Medications, allergies, and personal information are reviewed, and relevant forms (eg, review of system and patient-reported outcome measure [PROM] questionnaires) are completed. All patients at the UCSF VSC complete standard laryngology PROMs (eg, Voice Handicap Index-10,<sup>13</sup> reflux symptom index,<sup>14</sup> cough severity index (CSI),<sup>15</sup> dyspnea index,<sup>16</sup> and eating assessment tool-10<sup>17</sup>) prior to their clinic visit. A Zoom for Healthcare link is provided electronically through the secure patient portal system or via e-mail. The clinical team confirms the patient is able to load and use the platform successfully before their scheduled visit. If possible, having the patient complete a “trial run” with the clinical staff team may enable early identification of technical issues and help the patient feel comfortable with the steps needed to connect to the virtual visit.

**TABLE 1.**  
**UCSF Voice and Swallowing Center Protocol for Preparing and Conducting Telemedicine Visits**

	Performed by	Tasks	Notes
Setting up the visit	Scheduling staff	<ol style="list-style-type: none"> <li>1. Verify that patient is interested in telemedicine visit</li> <li>2. Confirm that patient has technological capabilities to participate in video visit</li> <li>3. Advise patient that telemedicine visit is a billable encounter and insurance co-pay may apply</li> </ol>	<ul style="list-style-type: none"> <li>• Can be performed verbally (via telephone) or electronically (via email or a secure patient portal)</li> </ul>
Previsit check-in (1-3 days before physician appointment)	Clinical staff (ie, medical assistant or nurse)	<ol style="list-style-type: none"> <li>1. Verify that patient has received and completed paperwork including health history and PROMs.</li> <li>2. Review health information, notably changes in medications, allergies, and review of systems.</li> <li>3. Confirm that patient has electronically received link to the meeting.</li> <li>4. Provide patient with the provider's individual meeting identification number, if applicable.</li> <li>5. Consider conducting a trial run session with the patient to facilitate the upcoming video visit.</li> <li>6. Answer any questions related to the televisit, to the best of their ability, and notify provider if additional questions remain unaddressed.</li> </ol>	<ul style="list-style-type: none"> <li>• New patients should complete all paperwork prior to the visit including information about: medical and surgical history, medications and dosing, allergies, family history, review of systems, and PROMs.</li> <li>• Staff may need to assist patient in emailing or scanning back completed forms.</li> <li>• Occasionally, staff may need to review the above information with the patient verbally by phone. Providing dedicated time for this time-consuming task is vital and significantly improves the efficiency of the telemedicine visit.</li> </ul>
Telemedicine visit	Provider (ie, laryngologist and/or SLP)	<ol style="list-style-type: none"> <li>1. Confirm patient identity</li> <li>2. Obtain verbal consent for the visit</li> <li>3. Establish patient's current location (see note)</li> <li>4. Advise patient of institutional policy prohibiting recording of the visit and obtain patient's verbal agreement not to do so</li> <li>5. Complete remainder of encounter similar to in-person visit</li> </ol>	<ul style="list-style-type: none"> <li>• Be cautious if name displayed on video is not the patient's name (eg, could be name of patient's child, spouse, or other family member) or if this is a generic name (eg, "iPhone," "iPad," "Galaxy," etc.) In this situation, confirmation of patient's identity is paramount and additional identifiers may be required.</li> <li>• Currently, the requirement for provider and patient to be in the same state is temporarily waived. (See section: Telemedicine Billing Considerations) Providers should verify the up-to-date regulations in their individual state.</li> </ul>

Abbreviations: PROMs, patient-reported outcome measures; SLP, speech-language pathologist.

At the start of the video-visit or telephone encounter, patient identity is verified; typically, name and date of birth can be sufficient. For video visits, the patient must connect to the virtual platform on their own accord, either by clicking on a provided link or by accessing a downloaded application. Verbal consent to utilize telemedicine for the encounter is obtained by the provider and documented within the patient's clinical encounter note. If patients have any concerns about HIPAA-compliance or confidentiality, these questions are addressed by the clinician at this time. UCSF institutional policy prohibits recording of the televisit. Patients verbally confirm their understanding of and agreement to abide by this policy, which further protects patient confidentiality. The remainder of the telehealth visit should be conducted in the same manner as an in-person visit.

For referring providers, good communication in the referral regarding patient complaint, duration of symptoms, and suspected urgency are especially important during this time for appropriate patient triage. A review of the referral and existing medical history can help clinicians anticipate patient's needs, and identify those who would especially benefit from SLP involvement. Patients with complex laryngologic complaints may be best served by a joint visit with both laryngologist and SLP. This allows a detailed history to be obtained concurrently rather than separately, thereby saving time. A concurrent visit also allows for real-time discussion between the laryngologist and SLP, which facilitates efficiency and treatment decision-making.

Virtual joint laryngologist/SLP visits may be possible by logging into one meeting room with the patient. After joint initial patient evaluation, the laryngologist can maximize efficiency while the SLP spends time assessing the patient for therapy candidacy (ie, stimulability<sup>18,19</sup>) by completing other patient-care-related tasks. This may include reviewing previous testing (eg, pulmonary function testing, pH-impedance, manometry, or imaging), working on chart documentation, initiating referrals, or ordering medications or additional testing.

After initial evaluation, in the Zoom platform, the patient may be returned to the "waiting room" temporarily so that the laryngologist and SLP can discuss the patient's case privately, as providers might typically do outside of the patient's examination room. Subsequently, the patient may be "brought back in" to the joint visit for discussion of suspected differential diagnosis and recommended next step(s) in evaluation or treatment.

New patients present a particular challenge with respect to timing and coordination. History-taking can be time-consuming, especially if complex. A full SLP evaluation including voice stimulability testing,<sup>18,19</sup> acoustic evaluation, and/or clinical swallow evaluation<sup>20</sup> requires adequate time allotment. During in-person visits, the laryngologist may go into another exam room with another patient during this time. For virtual visits, this is technically feasible with many telemedicine platforms but again requires appropriate coordination and planning. This may be most easily accomplished by the provider having more than one Zoom

account or access to breakout rooms that can be utilized to run "multiple rooms" with multiple patients. Clearly, this time management is more challenging to coordinate during a video visit with multiple concurrent providers. Alternatively, it may be more advantageous for some new patients to be assessed independently by the laryngologist and SLP depending on the specific practice flow, patient complaint or anticipated patient needs.

For follow-up visits, when care has already been established, a joint laryngologist/SLP session may be more feasible and efficient. Such situations include patient progress updates, re-evaluation after completion or plateau of voice/swallow therapy, evaluation of medication efficacy (eg, allergy or reflux treatment), review of test results (eg, modified barium swallow [MBSS]), and/or patient counseling. A joint session to determine the role for additional therapy, addition of medications or surgical intervention, or review of trialed devices (such as an Expiratory Muscle Strength Trainer or ProTrach) can be more easily accomplished. The visit duration for follow-up is usually shorter which facilitates schedule coordination.

### Examination and treatment

Despite advances in telehealth, otolaryngologists and SLPs depend highly on the oral/pharyngeal/laryngeal examination for diagnosis and treatment. A limited physical examination is possible via video visit. A cursory view of the oral cavity and oropharynx can be obtained with appropriate intraoral lighting in some cooperative patients.<sup>9,20</sup> Perceptual voice analysis with sustained and dynamic vocalization (ie, varying pitch and loudness) tasks in addition to reading standardized passages provide important auditory diagnostic information. Clinical swallowing evaluations are frequently employed as an initial screening tool in dysphagia patients.<sup>21</sup> While these assessments have well-described limitations, direct observation of the patient swallowing various consistencies and subsequently phonating during the televisit could provide helpful preliminary information about global swallowing function, voice quality after swallow, and strength of cough. For patients with breathing complaints, quiet respiration at baseline can be observed and rapid breathing exercises may elicit stridor.

While a telemedicine model of laryngoscopy-videostroboscopy has been described, where a remotely performed exam is relayed for review through either real-time or cloud-based (store and review) technologies, the reliance on an in-office visit with someone able to perform endoscopy remains.<sup>9,11,20</sup> During the peak of the pandemic, avoidance of nonurgent in-person visits and aerosol-generating procedures were recommended.<sup>22,23</sup> Nonurgent laryngoscopy was therefore deferred. Of course, any urgent laryngoscopy should still be performed as deemed medically necessary.

It is imperative that patients are counseled about the diagnostic and treatment limitations in the absence of an endoscopic laryngeal examination. Furthermore, it must be emphasized to patients that such an examination is vital to

complete as soon as it is deemed safe to do so. However, proceeding with therapeutic intervention in the absence of the above comprehensive evaluations is nonetheless possible. For example, in suspected laryngitis or vocal fold hemorrhage, a trial of voice rest could be considered, with reassessment for response in 5 to 7 days. Additionally, there are many medical therapies that laryngologists can initiate with acceptable benefit-to-risk ratios without confirmatory laryngoscopy, including proton pump inhibitors, H2 blockers, alginates, steroids, anti-tussives, mucolytics, and antibiotics, based on appropriate history and suspected diagnosis. Many clinical diagnoses are confirmed or supported by laryngoscopy, but may safely be treated with trials of medications. In these instances, laryngoscopy may be delayed without undue patient risk. For patients with known subglottic stenosis, use of a home peak flow meter to monitor airway symptoms may guide need for in-person visit or surgery.<sup>24-26</sup> Results may be relayed during tele-video visits, and if significant decline in values are noted, a prompt in-office visit should be considered.

Again, providers should proceed with caution, carefully monitoring progress and ensuring completion of full evaluation when safely possible. Once clinics resume safe instrumental examination, timely completion should be accomplished.

### Optimizing the success of the video visit

Multiple steps can be taken on the part of both provider and patient in order to maximize telehealth efficiency and effectiveness. The office should create a virtual workflow for telehealth visits to maximize success prior to starting the visit. This can include a previsit call from office staff to ensure the patient is aware of and knows how to set up the video visit. Technical support or troubleshooting during this call can be helpful.

For the provider, we recommend performing the telehealth visit in a quiet room and using headphones to hear the patient clearly. Similarly, it is helpful for the patient to participate in a quiet room using headphones. In this way, both provider and patient can be heard without excessive vocal strain or effort. For certain patients (eg, elderly, hard of hearing, or those with disabilities), having family members or other care providers present for the video visit is anecdotally beneficial.

Reliable Internet connection is critical. Proximity to the router or being directly connected to Ethernet can be helpful to avoid disruptions of video or audio feed. A readily accessible informational technology hotline number can help providers and patients troubleshoot technical issues. Flexibility and patience are also important to ensuring success. In the event a patient does not show on time for their visit, a simple phone call can help the provider understand the reason for that delay. This may be due to a forgotten visit time, difficulty accessing the tele-visit platform, or another easily corrected technology problem. If the patient is having difficulty with use of a downloaded application, a simple work-around may be use of the website via the internet (eg, zoom.us) to join the meeting. For the clinician, having your Personal Meeting Identification number readily on hand to

give to the patient to input manually on the website can expedite patient connection to the virtual meeting.

Patient-reported outcome measures (eg, VHI-10,<sup>13</sup> reflux symptom index,<sup>14</sup> cough severity index,<sup>15</sup> dyspnea index,<sup>16</sup> and eating assessment tool-10<sup>17</sup>) can be completed by patients prior to the visit, and submitted by email or directly through the electronic medical record. These results are then available to the providers prior to the visit for review.

It is helpful to create a database of resources that can easily be shown during the video visit or sent to the patient via secure link for easy access. These resources serve as virtual replacement for the typical paper informational handouts given in the office. The Zoom for Healthcare platform allows the provider to share their screen. This feature facilitates reviewing results, imaging, previously archived endoscopic examinations, or diagrams for explaining proposed surgeries or procedures.

Sound can sometimes be a challenge on a virtual visit. For example, sustained sounds during voice evaluation or voice therapy may be clipped on Zoom. Providers may change settings to allow original sound; if the issue continues to persist, the patient can also be instructed to make these changes (Table 2).

### When is a video visit not enough?

Some voice and swallowing complaints can be safely managed remotely. However, the majority of patients will ultimately require laryngoscopy for evaluation. If on initial telehealth evaluation, the provider identifies medical complaints needing urgent evaluation, the patient should come in for an urgent office visit. Within laryngology, urgent issues include suspected malignancy, symptomatic airway obstruction, aspiration, and severe dysphagia without alternative nutritional intake means (ie, nasogastric or PEG tube). There are also situations when patients themselves are distressed and would be more reassured by in-person patient evaluation. These cases should be addressed more urgently at the provider's discretion.

In-person SLP evaluation with instrumentation including MBSS should be limited to urgent cases only during peak pandemic. This includes patients with no means of nutrition and high risk of aspiration. Alternatively, MBSS can be performed at a facility closer to home and then reviewed by the provider to determine urgency and in-office assessment needs. In cases where urgent MBSS is required and the patient is unknown to the SLP, it is advantageous for the SLP to complete a video visit prior to the MBSS to obtain relevant history and complete a clinical swallow evaluation. Then, the in-person time in the fluoroscopy suite during the MBSS can be utilized most efficiently. For patients with a tracheoesophageal voice prosthesis, in-person visit during peak pandemic may be necessary. However, video visits can be used for troubleshooting, as the patient may be able to apply a plug to the tracheoesophageal voice prosthesis or use other strategies to reduce urgency or even delay the need for in-person visit.

**TABLE 2.**  
**Steps to Optimize Sound in Zoom—Can Be Completed**  
**by the Provider and/or the Patient**

Step 1	Identify the ^ next to the Microphone on the Bottom Left of the Screen
Step 2	Click Audio Settings
Step 3	Uncheck the box next to 'Automatically Adjust Microphone Volume
Step 4	Click Advanced on the bottom right of the screen
Step 5	Check the box next to Show in-meeting option to "Enable original sound"
Step 6	Disable Suppress Persistent Background Noise and Suppress Intermittent Background Noise are set to
Step 7	Set Echo cancellation to Auto
Step 8	Close out the box and return to your home zoom screen.
Step 9	Click 'Turn on Original Sound' in the upper left-hand corner

### Laryngology tele-health in the post-COVID era

Even after the risks of COVID-19 have declined sufficiently to allow resumption of more routine clinical practice, telehealth will likely remain a useful tool for providers. We envision that telehealth could be used as prescreening for patients to identify needs and optimize resource utilization. For example, patients with swallowing complaints could be screened prior to coming into clinic for need for an instrumental swallow evaluation (ie, flexible endoscopic evaluation of swallowing or MBSS). If deemed necessary, the instrumental swallow evaluation could be scheduled on the same day as an in-person office visit. This would be especially advantageous for those patients coming from a long distance or in centers where the wait time to schedule MBSS may be prolonged. Determination of who would be best to do this screening and how to be reimbursed for this practice remains unknown.

Remote voice and swallow therapy have been performed for several years to increase patient access to care and have been shown to be cost-effective and efficient.<sup>27,28</sup> Patients benefit from both cost (eg, gas, toll roads, parking, and public transportation) and time (eg, driving, time off from work) savings with telehealth visits. However, not all patients are appropriate for nor desirous of remote therapy, and some patients may prefer or require hands-on, in-person work. Patients who require manual therapies and certain voice patients with subtle sound variations or who are less stimutable for vocal change are better seen in person.

### Telemedicine billing considerations

Retroactive to January 27, 2020, the federal government has approved certain federal regulatory flexibilities and blanket waivers to expand access to telehealth for physicians. This includes:

- Telehealth provided for any reason, even non-COVID-19-related care.
- Allowing providers located out of state/territory to provide care to another state's Medicaid enrollees impacted by the emergency.
- Temporary waiver of the requirement that physicians and other healthcare professionals be licensed in the state in which they are providing services, so long as they have equivalent licensing in another state.
- Waiver of prior authorizations in fee-for-service programs.
- Allowing physician or other practitioner to either reduce or waive cost-sharing obligations (ie, coinsurance and deductibles) that a beneficiary may owe for telehealth services furnished.<sup>29</sup>

It is important to be aware of potential state-to-state variability in these laws and regulations. For example, in California, a pay parity law requires that if a service is covered in person, that service must be reimbursed at the same rate for a video visit. Individual providers are encouraged to investigate the specific laws in their state.

Physician billing may be determined based on visit complexity or by time spent. Criteria to meet various levels of billing for new and return patient video visits are similar to those for in-person visits, as specified by the American Medical Association.<sup>30</sup> Often, limitations of physical exam performance related to telehealth restricts the clinician's ability to bill above level 3. In some situations (eg, discussion of test results with a follow-up patients), time-based billing may be more appropriate (Table 3). For patients requiring extensive record search and interpretation prior to or after the visit, use of the code 99358 may be appropriate for that time spent in addition to the actual visit. It is important to reference the date of the visit in the note documenting the non-direct service (ie, chart review).

If the video visit fails, current guidelines allow for conversion to a telephone visit, which remains billable. If the video visit was >50% completed, then a video visit may be billed, but if <50% of the visit was performed, then this should be considered a telephone visit. Under current guidelines, the telephone visit may be billed as shown in Table 4.

**TABLE 3.**  
**Time-Based Billing Codes\***

New Patients		Established Patients	
99205	60 minutes	99215	40 minutes
99204	45 minutes	99214	25 minutes
99203	30 minutes	99213	15 minutes
99202	20 minutes	99212	10 minutes
99201	10 minutes	99211	5 minutes

\* More than 50% of the visit spent in counseling.



**TABLE 4.**  
**Telephone Visit Billing**

99441: telephone evaluation and management service, 5-10 minutes
99442: telephone evaluation and management service, 11-20 minutes
99443: telephone evaluation and management service, 21-30 minutes

## CONCLUSIONS

COVID-19 has presented unprecedented challenge to providing clinical care. Telehealth has been quickly adapted into both otolaryngology and subspecialty laryngology care. As with any new endeavor, there are challenges to adaptation; however, with appropriate planning and flexibility, the telehealth model can be optimized to provide high-quality, multidisciplinary, laryngologic care. Telehealth is anticipated to remain an important component of laryngology care in the post-COVID-19 era. Therefore, ongoing refinement of telemedicine techniques should continue to optimize future patient care.

## REFERENCES

- Healthcare facilities: preparing for community transmission. 2020. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-hcf.html>. Accessed April 28, 2020.
- Otolaryngologists and the COVID-19 pandemic. 2020. Available from: <https://www.entnet.org/content/otolaryngologists-and-covid-19-pandemic>. Accessed April 28, 2020.
- Bhalla RK, Wallis J, Kaushik V, et al. How we do it: adjunctive intravenous midazolam: diagnosis and treatment of therapy-resistant muscle tension dysphonia. *Clin Otolaryngol*. 2005;30:367–369.
- Zhang XY, Zhang P. Telemedicine in clinical setting. *Exp Ther Med*. 2016;12:2405–2407.
- Beswick DM, Vashi A, Song Y, et al. Consultation via telemedicine and access to operative care for patients with head and neck cancer in a Veterans Health Administration population. *Head Neck*. 2016;38:925–929.
- Gartner-Schmidt JL, Rosen CA, Radhakrishnan N, et al. Odor provocation test for laryngeal hypersensitivity. *J Voice*. 2006;22:333–338.
- Kohlert S, Murphy P, Tse D, et al. Improving access to otolaryngology-head and neck surgery expert advice through eConsultations. *Laryngoscope*. 2018;128:350–355.
- Hagge D, Knopf A, Hofauer B. Telemedicine in the fight against SARS-CoV-2-opportunities and possible applications in otorhinolaryngology: narrative review. *HNO*. 2020;68:433–439.
- Triantafillou V, Rajasekaran K. A commentary on the challenges of telemedicine for head and neck oncologic patients during COVID-19. *Otolaryngol Head Neck Surg*. 2020. <https://doi.org/10.1177/01194599820923622>.
- Pollock K, Setzen M, Svider PF. Embracing telemedicine into your otolaryngology practice amid the COVID-19 crisis: an invited commentary. *Am J Otolaryngol*. 2020;41:102490.
- Bryson PC, Benninger MS, Band J, et al. Telemedicine in laryngology: remote evaluation of voice disorders-setup and initial experience. *Laryngoscope*. 2018;128:941–943.
- HIPPA compliance guide. 2020. Available from: <https://zoom.us/docs/doc/Zoom-hipaa.pdf>. Accessed April 28, 2020.
- Rosen CA, Lee AS, Osborne J, et al. Development and validation of the voice handicap index-10. *Laryngoscope*. 2004;114:1549–1556.
- Belafsky PC, Postma GN, Koufman JA. Validity and reliability of the reflux symptom index (RSI). *J Voice*. 2002;16:274–277.
- Shembel AC, Rosen CA, Zullo TG, et al. Development and validation of the cough severity index: a severity index for chronic cough related to the upper airway. *Laryngoscope*. 2013;123:1931–1936.
- Crisafulli E, Clini EM. Measures of dyspnea in pulmonary rehabilitation. *Multidiscip Respir Med*. 2010;5:202.
- Belafsky PC, Mouadeb DA, Rees CJ, et al. Validity and reliability of the eating assessment tool (EAT-10). *Ann Otol Rhinol Laryngol*. 2008; 117:919–924.
- Gillespie AI, Gartner-Schmidt J. Immediate effect of stimulability assessment on acoustic, aerodynamic, and patient-perceptual measures of voice. *J Voice*. 2016;30:507.e9–507.e14.
- Bonilha HS, Dawson AE. Creating a mastery experience during the voice evaluation. *J Voice*. 2012;26:665.e1–665.e7.
- Prasad A, Brewster R, Newman JG, et al. Optimizing your telemedicine visit during the COVID-19 pandemic: practice guidelines for patients with head and neck cancer. *Head Neck*. 2020;42:1317–1321.
- O'Horo JC, Rogus-Pulia N, Garcia-Arguello L, et al. Bedside diagnosis of dysphagia: a systematic review. *J Hosp Med*. 2015;10: 256–265.
- Zou L, Ruan F, Huang M, et al. SARS-CoV-2 viral load in upper respiratory specimens of infected patients. *N Engl J Med*. 2020;382: 1177–1179.
- Givi B, Schiff BA, Chinn SB, et al. Safety recommendations for evaluation and surgery of the head and neck during the COVID-19 pandemic. *JAMA Otolaryngol Head Neck Surg*. 2020. <https://doi.org/10.1001/jamaoto.2020.0780>. Online ahead of print.
- Carpenter DJ, Ferrante S, Bakos SR, et al. Utility of routine spirometry measures for surveillance of idiopathic subglottic stenosis. *JAMA Otolaryngol Head Neck Surg*. 2019;145:21–26.
- Vössing M, Wassermann K, Eckel HE, et al. Peak flow measurement in patients with laryngeal and tracheal stenoses. A simple and valuable spirometric method. *HNO*. 1995;43:70–75.
- Li JT. Home peak expiratory flow rate monitoring in patients with asthma. *Mayo Clin Proc*. 1995;70:649–656.
- Rangarathnam B, McCullough GH, Pickett H, et al. Telepractice versus in-person delivery of voice therapy for primary muscle tension dysphonia. *Am J Speech Lang Pathol*. 2015;24:386–399.
- Towey MP. Speech therapy telepractice for vocal cord dysfunction (VCD): MaineCare (Medicaid) cost savings. *Int J Telerehabil*. 2012;4: 33–36.
- Jiang JJ, Tao C. The minimum glottal airflow to initiate vocal fold oscillation. *J Acoust Soc Am*. 2007;121:2873–2881.
- AMA CPT® Professional 2020. 2019, USA: American Medical Association.