INTRODUCTION TO TELE-OPHTHALMOLOGY

A GUIDE FOR OPHTHALMOLOGISTS

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Tele-Ophthalmology:
The Basics

Telemedicine has transformed healthcare practices worldwide and will continue to influence the future delivery of healthcare, including ophthalmic services. The American Society of Cataract and Refractive Surgery (ASCRS) and the American Society of Ophthalmic Administrators (ASOA) Telemedicine Task Force created this guide, "Tele-Ophthalmology: The Basics," as an educational resource for physicians to learn about tele-ophthalmology. This guide reviews the benefits of tele-ophthalmology, various delivery methods, reimbursement, potential liabilities, and challenges.

What is Tele-Ophthalmology

Tele-ophthalmology is the practice of ophthalmology when using electronic communication to exchange medical information remotely. It may be used for screening and diagnosing patients, chronic disease management, and remote monitoring.

Benefits of Tele-Ophthalmology

Tele-ophthalmology is an effective and important tool to expand access to specialty care. While tele-ophthalmology has been around for decades, the mainstream use of mobile devices and the internet has increased its availability and use. Through the use of tele-ophthalmology, patients, especially those living in rural and underserved communities, have access to specialty care that can be provided relatively inexpensively.

Delivery of Tele-Ophthalmology

There are three main delivery methods of tele-ophthalmology services:

➢ **Asynchronous or "store and forward":** The receiving and storing of clinical information that is then transferred to another site for clinical evaluation. For example, a nurse takes images of a patient's retina to screen for diabetic retinopathy. The image is then stored in a database that may be accessed by an ophthalmologist in a different location. The ophthalmologist can review the photos and send a report back to the nurse or technician caring for the patient. Patients identified with diabetic retinopathy would be referred to an ophthalmologist for treatment. Alternatively, retinal images can be transferred to an intelligent site application that provides online and immediate interpretation.

➢ **Remote monitoring:** Allows an ophthalmologist to monitor patients at a distance. Intraocular pressure (IOP) contact lenses are a new type of remote monitoring device that allows an ophthalmologist to observe fluctuations in a patient's IOP pattern and monitor progression of glaucoma. Typically, IOP contact lenses transmit data wirelessly to a device that records pressure changes in the eye. Similarly, an IOL is being studied that can measure and transmit IOP for continuous remote monitoring of IOP. Home monitoring by these devices relays data to the ophthalmologist's office network, permitting the patient's ophthalmologist to analyze the data to optimize treatment of the disease.

➢ **Real time:** This is a real-time telemedicine visit that offers immediate access to an ophthalmologist through software and smartphone applications (apps) that provide video display. For example, a patient may connect with an ophthalmologist by replacing a traditional in-person office visit with a Health Insurance Portability and Accountability Act (HIPAA)-compliant smart phone app that allows a live video conversation. Additionally, many hospitals across the United States offer real-time remote eye care in their emergency rooms. This allows emergency room doctors, who do not have an expertise in ocular care, to have immediate access to specialists to assist in clinical decision making for eye injuries that

could be sight-threatening. Many diagnostic instruments are directly connected to clinic intranets and the internet, making access to test results available on demand through cloud storage and cloud computing.

Reimbursement for Tele-Ophthalmology

Medicaid and Private Payers

While reimbursement policies vary among different payers, most private payers and Medicaid will pay for real-time telemedicine video visits in most states. According to the American Telemedicine Association, there are 34 states in addition to Washington, D.C. that have parity laws. Parity means that non-Medicare payers will reimburse for a virtual visit just as they reimburse for conventional visits. Reimbursement includes telemedicine evaluation management (E/M) services when using CPT codes 99201–99203 and 99211–99215.

In states without a parity law, telemedicine visits may still be reimbursed by private payers and Medicaid, but it is at their discretion. ASCRS recommends verifying reimbursement for telemedicine services with any payer.

Medicare

Medicare reimburses for a limited number of telehealth services furnished by a physician based on two conditions. First, a Medicare beneficiary needs to present from a county outside of a metropolitan statistical area (MSA) or an area that has been identified as a health professional shortage area. Second, the Medicare beneficiary is required to be at an "originating site" when the telemedicine visit begins. The Centers for Medicare and Medicaid Services (CMS) has identified the following as originating sites:

- The offices of physicians or practitioners
- Hospitals
- Critical Access Hospitals (CAHs)
- Rural Health Clinics
- Federally Qualified Health Centers
- Hospital-based or CAH-based Renal Dialysis Centers (including satellites)
- Skilled Nursing Facilities (SNFs) and
- Community Mental Health Centers (CMHCs)

ASCRS recommends verifying coverage for telemedicine services with Medicare Advantage plans, as they may have different requirements. For more information, access the CMS Medicare Learning Network Booklet for providers, titled "Telehealth Services."[1]

In the 2019 Medicare Physician Fee Schedule final rule, CMS finalized its proposal to expand coverage of certain tele-ophthalmology services furnished using asynchronous technologies, such as those used to evaluate recorded videos or images submitted by patients. Additionally, physicians may be reimbursed for "virtual check-ins" with beneficiaries via telephone or other telecommunications devices to decide whether an office visit or other service is needed. According to the final rule, the physician has to provide the service to an established patient, not originating from a related E/M service provided within the previous 7 days nor leading to an E/M service or procedure within the next 24 hours or soonest available appointment. An establish patient is one that has received professional services from the physician or qualified health care professional or another physician or qualified health care professional of the exact same specialty and subspecialty who belongs to the same group practice, within the past 3 years. Below is the description for each of

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[1] Website: www.cms.gov. Telehealth Services February 2018. Available from: https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/telehealthsrvcsfctsht.pdf. Accessed 6/20/2018.

these codes:

- **Remote evaluation of patient-submitted recorded video and/or images: HCPCS G2010:** Remote evaluation of recorded video and/or images submitted by the patient (e.g., store and forward), including interpretation with follow-up with the patient within 24 business hours, not originating from a related E/M service provided within the previous 7 days nor leading to an E/M service or procedure within the next 24 hours or soonest available appointment.

- **Virtual check-ins: HCPCS G2012:** Brief communication technology-based service, e.g. virtual check-in, by a physician or other qualified healthcare professional who can report evaluation and management [E/M] services, provided to an established patient, not originating from a related E/M service provided within the previous 7 days nor leading to an E/M service or procedure within the next 24 hours or soonest available appointment; 5-10 minutes of medical discussion.

Private Pay
If telemedicine is not a covered service for your patient, you may opt to collect privately by having a signed Exclusion of Benefits form, just like any other non-covered service.

HIPAA-Compliant Tele-Ophthalmology

Telemedicine visits must be conducted using devices and software platforms that are HIPAA compliant. This will ensure that any personal health information (PHI) collected from the patient during a telemedicine visit remains secure. For example, popular mobile apps, such as Skype, WhatsApp, or Apple's FaceTime, are not considered HIPAA-compliant systems. Therefore, an ophthalmologist seeking to provide real-time telemedicine visits should use an app specifically designed for that purpose. For more information on HIPAA compliance, please visit the Office of the National Coordinator for Health Information Technology (ONC) web page Health IT privacy and security resources for providers.[2]

Potential Liabilities in Tele-Ophthalmology

If you decide to engage in tele-ophthalmology, it is important to be aware of potential liabilities you may expose yourself to, including physician licensing requirements and medical credentialing policies, misdiagnosis, prescribing, and cybersecurity.

➢ **Ophthalmologists engaging in telemedicine activities should be aware of physician licensing requirements and medical credentialing policies, especially relating to the interstate practice of tele-ophthalmology.** Ophthalmologists engaging in telemedicine services need to be properly licensed and credentialed in the states where they provide the service. This is not an issue when offering telemedicine to your immediate patient population, but can become an issue should you decide to offer outside your geographic area. The place of service is dependent on the patient's location; therefore, the ophthalmologist would have to adhere to the requirements and policies where the patient is located. ASCRS highly recommends reviewing physician licensing requirements and medical credentialing policies for states before engaging in any telemedicine activity. For more information on physician licensing requirements and medical credentialing policies, please contact your state medical board. Additionally, the Center for Connected Health Policy (CCPH) offers an interactive map with details on telemedicine laws and policies by state.[3]

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[2] Website: www.healthit.gov. Health IT Privacy and Security Resources for Providers. Available from: https://www.healthit.gov/topic/privacy-security-and-hipaa/health-it-privacy-and-security-resources-providers. Accessed 5/24/2018.

[3] Website: www.cchpca.org. State Laws and Reimbursement Policies. Available from: http://www.cchpca.org/state-laws-and-reimbursement-policies. Accessed 6/5/2018.

➢ **Most malpractice insurers consider telemedicine a covered service.** Liability is always a concern, but ophthalmologists should be more cognizant of the potential for misdiagnosis with telemedicine. The best way for ophthalmologists to protect themselves is to establish a positive patient-physician relationship, based on strong communication. This will ensure the patient understands possible limitations in a telemedicine visit, as well as the importance of proper follow-up care after a virtual visit.

➢ **Devices connected to a practice's network that feature remote monitoring from the manufacturer are particularly vulnerable to cyberattacks.** Medical device manufacturers will never be able to completely mitigate all cybersecurity threats. Therefore, it is important that practices conduct yearly security risk analysis of their devices and software programs to identify any potential vulnerabilities in their systems.

Challenges in Tele-Ophthalmology

There is no doubt that innovation in telemedicine is thriving and creating more opportunities to engage in tele-ophthalmology; however, there are factors that hinder widespread adoption into clinical workflow, including challenges in physician engagement, reimbursement, and licensing.

➢ **Physician Engagement:** Many ophthalmologists recognize the benefits of telemedicine, yet they remain hesitant to provide services for many reasons, including lack of experience or familiarity with telemedicine technology. To overcome these obstacles, there must be opportunity to provide training on ophthalmic devices used in telemedicine. Additionally, physicians should follow best practices and successful models for integrating telemedicine into a practice's clinical workflow.

➢ **Reimbursement:** Reimbursement can vary depending on state and payer requirements. In addition, many ophthalmologists may be uncomfortable with collecting private fees using an Exclusion of Benefits form. ASCRS recommends checking telemedicine benefits, just as insurance benefits are routinely verified for patients.

➢ **Licensing:** Typically, ophthalmologists must have a license in every state in which they practice medicine, irrespective of whether the service being provided is in-person or remote. However, with the increased demand for telemedicine services to provide specialty care, changes are beginning to be made to state physician licensing requirements. For example, recently the U.S. Department of Veterans Affairs (VA) published a final rule that overrides state physician licensing requirements. Therefore, a VA physician may provide telehealth services to a veteran located anywhere in the country.

➢ **HIPAA Compliance:** Telemedicine involves transmission and storage of patient information on cloud servers not located in a physician's practice nor under physician control. ASCRS recommends the use of HIPAA-compliant services that comply with the privacy acts.

The Future of AI Tele-Ophthalmology

Tele-ophthalmology is not limited to remote sharing of patient data for physician diagnosis but has incorporated sophisticated artificial intelligence (AI) algorithms that provide automatic interpretive utilities to assist in clinical decision making. For example, automatic screening programs to detect abnormal corneal topography, such as keratoconus, have been available for decades. The first AI platform to read and interpret fundus photographs has been approved for use by the FDA. While this platform is accessed remotely, similar disease recognition utilities can be built into smart fundus cameras. Such AI programs are regarded as devices by the FDA and must be approved for use in the U.S. before being marketed.

AI in tele-ophthalmology has a wide range of applications to improve medical practice.

> - **AI in scheduling and billing:** Mundane tasks in the front office can weigh down efficiency in the clinic. Currently, AI programs built into patient schedulers and invoice generators can reduce office workload by smart scheduling, insurance conundrum resolution, and improved accuracy of invoice generation and follow up.

> - **AI in diagnostics:** AI utilities in medicine are computer software programs that are trained to emulate physician interpretation of test results. Importantly, such programs are only as useful and accurate as the universe of data that has been used for training. With improvements in test result accuracy stemming from technologic advances and evolution of physician diagnostics, AI utilities will require regular upgrades, just as the practice of medicine evolves. With that caveat, AI utilities have the potential to enhance the physician role in patient care, improving both the accuracy and efficiency of the practice of specialty medicine.

> - **AI and robotics in medicine:** Computer-assisted surgery has made possible both minimally invasive surgery and remote surgery. Many ophthalmic devices, from fundus cameras to microperimeters, use AI-guided robotics for auto-alignment, focus, and image or data capture. Some can function autonomously to screen patients without clinic personnel assistance conversing with a patient, even offering instructions in the patient's native language. Such technology is extremely useful in remote and underserved areas of the world.

> - **Monitoring patients at home:** Remote patient monitoring devices allow for the collection and tracking of health data for an individual patient. It is important that the data being collected by remote monitoring systems is continuously monitored and analyzed on an individualized basis. Additional AI utilities need to be developed as watchdogs to aid in assessing individual patient data on arrival. These utilities will be used to make more advanced analysis with patients' stored data history and formulate a decision based on AI that determines the need for physician attention and the urgency of care.

Summary and Conclusions

With greater adoption of tele-ophthalmology, patients, especially those in rural and underserved areas, will have increased and timely access to specialty care. Tele-ophthalmology has been proven to provide timely and cost-effective access to care, positively impacting patient outcomes.[4] While physicians still face challenges, such as reimbursement and engagement, more favorable policies and regulations that embrace telemedicine are beginning to be released. Additionally, advances in AI will greatly impact the future of tele-ophthalmology, with increased success in medical device diagnostics and robotic capabilities.
ASCRS will continue to monitor the landscape and work to ensure policies and regulations that support our members and facilitate the delivery of forward-thinking ophthalmic services.

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[4] Sreelatha O, S Ve R. Teleophthalmology: improving patient outcomes? Clinical Ophthalmology. 2016 Feb 10; 10:285-295.