



The Outline of Virtual Education for Allergy and Immunology

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Abstract

Allergy-immunology should be at the forefront of adoption and implementation of these services given the growing interest in the use of telemedicine. Patients say they are more satisfied with video-based encounters with their doctors and have a greater desire for telemedicine services. Interim virtual visits can help overbooked clinics, lighten the hardship of travelling to remote locations, boost adherence during the monitoring of chronic allergy disorders, and improve access to specialist treatment. The simplicity with which many components of a typical visit can be conducted via telemedicine, along with the outpatient nature of allergy-immunology, makes the inclusion of telehealth training into fellowship programmes particularly desirable. The brief shutdown of hospital-affiliated clinics, especially for immunocompromised or vulnerable patients, in the midst of a pandemic shows how timely this problem is. The discussion includes a framework for incorporating telemedicine into the allergy-immunology curriculum, educating faculty on proper supervision, offering elective clinical experience in the form of continuity clinics, and simulating telemedicine delivery. Suggested telemedicine competencies are needed for autonomous telemedicine practise.

Keywords: Fellowships; Trainees; Virtual classrooms; Mentoring and telemedicine

Introduction

Abbreviations used

ACGME Accreditation Council for Graduate Medical Education
AAAAI American Academy of Allergy, Asthma, and Immunology.

Recently, telemedicine has come to attention as a method of delivering healthcare that can enhance patient-physician interactions, access to care, patient adherence, and cost effectiveness. The effectiveness of telemedicine services in enhancing asthma care and quality of life has been [1-3] demonstrated. Since 2015, there have been more articles published and people using telehealth and telemedicine services in allergy-immunology; nevertheless, the most recent public health emergency has accelerated the use of telemedicine more quickly than previous attempts to do so. Importantly, organisations that offer training in allergy-immunology have quickly adopted telemedicine initiatives to offer continuity of care for current patients and a chance for trainees in a dynamic instructional environment. The outpatient nature of the specialty and the recent sharp decline in the number of patients with specific allergies and immune conditions highlight the significance of taking into account virtual training and telemedicine as key components of preparing future allergists and immunologists for clinical practise.

Materials and Methods

Telemedicine integration into fellowship training programs

Recent articles in *The Journal of Allergy and Clinical Immunology: In Practice* discussed how to prioritise patients for virtual consultations and integrate telemedicine into practise. Use of this technology for training continuity is a factor in addition to practical considerations. While the Accreditation Council for Graduate Medical Education (ACGME) does not currently list telemedicine training as a core programme requirement, there is a broad desire to include it in medical school [3-7] curricula. The Allergy Immunology Milestones 2.0, scheduled for July 2020, do not specify telemedicine training, but the systems-based practise, professionalism, and communication skill subparts are ideally suited for evaluation utilising supervised

telemedicine. ACGME-accredited schools should anticipate the need to incorporate telemedicine into training, both in direct patient care and in the virtual classroom, given the anticipated duration of the COVID-19 pandemic.

Content for didactic telemedicine training

Before engaging in their first telemedicine interaction, trainees will need to complete an introductory didactic curriculum because telemedicine is still not a part of the normal medical school and residency curriculum. To make sure that they are in compliance with the necessary security and technological issues, trainees should receive instruction in the underlying telemedicine technology. The several videoconferencing and telemedicine platforms, as well as concerns with HIPAA compliance, data encryption during transmission, and the requirement for technology platform auditing, should all be known to trainees. For telemedicine consultations, desktop computers, laptops, and portable electronics like tablets or smartphones may be used. It is important to talk about the capabilities of these goods, their applications, and the many options and IT support. Without the patient's informed consent, it should be strongly forbidden to use screenshots, video, and/or audio recordings for teaching or research. Students will need to learn about patient privacy, especially if they conduct telemedicine consultations from their homes. The student should make sure that they are the only ones using the computer and that it is properly protected, such as with a screen protector, to keep outsiders from viewing the content. The telemedicine consultations must take place in a private space. If performing the visit from home, listening devices like the Amazon Echo or Google Home should

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be taken out or turned off, and the trainees should wear headphones to prevent the patient from being overheard. The trainees should also receive training on how to start privacy conversations about their own and the patient's surroundings. The necessity of end-to-end encryption for all transmitted data and messages should be made clear to trainees. The laws governing telemedicine are not well understood by trainees, according to studies. The COVID-19 epidemic has caused regulatory organisations to relax earlier rules requiring an established patient-physician relationship in order to provide telemedicine services. Some states have temporarily loosened their licencing requirements, for both direct practise and telemedicine. Shows the modifications to telemedicine made by the Centers for Medicare and Medicaid Services during the COVID-19 Public Health Emergency as of May 6, 2020; however, regulations and waivers are still changing due to the changing nature of the practise environment. For the purpose of instructing fellows in operational concerns, it is crucial to have an awareness of current rules and regulatory requirements as well as the capacity to find critical resources to track changing federal and state rules and regulations. Here are a few important sources. New chances to offer extra training opportunities and experiences for trainees will emerge when regulations governing interstate medical licence change.

Synchronous

Synchronous visits are live video conferences involving a doctor, a student, and a patient that simulate an in-person consultation for medical purposes. Trainees must be skilled in both facilitated and unfacilitated encounters and know which is preferred in specific situations because these can be either.

Visits without facilitation

Non-facilitated encounters take place in the present between the doctor, patient, and trainee. A traditional, in-clinic session should be replicated in terms of taking the patient's medical history and discussing their evaluation and treatment plan. The physical examination is more constrained because the patient is alone at home without access to expert healthcare personnel, but with the patient's agreement, trainees can be informed on parts of the allergy-immunology physical examination that can be accessed via telemedicine²⁰ (AAAAI). For instance, patients can be shown how to use home thermometers and blood pressure cuffs to take their own vital signs and can be shown how to position themselves for a video examination of their oropharynx or skin. The capacity to visualise the nasal cavity and auscultate the lungs are two constraints of a telemedicine physical exam that students need to be aware of. Future plans for certain patients may include the purchase of affordable home monitoring tools, digital stethoscopes, spirometry devices, or mobile health apps that could help with the management of chronic illnesses. For routine physical examinations, employing current cameras on mobile devices will probably be sufficient for the majority of patients. Additionally, instructors will need to provide guidance on how to establish the therapeutic relationship between doctors and patients in the digital environment. Compared to in-person visits, trainees may find that telemedicine is more conducive to multitasking because the electronic medical record is readily available for quick evaluation and order writing. Similar to good manners in person, efforts must be made to minimise distraction in order to have clear communication. In order to give patients confidence that the doctor is focused on their treatment, the trainees should let patients know when they are placing orders or examining the paperwork. When a thorough physical examination is not required for proper patient management, nonfacilitated visits could be the best option. Examples of suitable nonfacilitated visits are discussions of test results, reviews of asthma medication adherence, or

triage of urgent issues. It's important to teach trainees when a patient needs to be evaluated in person, whether it's for a first appointment or a follow-up one.

Promoted visits

Facilitated visits take place at a location far from the allergist but with assistance from a medical practitioner. In these visits, a facilitator, frequently a registered nurse or other healthcare professional who may have received a telehealth facilitator credential, does the physical examination while the patient travels to a nearby clinical location and has a remote consultation with the allergist. For a more thorough examination than is feasible with unfacilitated visits, specialised equipment, such as a digital otoscope or stethoscope, relays physical examination information to the telemedicine physician in real time.

Both leading a physical examination in a guided visit and resolving equipment-related problems in the moment will be skills that trainees will need to master. As an essential member of the care team, trainees will need to establish a relationship with the facilitator. Facilitated visits can be utilised for follow-up appointments or new patient visits, which need for a thorough physical examination.

Based on the following assumptions

Both training and patient care may benefit from the deployment of asynchronous telemedicine technology through store and forward or remote patient monitoring.

Store and transmit

In store and forward telemedicine, medical data collected from patients or medical services is electronically stored before being forwarded to a healthcare provider or shared [7-9] among healthcare experts for interpretation. Telemedicine can be utilised to train fellows on dermatologic disorders using the store-and-forward method. The patient can snap a picture of the region of concern and email it to the allergy-immunology fellow for assessment in order to receive advice about skin rashes or lesions.

Similar to the telemedicine training provided to dermatology residents, allergy-immunology trainees can independently assess the skin condition to develop a differential diagnosis and treatment plan based on the appearance. They can then consult with the attending physician or even a consulting dermatologist for additional instruction in the management of skin conditions. Before telemedicine appointments, spirometry data from mobile apps can also be sent to doctors. In-home spirometry coaching and remote bronchodilator response instruction are also skills that can be learned by trainees. The virtual encounter can then be used by fellows to discuss their interpretation of the spirometry with their attending for diagnostic confirmation and to solidify their clinical rationale.

Telehealth Observation

Outside of a clinic or hospital, remote patient monitoring gathers and stores patient physiological data. Health care professionals receive these data for review, diagnosis, and clinical management. Through the use of remote peak flow and symptom monitoring, a clinical trial using remote patient monitoring of asthma showed improved asthma management and lung function. Adherence to an asthma treatment regimen can be tracked using sensors that attach to the patient's inhalers. The analysis of data from remote patient monitoring and how to use it to improve patient care and instruction should be covered in training. It will be necessary to continuously update telemedicine fellowship training to incorporate cutting-edge technology like mobile

health applications and digital therapies.

Electronic mails and consultations

Electronic consultations (e-consults) are communications between a specialist and the patient's primary care physician or another treating specialist that take place inside the electronic health record. E-consults can be utilised effectively to streamline timely access to required care from specialists, especially for previous adverse medication reactions and immunodeficiency consultations. The proper guidance for a referring provider on interim management prior to evaluation in a telemedicine or in-person allergy-immunology visit should be provided to trainees when performing e-consults for ordering testing in advance of a visit, planning skin testing or oral challenge testing in a subsequent visit, and ordering testing in advance of a visit using e-consults.

Limitations of Telemedicine Training

It's critical to comprehend the telemedicine's restrictions and challenges for both students and their patients. Many new students believe they lack the skills necessary to use telemedicine effectively. The patient may still need to go to have lab work and other diagnostic tests because some parts of the physical examination cannot be done remotely. Patients' socioeconomic situation and available resources, such as internet access, video and audio equipment, and any linguistic or visual impairments, should be taken into account as these could provide barriers to use. Patients could be wary of telemedicine, and some might find it challenging to use its services. By informing patients of the advantages and security of telemedicine and giving them step-by-step directions on how to access it, certain barriers can be removed. Cost barriers to using telemedicine are probably going to disappear as laws and regulations governing its delivery alter. To help with language translation, several medical systems currently offer telephone interpreter or facilitator services. The hearing and visually handicapped can be accommodated by using these services during a patient visit. The best way to comply with these requirements should be made clear to trainees, and they should consult their attending physician for advice.

Conclusions

Telemedicine offers a previously unheard-of chance to train and assess trainees' clinical abilities. In order to familiarise them with the technology, practise stereotypical allergy-immunology case scenarios,

and learn proper virtual etiquette, trainees should take part in simulation telemedicine cases at the start of their fellowship. Supervisory faculty can employ telemedicine interactions to directly evaluate trainees' clinical reasoning, professionalism, and communication skills at the end of their programme. This will ensure a more accurate assessment of the core competencies.

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Conflict of Interest

For the research, writing, and/or publication of this work, the authors disclosed no potential conflicts of interest.

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