

Telemedicine Improves Allergy Care for Hospitalized Patients



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Adverse reactions to drugs, particularly to penicillin, are recognized as a significant problem largely due to the number of patients who have been mislabeled with the diagnosis.¹ An infected patient who is incorrectly labeled with a drug allergy is likely to be treated with a more expensive antibiotic that may not be as effective as the preferred drug and that has an increased risk of causing side effects. Increased use of testing for drug allergies has been promoted to reduce this mislabeling.² Although hospital-based screening programs have been proposed to identify and test patients who have a diagnosis of drug allergy, the primary obstacle to widespread drug testing is the lack of available allergists.³ This is particularly problematic in hospital settings because most allergists are based in outpatient offices or clinics.

Telemedicine is a technology that can enable medical care to be delivered when the patient and provider are separated from each other by distance.⁴ Use of real-time video conferencing augmented with digital examination equipment can close geographical separations. Situations in which access to allergy specialty care is limited, as is the case for patients admitted to a hospital, is a particularly germane use of this technology.

In this issue of *Journal of Allergy and Clinical Immunology: In Practice*, Staicu et al⁵ describe a study in which 338 adult inpatients with a history of penicillin allergy who required systemic antibiotic therapy were identified by a pharmacist and offered penicillin skin testing by a qualified allergy physician assistant (PA). In these patients, historical reactions to penicillin tended to consist of nonspecific rashes, hives, and angioedema. Of the 50 patients who agreed to participate, 46 had a negative test result and 4 had a positive test result. Shortly after that, a video consultation with an allergist was used to explain the test results and to offer an oral amoxicillin challenge if the skin test result was negative. None of the 43 patients who agreed to undergo the drug challenge experienced a reaction and 33 were able to switch to a beta-lactam antibiotic.

The authors determined that each consultation took an average of 128 minutes to perform and that the allergist needed to be involved in the consultation for only 5 minutes. The rest of the time consisted of travel time for the PA (46 minutes) and of

time doing the skin test and oral challenge (82 minutes). The authors estimate that more than \$30,000 was saved by using a PA at the hospital and having the allergist see the patient by telemedicine rather than traveling to the hospital to do the consult in person. The use of this technology increased the allergist's availability to patients and resulted in more patients taking the preferred medication.

This demonstrates the use of synchronous telemedicine visits to perform penicillin testing in patients who would otherwise not have easy access to the procedure. Because there were only 3 allergy offices within 8 miles of the hospital where this study was conducted, routine in-person consults could be performed only before or after office hours, significantly limiting the availability of this procedure for patients who needed to be seen quickly. This situation is common because allergists usually do not practice in hospitals.

Clearly, supervision of testing for drug allergy using telemedicine is a viable alternative to in-person consults, particularly when a PA is available to do the procedures. An oral challenge could not have been done without a real-time discussion with the patients to get their consent. In addition to drug testing, telemedicine can be used to perform inpatient consultations for patients with conditions other than drug allergy. For example, telemedicine has been used to deliver outpatient asthma care leading to outcomes similar to in-person visits both in clinics⁶ and in schools.⁷ Hospitalized patients could benefit from that same telemedicine-facilitated care. The primary obstacles are a general lack of telemedicine infrastructure in hospitals that would permit such consultations to occur and the business and operational challenges of legal agreements/contracts and identifying appropriate hospital staff to schedule and facilitate the virtual consults.

Hospitals should be encouraged to offer the ability for outpatient specialists to perform inpatient consults by telemedicine. To do this, a hospital would need to provide a patient access device (PAD) to serve as the connection between a patient and a provider. Such devices allow secure, Health Insurance Portability and Accountability Act–compliant video conferencing as well as a means to connect digital examination equipment (otoscope, stethoscope, high-resolution camera) so that a physical examination can be done if needed. The authors of the Staicu study used a laptop computer and Microsoft Lync to connect with the patient, which was sufficient because a physical examination was not necessary.

In addition to computer equipment, a facilitator is needed to take the PAD to the patient's room and to operate the digital equipment. By providing this service, hospitals can encourage providers who are not hospital-based to perform inpatient consults in a timelier and less expensive manner. Communities that lack access to certain specialties can improve their access by recruiting specialists from other areas to see patients via telemedicine.

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There are limitations in the use of telemedicine that should be considered when setting up a remote inpatient consultation service. Procedures that require a provider's physical presence such as skin tests, allergy shots, and oral challenges should not be done using telemedicine unless a qualified provider such as a PA or nurse practitioner is present who can treat a reaction should one occur. The current study was done in the presence of an allergy-trained PA, which meets this requirement.

Telemedicine is a technology that is available today. It has been used for outpatient and inpatient patient care in various settings. The use of telemedicine to provide inpatient consults would increase access to allergy services for hospitalized patients who need them. Patients with drug allergy are ideal candidates for this type of encounter as shown in the current article; however, other types of patients with conditions that are treated by allergists are also candidates for telemedicine visits. As the technology becomes more widely available and its use increases, additional strategies for treating allergic patients are likely to be identified.

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