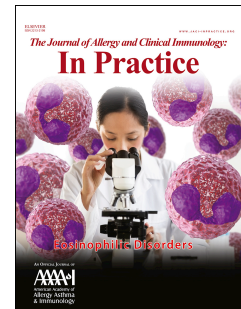


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Patient satisfaction and utilization of telemedicine services in allergy: an institutional survey

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Clinical Implications:

The adoption of telemedicine services by the allergist community was minimal prior to the SARS-CoV-2 pandemic, but has gained dramatic momentum in recent months. We present the results of a survey study aimed to measure patient satisfaction with a cloud-based telemedicine platform performed at an academic allergy clinic during the pandemic.

Despite the exponential growth of telemedicine in the past five years in the United States, its adoption by the allergist community was minimal prior to the pandemic(1). The delay in uptake is notable since this specialty is especially prime for telehealth services(2). Allergists treat a generally healthy patient base and manage a range of diagnoses amenable to telemedicine modalities. However, allergists also rely on several procedures for effective patient management. These can be challenging to conduct using telehealth alone and may account for some of the inertia in adopting these services.

Direct to consumer telehealth, dominated by the for-profit private sector, was the most popular form of telemedicine prior to the SARS-CoV2 pandemic(3). With the current pandemic and in the advent of improved CMS and third-party reimbursement for telehealth, the expansion of direct to consumer telehealth among allergists has gained abrupt and dramatic momentum. At the Emory Allergy Clinic, a telemedicine program was rolled out in a highly expedited fashion within one week in order to maintain access while limiting infectious risk. From a provider and administrative standpoint, we have continually sought to fine-tune and readjust delivery of services. It is however imperative to evaluate telehealth delivery models not only in terms of efficiency and efficacy but also to measure patient acceptance and satisfaction. We performed a survey study aimed to measure patient satisfaction with a cloud-based telemedicine platform. Patient data from our academic adult clinic was collected over the first two months following its implementation (March 24 to May 29, 2020). We used a questionnaire-based survey that was sent to all patients who utilized telemedicine services during this time. Qualifying visits were defined as those involving synchronous two-way audiovisual encounters between the allergy provider and the patient using Zoom and transcribed into PowerChart.

Patients were contacted to complete the survey by a member of the study team who was not present during the telemedicine appointment in order to minimize bias. The questionnaire consisted of six questions that prompted patients to grade their satisfaction with various aspects of their telemedicine visit (Figure 1). Their responses were scaled from 0 to 10, with 10 representing the highest satisfaction score. The scale was dichotomized as a response of 10 versus less than 10, in accordance with other measures of patient satisfaction(4).

A total of 297 patients were seen in 289 encounters during the two-month study period. 17 % of visits were new consultations and 83% were established follow-ups. There was a 58% response rate. 78% of respondents were female, and the mean age was 45 years. Patient demographics as well as insurance information, are outlined in Table 1. The primary diagnoses were asthma in 48 % patients, immune deficiency in 20 %, rhinitis in 14 %, urticaria/angioedema in 9 %, food allergy in 6% and drug allergy in 3%.

Overall, 88 % of patients rated their comfort level seeing a doctor via telemedicine as a 10. 93% of respondents stated that their doctor explained their condition in an easily understood manner. 79% strongly agreed that connecting their telehealth appointments was easy. Only 46% indicated their preference for future telemedicine visits following resolution of the pandemic, while 77% would strongly recommend telemedicine services to others. 40% rated their virtual visit equivalent or superior to a traditional outpatient encounter. Figure 1 illustrates responses to each question. There were a variety of reasons stated by responders who would not preferentially elect for telehealth again. Some were

disappointed with the limitations of the physical exam and access to ancillary testing such as labs and pulmonary function tests. Others expressed discomfort with video conferencing technology, while a minority expressed a compromise to the level of rapport with the doctor. Those who highly prefer telehealth visits expressed satisfaction with convenience, decreased wait times, and saving money and transportation time.

Logistic regression analysis was performed to evaluate potential factors influencing patient satisfaction. Notably, Caucasian patients were 18.5 times more likely to express comfort with telemedicine encounters as compared with Hispanic patients. Patients with government insurance were 2.5 times more likely to choose telemedicine even after the pandemic and 2.7 times more likely to recommend telemedicine to others. We did not ascertain significant associations with satisfaction scores for gender or underlying diagnosis.

Our data has implications for present and continuing service delivery. It remains to be seen whether current practice will translate into a longer-term acceptance of telehealth in allergy following resolution of the COVID19 pandemic. Telemedicine has shown in previous studies to increase access to care, improve health outcomes and reduce costs, (5), but a Zoom platform has obvious limitations, and is less suitable for visits requiring a physical examination or diagnostic evaluation. In a large cohort of telehealth patients from a tertiary center, only 25% of new allergy consults and <10% of follow up encounters requested in-person evaluations(6). In a pediatric study, asthma outcomes were comparable in matched cohorts seen either via telemedicine or in person(7), and this study design would be helpful for each allergy diagnosis in the future.

Our study has several shortcomings. The questionnaire was numerically scored and not open-ended, and did not formally elicit patient-specific feedback. Additionally, our study only included adult patients older than 18 years old and cannot be generalized to pediatric populations. Also, the study design self-selected patients with experience in video-conferencing, thus excluding those without access to this technology who were unable to schedule a visit. In addition, our telehealth platform is non-facilitated and few of our providers had previously utilized telehealth. Thus, our outcomes and experiences cannot be extrapolated to other centers with different levels of resources and training.

In conclusion, it appears feasible for allergists to provide high-quality care via telemedicine based on patient satisfaction, however there is a great deal of reluctance to preferentially elect telehealth over in-person visits. These findings are congruent with previous reports on patient experience with telehealth that have been overall favorable(8, 9). Future studies should focus on clinical outcomes stratified by underlying diagnosis. We also recognize that our findings are applicable only to patients with the technical proficiency to perform these visits, and the opinions of those without such experience must be accounted for.

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Figure Legends:

Figure 1 Legend: Survey Responses Scale1 (Strongly Disagree) to 10 (Strongly Agree)

Table 1: Telemedicine Patient Demographics

Age	Respondents	Percent of Respondents	Total Telehealth patients
18-39	64	40%	106
40-59	63	39%	115
60 +	35	22%	68
Gender			
Female	126	78%	225
Male	36	22%	64
Ethnicity			
Asian	5	4%	8
African American	49	30%	100
Caucasian	95	58%	166
Hispanic	2	1%	4
Unidentified	11	7%	11
Insurance			
Government	48	30%	82
Private	114	70%	207
Type of Visit			
Established	134	83%	235
New	28	17%	54
Primary Diagnoses			
Asthma	78	48%	126
Drug Allergy	5	3%	10
Food Allergy	9	6%	14
Immune Deficiency	32	20%	50
Rhinitis	23	14%	59
Urticaria/Angioedema	15	9%	30

FIGURE 1: TELEMEDICINE PATIENT RESPONSES