

## LETTERS—CONCISE RESEARCH REPORTS

# Using Telemedicine to Preserve Internal Medicine Residency Continuity Clinic During the COVID-19 Pandemic: Results from a National Survey



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## INTRODUCTION

Prior to the COVID-19 pandemic, telemedicine<sup>1</sup> was gaining popularity in some graduate medical education training programs.<sup>2</sup> Despite this, most internal medicine (IM) ambulatory training occurred during in-person clinic visits. The pandemic compelled IM residency programs to quickly develop virtual continuity clinic opportunities. To date, there has been no report describing the implementation of telemedicine in IM residency programs. The goal of this study is to characterize how IM program directors (PDs) used telemedicine to maintain resident continuity clinics during the pandemic and its perceived impact on education.

## METHODS

An annual survey of IM PDs conducted in 2020 asked PDs to report the percentage of ambulatory visits in continuity clinic conducted using telemedicine prior to and during maximal pandemic intensity, perceived impact of telemedicine on education, and important factors for future use.

Statistical analysis of the data included a comparison of categorical variables between respondents and non-respondents as well as the different types of programs using adjusted Wald (Pearson) chi-square tests. Comparisons based on residency program type were dichotomized as previously described.<sup>3,4</sup> Additional exploratory factor analysis of multiple choice select-all questions looked for relationships between responses.

## RESULTS

The telemedicine section of the survey had a response rate of 60.8% (261/429), and there were no statistical associations between respondents and non-respondents for essential program characteristics. Thirteen percent (34/258) reported using

telemedicine in continuity clinic prior to the pandemic, and 91.5% (236/258) of programs reported usage during their maximal pandemic intensity period (Table 1). Seventy-six percent (187/244) of respondents reported supervising physicians received training in telemedicine supervision and 75% (134/177) planned additional faculty development. A higher percentage of university-based programs reported that clinic preceptors received training compared to other types of programs ( $p=0.028$ )

In considering whether to continue the use of telemedicine in continuity clinic, the majority of responding PDs included access to care, patient ability to participate, satisfaction, need for social distancing, and reimbursement as significant influences. Exploratory factor analysis identified three primary themes as important to supporting the continuation of telemedicine: patient-centered care, usefulness, and physical environment of the clinic (average interitem correlation: 0.13; Cronbach's  $\alpha$ : 0.51). Eighty-four percent of PDs thought that telemedicine would worsen residents' physical exam skills—there was no significant difference by program type ( $p=0.973$ ). A higher percentage of PDs at university-based programs believed that telemedicine would improve resident ability to practice ambulatory medicine after residency (61.5%, 40/88 compared to 42.9%, 48/88;  $p=0.020$ ) (Table 2).

## DISCUSSION

This survey found that the COVID-19 pandemic shifted the landscape of IM ambulatory education. At maximal pandemic intensity, the number of IM programs using telemedicine in continuity clinic increased compared to pre-pandemic. Although necessary for patient care, PDs reported mixed perceptions of the value telemedicine. Notable differences between program type may reflect more available resources within university programs.

The majority of PDs reported that telemedicine would continue in their programs, mostly for reasons related to patient care rather than education. Only a minority of PDs believed telemedicine may worsen the patient-physician relationship, consistent with studies reporting high patient satisfaction with telehealth.<sup>5</sup> Most of the PDs believed telemedicine would worsen residents' physical exam skills, possibly due to the inability to lay hands on patients. Core curricula to address

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**Table 1 Utilization of Telemedicine, Training of Clinic Preceptors, and Future Plans by Residency Program Type**

	University-based	All other programs	Total	<i>p</i> value*
	No. (column %)	No. (column %)	No. (column %)	
Telemedicine utilization: pre-pandemic ( <i>n</i> =97, <i>n</i> =161, <i>n</i> =258) <sup>1</sup>				
Using telemedicine	16 (16.5)	18 (11.2)	34 (13.2)	0.237
Not using telemedicine	81 (83.5)	143 (88.8)	224 (86.8)	
Telemedicine utilization: maximal pandemic intensity <sup>2</sup> ( <i>n</i> =97, <i>n</i> =161, <i>n</i> =258)				
Using telemedicine	96 (99.0)	140 (87.0)	236 (91.5)	<b>0.034</b>
Not using telemedicine	1 (1.0)	21 (13.0)	22 (8.5)	
Anticipated use of telemedicine in residents' clinics for the entire 2020–2021 academic year? <sup>4</sup> ( <i>n</i> =97; <i>n</i> =155; <i>n</i> =252)				
No telemedicine/Solely in-person clinics when safe	12 (12.4)	18 (11.6)	30 (11.9)	0.913
Blend in-person and telemedicine**	85 (87.6)	137 (88.4)	222 (88.1)	
Clinic preceptors have received training in how to supervise via telemedicine <sup>5</sup> ( <i>n</i> =91; <i>n</i> =153; <i>n</i> =244)				
Yes	77 (84.6)	110 (71.9)	187 (76.6)	<b>0.028</b>
No	14 (15.4)	43 (28.1)	57 (23.4)	
Planning additional faculty development for telemedicine precepting <sup>6</sup> ( <i>n</i> =63; <i>n</i> =114; <i>n</i> =177)				
Yes	50 (79.4)	84 (73.7)	134 (75.7)	0.562
No	13 (20.6)	30 (26.3)	43 (24.3)	

Program type obtained from the AMA-FREIDA: American Medical Association Residency and Fellowship Database

\*Adjusted Wald [Pearson] chi-square test of association with one degree of freedom

\*\*This response option was displayed to respondents who reported to have used telemedicine for ambulatory continuity clinics either prior to the pandemic or during the period of maximal intensity

<sup>1,2</sup>Excludes three non-respondents

<sup>3</sup>Excludes eight respondents who reported "Unsure" and one non-respondents

<sup>4</sup>Excludes 16 respondents who reported "Unsure" and one non-respondent

<sup>5</sup>Excludes 83 respondents who reported "Unsure" and one non-respondent

Bolded values represent statistical significance

**Table 2 Perceived Effect of Telemedicine on Residency Ambulatory Education by Internal Medicine by Program Type in Two Categories (*n*=253)**

Perceived effects	University-based	All other programs	Total	<i>p</i> value*
	No. (column %)	No. (column %)	No. (column %)	
Physical exam skills <sup>1</sup> ( <i>n</i> =82; <i>n</i> =108; <i>n</i> =210)				
Worsen	69 (84.2)	108 (84.4)	177 (84.3)	0.973
No effect	13 (15.9)	19 (14.8)	32 (15.2)	0.885
Improve	0 (–)	1 (0.8)	1 (0.5)	0.343
Access to patients <sup>2</sup> ( <i>n</i> =83; <i>n</i> =139; <i>n</i> =222)				
Worsen	15 (18.1)	28 (20.1)	43 (19.4)	0.636
No effect	17 (20.5)	27 (19.4)	44 (19.8)	0.831
Improve	51 (61.5)	84 (60.4)	135 (60.8)	0.891
Patient-physician relationships <sup>3</sup> ( <i>n</i> =60; <i>n</i> =106; <i>n</i> =166)				
Worsen	26 (43.3)	50 (47.2)	76 (45.8)	0.631
No effect	26 (43.3)	37 (34.9)	63 (38.0)	0.255
Improve	8 (13.3)	19 (17.9)	27 (16.3)	0.478
Ability to practice ambulatory medicine after residency <sup>4</sup> ( <i>n</i> =65; <i>n</i> =112; <i>n</i> =177)				
Worsen	12 (18.5)	30 (26.8)	42 (23.7)	0.328
No effect	13 (20.0)	34 (30.4)	47 (26.6)	0.131
Improve	40 (61.5)	48 (42.9)	88 (49.7)	0.020

\*Adjusted Wald [Pearson] chi-square test of association with one degree of freedom

<sup>1</sup>Excludes 43 respondents who reported "Do not know / Unsure" and eight non-respondents

<sup>2</sup>Excludes 31 respondents who reported "Do not know / Unsure" and eight non-respondents

<sup>3</sup>Excludes 87 respondents who reported "Do not know / Unsure" and eight non-respondents

<sup>4</sup>Excludes 76 respondents who reported "Do not know / Unsure" and eight non-respondents

telehealth skills including physical exam training will be necessary to ensure resident competency.

Limitations of our study include that we queried PD perceptions. We did not determine the attitudes and skills of residents who were providing care via telemedicine. One strength of this study is that the survey was conducted before the new 2022 ACGME IM program requirements were finalized.<sup>6</sup> This provides data on PDs' opinions on the value of telemedicine at a time when there would have been an option of discontinuing telemedicine in their training programs.

PD experience of telemedicine implementation is useful as IM programs plan for ACGME-required training in telemedicine. Responding PDs prioritized patient-related factors rather than resident education when considering whether to continue telemedicine. Moreover, a majority believed that telemedicine would have a detrimental effect on physical exam skills. The practicality of how telemedicine is realized may influence the robustness of its use. Future areas for study may include implementation, further codifying the skills necessary for proficiency, and augmenting faculty development.

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**Declarations:**

**Conflict of Interest:** *The authors declare that they do not have a conflict of interest.*

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