

Increasing Resident Confidence With Telemedicine: Teaching the Virtual Examination

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Introduction

A growing body of research illustrates the importance of incorporating formal telemedicine training into postgraduate medical education.¹ Studies support the validity of virtual examination for specific conditions. Several guides now exist that offer a basic systematic approach to the virtual physical examination.²⁻⁶ A myriad of technologies have been developed to support the collection of home-based objective patient data.⁷ However, there is no gold standard for how these tools should be employed in the virtual setting and to what extent patients may acceptably participate in gathering objective data. There is ongoing need for further research regarding the limitations of virtual medicine in order to effectively teach learners how to safely deliver care.⁸

During the COVID-19 pandemic, primary care offices across the United States pivoted quickly to deliver care via telemedicine. Kaiser Permanente Santa Rosa Family Medicine Residency had a longitudinal telemedicine curriculum in place prior to the pandemic. This curriculum included an introduction to virtual care, patient secure message training, and guidance on effective virtual communication with patients. Prior to the COVID-19 pandemic, approximately 10%-20% of resident clinic visits were telephone or video visits. In March 2020, these percentages flipped. Approximately 80% of appointments were virtual visits and 20% were in-person visits. This increase exposed a lack of resident confidence and skill in conducting virtual physical exams, documenting virtual exams, and assessing the limitations associated with virtual care. We conducted this project to address these knowledge gaps by adding to the existing telemedicine curriculum.

Methods

Eighteen family medicine resident physicians (postgraduate years [PGY] 1-3) participated in a single didactic session on how to conduct and document a virtual physical exam during a telephone or video visit in the ambulatory setting. This training reviewed a body system-based approach to conducting a virtual physical exam, when virtual care may be indicated, and a discussion of the limitations of telemedicine. The content was delivered through lecture, case review, and role-play. A senior resident and attending physician led the training. Sessions were 120 minutes in length for PGY-1 residents and 60 minutes in length for PGY-2 and PGY-3 residents. The difference in session duration was justified by prior telemedicine training and experience among the PGY-2 and PGY-3 residents compared with PGY-1 residents.

We assessed resident confidence in performing each element of the virtual physical exam through a series of surveys with 5-point Likert scale responses (1=strongly disagree, 5=strongly agree). These questionnaires were administered immediately before the training, immediately after the training, and 10 months following the

training. We used descriptive and nonparametric statistical tests (Friedman Test) to assess changes in reported confidence over the three time periods. The Kaiser Permanente Northern California Institutional Review Board reviewed this project and determined it to be exempt from the full review process.

Results

Following the training, there was a sustained improvement in resident confidence with obtaining a patient history virtually ($P=.0007$), conducting a physical examination in telephone settings ($P=.0021$) and video-based ($P=.0033$) settings (Table 1). Resident confidence in assessing patients in the virtual setting and using information obtained to make clinical decisions regarding further evaluation or next level of care also improved over time ($P<.0001$). There was significantly improved and sustained confidence in evaluating the psychiatric body system via telephone (Table 2). However, there was decreased confidence in the telephone-based evaluation of the neurological body system ($P=.0235$), and no significant change across other areas assessed.

Similar to the data collected regarding telephone-based examinations, confidence with video examinations was mixed (Table 2). Of the 10 body systems evaluated, residents had statistically significant immediate and sustained increase in confidence with the general, neurological and integumentary body systems. In no area was sustained decreased confidence noted.

Discussion

This project provided 18 residents with formal training on telephone and video-based examinations, and assessed changes in resident confidence before, immediately after, and 10 months following the training. However, as self-reported confidence is not a proxy for actual skill level, future research is warranted to evaluate the degree to which training in telemedicine correlates with improved skill level and clinical outcomes. The generalizability of these findings is limited due to the project being conducted on a small population of residents who practiced in an organization with a robust prepandemic culture of telemedicine, which is likely not representative of the experience of family medicine residents more generally.

Specific training on telemedicine is an important component of preparing residents to safely care for patients in the virtual setting. The data obtained in this project may inform future didactic focus areas for other graduate medical education programs, including the incorporation of body system-level guidance on how to conduct the virtual examination in both the telephone and video visit settings.

Tables and Figures

Table 1: Resident Confidence Ratings Before and After Training

Questionnaire Statement	Likert Scale (1-5)*			P Value
	Mean (Pre)	Mean (Post)	Mean (10 Months Post)	
"I feel prepared to safely assess patients over the telephone and use the information obtained to make clinical decisions regarding further evaluation or next level of care."	1.5	3.8	4.2	.0001
"I feel confident obtaining a patient history virtually."	3.3	4.3	4.6	.0007
"I understand the limitations of clinical decision making in the setting of telephone visits."	3.5	4.3	4.5	.0021
"I understand the limitations of clinical decision making in the setting of video visits."	3.3	4.3	4.4	.0033
I feel confident documenting a basic physical examination with information obtained via a virtual visit.	3.5	3.8	4.2	.1248

* Scale: 1=strongly disagree, 5=strongly agree.

Table 2: Change in Resident Confidence With Physical Examination by Setting

Questionnaire Statement	Likert Scale Response (1-5)*			P Value
	Mean (Pre)	Mean (Post)	Mean (10 Months Post)	
"I feel confident conducting the following portions of the physical examination in the telephone visit setting."				
General	3.5	4.0	4.1	.2101
Neurological	4.0	3.9	3.2	.0235
Psychiatric	3.1	4.0	4.1	.0132
HEENT	2.9	3.5	3.2	.5528
Respiratory	3.0	3.5	3.6	.2455
Cardiac	2.9	3.2	3.1	.8589
Gastrointestinal	3.1	3.5	3.8	.1421
Genitourinary	2.7	3.4	3.2	.2346
Musculoskeletal	3.3	3.7	3.4	.5518
Integumentary	2.6	3.4	2.9	.1993
"I feel confident conducting the following portions of the physical examination in the video visit setting."				
General	3.0	4.4	4.3	.0006
Neurological	3.2	4.1	3.9	.0396
Psychiatric	3.8	4.2	4.2	.1504
HEENT	3.6	3.8	3.6	.8414
Respiratory	3.4	3.9	3.8	.3087
Cardiac	3.2	3.5	3.4	.7707
Gastrointestinal	3.1	3.8	3.8	.0658
Genitourinary	2.9	3.5	3.4	.3471
Musculoskeletal	3.2	4.0	3.8	.1673
Integumentary	2.8	4.0	3.6	.0182

Abbreviation: HEENT, head, eyes, ears, nose, and throat.
 * Scale: 1=strongly disagree, 5=strongly agree.

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