

Variation in Telehealth Use for Patients with Incident Atrial Fibrillation Across the Veterans Health Administration: Retrospective Cohort Study

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Abstract

Background: Telehealth is a potential tool to alleviate geographic cardiology specialist shortages, but there is limited data regarding current telehealth use for common cardiology conditions, including atrial fibrillation (AF).

Objective: We evaluated variation in telehealth use in primary care and cardiology clinics for patients with incident AF in the Veterans Health Administration (VA).

Methods: We constructed a cohort of patients with AF diagnoses made in the outpatient setting 1/2022-9/2023. We included facility-specialty groups with at least 20 visits for these patients between 1/2022-12/2023. We assessed the association of any video visit and any telehealth use (including phone) for primary care or cardiology visits within 90 days of AF diagnosis with selected patient and facility characteristics using Bayesian logistic regression, including facility random intercepts. We evaluated facility variation in video visit and telehealth use via the median odds ratio (MOR).

Results: Our cohort included 36,929 patients with new AF, with 80,596 visits across 125 facilities. Of these, 2,088 of 63,835 primary care visits (3.3%) and 323 of 16,761 cardiology visits (1.9%) were delivered by video and 13,403 primary care visits (21.0%) and 3,288 cardiology visits (19.6%) by telehealth. Average age was 74, 2.9% were female, 78% were White, and average CHA2DS2-VASc was 2.8. In adjusted analyses, older age was associated with lower use of video care for both primary care and cardiology and any telehealth for cardiology (e.g., adjusted odds ratio [AOR] of 0.61 [95% credible interval, CrI, 0.42-0.85] for use of video cardiology for patients older than 77). Living >40 miles from care was associated with increased use of both video and any telehealth care for primary care and cardiology (e.g., AOR 1.91 [95% CrI 1.21-3.00] for video cardiology care); rural location was associated with lower odds of using video or any telehealth for primary care (video AOR 0.73 [95% CrI 0.64-0.84]; telehealth AOR 0.89 [95% CrI 0.83-0.96]). There was marked variability across facilities in use of video care (range 0%-17.4% for cardiology, 0%-12.5% for primary care) and telehealth (range 0%-82.6% for cardiology, 3.8%-61.6% for primary care) for this patient population. The facility-level adjusted MOR for video care was 1.97 (95% CrI: 1.77-2.24) for primary care and 4.95 (95% CrI 3.39-7.98) for cardiology. Similarly, the adjusted MOR for any telehealth use was 1.79 for primary care (95% CrI: 1.65-1.96) and 2.61 for cardiology (95% CrI 2.25-3.13).

Conclusions: Following incident AF diagnosis, telehealth may increase access to primary and cardiology care for Veterans living at a distance, but its use remains lower for older patients and those in rural geographies. There was significant variation in telehealth use across facilities not explained by differences in patient and facility characteristics. Standardizing telehealth use across VA facilities may improve access to AF care.

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Original Manuscript

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Abstract

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Conclusions: Following incident AF diagnosis, telehealth may increase access to primary and cardiology care for Veterans living at a distance, but its use remains lower for older patients and those in rural geographies. There was significant variation in telehealth use across facilities not explained by differences in patient and facility characteristics. Standardizing telehealth use across VA facilities may improve access to AF care.

Keywords

Telehealth; cardiology; atrial fibrillation

Introduction

The Veterans Health Administration (VA) has promoted telehealth to broaden access to primary and specialty care and alleviate geographic clinician shortages. These efforts preceded the COVID-19 pandemic and enabled the rapid expansion of telehealth during the pandemic to maintain access to care (1). Telehealth use remains more prevalent, but there is limited data on current patterns of virtual care in the VA, especially for the management of specific cardiovascular conditions.

Atrial fibrillation (AF) is the most common cardiac rhythm disorder in the United States, affecting nearly 1 million VA patients, and is associated with significant morbidity and cost (2,3). Previous studies suggest that telehealth use for arrhythmia management may be higher than for other cardiovascular conditions (4,5), perhaps due to the availability of remote diagnostics, like ambulatory electrocardiogram monitoring. Telehealth may therefore be an effective tool to increase access to AF care in the VA, which serves patients across diverse geographies.

Previous studies of telehealth use in the VA early in the pandemic highlighted barriers in access to video-based care for older patients and those living in rural areas (1,6,7). During this period, evaluations of variation in telehealth use within cardiology suggested that it was driven by patient factors and differences in physician preference, with one VA analysis showing a lower contribution from facility-level differences (8,9). Additional evidence is needed assessing current patterns of telehealth use, especially for prevalent conditions like AF, which may be amenable to virtual management. Characterizing the current state of telehealth use will be critical to identify opportunities for improvement for large integrated health systems like VA. This is particularly relevant in the post-pandemic period, where telehealth is an option rather than a requirement; it is therefore more urgent to define when telehealth is an acceptable, or even preferable, alternative to in-person care.

To address this gap, we investigated drivers of variation in telehealth use for patients newly diagnosed with AF diagnosis in VA.

Methods

This evaluation was conducted as a quality improvement project supported by the VA Office of Connected Care with the primary goal of assessing and improving VA care.

Data

We extracted data on a retrospective cohort of VA patients 18 and older with AF first diagnosed in the outpatient setting between 10/2018 and 9/2023. All data were derived from VA's Corporate Data Warehouse. AF was defined as a primary or secondary diagnosis with AF-specific International Classification of Disease, Tenth Revision (ICD10) codes (Table S1) recorded at an Evaluation and Management (E&M) encounter in the outpatient setting. To improve specificity, we required a second AF diagnosis to be coded within one year after the index diagnosis for inclusion in the cohort; this second diagnosis could be recorded at an E&M encounter or associated with a procedure code. To limit our sample to new diagnoses, we excluded Veterans with prior AF diagnoses coded in the two years prior to the index diagnosis. We excluded individuals surviving for less than 30 days after their AF diagnosis.

We captured visits for cohort patients taking place in VA-based primary care or cardiology clinics within the 90 days following an AF diagnosis. These visits were identified using primary care- and cardiology-specific VA "stop" codes, three-digit codes defined by VA's Managerial Accounting System that characterize all VA outpatient encounters. We used Current Procedural Terminology (CPT) codes (Table S1) to include only encounters representing office-type visits rather than other forms of patient contact (e.g., phone calls to deliver results of laboratory testing). In addition, we classified visits as taking place by phone, video, or in person using additional VA stop codes for telehealth visits (Table S1). Visits with conflicting labels at the same time were dropped (N=10).

We captured selected Veteran characteristics according to conventions of prior VA telehealth literature focused on cardiovascular disease (6). Age at the time of AF diagnosis was grouped into approximate tertiles for the study population, with resulting categories for those younger than 70, age 70-77, or older than 77. We captured race and ethnicity according to the most frequently recorded race and/or ethnicity identification in the electronic health record, with categories for race of American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or other Pacific Islander, unknown, or White; and categories for ethnicity consisting of Hispanic or Latino, not Hispanic or Latino, or unknown. Rural was defined according to US Census Bureau criteria (10)

into categories of highly rural, rural, urban, or unknown; patients with rurality categorized as “I” for insular island were excluded from the analysis. We captured drive distance to closest secondary care for patients with cardiology visits and drive distance to closest primary care for patients with primary care visits, dividing these distances into categories of short (under 10 miles), medium (10 to 40 miles), long (greater than 40 miles), or missing; drive distance was derived from the year of data closest to the index visit. We included data regarding patients’ cardiovascular disease-related comorbidities, including hypertension, heart failure, stroke or transient ischemic attack, diabetes, myocardial infarction, coronary artery disease, peripheral artery disease, and chronic kidney disease (Table S1). Finally, we recorded the number of visits the patient had in primary care and/or cardiology within 90 days of the incident AF diagnosis, categorized as one, two, three, or four or more visits.

Analysis

The primary analysis was limited to patients with AF diagnoses from January 2022 to September 2023 and visits within 90 days, to capture a period at the end and after the COVID-19 pandemic, which may be more generalizable to contemporary telehealth use. Facilities with less than 20 visits for this period in the dataset and those located in non-US regions were excluded from analysis, as were patients receiving specialty care from multiple facilities to allow patients to be attributed to a single facility for analytic models.

We plotted the proportion of primary care and cardiology visits within 90 days of AF diagnosis that were delivered by telehealth, including video and phone, over time, including trends pre- and post-COVID.

We estimated the association between patient and facility characteristics and receipt of video care or any telehealth (video or phone) using Bayesian mixed-effects logistic regression models with facility-level random intercepts. Patient- and facility-level characteristics were selected based on prior literature suggesting relationships between these characteristics and use of telehealth (1,6). Patient-level characteristics included age, sex, race and ethnicity, rurality, and drive distance to care; we also adjusted for the selected comorbidities noted above and the patient’s number of primary care and/or cardiology visits within 90 days of the incident AF diagnosis. Facility-level characteristics included VA facility complexity level, teaching status, patient population, number of hospital beds, and geographic region. Adjusted odds ratios are reported with 95% credible intervals (CrIs).

To assess facility-level variation in video care and telehealth use, we compared the proportion of visits delivered through these modalities in primary care and cardiology across VA facilities. We also used the mixed effects models described above to calculate the median odds ratios for receipt of video care and any telehealth after adjustment for patient and facility characteristics. The median odds ratio estimates the variation in the likelihood that two similar patients presenting to two similar facilities would receive video care or any telehealth (11). For example, a median odds ratio of 1.6 would indicate a typical 1.6-fold difference in the likelihood of video care or telehealth use between random sites. We used a 2-sided $\alpha = .05$ to define statistical significance. Analyses were performed using R (version 4.5.0, R Foundation for Statistical Computing, Vienna, Austria).

Results

The overall cohort including patients with AF diagnoses from October 2018 to September 2023 included 92,192 patients seen in primary care with 176,572 visits within 90 days, and 28,442 seen in cardiology with 45,387 visits within 90 days. The analytic cohort of patients with AF diagnoses from January 2022 to September 2023 included 36,929 unique patients with a total of 80,596 visits across 125 facilities (Table 1). There were 34,535 patients with primary care visits in the 90 days following diagnosis, with 63,835 visits. There were 10,657 patients with cardiology visits in the 90 days after diagnosis, with 16,761 total cardiology visits.

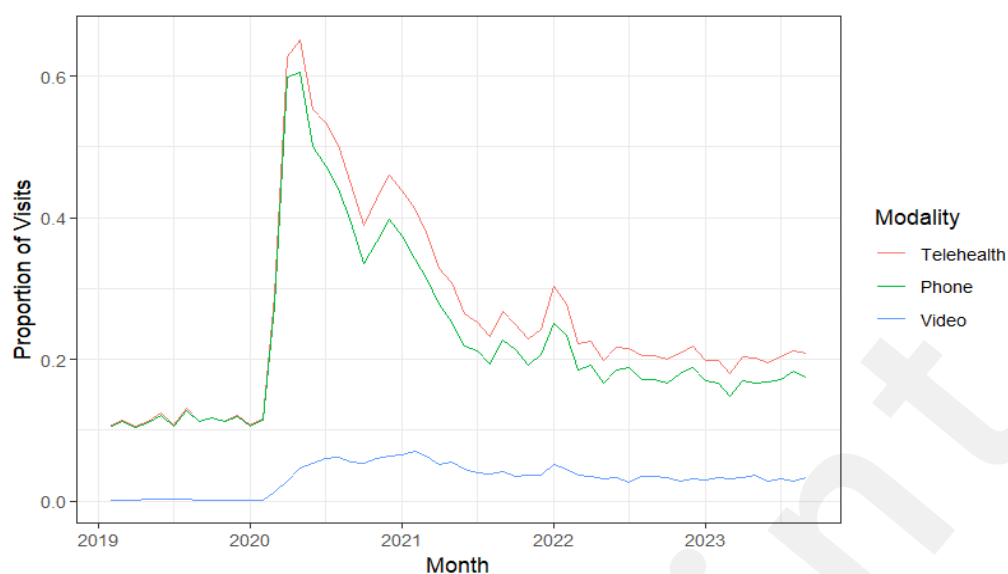
Among patients in the analytic cohort, 2.9% were female, 77.7% were White, and 62.5% resided in urban areas. Mean age was 73.6 years, and mean CHA₂DS₂-VASc was 2.76. Of these visits, 2,088 of the 63,835 primary care visits (3.3%) and 323 of the 16,761 cardiology visits (1.9%) were delivered by video; 13,404 primary care visits (21.0%) and 3,288 cardiology visits (19.6%) were delivered by telehealth. Facility characteristics are summarized in Table S2.

Patients with cardiology visits had higher mean CHA₂DS₂-VASc scores (2.99 vs 2.74) and higher rates of all comorbidities captured compared to patients with primary care visits, though 80% of patients with cardiology visits also had primary care visits and so were also included in the latter group. Cardiology visits were more likely to occur at facilities deemed very high or high complexity, with 88.1% of cardiology visits occurring at these facilities compared to 79.3% of primary care visits.

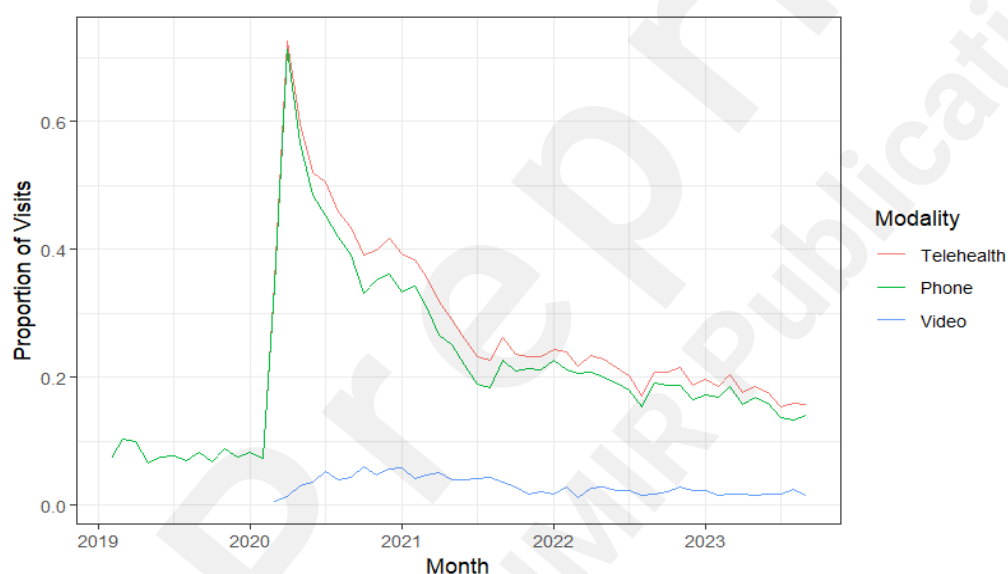
Figure 1 depicts the proportions of care offered via different modalities over time for the overall cohort. After initially peaking at the start of the COVID-19 pandemic and subsequently dropping, the relative proportions of care offered by phone, video, or in person remained reasonably stable for both primary care and cardiology, though perhaps with a slight downtrend for cardiology, after approximately mid-2022.

Figure 1. Proportion of Care Offered as Phone, Video, or All Telehealth Within 90 days of New Outpatient Diagnoses of Atrial Fibrillation from Oct 2018 to Sept 2023

A. Primary Care



B. Cardiology

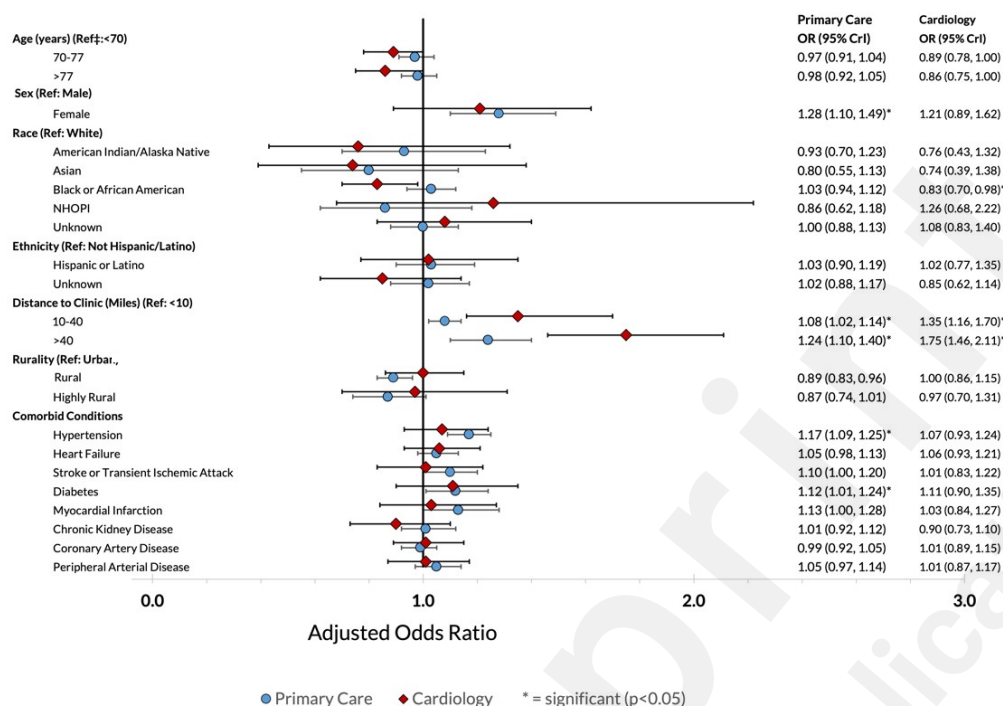


Video Care

In the fully adjusted analysis, primary care video visit use was more likely among Veterans who were younger (adjusted odds ratio [AOR] for age >77 0.71, 95% credible interval [CrI] 0.63-0.82), female (AOR 1.67 [95% CrI 1.31-2.10]), had a diagnosis of diabetes (AOR 1.39 [95% CrI 1.13-1.73]), or lived at a moderate (10-40 miles) or long (>40 miles) distance from care (AOR 1.24 [95% CrI 1.11-1.39] and 1.58 [95% CrI 1.24-2.00], respectively (Figure 2). Video care was less likely among patients with chronic kidney disease and those living in a rural setting. The odds of receiving at least 1 video visit increased as the patient's total number of visits increased. No facility-level

characteristics were associated with the likelihood of video care use (Table S3).

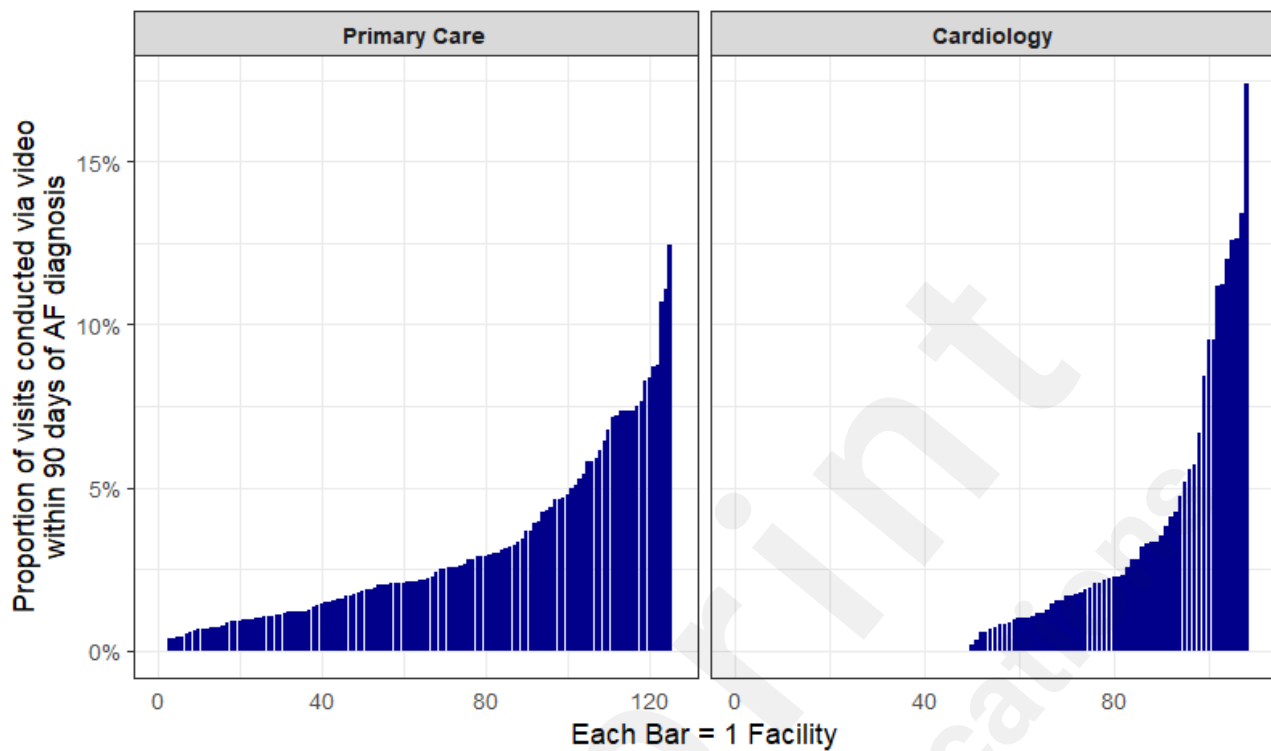
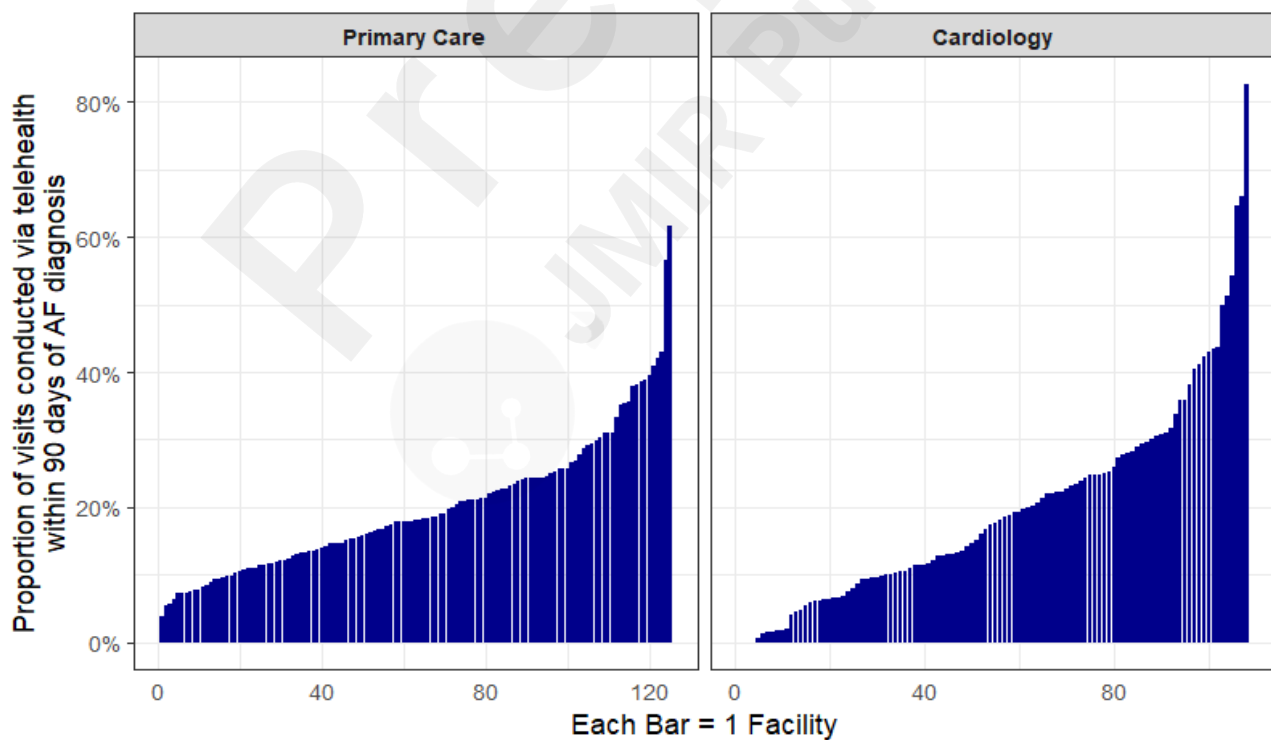
Figure 2. Adjusted odds ratios for the likelihood of any video care use within 90 days following new outpatient diagnoses of atrial fibrillation from January 2022 to September 2023.



For cardiology video-based care, similar patterns emerged regarding age, distance to care, and number of visits (Figure 2). However, there was no difference by sex, chronic condition, or rurality. Patients receiving care at higher complexity facilities were less likely to use video visits (Table S3).

There was significant variation in video care use across facilities (primary care range 0%-12.5% of visits, interquartile range [IQR] 1.2%-4.2%; cardiology range 0%-17.4%, IQR 0%-2.3%). A substantial proportion (45.4%) of cardiology practices provided no video care for patients with newly diagnosed AF (Figure 2). The adjusted median odds ratio (MORs), which reflects the typical difference in the likelihood that similar patients at similar facilities received any telehealth, also suggested large variation in use of video care for these patients in primary care (1.97 [95% CrI: 1.77-2.24]) and cardiology (4.95 [95% CrI: 3.39-7.98]).

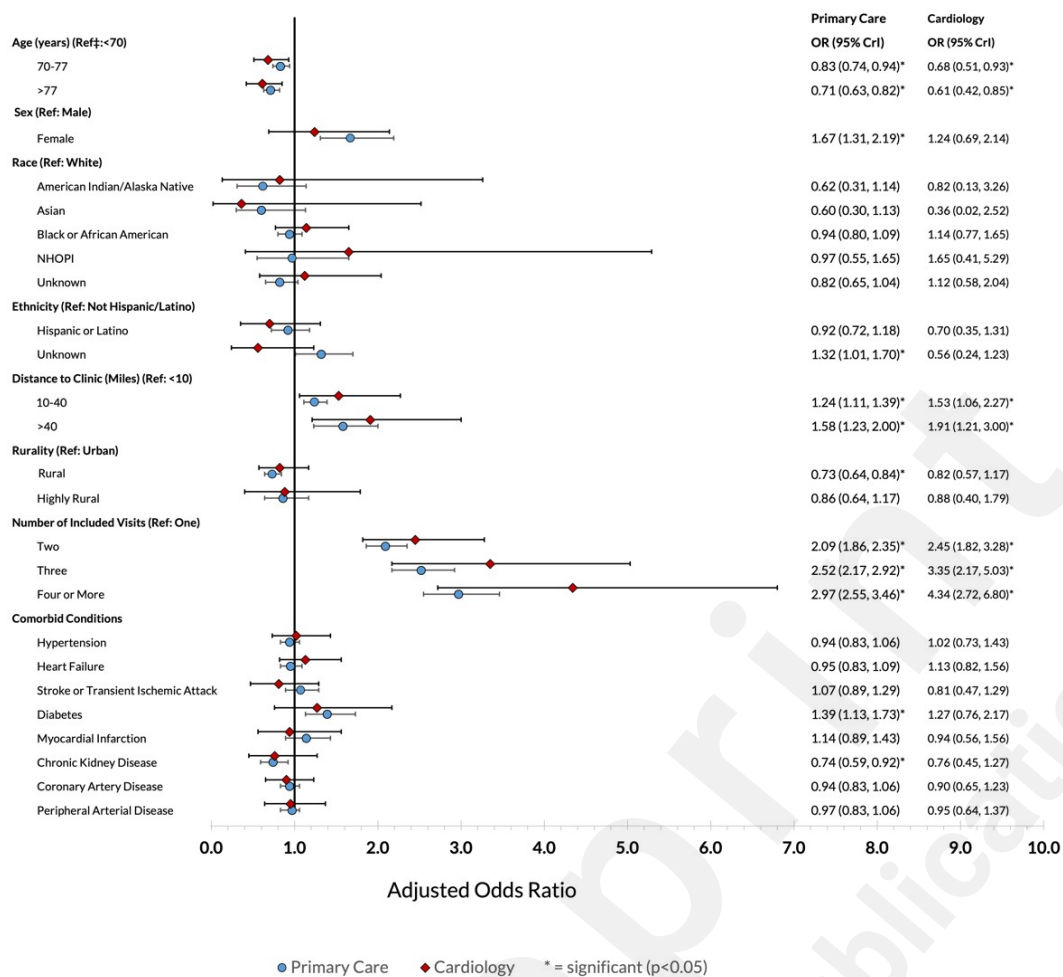
Figure 3. Variation in Primary Care and Cardiology Facility-Level Video Care Use (A) and Any Telehealth Use (B) for Patients with New Outpatient Diagnoses of Atrial Fibrillation from January 2022 – September 2023.

A. Video Use**B. All Telehealth Use**

All Telehealth

In the fully adjusted analysis, there was no association of telehealth use with age (Figure 4). Similar to the results for video care, female Veterans were more likely to receive telehealth for primary care but not for cardiology (AOR 1.28 [95% CrI 1.10-1.49]), and living at a moderate or long distance from care was associated with greater telehealth use for both primary care (AOR 1.08 [95% CrI 1.02-1.14] and 1.24 [95% CrI 1.10-1.40], respectively) and cardiology (AOR 1.35 [95% CrI 1.16-1.70] and 1.75 [95% CrI 1.46-2.11]), with a larger effect for cardiology. Patients receiving a greater number of visits were more likely to receive any telehealth in both specialties (Table S3). Having a diagnosis of hypertension, diabetes, or myocardial infarction was associated with a greater likelihood of primary care telehealth use, and having a diagnosis of heart failure was associated with greater likelihood of cardiology telehealth use (Figure 4). Regarding facility-level characteristics, patients receiving care at higher-complexity facilities were less likely to use telehealth for cardiology, but not for primary care, and patients receiving care at facilities located in the West were more likely to use telehealth for both primary care and cardiology (Table S3).

Figure 4. Adjusted odds ratios for the likelihood of any telehealth use within 90 days following new outpatient diagnoses of atrial fibrillation from Jan 2022 to Sept 2023



There was substantial variation in telehealth use for patients with newly diagnosed AF across facilities, across an overall wider range than for video care. Telehealth use for primary care ranged from 3.8%-61.6% of visits (IQR 12.2%-24.4%), and for cardiology, from 0%-82.6%, IQR 9.3%-27.5%) (Figure 2B). The adjusted MOR for any telehealth use was 1.78 for primary care (95% CrI 1.65-1.96) and 2.61 for cardiology (95% Cr: 2.25-3.13).

Discussion

In this investigation of care modalities for Veterans within 90 days of an incident AF diagnosis, we found that about one fifth of primary care and cardiology visits were provided through telehealth during this period at the end and after the COVID-19 pandemic. Video care use remained low overall, representing only 2-3% of visits, and was less likely for older patients and those living in rural areas for primary care. Video care and all telehealth use were more likely for those living at a distance from care. Importantly, there was significant variation in video and telehealth use across VA facilities even after adjustment for patient and facility characteristics.

In contrast to much of the existing literature on telehealth for patients with cardiovascular disease, this study focuses on a narrowly defined population of patients within 90 days of a new diagnosis of a specific cardiovascular condition. Despite this consistent clinical context, telehealth use across VA facilities ranged from about 4% to over 60% of primary care visits and from 0% to over 80% of cardiology visits for this patient population. Notably, more than 45% of VA cardiology practices did not use any video care for these patients, suggesting potential gaps in access to video care for patients with new AF. This variation was not explained by observable patient and facility factors, with a 5-fold difference in the likelihood that 2 similar patients presenting to 2 similar facilities with new AF would receive video-based cardiology care. This finding underscores the need for further investigation into facility-level policies, infrastructure, and provider preferences that may influence telehealth adoption and the possible quality of care differences that accompany this substantial variation across facilities. The persistence of these significant differences suggests that additional efforts are needed—particularly in rural areas—to fully leverage telehealth's potential in expanding access to cardiovascular care.

Our findings align with prior research indicating that telehealth use has stabilized at a higher level than before the COVID-19 pandemic even years after its historic peak, reflecting both patient and clinician preference to continue integrating these modalities into clinical care in addition to in-person care (12). Video care and all telehealth use were more likely for Veterans living at a distance, highlighting the potential of these modalities to increase access for patients with geographic barriers to care, a critical goal for the VA which serves Veterans across the entire nation. Of note, this distance effect was stronger for cardiology visits; this suggests that telehealth could be more effective for improving access to cardiology care, which is more geographically restricted than primary care.

However, inequities in telehealth access persist. Older Veterans with incident AF were less likely to receive video visits in the post-diagnosis period, and rural Veterans were less likely to receive primary care video visits. These findings are troubling, given that individuals aged 75 and older have the highest prevalence of AF (2)—and thus likely the highest need for care—and that rural Veterans tend to face greater barriers to accessing care than their urban counterparts (13). Video-based care offers specific advantages over audio-only visits, including the ability to conduct a visual physical examination, to assess a patient's home environment, and to build a connection with patients through visual emotional cues (e.g., facial expressions). Female Veterans, conversely, were more likely to use both video care and telehealth. This is consistent with past findings regarding female Veterans' telehealth use (1,6), and suggests that telehealth may specifically increase access for these patients, who may face unique barriers in accessing in-person care, such as greater care-giving responsibilities.

The VA has actively expanded its telehealth capabilities to improve access to care, including through the use of telehealth hub-and-spoke networks designed to increase clinician supply in resource-limited areas (14). These networks enable longitudinal clinical relationships even when Veterans and clinicians are based at different facilities. For such initiatives to succeed, it is crucial to better understand the factors driving variation in telehealth use across facilities, particularly in the early management of AF—a common and costly condition requiring timely intervention, which may be well-suited to virtual management. The limited evidence to date shows that patients with AF were overrepresented among users of one VA cardiology telehealth care model (5) and that electrophysiologists tend to use more telehealth than other cardiology subspecialists (4), offering an early suggestion that telehealth may be effective in caring for this patient population. Understanding why telehealth use is limited for these patients at some facilities will be essential in the quest to connect patients with adequate specialty care. Future research must also focus on assessing the quality and outcomes of telehealth care provided for cardiovascular conditions, like AF. The observed variation in telehealth adoption, which is unexplained by patient and facility-level factors, offers a potential natural experiment to investigate the impact of telehealth on care delivery.

Limitations

Our study has limitations. The data are restricted to VA encounters and thus do not account for care received outside the VA system. The findings may not be generalizable to other contexts and patient populations, though they offer insights which may be relevant for other integrated healthcare

systems. Additionally, while we included all primary care and cardiology visits in the immediate post-AF diagnosis period, AF may not have been the primary focus of these encounters. Finally, though the analytic cohort spanned a period from the late COVID-19 pandemic to after the pandemic, there may have been pandemic effects which influenced the associations described.

Conclusion

Telehealth accounted for a substantial proportion of care provided to this cohort of Veterans with newly diagnosed AF. Telehealth use was more likely for those living at a distance, but video care rates remained low and there was evidence of barriers in access for certain groups. Even after adjustment for patient and facility factors, there was significant variation in video care and telehealth use across facilities. To fully realize the potential of telehealth to enhance care delivery, targeted interventions are needed to ensure equitable telehealth access, particularly for older and rural Veterans. Standardizing telehealth use across VA facilities may be an effective approach to enhancing access to care for AF—a highly prevalent condition with limited specialist availability.

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Statement of Author Contributions

All authors meet criteria for authorship per ICMJE requirements and made the following contributions: Conception and design: RLT, NMK. Acquisition, analysis, and interpretation of data: JF, HK, RLT, NMK. Drafting original draft: RLT, NMK. Critical revision: RLT, NMK, HK, JF, ND, ACP, DC, ATS, PAH. Accountability for accuracy and integrity of work: RLT, NMK, PAH.

Conflicts of Interest

None declared.

Abbreviations

AF: Atrial Fibrillation

CPT: Current Procedural Terminology

E&M: Evaluation and Management

ICD-10: International Classification of Disease, Tenth Revision

VA: Veterans Health Administration

Data Availability Statement

Due to US Department of Veterans Affairs (VA) regulations and our ethics agreements, the analytic datasets used for this study are not permitted to leave the VA firewall without a Data Use Agreement. This limitation is consistent with other studies based on VA data. However, VA data are made freely available to researchers with an approved VA study protocol.



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Tables

Table 1. Patient and Facility Characteristics for a Cohort of Veterans with New Outpatient Diagnoses of Atrial Fibrillation from Jan 2022 – Sept 2023

Patient Characteristics

Field	Dimension	Overall	Cardiology	Primary Care
	Patients	36,929	10,657	34,535
	Visits	80,596	16,761	63,835
Age (years)	Mean (SD)	73.6 (10.9)	71.8 (10.6)	73.7 (10.9)
	≤70	11,512 (31.2%)	3,962 (37.2%)	10,618 (30.7%)
	70-77	13,002 (35.2%)	3,863 (36.2%)	12,181 (35.3%)
	>77	12,415 (33.6%)	2,832 (26.6%)	11,736 (34.0%)
Sex	Male	35,854 (97.1%)	10,293 (96.6%)	33,542 (97.1%)
	Female	1,075 (2.9%)	364 (3.4%)	993 (2.9%)
Race	American Indian or Alaska Native	312 (0.8%)	93 (0.9%)	296 (0.9%)
	Asian	177 (0.5%)	53 (0.5%)	168 (0.5%)
	Black or African American	4,429 (12.0%)	1,623 (15.2%)	4,057 (11.7%)
	Native Hawaiian or other Pacific Islander	265 (0.7%)	73 (0.7%)	252 (0.7%)
	Unknown	3,048 (8.3%)	734 (6.9%)	2,879 (8.3%)
	White	28,698 (77.7%)	8,081 (75.8%)	26,883 (77.8%)
Ethnicity	Hispanic or Latino	1,280 (3.5%)	396 (3.7%)	1,197 (3.5%)
	Not Hispanic or Latino	33,352 (90.3%)	9,737 (91.4%)	31,159 (90.2%)
	Unknown	2,297 (6.2%)	524 (4.9%)	2,179 (6.3%)
Distance to Clinic (miles)*	<10	-	2,430 (22.8%)	14,723 (42.6%)
	10-40	-	5,226 (49.0%)	16,617 (48.1%)
	>40	-	29,70 (27.9%)	27,88 (8.1%)
	Unknown	416 (1.1%)	31 (0.3%)	407 (1.2%)
Rurality Status	Urban	23,090 (62.5%)	7,118 (66.8%)	21,504 (62.3%)
	Rural	11,826 (32.0%)	3,149 (29.5%)	11,112 (32.2%)
	Highly Rural	1,601 (4.3%)	373 (3.5%)	1,512 (4.4%)
	Unknown	412 (1.1%)	17 (0.2%)	407 (1.2%)
Number of Included Visits	One	20,571 (55.7%)	7,052 (66.2%)	18,978 (55.0%)
	Two	9,307 (25.2%)	2,323 (21.8%)	8,762 (25.4%)
	Three	3,771 (10.2%)	738 (6.9%)	3,611 (10.5%)
	Four or More	3,280 (8.9%)	544 (5.1%)	3,184 (9.2%)
CHA ₂ DS ₂ -VASc	Mean (SD)	2.76 (1.60)	2.99 (1.67)	2.74 (1.58)
Preexisting	Hypertension	26,003 (70.4%)	8,544 (80.2%)	24,086 (69.7%)

Conditions		)		)
	Heart Failure	7,522 (20.4%)	3,052 (28.6%)	6,729 (19.5%)
	Stroke or TIA	2,861 (7.7%)	939 (8.8%)	2,622 (7.6%)
	Diabetes	13,553 (36.7%)	4,466 (41.9%)	12,554 (36.4%)
	Myocardial Infarction	1,981 (5.4%)	894 (8.4%)	1,741 (5.0%)
	Chronic Kidney Disease	16,391 (44.4%)	5,396 (50.6%)	15,168 (43.9%)
	Coronary Artery Disease	11,972 (32.4%)	4,311 (40.5%)	10,892 (31.5%)
	Peripheral Arterial Disease	4,806 (13.0%)	1,672 (15.7%)	4,405 (12.8%)
Facility Complexity Level	Very High	16,350 (44.3%)	5,169 (48.5%)	15,220 (44.1%)
	High	13,112 (35.5%)	4,216 (39.6%)	12,172 (35.2%)
	Medium	3,859 (10.4%)	831 (7.8%)	3,661 (10.6%)
	Low	3,440 (9.3%)	405 (3.8%)	3,321 (9.6%)
	Unknown	168 (0.5%)	36 (0.3%)	161 (0.5%)
Facility Teaching Status	Major Teaching Hospital	15,095 (40.9%)	4,859 (45.6%)	13,981 (40.5%)
	Minor Teaching Hospital	16,948 (45.9%)	4,862 (45.6%)	15,884 (46.0%)
	Non-Teaching Hospital	4,427 (12.0%)	901 (8.5%)	4,221 (12.2%)
	No Hospital Data	459 (1.2%)	35 (0.3%)	449 (1.3%)
Facility Patient Population	≤30,000	4,725 (12.8%)	901 (8.5%)	4,518 (13.1%)
	30,000-50,000	14,024 (38.0%)	4,085 (38.3%)	13,085 (37.9%)
	>50,000	18,180 (49.2%)	5,671 (53.2%)	16,932 (49.0%)
		)	)	)
Facility Beds	0	459 (1.2%)	35 (0.3%)	449 (1.3%)
	1-100	6,324 (17.1%)	1,479 (13.9%)	6,009 (17.4%)
	101-500	22,536 (61.0%)	6,663 (62.5%)	21,006 (60.8%)
	>500	7,610 (20.6%)	2,480 (23.3%)	7,071 (20.5%)
Facility Region	South	16,715 (45.3%)	4,991 (46.8%)	15,578 (45.1%)
	West	6,999 (19.0%)	1,931 (18.1%)	6,583 (19.1%)
	Northeast	5,427 (14.7%)	1,531 (14.4%)	5,097 (14.8%)
	Midwest	7,788 (21.1%)	2,204 (20.7%)	7,277 (21.1%)

*Note that individual patients receiving both Primary Care and Cardiology visits during the study period will be represented in both sub-cohorts, hence the total number of patients is smaller than the sum of Primary Care and Cardiology patients. Note that distance to clinic is given as distance to closest primary care for Primary Care columns and as distance to closest secondary care for Cardiology column.

Supplementary Files

Multimedia Appendixes

Supplement to: Variation in Telehealth Use for Patients with Incident Atrial Fibrillation Across the Veterans Health Administration: Retrospective Cohort Study.

URL: <http://asset.jmir.pub/assets/d346ed603c2475ab2cbffbec626d62ce.docx>