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Telemedicine Outpatient Cardiovascular Care during the COVID-19 Pandemic: Bridging or Opening the Digital Divide?

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During the coronavirus disease 2019 (COVID-19) pandemic, it is critical that patients maintain access to routine care while simultaneously limiting community spread of the virus. Given this, the Centers for Medicare and Medicaid Services (CMS) and other insurance payers expanded reimbursement for ambulatory visits via telehealth interactive communications systems. Initially, full reimbursement was restricted to visits utilizing video, as opposed to telephone only. Recent regulatory updates have improved reimbursement for telephone visits; however, these changes are temporary and do not apply to all types of telephone visits or payers [1]. Many ambulatory clinics have exponentially increased telemedicine utilization, with strong preference for video visits.

The use of technology for maintenance of care may exacerbate inequities. Vulnerable patients, including poorer patients, older patients, and non-English speaking patients may have increased barriers to engaging in care via telemedicine, particularly video visits.

The aim of this study was to compare the demographics of patients with completed telemedicine encounters in the current COVID-19 era at a large academic health system to those who were scheduled, but did not complete a visit. We also identified factors associated with a completed telemedicine visit, and video as compared to telephone encounters.

Utilizing the electronic medical record, we extracted demographic information for adult patients (age ≥18 years) scheduled at our institution's general/subspecialty cardiology clinics from 3/16/20 (after local shelter-in-place order and transition of clinics to complete

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telehealth platform) to 4/17/20. Based on billing, we determined whether patients had completed a telemedicine encounter (and if telephone or video), or if not (canceled/no show). Median household income from the American Community Survey [2] was linked to patient ZIP code. Differences in patient characteristics between completed and non-completed, and between video and telephone visits, were compared using $\chi 2$ and t-tests. Multivariable logistic regression was used to identify factors associated with a completed telemedicine visit (telephone or video), as well as video use, specifically. This project was reviewed and determined to qualify as quality improvement by the University of Pennsylvania's Institutional Review Board; no informed consent was required.

A total of 2,940 patients were scheduled during the study period. Of those, 1,339 (46%) had a completed telemedicine encounter and 1,601 (54%) patients had a canceled/no-show visit. On unadjusted analysis, patients with a completed telemedicine visit were slightly older (mean 63 vs 62 years, $p<0.0001$), were more likely to be male (51% vs. 44%, $p<0.0001$), and were more likely to speak English (99% vs. 98%, $p=0.03$). Between groups, there were no differences based on race/ethnicity ($p=0.25$), insurance/payor class ($p=0.12$), or zip-code linked household income ($p=0.38$). Among those with completed telemedicine visits, compared to telephone-only, patients with video visits were more likely to be male (50% vs 42%; $p=0.01$), less likely black (24% vs 34%; $p<0.01$), and had higher median household income (21% vs. 32% income <$50K, 54% vs 49% $50–100K, 24% vs. 19% ≥ $100K). Independent factors on multivariable analysis associated with completed telemedicine visit and video use are summarized in Table 1.

The COVID-19 pandemic has been the great unequalizer, revealing the many ways in which the American healthcare system fails to provide equitable care [3]. Our results suggest that in the current COVID-19 era, inequities may be compounded even among non-COVID patients in outpatient routine care via inequitable access to telemedical care for female, non-English speaking, older, and poorer patients.

Non-English language was independently associated with >50% lower telemedicine use. Although platforms for virtual interpreter services exist, more seamless translation services spanning an entire virtual patient encounter, from scheduling to follow-up visit/testing, are needed. These results call for rapid adoption of such technologies/workflows and immediate implementation of strategies to engage non-English speaking patients, including structured electronic documentation of patient language preference and translation of instructions to access communications technologies.

Female gender was independently associated with less telemedicine and video use. This may be due to disproportionate distribution of child care duties as children stay home or differing employment strains, but further investigation is needed [4].

Median household income <$50K was independently associated with lower video use, which continues to be favored by current insurance coverage policies [1]. This finding may be due to lower rates of smartphone or broadband adoption in this population [5]. Strategies to improve distribution of devices with video capability or provide broadband internet coverage could improve access. While CMS has more recently expanded reimbursement for

telephone visits, there is still not full payment parity between video and audio visits for all insurance payers, and these regulations are temporary [1]. Complete payment parity between modalities should be mandated with permanent, nationwide legislative action. Current reimbursement policies may inadvertently penalize providers with poorer patients in a time of economic uncertainty.

The foundation we develop now for telemedicine visits is sure to last past the current COVID-19 crisis. As we further refine our telemedicine practice, attention to equity is essential.

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Table 1.

Multivariable Logistic Regression on Factors Associated with Completed Telemedicine Visit and Video Use During COVID-19 Pandemic

	Completed Telemedicine Visit			Video Use for Telemedicine Visit (vs. Telephone)		
	Odds Ratio*	**95% CI**	**P-value**	**Odds Ratio***	**95% CI**	**P-value**
Age	1.00	0.99–1.01	0.12	0.97	0.97–0.98	<0.0001
Female Gender	0.74	0.64–0.86	0.0001	0.72	0.56–0.93	0.01
Race/Ethnicity (white as ref.)						
Black	1.17	0.94–1.45	0.82	0.86	0.60–1.23	0.56
Asian	0.77	0.45–1.33	0.09	0.78	0.28–2.17	0.61
Hispanic	1.6	0.89–2.86	0.16	1.55	0.52–4.62	0.3
Other	1.31	0.88–1.95	0.41	0.81	0.44–1.51	0.56
Non-English Language (English as Ref)	0.47	0.22–0.97	0.04	0.80	0.19–3.34	0.76
Median Household Income †, $ (>$100K as Ref)						
<50K	0.85	0.66–1.10	0.23	0.51	0.33–0.79	0.004
50–100K	0.95	0.79–1.15	0.72	0.78	0.57–1.07	0.47

*All factors in table were mutually adjusted for each other

†Based on Zip-Code Linked Median Household Income