Determining the impact of COVID-19 on the equitable utilization of outpatient care at Stanford Children's Health

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Background

The COVID-19 pandemic has required the rapid adoption of telehealth services at Stanford Children's Hospital in order to continue provision of clinical care. This study aims to elucidate the combined impact of demography, disease susceptibility, and the digital divide on the uptake of telehealth in pediatric populations.

Community Partner

Stanford Children's Health (SCH) is a pediatric healthcare system in the San Francisco Bay Area that provides over 500,000 clinical care visits annually. The system is anchored by an academic, quaternary, free-standing children's hospital which serves as a regional care center for children with medical complexity.

Methods

Outpatients seen by pediatric cardiology, nephrology, oncology, neurology, pulmonary and endocrinology between March – June 2019 and March – June 2020 were included in this retrospective cohort analysis. Demographic information included age, gender, interpreter usage, race/ethnicity, insurance status, zip-code derived distance from SCH clinic, and broadband access. Family income was approximated using the zip-code level annual data from the 2018 American Community Survey. The broadband variable was derived from the Federal Communication Commission's Fixed Broadband Deployment database (FCC). Adequate broadband was defined as having 2+ providers of 100/10 Mbps download/upload speed of fiber, cable, or wireless technologies.

Figure 1: Demographic Changes in SCH Patient Population

		March - June 2019	March - June 2020
		# (%)	# (%)
Interpreter Requested	No	18400 (83%)	15369 (81%)
	Yes	3784 (17%)	3499 (19%)
Insurance	Public Insurance	9096 (41%)	8036 (43%)
	Private non-HMO	2986 (13%)	2601 (14%)
	Private HMO	9458 (43%)	7721 (41%)
	Other	644 (3%)	510 (3%)
Distance from SCH	<=50mi	15982 (72%)	13208 (70%)
	>50mi	6202 (28%)	5660 (30%)
Income status	<3*FPL	7986 (36%)	6932 (37%)
	3-4*FP	6168 (28%)	5079 (27%)

Results

Clinical Trends

- There was a 24% decline in new patients and 9% decline in established patients across years. Established patients were significantly more likely to schedule and complete appointments than new patients.
- Total telehealth utilization rose from .6% of total visits in 2019 to 36% of total visits in 2020.
- Relative to endocrinology visits, there were significantly more completed neurology and nephrology telehealth visits. There were significantly fewer completed cardiology, oncology, and pulmonology telehealth visits, relative to endocrinology.

Sociodemographic Trends

- Patients that requested interpreters or lived > 50 miles from SCH were significantly less likely to successfully complete a telehealth appointment.
- Patients with the lowest access to high-speed broadband were significantly more likely to complete appointments. This suggests that broadband—as it is currently measured—plays only a partial role in pediatric subspecialty care utilization.
- Interestingly, Black families experienced increased access to telehealth, suggesting that telehealth may function to increase access for some. Telehealth has been previously shown to facilitate access to care by eliminating appointment-related transit barriers, and may have additionally provided access to specific populations.
- There was no significant differences in successful telehealth appointment completion by payor status, age, or gender.

Figure 2: Multivariable Regression for Telehealth Appointment Completion

Variable	Odds Ratio Estimates [95% CI]
Established Patient	2.52 [2.33-2.72]
Requested Interpreter	0.69 [0.62-0.76]
>50mi	0.89 [0.81-0.99]
Lowest 25th percentile @ 100mbps	1.28 [1.15 -1.42]
Cardiology	0.09 [0.08-0.11]
Nephrology	1.23 [1.06-1.43]
Neurology	1.92 [1.74-2.11]
Oncology	0.12 [0.10-0.14]
Pulmonology	0.67 [0.60-0.74]

Recommendations

Prior patient-clinician relationship is often a foundational requirement for successful appointment completion. Future interventions that increase the accessibility of health services for new patients could serve to increase access to SCH's health services.

The heterogeneity in telehealth usage across subspecialties likely reflects differences in clinical needs and may persist in a post-COVID era. It will be necessary to find an optimal balance between in-person visits and telehealth visits for each subspecialty that is both high-quality and accessible to all populations.

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