



Research Report

Lessons learned: Telemedicine patterns and clinical application in patients with gynecologic cancers during COVID-19

Sarah A. Ackroyd^{a,*}, Melinique Walls^b, Josephine S. Kim^a, Nita K. Lee^a

^a University of Chicago Medicine, Section of Gynecologic Oncology, 5841 S Maryland Ave, Chicago, IL 60637 USA

^b University of Chicago, Pritzker School of Medicine, 5841 S Maryland Ave, Chicago, IL 60637, USA

ARTICLE INFO

Keywords:

Telemedicine
Covid-19
Ehealth literacy

ABSTRACT

Objective: To describe the use of telemedicine in gynecologic oncology and identify patient characteristics associated with telemedicine use during COVID-19.

Methods: Single-institution retrospective chart review of patients with gynecologic cancer who participated in in-person and telemedicine visits (video and telephone) from January 2019 to November 2020. Patient characteristics, visit and treatment characteristics were collected. Comparisons between 2019 and 2020 and between in-person and telemedicine visits were performed. Cancer-specific visit details were described.

Results: From January to November 2020, 2,039 patients attended 5240 ambulatory visits in our gynecologic oncology outpatient clinics with 4,304 (82.1%) in-person visits, 512 (9.8%) video telemedicine visits, and 424 (8.1%) telephone visits. In 2020, 936 (45.9%) patients participated in a telemedicine visit. Demographic characteristics did not differ between those who participated in any telemedicine versus in-person visits ($p > 0.05$). Black patients represented a larger share of telephone visits but this was not significant. Patients aged > 65 years were more likely to use the telephone for a visit and less likely to use video visits compared to their younger counterparts. The majority of patients who attended a telemedicine visit also attended a visit in-person (88.0%). The most common purpose of the telemedicine visits was to discuss results and/or treatment plans (46%) with other appointments occurring for treatment check-ins and clinical trials.

Conclusions: The use of telemedicine drastically increased in 2020. Patient demographics were not different between in-person and telemedicine visits except that older patients were more likely to use telephone visits over video visits. Telemedicine can be used for a variety of care needs in gynecologic oncology but further work needs to be done to optimize implementation, assess cost-effectiveness and patient outcomes.

1. Introduction

The COVID-19 pandemic has accelerated the implementation of telemedicine (telephone and video visits) to help expand care to patients during this time when social distancing was encouraged (Dorsey and Topol, 2020). While telemedicine use may result in decreased patient costs including time spent away from work, transportation, and time, there are inherent limitations to the use of medical technologies (Bynum et al., 2003). Specifically, telemedicine requires both access to technology (ie. broadband internet, smartphone, computer) and a level of eHealth literacy, defined as the ability to seek, find, and understand health information from electronic sources, which are both known to be disproportionately lower in underserved populations (Brodie et al., 2000; Glied and Lleras-Muney, 2008). For instance, lower internet use

and eHealth literacy is more prevalent in patients who are older age, lower income, lower educational attainment, non-English speakers and those of Black or Hispanic race (Chesser et al., 2016; Abdel-Rahman, 2021).

In the early phase of the COVID-19 pandemic, telemedicine was rapidly implemented via telephone and video visits to help provide continued care while minimizing risk associated with in-person visits. This shift in clinical practice allowed better understanding of the benefits, structural gaps and challenges associated with telemedicine integration. A group at our institution published on the use of telehealth visits in the outpatient setting during the pandemic. With over 48,000 virtual visits in their analysis, they found that patients who participated in telephone visits were more likely to be older, of Black race, and be Medicare and/or Medicaid beneficiaries (Gilson et al., 2020).

* Corresponding author at: University of Chicago Medicine, Section of Gynecologic Oncology, 5841 S Maryland Ave MC2050, Chicago, IL 60637, USA.

E-mail address: Sarah.Ackroyd@uchospitals.edu (S.A. Ackroyd).

<https://doi.org/10.1016/j.gore.2022.100986>

Received 17 February 2022; Received in revised form 20 April 2022; Accepted 22 April 2022

Available online 27 April 2022

2352-5789/© 2022 Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Identifying the groups left out of telephone and video visits can help us to improve our implementation of telemedicine in the future and better understand reasons behind this gap.

Given these findings, we sought to use the experience with telemedicine in a large, urban academic center to help characterize the patients with gynecologic cancer who participated in telemedicine and the purpose of the visits conducted. Our institution serves a large, multi-ethnic, mixed socioeconomic status patient population in southside Chicago. Compared to the previous study conducted at our institution, we focused on the gynecologic oncology population and chose to use unique patients in our analysis to better understand characteristics of patients and visits types common in the gynecologic cancer care pathway. We hypothesized that patients who were older, of non-White race, and non-commercial insurance would be less likely to use telemedicine (Gilson et al., 2020).

2. Methods

A retrospective chart review was performed on patients seen at our institution in the Gynecologic Oncology outpatient clinic by eight providers between January 1, 2019 to November 1, 2020. Data collection included patient demographics including age, race (white, Black, "other" which represented patients with no known race, declined race, and American Indian/Alaskan Native, Asian/Mideast Indian, Native Hawaiian, and "more than one race" groups), insurance status, proximity to the hospital (defined as zip code < 5 miles from our hospital which is located in southside Chicago), and visit characteristics (provider, visit type (new/return), in-person/telemedicine). Visit type was identified using e-record billing codes for in-person, telephone, and video visits. To characterize the purpose of telemedicine visits, additional information was collected on disease status and treatment status. This study protocol was approved by the University of Chicago Institutional Review Board. Telemedicine was offered to all patients treated at our institution. Each patient scheduled for an appointment was contacted to inquire over the use of a telephone or video visit in lieu of an in-person visit. Providers and support staff had access to training and support with telemedicine through an institution-wide telemedicine initiative to help extend medical care to our patients. Our institution's experience has been highlighted in the literature.

Two cohorts were created for comparison: one that represents the pandemic year including patients from January 1, 2020 to November 1, 2020, and a comparable group from the same time period in 2019 that represents the usual patient population. This time period was selected to represent overall patient volume from year to year (including January, February) and to represent the time COVID policies were in effect at our institution (which corresponded with Chicago area community data) at the time of the study data collection. Visits were coded into "in-person" and "telemedicine" groups, which were further separated into video and telephone groups. As many patients could participate in multiple visits in a year time period, we chose to represent unique patients in our descriptive analysis. Descriptive statistics were performed with chi-square and independent t-tests to compare patient characteristics and volume between 2019 and 2020. Multivariate logistic regression was performed to assess characteristics predictive of participating in a telemedicine visit versus an in-person visit. Additional descriptive statistics were performed on the telemedicine group to describe the disease characteristics and current treatments received by patients who participated in telemedicine in 2020. Statistical analysis was performed using STATA 15 (StataCorp. 2017. *Stata Statistical Software: Release 15*. College Station, TX: StataCorp LLC.).

It is important to note that our study was different from prior studies (Gilson et al., 2020; Berlin et al., 2021) in that we used only distinct patients in our regression analysis, versus total number of visits completed by all patients. By using only unique patients in our analysis, we avoided bias that patients who have multiple visits would contribute to the association between participation in telemedicine and patient

characteristics (ie. skewing associations if the same patient used telemedicine more frequently than other patients).

3. Results

From January to November 2019, a total of 1,930 patients attended 4,732 ambulatory in-person visits with gynecologic oncology providers. There were no telemedicine visits in 2019. In the same time period in 2020, 2,039 patients attended 5,240 ambulatory visits, representing a 5.6% increase in patient population and 10.7% increase in visit volume. Of the 5,240 outpatient visits 4,304 (82.1%) were in-person visits, 512 (9.8%) video telemedicine visits, and 424 (8.1%) telephone visits. Fifty-eight (58.1%) of patients attended multiple telemedicine visits over the 2020 time period and 85% of patients who participated in telemedicine also participated in an in-person visit. The distribution of visits by month for 2019 and 2020 are shown in Fig. 1. While visits in March and April 2020 were <2019 numbers, the total number of outpatient visits (in-person and telemedicine) for 2020 exceeded the previous year's numbers from June to October. Telemedicine visits were the largest proportion of April 2020 visits, representing 56.6% (167/295) of visits.

Demographic and visit characteristics for unique patients are displayed in Table 1. Demographic characteristics between patients who participated in visits between 2019 and 2020 were similar. In 2020, the mean age of participants was 60 years, majority White (68.4%) followed by Black (23.6%), and a majority of patients had commercial insurance (59.9%) followed by Medicare (27.1%), and Medicaid (13.0%). In 2020, demographics of patients who participated in a telemedicine (phone or video based) visit versus those who only participated in an in-person visit were similar in age, Hispanic ethnicity proportion, insurance distribution, and proximity to the medical center. However, compared to White counterparts, a smaller proportion of Black patients participated in telemedicine (21.3% vs. 24.2%, $p > 0.05$) and a larger proportion of "other" racial category participated in telemedicine (11.4 vs. 8.2%, $p < 0.05$). Telemedicine visits had a higher proportion of "new" visits/consultations compared to in-person visits (38.4% vs. 28.7%, $p < 0.01$). Patients who had at least one telemedicine visit were more likely to have multiple visits over the course of 2020 compared to those who only attended in-person visits (84.6% vs. 45.9%, $p < 0.01$). Eight-hundred fifty-four (41.9%) patients only had one visit, 516 (25.3%) had 2 visits, 273 (13.4%) had 3 visits and the rest had 4 or more visits, with only 98 (4.8%) patients attending >6 visits. In a multivariate regression, after adjusting for demographic characteristics, only the "other" race group (versus White) was more likely to have a telemedicine visit (aOR 2.33 (95% CI: 1.38–3.96), $p < 0.01$).

Telemedicine visits were also further analyzed by the type of telehealth visit as either telephone or video visits, as shown in Table 2. In a multivariate regression, after adjusting for patient characteristics, we found that compared to in-person visits, patients greater than age 65 were less likely to use video visits (aOR 0.55, 95% CI: 0.36–0.82, $p < 0.01$) and more likely to participate in a telephone visit (aOR 1.83, 95% CI: 1.22–2.75, $p < 0.01$). There were no differences between white patients and Black patients but patients in the "other" racial category were more likely to participate in a video visit (aOR 2.35, 95% CI: 1.30–4.25, $p < 0.01$) and less likely to participate in a phone visit (aOR 0.43, 95% CI: 0.24–0.77, $p < 0.01$). Lastly, compared to in-person visits, new visits were less likely to be video visits (aOR 0.51 95% CI: 0.36–0.72, $p < 0.01$) and more likely to be telephone visits (aOR 1.96 95% CI: 1.39–2.76, $p < 0.01$).

Treatment characteristics for all telemedicine visits ($n = 936$) were examined (Table 3). The majority of patients who attended a telemedicine visit also attended a visit in-person (88.0%). Patients with ovarian cancer represented the largest number of visits (384/936, 41.0%) followed by uterine cancer with 301 visits (32.2%), cervical cancer with 62 (6.6%) visits, vaginal/vulvar cancer with 23 (2.5%) visits, and 164 (17.7%) visits were for benign or genetic conditions. The most common purpose of the telemedicine visits was to discuss results and/or

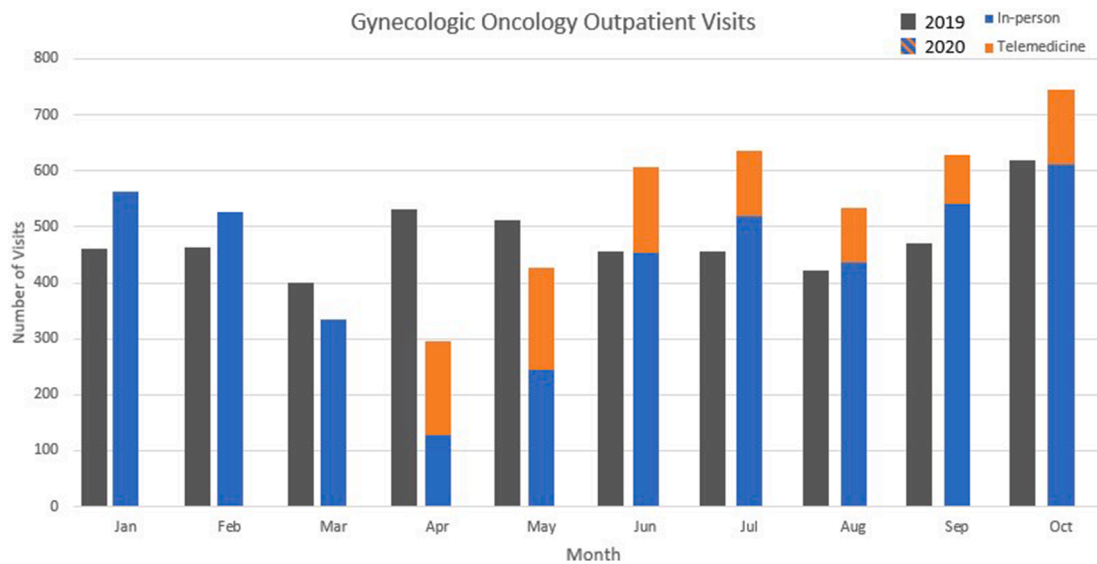


Fig. 1. Gynecologic Oncology outpatient visits, by year and type.

Table 1
Characteristics of unique patient visits in 2019 and 2020.

Characteristic #, n (%)	2019 Ambulatory In-person (n = 1,930)	2019 vs. 2020 p-value	2020 Ambulatory visits			Univariate p-value (Telemedicine vs. In-person)	Telemedicine vs. In-person aOR (95% CI)
			Total (n = 2,039)	In-person only (n = 1,396)	Any telemedicine (n = 643)		
Age (years)	59.7 ± 14.6	0.19	60.3 ± 14.4	60.4 ± 14.3	60.1 ± 14.6	0.76	0.88 (0.70–1.12)
Race		0.08				<0.05	
White	1,255 (65.0)		1,395 (68.4)	950 (68.1)	445 (69.2)		Referent
Black	509 (26.4)		481 (23.6)	342 (24.5)	139 (21.6)		1.09 (0.64–1.85)
Other/Unknown	166 (8.6)		163 (8.0)	104 (7.4)	59 (9.2)		2.33 (1.38–3.96)*
Hispanic ethnicity (% yes)	113 (5.9)	0.35	134(6.6)	83 (5.9)	51 (7.9)	0.09	1.01 (0.49–2.09)
Insurance Type		0.36				0.15	
Commercial	1,146 (59.4)		1,222 (59.9)	830 (59.5)	392 (61.0)		Referent
Medicare	504 (26.1)		552 (27.1)	371 (26.6)	181 (28.1)		0.88 (0.50–1.55)
Medicaid	280 (14.5)		265 (13.0)	195 (14.0)	70 (10.9)		0.61 (0.31–1.19)
Visit Type		0.11				<0.01	
New	659 (34.1)		648 (31.8)	401 (28.7)	247 (38.4)		1.20 (0.82–1.77)
Return	1,271 (65.9)		1,391 (68.2)	995 (71.3)	396 (61.6)		Referent
<5 MILES OF Hospital (% yes)	166 (8.6)	0.20	1,886 (92.5)	112 (8.0)	41 (6.4)	0.21	0.83 (0.36–1.93)
>1 visit (% yes)	1,138 (59.0)	0.59	1,185 (58.1)	641 (45.9)	544 (84.6)	<0.01	–

* p-value < 0.01, Age classified as age > 65 in model

treatment plans, which occurred in 46% of visits. Other reasons for visits included discussion of treatment /side-effects while on chemotherapy (20.5%), maintenance therapy (7.5%), clinical trial therapy (7.2%), and follow-up during radiation/chemoradiation (1.8%). There was a higher proportion of visits by video versus telephone for ovarian cancer (47.5% vs 33.0%, respectively) visits, while the opposite was true for uterine cancer visits with 38% by telephone and 28% by video (p < 0.01, cancer type between video and telephone). A larger proportion of advanced stage (3 or 4) disease visits were done by video (49.8%) versus telephone (41.3%) (p < 0.01).

4. Discussion

Telemedicine allowed our institution to rapidly reconfigure care

delivery to meet patients’ clinical needs during the COVID-19 pandemic. We found that a majority (58.1%) of patients attended multiple telemedicine visits over the 2020 time period and found that a hybrid model of visits were common with with 88% of patients who participated in telemedicine also participated in an in-person visit. Telemedicine visits reflected the wide scope of care in gynecologic oncology and included initial consultations, postoperative visits, results discussions, surveillance visits, chemotherapy and maintenance medication check-ins. Importantly, while older patients may have preferred telephone visits over video visits, other socioeconomic driven variables, such as race, age, medical center proximity, and insurance did not impact the overall use of telemedicine.

Understanding telemedicine usage should guide future thoughtful implementation beyond the initial emergent use. A hybrid model of care

Table 2
Unique patients for In-person vs video and telephone visits, respectively.

Characteristic	Video aOR (95% CI) n = 379		Phone aOR (95% CI) n = 264	
Age > 65	130 (34.3)	0.55 (0.36–0.82)*	132 (50.0)	1.83 (1.22–2.75)*
Race				
White	265 (69.9)	Referent	180 (68.2)	Referent
Black	72 (19.0)	0.67 (0.43–1.04)	67 (25.4)	1.50 (0.96–2.35)
Other/Unknown	42 (11.1)	2.35 (1.30–4.25)*	17 (6.4)	0.43 (0.24–0.77)*
Hispanic ethnicity (% yes)	33 (8.7)	0.83 (0.43–1.58)	18 (6.8)	1.21 (0.63–2.30)
Insurance Type				
Commercial	247 (65.2)	Referent	145 (54.9)	Referent
Medicare	90 (23.7)	0.95 (0.60–1.49)	91 (34.5)	1.05 (0.67–1.66)
Medicaid	42 (11.1)	0.92 (0.52–1.63)	28 (10.6)	1.09 (0.61–1.92)
Visit Type- New	127 (33.5)	0.51 (0.36–0.72)*	120 (45.5)	1.96 (1.39–2.76)*
<5 MILES OF UCM (% yes)	25 (6.6)	1.51 (0.74–3.09)	16 (6.1)	0.66 (0.32–1.36)

* p-value < 0.01, UCM = University of Chicago Medical Center

Table 3
Treatment characteristics for visits of patients who participated in telemedicine.

	Total N (%)	Video	Telephone	P- value
# of visits	936 (100)	510 (54.5)	426 (45.5)	N/A
Cancer Type				<0.01
Ovary/Fallopian tube/ Primary peritoneal	384 (41.0)	244 (47.5)	140 (33.0) 161 (37.8)	
Uterine	301 (32.2)	140 (27.5)	28 (6.6) 12 (2.8)	
Cervix	62 (6.6)	34 (6.7)	3 (0.7)	
Vaginal/Vulvar	23 (2.5)	11 (2.2)	82 (19.2)	
Genetic predisposition	13 (1.4)	10 (2.0)		
Benign	153 (16.3)	71 (13.9)		
Stage				<0.01
Benign	168 (17.9)	83 (16.3)	85 (20.0) 146 (34.3)	
1	288 (30.8)	142 (27.8)	19 (4.5) 122 (28.6)	
2	50 (5.3)	31 (6.1)	54 (12.7)	
3	270 (28.8)	148 (29.0)		
4	160 (17.1)	106 (20.8)		
Disease Status				0.11
Initial appointment/adjuvant treatment	431 (46.0)	227 (44.5)	204 (47.9) 82 (19.2)	
No evidence of disease	215 (23.0)	133 (26.1)	125 (29.3) 15 (3.5)	
Recurrent disease	255 (27.2)	130 (25.5)		
Progressive disease	35 (3.7)	20 (3.9)		
% on treatment	356 (38.0)	202 (39.6)	154 (36.2) 83 (19.5)	0.39
Chemotherapy	192 (20.5)	109 (21.4)	2 (0.5) 30 (7.0)	
Hormonal therapy	9 (1.0)	7 (1.4)	6 (1.4)	
Maintenance therapy	71 (7.5)	41 (8.0)	33 (7.7)	
Radiation/chemoradiation	17 (1.8)	11 (2.6)		
Investigational therapeutic clinical trial	67 (7.2)	34 (6.7)		
Telemedicine alone	112 (12.0)	–	–	–
Telemedicine + In-person	824 (88.0)			

may be able to extend clinical care to patients without the associated indirect costs of travel, parking, or time-off of work. Telemedicine visits were also used with patients who required appointments for various clinical trial protocols. If carefully built into standard protocols, telemedicine visits may help with known trial participation barriers including number of visits, costs of transportation, or time spent at visits away from home.

The use of telemedicine was feasible and has previously been shown to produce cost savings (8). A hybrid model which incorporates or alternates telemedicine visits with in-person visits may be beneficial, and existing frameworks have been outlined, the most notable being the “risk-based surveillance” schema proposed by Mancebo et al. (Mancebo et al., 2021). While more outcomes-based work needs to be done, this method of care has the potential to save patients significant time and resources, reduce community exposure to COVID19 (or other emerging communicable diseases) and allow clinical care to continue more efficiently. Importantly, patients have reported acceptability and positive experiences with telemedicine. In a study in another academic gynecologic cancer practice, patients who participated in telemedicine during the pandemic reported good satisfaction with the technology quality, counseling received by providers, and the length of visit conducted. Overall, 88.5% of patients reported a positive experience and 82% said they would participate in telemedicine again (Mojdehbakhsh et al., 2021).

As a medical technology, telemedicine lends itself to disproportionately favor those patients who have access and experience with technological innovations. The digital divide refers to disparities in technology use that result from an unbalanced infrastructure, such as access to broadband internet, computer technology and knowledge of eHealth literacy. This inequitable access to technology can be related to ownership, availability, and affordability, resulting in rural and lower socioeconomic groups being disproportionately affected (Brodie et al., 2000). Due to this concept, telemedicine has historically been challenging to implement across all healthcare settings. A survey of 67 medical oncology patients in rural Virginia found that only 72% had a video-capable phone and only 62% had high-speed internet or data that would be able to support a video. Additionally, 37% did not feel they could access video on their phone and 17% did not want to participate in telehealth (Bodine et al., 2020). It is possible that differences noted between video and telephone visits may be due to patient’s varying comfort level and access to technology. To help extend telemedicine care to all populations we have to consider screening patients for eHealth literacy and technologic capabilities, and designing programs that will help to improve patient participation.

Implementation of telemedicine will require attention to the needs and preferences of the diverse patients cared for by each institution or health system. Clinical care models should adapt to in the different usage patterns in patients based on age, race, language, economic and insurance status, and technology skills and access to avoid worsening known disparities in gynecologic cancer care. A previous study in a hematology-oncology population in Houston, reported that older, lower-income, and non-commercial insurance patients were less likely to participate in telemedicine video visits (Darcourt et al., 2021). A study of oncology patients in New York City found that African American patients were less likely to participate in telemedicine, however this analysis was limited in that they looked at all visits and not a unique patient population (Smith and Bhardwaj, 2020). In our study population, after adjusting for demographic characteristics, we found that age, insurance, race and Hispanic ethnicity did not vary between those who participated in any telemedicine and those who participated in in-person visits. However, although not statistically significant we did see that Black patients represented a larger share of telephone visits versus video visits. Those patients aged 65 and older were more likely to use the telephone for a visit and less likely to use video visits compared to their younger counterparts. This may represent lack of access or comfort with technology and should be further explored. While patients may use

video or telephone visits differently, physician effort and time commitment is similar in both video and telephone visits. The distinction between telephone and video visits is important to consider as the Center for Medicare and Medicaid derives permanent laws over insurance coverage of virtual visits.

This study was limited due to the retrospective nature and the use of billing records to identify telemedicine visits. It would be most helpful to understand patient experiences and preferences with telemedicine types to build better clinical algorithms. Further work should be done to create a standardized telemedicine approach to optimize patient and provider interaction with the technology. Long term studies of cost to the individual and the health care system, clinical outcomes including quality of life, as well as patient provider communication in telemedicine are warranted.

Our group was likely successful in implementing telemedicine across disparate groups due to our experience working with our community and established communication lines that have already been formed with our patients. We routinely communicate with our patients via telephone and myChart and verify contact/family member contact at each visit. We do acknowledge that this may leave out the most vulnerable, or those with no access to care. Furthermore, our institutional initiative provided guidance and technological backup during administration of telemedicine that allowed providers to be comfortable using telemedicine. During the actual telemedicine visit, our medical staff would first establish communications with the patient to gather background information and assure comfortability with the technology which allowed for a seamless transition to the provider's telemedicine visit.

Telemedicine can be used for a variety of care needs in gynecologic oncology. Further work needs to be performed to optimize implementation, assess the cost-effectiveness and ascertain patient outcomes. Telemedicine can become an opportunity to expand care and reduce the burdens associated with traditional in-person visits. As the initial pandemic emergency subsides and clinical care is resuming under a "new normal", learning from the telemedicine experience is an important first step in building clinical models for hybrid care.

CRedit authorship contribution statement

Sarah A. Ackroyd: Conceptualization, Data curation, Writing – original draft. **Melinique Walls:** Data curation, Formal analysis, Writing – review & editing. **Josephine S. Kim:** Methodology, Writing – review & editing. **Nita K. Lee:** Conceptualization, Methodology, Formal

analysis, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- Dorsey, E.R., Topol, E.J., 2020. Telemedicine 2020 and the next decade. *Lancet* 395 (10227), 859.
- Bynum, A.B., Irwin, C.A., Cranford, C.O., Denny, G.S., 2003. The impact of telemedicine on patients' cost savings: some preliminary findings. *Telemed J E Health*. 9 (4), 361–367.
- Brodie, M., Flournoy, R.E., Altman, D.E., Blendon, R.J., Benson, J.M., Rosenbaum, M.D., 2000. Health information, the Internet, and the digital divide. *Health Aff (Millwood)*. 19 (6), 255–265.
- Glied, S., Lleras-Muney, A., 2008. Technological innovation and inequality in health. *Demography* 45 (3), 741–761.
- Chesser, A., Burke, A., Reyes, J., Rohrberg, T., 2016. Navigating the digital divide: a systematic review of eHealth literacy in underserved populations in the United States. *Inform Health Soc Care*. 41 (1), 1–19.
- Abdel-Rahman, O., 2021. Patient-related barriers to some virtual healthcare services among cancer patients in the USA: a population-based study. *J. Comp. Eff. Res*. 10 (2), 119–126.
- Gilson, S.F., Umscheid, C.A., Laiteerapong, N., Ossey, G., Nunes, K.J., Shah, S.D., 2020. Growth of ambulatory virtual visits and differential use by patient sociodemographics at one urban academic medical center during the COVID-19 pandemic: retrospective analysis. *JMIR Med. Inform*. 8 (12), e24544.
- Berlin, A., Lovas, M., Truong, T., Melwani, S., Liu, J., Liu, Z.A., Badzynski, A., Carpenter, M.B., Virtanen, C., Morley, L., Bhattacharyya, O., Escaf, M., Moody, L., Goldfarb, A., Brzozowski, L., Cafazzo, J., Chua, M.L.K., Stewart, A.K., Krzyzanowska, M.K., 2021. Implementation and outcomes of virtual care across a tertiary cancer center during COVID-19. *JAMA Oncol*. 7 (4), 597.
- Mancebo, G., Solé-Sedeño, J.-M., Membrive, I., Taus, A., Castells, M., Serrano, L., Carreras, R., Miralpeix, E., 2021. Gynecologic cancer surveillance in the era of SARS-CoV-2 (COVID-19). *Int. J. Gynecol. Can*. 31 (6), 914–919.
- Mojdehbakhsh, R.P., Rose, S., Peterson, M., Rice, L., Spencer, R., 2021. A quality improvement pathway to rapidly increase telemedicine services in a gynecologic oncology clinic during the COVID-19 pandemic with patient satisfaction scores and environmental impact. *Gynecol. Oncol. Rep*. 36, 100708.
- Bodine CD, Das DG, Haywood K. Barriers to telehealth: The patient perspective. *J Clin Oncol*. 2020;38.
- Darcourt, J.G., Aparicio, K., Dorsey, P.M., Ensor, J.E., Zsigmond, E.M., Wong, S.T., Ezeana, C.F., Puppala, M., Heyne, K.E., Geyer, C.E., Phillips, R.A., Schwartz, R.L., Chang, J.C., 2021. Analysis of the implementation of telehealth visits for care of patients with cancer in houston during the COVID-19 pandemic. *JCO Oncol. Pract*. 17 (1).
- Smith, C.B., Bhardwaj, A.S., 2020. Disparities in the use of telehealth during the COVID-19 pandemic. *J. Clin. Oncol*. 38 (29_suppl), 87.