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Original Research

Telehealth: An Effective Model of Care for Renal Cancer Surveillance

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A B S T R A C T

The coronavirus disease 2019 pandemic presented challenges for urology patients to receive care in the format of a traditional clinic visit. For renal cancer patients, active surveillance and postintervention surveillance are the standard components of management. Telehealth, which was defined as a televideo encounter via the BlueJeans (Verizon) platform (a telehealth platform), was used to ensure continuity of care. Telehealth using the televideo modality was shown to be an effective model of care delivery to provide an optimal patient experience with ease of use.

Active surveillance and postintervention surveillance are the standard components of care in the management of renal cancer. The coronavirus disease 2019 (COVID-19) pandemic presented challenges for urology patients to receive care in the format of a traditional clinic visit. A telehealth visit (defined as a televideo encounter) was used to ensure continuity of care. The aim of this study was to evaluate the perceived quality of care and ease of use of telehealth as a feasible modality in which to provide an optimal patient experience.

Background and Significance

Telehealth visits were offered as an alternative to in-person visits to urology patients at the onset of the pandemic. The practice was rapidly adopted by providers, including urologists across the country. This was new territory for both patients and providers. Our hypothesis postulated that patients and providers would prefer to continue renal cancer follow-up in a formal manner. There were little initial available data in the realm of urology. Before the pandemic, common telehealth visit conditions included lower urinary tract symptoms, elevated prostate-specific antigen levels, and prostate cancer within Veterans Administration Medical Centers.[1] Furthermore, before the pandemic, a program was proposed in Illinois to explore one aspect of disease disparity related to renal cancer and the possible role of telehealth in addressing disparities in rural communities.[2]

During the early days of the pandemic, one study looked at online telehealth visits in urology, specifically their potential risk factors and patient perspective.[3] Although the patient perspective was unclear, according to Boehm et al,[3] who conducted phone interviews at the onset of the pandemic, 84.7% wished for a telehealth visit. A visit was not conducted 17.3% of the time in this study because of a technical limitation. In this study, which also looked at risk factors, patients with renal cancer had the highest number of clinical risk factors (Box) (ie, > 50 years old, circulatory disease, diabetes, respiratory disease, renal disease, liver disease, history of nononcologic disease, immunosuppression at the time of the visit, nicotine abuse, and hypertension), making them more complex urologic patients followed by patients with urothelial cancer, prostate cancer, and nononcologic disease. It was also identified early on that urology was a high user of telehealth across subspecialties.[4]

In a recent investigation by Chao et al,[4] of 4,405 active surgeons, 2,508 used telehealth with 109,610 visits, and urology ranked the highest user of telehealth across subspecialities. For new patients, urology came in first at 14.3% (prepandemic conversion rate = 7.7%) with neurosurgery at 13.8% (prepandemic conversion rate = 3.7%); the conversion rate was defined as new telehealth visits divided by the mean total of new patient visits. Further analysis supported

Box. Renal Cancer Patients' Clinical Risk Factors

- > 50 years old
- Circulatory disease
- Diabetes
- Respiratory disease
- Renal disease
- Liver disease
- History of nononcologic disease
- Immunosuppression at the time of visit
- Nicotine abuse
- Hypertension

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urology as the leading subspecialty for established patients at 21.6%. Overall, with all patients, prepandemic telehealth visits were less than 1% for new patients, which increased to 34% at the height of telehealth use followed by a decrease to 3% during the later months, which were indicative of prepandemic levels according to Kapadia et al.[5]

Other findings related to patient characteristics for new patients showed higher use by women, patients younger than 60 years old, patients in nonrural area, and patients with a mean income of above $56,458. Another study sought to assess demographics, socioeconomic factors, and insurance status associated with patient participation in telehealth during the COVID-19 pandemic. This cohort included more than 1,000 otolaryngology patients with greater than 400 of them completing a virtual visit and with telehealth defined as a broader scope of remote health care services in a tertiary care, academic, multispecialty, multisite practice. The findings suggested that age, sex, median household income, and marital status play roles in patient participation.[6] These findings by Darrat et al[6] identified vulnerable populations who may not engage with telehealth yet still require medical care in a changing health care delivery landscape. Specific challenges relative to urology and patient characteristics associated with participating in a telehealth appointment were studied by Javier-DesLoges et al.[7] The results of 4,234 total visits composed of 1,567 (37%) telehealth visits demonstrated that Hispanic ethnicity, older age, and Medicaid insurance correlated with a decreased likelihood of accessing telehealth. Moreover, no differences were found in telehealth utilization when stratifying providers by their age, sex, or training (ie, physicians, nurse practitioners [NPs], or physician assistants).

Additional barriers include process issues. A recent small series of urology patients studied system efficiencies related to communication breakdowns, interconnectivity issues, and interruptions and highlighted opportunities to improve the process during telehealth visits.[8] Quality improvement is ongoing to enhance the patient and provider experience.

In regard to barriers to reimbursement, federal and state emergency declarations early on in the COVID-19 pandemic waived barriers for out-of-state medical licenses in order for providers to treat out-of-state patients. However, the future of licensure reciprocity is unclear. Several reforms have been suggested, including state-based medical licensing, licensure reciprocity, a proposal to practice medicine on the basis of the physician's location instead of the patient location, and the implementation of a federal medical license.[9] Insurance and reimbursement legislation would need to coincide for this to be a viable solution. To date, many states do not have a definitive reimbursement schedule for the post–COVID-19 era or a fee structure palatable to providers and health systems. These states are working within the boundaries of regulatory waivers and suspensions issued by their respective Departments of State and Bureau of Professional and Occupational Affairs, with extensions planned well into the early months of 2022.

The purpose of this study was to validate telehealth as an appropriate model of care delivery for renal cancer surveillance during the COVID-19 pandemic, to ascertain patients' perception of their quality of care, and to assess the feasibility for ease of use. As expected, there were no available data specifically studying telehealth for renal cancer patients. This presented an opportunity to add to the body of knowledge for this patient population.

Methods

Study Design

This was a prospective quantitative study design. Institutional review board approval was obtained (#844099).

Participants

The cohort consisted of 102 patients in a single university practice between March 2020 and September 2021. The 102 patients in the cohort were invited to participate, and 80 patients participated. The participants were adult renal cancer patients 34 to 85 years old with the diagnosis of renal cancer who required either active surveillance or posttreatment surveillance. The participants were recruited from the telehealth clinic schedule of the NP. Electronic consent was obtained to participate in the survey before the visit.

Survey

The survey (Figure 1) was developed and underwent content validity. It was also assessed through the Flesch-Kincaid readability formula index (Flesch-Kincaid reading ease = 46.5, grade level = 10, readability = 7.6). Both were addressed before dissemination. The survey was then administered to the 80 patients who responded after the telehealth visit by an electronic survey via their preferred email. The survey was composed of 10 questions related to patient experience with the visit, the telehealth platform, and ease of use. Eighty patient responses of the 102 patients invited were received and available for analysis.

Results

Among the 102 patients invited to participate, there was a response rate of 80 patients enrolled in the urology clinic; all 80 patients were undergoing active surveillance or posttreatment surveillance using telehealth for the follow-up visits via the BlueJeans (Verizon) platform. The BlueJeans platform was the designated telehealth platform used by the health system. Patients generally perceived the telehealth care they received favorably (Figure 2); 86.07% of the respondents strongly agreed/agreed that the telehealth care they received was valuable, 88.60% strongly agreed/agreed that the patient-provider interaction via telehealth was a positive experience, 92.40% strongly agreed/agreed that the scheduling process was easy, and 93.67% strongly agreed/agreed that they were satisfied with the length of their visit as well. For question 3 on the survey, 32.91% did not have imaging available to review at the time of the visit, and in all cases the studies were performed outside the health system. For question 10, 40.50% participated in telehealth before this visit to receive health care (Table 1). Regression analyses suggest that the questions related to quality were good predictors for sense of ease and overall patient experience with the telehealth visit ($P < .05$, Table 2).

Survey Validation With Ordinal Logistic Regression

Data pertaining to S were found to be strong indicators for Q. S is defined as being a strong indicator for questions 1, 2, 3, 4, 5, and 9, and Q is defined as being a strong indicator for questions 6, 7, 8, and 10. Q refers to questions 1, 2, 3, 4, 5, and 9 and the questions answered if the patient found the telehealth visits to be effective. S refers to questions 6, 7, 8, and 10 and the questions answered if the patient found the telehealth visits to be easy to access. Descriptive responses were also gathered. Five patients indicated their preference for an in-person visit versus a telehealth visit in the postpandemic era. One patient indicated that they would have welcomed staff instruction on how to connect to the platform before the visit. Lastly, another patient commented that they would like to continue telehealth visits even after the pandemic ends.

Survey

1. I found that the telehealth/televideo platform was a valuable tool to use to receive my care during the COVID-19 pandemic (1 strongly disagree - 5 strongly agree)
   1 2 3 4 5
2. My imaging and laboratory studies were readily available at the time of my visit (1 strongly disagree - 5 strongly agree)
   1 2 3 4 5
3. If imaging and laboratory studies were not available, they were performed outside of the health system (1 strongly disagree - 5 strongly agree)
   1 2 3 4 5
4. I felt that the telehealth/televideo platform was an appropriate mode to meet with my provider for my renal cancer surveillance (1 strongly disagree - 5 strongly agree)
   1 2 3 4 5
5. The patient/provider interaction via telehealth/televideo platform was a positive experience
   (1 strongly disagree - 5 strongly agree)
   1 2 3 4 5
6. The scheduling process for the telehealth/televideo visit was easy
   (1 strongly disagree - 5 strongly agree)
   1 2 3 4 5
7. I was able to easily access the BlueJeans platform (1 strongly disagree - 5 strongly agree)
   1 2 3 4 5
8. I was satisfied with the length of the visit (1 strongly disagree - 5 strongly agree)
   1 2 3 4 5
9. The option of telehealth/televideo has helped me remain safe during the COVID-19 pandemic? (1 strongly disagree - 5 strongly agree)
   1 2 3 4 5
10. I participated in a telehealth/televideo prior to this visit as a mode to receive healthcare?
    (1 strongly disagree - 5 strongly agree)
    1 2 3 4 5

Comments:
What recommendations or suggestions do you have that may improve upon the visit?

Figure 1. The survey for telehealth for renal cancer surveillance.

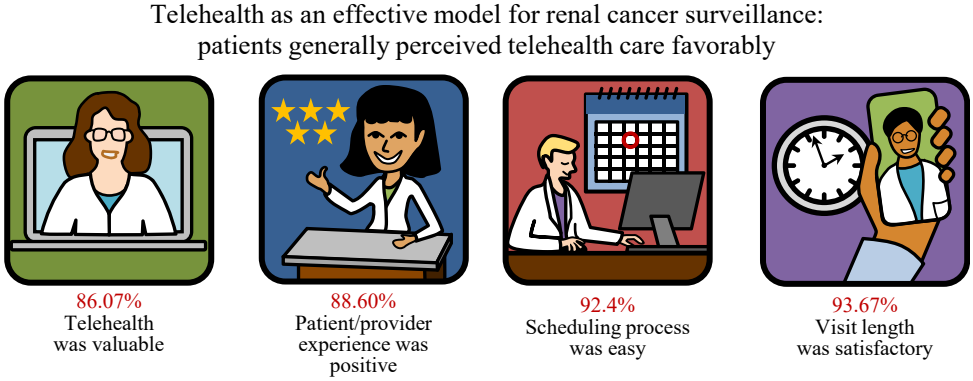

Figure 2. Telehealth as an effective model for renal cancer surveillance. Patients generally perceived telehealth care favorably. This figure is a visual representation of the results as a percentage related to the care received, patient-provider experience, scheduling process, and visit length.

Table 1
Frequency Table of Results

N = 79	Q1 (%)	Q2 (%)	Q3 (%)	Q4 (%)	Q5 (%)	Q6 (%)	Q7 (%)	Q8 (%)	Q9 (%)	Q10 (%)
Strongly agree	74.68	86.08	30.38	68.35	83.54	78.48	69.62	88.61	87.34	35.44
Agree	11.39	2.53	2.53	15.19	5.06	13.92	8.86	5.06	2.53	5.06
Neutral	8.86	7.59	44.30	3.80	6.33	5.06	15.19	5.06	7.59	6.33
Disagree	2.53	0	0	3.80	1.27	0	1.27	0	1.27	0
Strongly disagree	2.53	3.80	18.99	8.86	3.80	2.53	5.06	1.27	1.27	50.63

Q = question.

Telehealth as an Effective Model for Renal Cancer Surveillance

Patients generally perceived telehealth care favorably, with 86.07% of the respondents strongly agreeing/agreeing that the telehealth care they received was valuable, 88.60% strongly agreeing/agreeing that the patient/provider interaction via telehealth was a positive experience, 92.4% strongly agreeing/agreeing that the scheduling process was easy, and 93.67% strongly agreeing/agreeing that they were satisfied with the length of their telehealth visit.

Discussion

In this study, telehealth care was explored in the specialty of urology for renal cancer surveillance patients. We theorized that patients and providers would be determined to continue renal cancer follow-up in a formal manner, and we aimed to validate telehealth care as an appropriate model of care delivery for these patients. Renal cancer surveillance patients generally perceived the telehealth care they received as favorable and valuable. Imaging was not readily available at the onset of the visit 32.91% of the time. This was potentially a dissatisfier for patients. To mitigate this, imaging results were then acquired with the assistance of staff during the telehealth visit and provided to the patient. This allowed for a complete visit 85.0% of the time.

Thus, in the context of renal cancer surveillance specifically, telehealth proved to be a valuable tool overall. With only 40.50% of the study population having participated previously in using telehealth, it is important to see such a high level of patient satisfaction, which is validated to be statistically significant using ordinal logistic regression. Therefore, our findings support the ever-growing evidence that overall telehealth is an effective alternative method of delivering health care by removing patient barriers, especially barriers specific to renal cancer surveillance, such as having imaging readily available to review at the time of the telemedicine visit. Additionally, our findings support a recent telehealth investigation in the management of genitourinary malignancies by Margolin et al,[10] which included 18 renal cancer patients, among the disciplines of urologic oncology, medical oncology and radiation oncology, showing high levels of provider satisfaction for patients with genitourinary malignancies.

Telehealth, once piloted and limited to rural areas, expanded geographically during the COVID-19 pandemic. However, barriers to telehealth care remain and include those without internet access or who require significant travel to gain internet access. Additional notable barriers identified in the literature and previously mentioned were Hispanic ethnicity, older age, and Medicaid insurance. Lastly, workforce shortages in urology and maldistribution of urologic care are contributing factors to access to care, with more than 62% of cities without urology providers, especially in rural areas where they comprise fewer than 10% of the workforce.[11] NPs and physician assistants with increasing numbers are among the composition of providers of urologic care in the United States. A recent American Urological Association Advanced Practice Provider Census 2015-2019 reported the largest samples of NPs and physician assistants practicing in New York, California, Texas, Pennsylvania, and Florida.[12]

Telehealth afforded continuity of care for needed health care access while abiding by the initial stay-at-home orders and continues to support a safe environment when needed during the COVID-19 pandemic. This modality offers convenience to patients with quicker access to health care providers and minimizes travel time and expense. Many patients were able to access care through smartphones, tablets, and laptop or desktop computers.

However, it may be premature to infer whether this type of communication may or may not be appropriate for difficult conversations or managing strong emotions (eg, with certain advanced cancer diagnoses or in the setting of major surgical discussions).[13] For other urologic conditions and specifically with the population of the renal cancer surveillance patients studied, the preliminary evidence is favorable.

Limitations

The main limitation of this study is that it is a single-institution investigation. The population limits us from performing robust

Table 2
Survey Validation With Ordinal Logistic Regression Parameter Estimates

Threshold	Estimate	Standard Error	Wald	*df*	Significance	95% CI Lower Bound	95% CI Upper Bound
Trans S = 2.50	.743	1.623	.210	1	.647	−2.438	3.925
Trans S = 3.00	3.059	1.378	4.925	1	.026	.357	5.760
Trans S = 3.25	3.260	1.381	5.570	1	.018	.553	5.968
Trans S = 3.50	3.972	1.406	7.986	1	.005	1.217	6.727
Trans S = 3.75	4.551	1.432	10.104	1	.001	1.745	7.356
Trans S = 4.00	6.147	1.503	16.737	1	.000	3.202	9.093
Trans S = 4.25	6.418	1.512	18.029	1	.000	3.456	9.381
Trans S = 4.33	6.478	1.513	18.319	1	.000	3.511	9.444
Trans S = 4.50	6.789	1.523	19.866	1	.000	3.803	9.774
Trans S = 4.75	7.316	1.539	22.595	1	.000	4.299	10.332
Trans Q location	1.309	.333	15.461	1	.000	.656	1.961

Trans S stands for the threshold value for the S group.
CI = confidence interval; df = degrees of freedom.

subgroup analysis to evaluate if differences would be apparent in subpopulations. Additionally, regarding the visit capture, because the evaluation is at a 1-time interval, one cannot evaluate durability of satisfaction over a lengthy period of follow-up. This study did not assess communication breakdowns, connectivity problems, and interruptions as they related to the patient and provider experience. Process improvements evolved over time at the health system were incorporated into telehealth care to optimize patient access through the creation of an outpatient switchboard, access to technical support for patients before their visit, and the institution of a formal intake process with a nurse. Future studies may include other technical concerns that may affect the patient-provider interaction.

Conclusions

Our findings showed that patients found telehealth (defined as a televideo platform) to be a valuable tool and appropriate care model to receive care during the COVID-19 pandemic with ease of use. Patients expressed a positive experience with their patient-provider interaction via telehealth visits.

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