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Journal of Geriatric Oncology



## Development of a telehealth geriatric assessment model in response to the COVID-19 pandemic

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### 1. Background and Significance

In January 2020, the World Health Organization (WHO) declared the 2019 coronavirus disease (COVID-19) a public health emergency of international concern [1]. In response, WHO called for the implementation of risk communication and community engagement to help support efforts to combat the epidemic [1]. In the wake of the emergence of this novel virus, 80% of deaths reported in the U.S. have been in adults aged 65 years and older [2]. In addition, individuals who have serious underlying medical conditions, such as patients with cancer and particularly those receiving cancer treatment, may also be at higher risk of complications from COVID-19 [3,4]. According to the Centers for Disease Control and Prevention (CDC), the virus is thought to spread mainly through person-to-person contact from respiratory droplets [5]. To minimize infections in highly susceptible populations, such as older adults with cancer, the CDC recommends that individuals remain at home and self-isolate, wash their hands often, and avoid all non-essential travel [2]. Thus, healthcare systems have been encouraged to minimize in-person office visits for older adults, as appointments in hospitals and clinics may increase potential for exposure and infection. In an effort to abide by these guidelines while continuing to provide the essential care to those in need, telehealth has emerged as a crucial care-delivery mechanism. Implementation of telehealth care has already shown to be transformative and feasible in other areas of healthcare [6,7]. Specifically, it has been adopted to bring specialty-palliative care into the homes of seriously ill patients [8]. Similarly, many hospice agencies are offering social work support through telehealth [8].

As modeled by these other areas of healthcare, implementation of telehealth in the face of a pandemic is an effective modality for delivering valuable care to the most vulnerable populations [8]. Here we outline our geriatric oncology team's adaptation and delivery of a geriatric assessment (GA) via telehealth, in an attempt to minimize the amount of potential exposure to older patients with cancer.

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### 2. University of Rochester Specialized Oncology Care and Research in the Elderly (UR SOCARE) CLINIC: Existing Framework

The UR SOCARE clinic was established in 2009 in collaboration with the University of Chicago and has grown to include six dual-trained geriatric oncologists over the past decade. The UR SOCARE clinic evaluates patients aged  $\geq 65$  years and receives referrals from surgical oncologists, radiation oncologists, and other medical oncologists if they feel a GA would be useful to develop a cancer treatment plan and/or supportive care plan for an older patient with cancer [9]. The UR SOCARE clinic includes a multidisciplinary team including a geriatric oncologist, advanced practice providers, resident and fellow trainees, nurse navigator (NN), physical therapist, occupational therapist (with training in cognitive assessment and interventions), pharmacist, social worker, clinical nurse, dietician, and a clinic coordinator. Typically, patients referred to the SOCARE clinic are mailed a packet ahead of the visit and are asked to complete a self-administered questionnaire prior to their appointment and bring the completed packet to the visit. The assessment tool is approximately 20 pages and includes assessment of all GA domains except objective physical performance and cognition (Table 1, Column 2).

### 3. Modifications for Telehealth Geriatric Assessment Delivery

Many factors were considered when developing a telehealth GA model. Our usual practice of mailing the GA questionnaire was reconsidered, given disruptions to patients' routine and the slow turnaround time of this method. Sending the packet digitally was considered; however, this required access to either an email account or to our online patient portal (MyChart), which have lower uptake among older adults. Additionally, this would have excluded patients who did not have access to a computer or internet. Therefore, we elected to conduct a phone-based assessment by the nurse navigator (NN) whereby questions from the GA were asked verbally to patients one day prior to their scheduled appointments ("pre-visit evaluation").

#### 3.1. Pre-Visit Evaluation

Firstly, the NN contacted upcoming patients to ask if they gave permission for telehealth care. If patients agreed, the NN continued by

**Table 1**  
Comparison of assessment tools used in the traditional SOCARE Geriatric Assessment (GA) and the modified telehealth SOCARE GA.

GA Domain	Traditional SOCARE GA	Modified Telehealth SOCARE GA
Functional Status	MOS Physical Health: Activities of Daily Living OARS: Instrumental Activities of Daily Living Fall History OARS: Physical Health Section Short Physical Performance Battery	<u>OARS: Instrumental Activities of Daily Living</u>  1) <i>Can you use the telephone?</i> 2) <i>Can you get to places out of walking distance?</i> 3) <i>Can you go shopping for groceries or clothes (assuming you have transportation)?</i> 4) <i>Can you prepare your own meals?</i> 5) <i>Can you do your housework?</i> 6) <i>Can you take your own medicines?</i> 7) <i>Can you handle your own money?</i> 8) <i>Can you walk about one block?</i> <u>Fall History</u>  1) <i>In the past year, have you fallen down?</i> 2) <i>About how long ago was your most recent fall?</i> <u>Fatigue Rating</u>  1) <i>Do you experience fatigue and weakness?</i> 2) <i>If yes, rate your fatigue on a scale of 1-10 (10 = severe, 0 = absence).</i>
	OARS Physical Health Section Comorbidity Questionnaire	<u>Hearing</u>  1) <i>How is your hearing (with a hearing aide, if needed)?</i> 2) <i>If hearing is fair to totally deaf, how much does it interfere with activities?</i> <u>Comorbidity Review</u> <i>Completed by geriatric oncologist during visit</i>
Comorbidity	Medication Review <i>Patient meets with pharmacist during clinic visit for review and potential interventions</i> Body Mass Index Percent Unintentional Weight Loss in the Last 6 Months	<u>Medication Review</u> <i>Nurse Navigator confirmed current medications and provided list to SOCARE pharmacist for review and potential recommendations</i> <u>Weight Loss</u>
Nutrition	Mini Nutritional Assessment	1) <i>Have you lost weight in the past 6 months (involuntarily)?</i> 2) <i>What is your weight now?</i> 3) <i>What was your weight 6 months ago?</i>
Cognition	<u>Blessed Orientation Memory Concentration</u> <i>Conducted in person by occupational therapist during visit</i> OARS Medical Social Support	<u>Blessed Orientation Memory Concentration</u> <i>Conducted during visit by occupational therapist</i> <u>Social Activity</u>
Social Support	MOS Social Activity Limitations Measure	1) <i>In the last 4 weeks, how much of the time has your physical, health, or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?</i> <u>Social Support</u>  1) <i>Who do you live with?</i> 2) <i>Who is your main social support?</i>
	Geriatric Depression Scale Lerman Worry Scale	<u>PHQ-2</u>
Psychological Status		1) <i>In the last two weeks, how often have you been bothered by (0 = Not at all, 1 = Several days, 2 = More than half the days, 3 = Nearly every day)</i>  a) <i>Limited interest/pleasure in doing things?</i> b) <i>Feeling down, depressed, or hopeless?</i>

OARS = Older Americans Resources and Services; MOS = Medical Outcomes Survey; PHQ-2 = Patient Health Questionnaire 2.

asking an abbreviated series of questions from the GA. Selected questions were asked verbally by phone and covered all GA domains except cognition, which was assessed during the telehealth encounter (Table 1, Column 3). GA assessment measures were selected based upon brevity to minimize length of pre-visit evaluation (e.g. PHQ-2 [10] was substituted for Geriatric Depression Screen [GDS] [11]) and the reliability for use via telephone (where data were available). Questions also included all elements necessary to calculate the Cancer and Aging Research Group (CARG) Toxicity score [12]. The NN then documented the pre-visit evaluation in the electronic medical record (EMR), including a detailed record of patients' answers to the adapted GA questions. The telephone-based pre-visit evaluation allowed for an in-depth conversation between NN and patients, and allowed for identification of areas of vulnerabilities where further attention was needed during the telehealth encounter and potential opportunities for GA-based interventions. Use of a screening tool was also considered, but the majority

of patients referred to the SOCARE clinic are considered vulnerable or frail already, and the addition of a frailty screener was unlikely to provide additional information. Overall, the phone-based pre-visit evaluation took approximately 20 to 30 min.

### 3.2. Arranging the Telehealth Clinical Encounter

A HIPAA-compliant teleconferencing application (Zoom version 4.6.11) was utilized to allow several individuals in separate locations to join a single virtual telehealth clinical encounter. Only the audio function of Zoom was utilized for the telehealth encounters, therefore patients did not require any specific technology to participate other than a telephone. We elected to use a telephone-based encounter for our visits to minimize the complexity and technology needed for the encounters initially. The NN instructed patients on how to access the telemedicine encounter through a telephone dial-in process. The NN asked

patients if there were any family members or caretakers who would like to call in during the appointments. If so, the NN contacted those individuals and provided the teleconference information as well. Following the pre-visit evaluation, the NN contacted the SOCARE pharmacist with the current medication list for review; any de-prescribing or pharmacy-based recommendations were then provided to the geriatric oncologist via EMR documentation to discuss further during the visit.

### 3.3. Telehealth GA Visit

The clinic nurse initiated the telehealth visit, introduced the patient to the SOCARE team, and oriented the patient to the structure and plan for the telehealth visit. The SOCARE Occupational Therapist then conducted the Blessed-Orientation-Memory Concentration test [13] via the phone for a cognitive assessment. Lastly, the geriatric oncologist interviewed the patient, further explored relevant GA domains, and discussed potential GA-based recommendations and the oncology care plan in the context of GA results. Using a teleconference application for the visit allowed SOCARE multidisciplinary team members to join the encounter to provide assessment and/or recommend potential interventions if needed, and also allowed for trainees and advanced practice providers to be involved in the visit. It also allowed for family members (e.g. adult children of patients) who may be physically distancing from the patient due to COVID-19 concerns to participate in the visit. Overall, the telehealth GA visit lasted approximately one hour. Following the encounter, the NN sent any educational materials related to GA-based interventions discussed on the call (e.g. fall precautions information, nutritional handouts, etc) through postal mail.

## 4. Discussion

Due to the unprecedented onset of COVID-19, our SOCARE team has had to rapidly adapt their models of care in order to create a telehealth model for delivering geriatric oncology care. Given the nature of the virus, older adults with compromised immune systems are highly vulnerable. Our SOCARE team wanted to continue to offer GA consultations to help with decision-making for older adults with cancer, particularly at a time when GA may provide valuable information about the potential harms and benefits of various treatment options during a pandemic. Therefore, it was imperative that our team make quick and efficient efforts to minimize older patients' trips to the hospital to lessen their exposure to COVID-19, but also to offer our consultative service for patients and the oncology community. In response to this need, the UR SOCARE team developed and implemented an adapted telehealth GA as described here. The SOCARE clinic continues to receive referrals despite the COVID-19 pandemic, further reinforcing the value of the geriatric oncology evaluation in the care of older adults with cancer.

Although our current implementation of telehealth GA is promising, we anticipate modifying the delivery of this tool further in response to noted challenges. Specifically, the lack of eye contact and nonverbal cues during phone-based visits are problematic and telephone-based visits can hinder exploration and explanation of complex topics. The lack of face-to-face interaction made it difficult for providers to gauge how well the patient understood the relayed information. Additionally, without visual assessment evaluation of gait and objective physical function could not be performed.

In response to these limitations, the expansion of our SOCARE model to include video-based visits is now underway and a small number of GA telehealth visits have been conducted utilizing the Zoom video component. The Department of Health and Human Services has modified Health Insurance Portability and Accountability Act (HIPAA) telehealth requirements to allow providers to use any non-public facing remote communication product that is available to communicate with patients to facilitate care at this time, which affords flexibility in the development of GA telehealth programs. Another GA telehealth program described in the literature also utilized videoconferencing technology,

but evaluated patients through telemedicine when patients were located at a community oncology site, as opposed to at home [14]. This model could also be adapted further to allow patients to remain at home, but may require additional technology development and support for patients.

As developments and modifications to telehealth care are made, we hope to continue to expand the use of the adapted GA even after the global pandemic subsides. As telehealth care becomes more widely used, it provides an important opportunity to expand telehealth care to rural patients who live a greater distance from our tertiary medical center, or to those who may have transportation or mobility limitations. We hope that sharing our experience in modifying and implementing this tool may be useful for other geriatric oncology teams and healthcare systems that are faced with similar challenges during the COVID-19 pandemic.

## Disclosure

Dr. Loh serves as a consultant to Pfizer and Seattle Genetics. Other authors report no disclosures.

## Declaration of Competing Interest

None.

## Acknowledgments

We thank Dr. Enrique Soto Perez De Celis for his editorial review of this manuscript.

Dr. Magnuson is supported by a National Institute on Aging Beeson Career Development Award (NIA K76 AG064394). Dr. Loh is supported by a National Cancer Institute Career Development Award (NCI K99 CA237744) and the Wilmot Cancer Research Fellowship. Dr. Mohile acknowledges support from NIA K24 AG056589, NIA R21 AG059206 and NIA R33 AG059206.

## References

- [1] Organization WH. Responding to community spread of COVID-19: interim guidance, 7 March 2020. World Health Organization; 2020.
- [2] Coronavirus disease 2019 (COVID-19). Older adults. Accessed March 7, 2020, at <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/older-adults.html>; 2020.
- [3] Coronavirus disease 2019 (COVID-19). At risk for severe illness. Accessed April 6, 2020, at <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-at-higher-risk.html>; 2020.
- [4] Yu J, Ouyang W, Chua MLK, Xie C. SARS-CoV-2 transmission in patients with cancer at a tertiary care hospital in Wuhan, China. *JAMA Oncol* 2020 epub ahead of print.
- [5] Coronavirus disease 2019 (COVID-19). How it spreads. Accessed April 6, 2020, at <https://www.cdc.gov/coronavirus/2019-ncov/faq.html#how-covid19-spreads>; 2020.
- [6] Brignell M, Wootton R, Gray L. The application of telemedicine to geriatric medicine. *Age Ageing* 2007;36:369–74.
- [7] Narasimha S, Madathil KC, Agnisarman S, et al. Designing telemedicine systems for geriatric patients: a review of the usability studies. *Telemed J E Health* 2017;23:459–72.
- [8] Calton B, Abedini N, Fratkin M. Telemedicine in the time of coronavirus. *J Pain Symptom Manage* 2020 epub ahead of print.
- [9] Magnuson A, Dale W, Mohile S. Models of Care in Geriatric Oncology. *Curr Geriatr Rep* 2014;3:182–9.
- [10] Manea L, Gilbody S, Hewitt C, et al. Identifying depression with the PHQ-2: a diagnostic meta-analysis. *J Affect Disord* 2016;203:382–95.
- [11] Sheikh JI, Yesavage JA. Geriatric depression scale (GDS): Recent evidence and development of a shorter version. *Clin Gerontol* 1986;5(1-2):165–73.
- [12] Hurria A, Togawa K, Mohile SG, et al. Predicting chemotherapy toxicity in older adults with cancer: a prospective multicenter study. *J Clin Oncol* 2011;29:3457–65.
- [13] Kawas C, Karagiozis H, Resau L, Corrada M, Brookmeyer R. Reliability of the blessed telephone information-memory-concentration test. *J Geriatr Psychiatry Neurol* 1995;8:238–42.
- [14] Chien L, Roberts E, Soto-Perez-de-Celis E, et al. Telehealth in geriatric oncology: a novel approach to deliver multidisciplinary care for older adults with cancer. *J Geriatric Oncol* 2020;11:197–9.