Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

treatment process involving multiple disciplines both within and outside of oncology. This complexity can lead to longer package times and each involved discipline has the responsibility to maintain an efficient and effective process. Strategic intervention to improve package time must involve not only new technology or tools, but also "soft" components such as accountability, motivation, and leadership. This combination is necessary to affect true optimization of a workflow or process such as the radiation therapy of head and neck cancer patients leading to shorter TPT for these patients.

Materials/Methods: Two interventions were strategically executed to improve radiation therapy workflow: upgrade of the treatment planning system (TPS) to one more efficient at optimization and dose calculation and implementation of an automated patient management and accountability system. The radiation therapy-related timelines of 112 HN patients treated over the last two years were reviewed and the average time differences were compared between the patient populations before and after the strategic interventions.

Results: Purely upgrading the TPS did not show significant improvements, but when combined with the patient management system, significant improvement in radiation-related package time can be noted for every timepoint. The overall reduction of radiation-related package time was statistically significant at 22.85 days ($p = 0.002$).

Conclusion: On face value, the patient management system could be credited as responsible for the improvement, but on qualitative analysis, it is clear that it only played a role in the time reduction. The new system is only a tool which can be ignored or under-utilized. Due to the addition of important "soft" components such as accountability, motivation, and leadership, the tool was optimized and implemented in such a manner as to have the desired effect.

Abstract 2243 — Table 1

Clinic Timepoint	Workflow Timepoint	Mean (SD)	95% CI	Mean Difference (From Before Intervention) (Days)	p
No Intervention	Consult to 1st Treatment	38.02 (21.77)	(32.21, 43.82)		
	Sim to First Treatment	17.96 (6.48)	(16.23, 19.69)		
	Sim to Last Treatment	71.85 (19.28)	(66.70, 76.99)		
	RT-Related TPT	92.27 (28.18)	(84.75, 99.78)		
After Patient Management Upgrade (And TPS)	Consult to 1st Treatment	24.63 (4.02)	(20.61, 28.66)	-13.39	0.019
	Sim to First Treatment	13.74 (3.53)	(12.15, 15.32)	-4.23	0.013
	Sim to Last Treatment	58.53 (12.17)	(53.05, 64.00)	-13.32	0.009
	RT-Related TPT	69.42 (13.35)	(63.42, 75.42)	-22.85	0.002

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Clinical Decision Support System for Implementing Care Pathways in a Global Radiation Oncology Network

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Purpose/Objective(s): Evidence-based approaches to cancer care using established care pathways (CPs) are widely regarded as an effective way of improving quality and value in oncology. Yet, busy practicing oncologists can be overwhelmed with the quantity of literature and broad interpretation of evidence. In our global radiation oncology network, we developed a radiation oncology, clinical decision support (RO-CDS) system with evidence-based CPs to minimize variations in patient radiation treatments. This study assessed the usability and performance of our RO-CDS across Australia and UK radiation oncology centers.

Materials/Methods: We have developed a cloud-native RO-CDS (Horizon) that has been implemented with more than 241 radiation oncologists from diverse geographies (178 Australia and 63 UK) at 34 Australian centers and 15 UK centers. Horizon's CP library has been implemented for all treated disease sites and was developed in collaboration with participating radiation oncologists along with national guideline references (NCCN, EVIQ, NICE). Each CP defines an evidence-based radiation treatment approach for a specific cancer site including technical information for simulation and treatment. Horizon allows the oncologist to select from our CP library using a guided, templated workflow collecting high value distinct diagnosis, staging, medical data while pre-populating prescription, treatment and OAR info and data. The output (simulation and prescription structured data and PDFs) can be recorded in the application or sent to an EMR, which facilitates communication with care teams and payers. Horizon also provides access to view the physician schedule, clinic notes and labs, and patient chart information. During the implementation of Horizon, participants were asked to rate the performance of Horizon application and complete statements on a System Usability Scale (SUS) questionnaire. CP compliance was defined as no manual variations or edits to an approved CP by a prescribing physician.

Results: Since 2018, a total of 107,000 individualized prescriptions have been created in Horizon RO-CDS. Over this four-year period, overall compliance to approved CPs has improved from 86% to 97%. For usability, Horizon's SUS score was on average 84.2 (72.5 — 100), classified as an A score (excellent). Prescribing activities (clinical documentation and communication) involving all clinical care team members decreased by 20 minutes post-Horizon implementation saving valuable clinic time. Horizon prescription times for oncologists' software usage averaged 3 minutes per patient case irrespective of disease site.

Conclusion: Our cloud-native RO-CDS demonstrates that evidence-based CPs can be successfully implemented in a global radiation oncology network with high adherence rates, improved efficiency, and excellent usability. Future Horizon implementation includes our AI engine to automatically extract data from clinical reports reducing manual data entry.

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Technology Usage and Impacts by COVID-19 among Patients in a Radiation Oncology Clinic

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Purpose/Objective(s): Mobile devices provide platforms for consistent and real time symptom tracking for cancer patients, allowing for better symptom reporting and more timely interventions. There is limited research investigating barriers to adoption within the oncology setting and COVID-19 impacts on patent willingness to use health technology. Understanding these issues is key to successful development and implementation. We designed a survey to assess patient willingness and barriers to using mobile devices to report/track symptoms (e-report).

Materials/Methods: Two cohorts of adult patients completed a 21-question anonymized survey. The survey was administered to clinic patients before (PRE) and 18mo after (POST) the start of the COVID pandemic. Three additional questions were added to POST survey to investigate impacts from COVID. Demographics, technology usage, willingness to report data, barriers to utilization, and changes due to COVID were evaluated using descriptive statistics. Predictors of willingness to e-report, barriers to use, and changes due to the COVID-19 pandemic were analyzed using univariate and multivariate logistic regression (MVA).

Results: 318 patients completed the survey (PRE= 144 patients; POST= 174 patients) with mean age 65y, 75% Caucasian, 55% male. Altogether, 75% used a smart phone (PRE=66.7%; POST=81.3%; p 0.003), 90%

reported home internet access (PRE=87.5%; POST=91.4%; p 0.259), 86% used a computer (PRE=79.2%; POST=90.8%; p 0.004), and 26% used a wearable health tracker (PRE 25.7%; POST 26.4%; p 0.881). On MVA, age>65 (OR 0.32; p 0.001), annual income>50K (OR 2.16; p 0.032), smart phone ownership (OR 4.07; p 0.000), and new/current patient status (OR 2.15; p 0.020) were all significant factors impacting willingness to e- report. Limited tech literacy (p 0.024) and time commitment (p 0.048) were the only significant barriers. Privacy as a barrier was greater in PRE vs POST cohort (OR 2.3 vs OR 1.1) trending toward significance. Nearly all modes of tech usage were greater in POST vs PRE cohort. POST cohort was significantly more willing to e- report (81.1% vs 69.1%; OR 1.91; p 0.016). This remained significant on MVA after adjusting for age, concern for privacy, tech literacy, and patient status (OR 1.88; p 0.026). Furthermore, 51% of POST cohort reported the pandemic directly influenced their willingness to e-report (40% more, 11% less).

Conclusion: Radiation oncology patients are willing to use mobile technology to report symptoms. Willingness increases with decreasing age, increasing annual income, smartphone ownership, and new/current patient status. Significant barriers include tech literacy and time commitment. Post-pandemic patients are more willing to e-report and list fewer barriers. The COVID-19 pandemic appears to have had a positive impact on technology usage by patients. Efforts to develop and test mobile applications for this population are justified.

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Electronic Health Record Patient Portal Use in Radiotherapy Treated Patients in the Era of COVID-19; Who's Getting Left Behind?

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Purpose/Objective(s): COVID-19 has accelerated the utility of electronic health record (EHR) patient portal (PP) as a method for patients to communicate with oncology teams and improve the quality of care. This study examines the relationship between several sociodemographic characteristics with activation and use of PP system at an academic center by patients who underwent radiotherapy (RT). Use of PP among patients for up-to-date information on their care and to enhance their ability to manage their healthcare are linked with more favorable outcomes and quality of life. With the rapid integration of PP in oncologic management, differences in sociodemographic could account for disparities seen in PP use highlighting patients that should be receiving targeted efforts.

Materials/Methods: EHR data were retrospectively analyzed regarding PP activation and use in all patients who underwent RT between the start of COVID-19 (March 2020) until February 2022 at an academic center. Summary statistics and odds ratios were used to examine the study cohort demographic characteristics regarding the outcome of PP activation.

Results: There was a 10.4% increase in RT treated patients' activation of PP from 69.8% before the COVID-19 pandemic (November 2017-March 2020) to 80.2% after the start of the pandemic. Concurrently, telemedicine use (requiring PP activation) among patients increased from 0.8% pre-pandemic to 40.2%. During the study period of interest, PP activation rate was 84.3% among White patients, 67.8% in Black/African American, 76.5% in Asians; 82.9% activation rate in Hispanics compared to 76.2% in non-Hispanics. Non-Hispanic White female was the group most likely to activate PP (OR 2.2; 95% CI 1.7-2.8), whereas non-Hispanic Black male was the least likely (OR 0.5; 95% CI 0.3-0.7). English speakers were significantly more likely to activate their PP (OR 3.7; 95% CI 2.1-6.5) compared to non-English speakers (OR 0.3; 95% CI 0.1-0.5). The highest activated PP by age range was amongst 20-30 years old (89.6%). PP activation was slightly lower in ages 30-40 (80.7%), and then recovered to 85.9% in 40-50 years old, after which there was a gradual decrease each subsequent decade reaching a low of 75.8% in $\geq$ 80 years. Breast cancer had the highest activation rate (92.7%) followed by head and neck (84%), prostate (81.3%), and lung cancer (66.5%). Married or divorced patients in comparison to single or widowed were more likely to activate PP. There was no correlation with having activated PP with a "no show" status for RT treatment.

Conclusion: Overall, activation of PP has increased in RT treated patients since the start of the pandemic. There are disparities in respect to race, speaking English, sex, and age. At the time of this study, the PP system was only available in English. The lower rate of activation identified in specific sex, race and age should prompt exploration of creative opportunities to increase patient activation and engagement in populations facing health disparities.

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Prospective Evaluation of Automated Contouring for CT-Based Brachytherapy Treatment Planning of Gynecologic Malignancies

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Purpose/Objective(s): The use of artificial intelligence to automatically-contour OARs in gynecologic radiation treatment has been well-established in the literature. Yet, there is limited data on the prospective use of AC in clinical practice. The objective of this study was to assess the accuracy and efficiency of AC for CT-based brachytherapy treatment planning of gynecologic malignancies.

Materials/Methods: An in-house AC tool was used to automatically-delineate five organs-at-risk (OARs) used for gynecologic radiation treatment planning: the bladder, small bowel, sigmoid, rectum and urethra. The accuracy of each auto-contour was evaluated by the treating physician using a 5-point Likert scale: a score of five indicated the contour could be used without edits, while a score of one indicated the contour was unusable (Table 1). To assess the efficiency of AC in clinical practice, the planning time of a prospective AC cohort was compared to the planning time of a retrospective MC cohort. Planning time of each case was quantified as the time between import of CT image to TPS and final plan approval. Mean, standard deviation and standard error of each cohort's time to approval was analyzed via unpaired t-test with Welch's correction.

Results: Eight prospective AC cases from January 2022 to February 2022 and thirty retrospective MC cases from July 2021 to January 2022 were included in the study. The average time to plan approval in the AC cohort was 30% less than MC cohort (AC vs MC, 109.0 $\pm$ 6.4 minutes vs. 155.1 $\pm$ 15.4 minutes, p=0.0092). The AC group had less time variance between cases with a standard deviation of 17.0 minutes, compared to a 31.5-minute variance of the MC cohort. The mean accuracy score in the AC cohort was 4.8 (SD=0.7) for the bladder, 4.0 (SD=0.9) for the small bowel, 4.2 (SD=0.7) for the sigmoid, 4.6 (SD=0.7) for the rectum, and 4.8 (SD=0.4) for the urethra. No auto-contoured OARs required major edits from the attending physician. Physician slice-by-slice review of the AC contours took on average 3.6 minutes (SD=1.6) revising OARs (including edits if needed) and overall contouring time (included adding targets) took an average of 14.1 minutes (SD=6.0).

Conclusion: Automated contouring appears to be safe and accurate for use in clinical practice. Clinical implementation of AC shows promise to streamline radiation treatment workflows and decrease time required to design and approve gynecologic brachytherapy plans.