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and the majority of patients were treated with curative intent (n = 872, 58%). A total of 369 modifications on 269 (17.9%) simulation directives were recorded and parsed into 17 categories. The most common modifications resulted from omission of pregnancy testing orders (n = 92, 24.9%), immobilization device changes (n = 88, 23.8%), changes in the radiotherapy care path (n = 56, 15.1%), and arm positioning (n = 43, 11.6%). Modifications were less likely to occur if the directives were entered within 1 week of simulation (15.6% vs. 21.7%, *P* = 0.0028). Significant differences were also observed across tumor sites (*P* = 0.0091) with the highest modification rates observed for stomach, esophagus, and pelvis sites (40%, 30%, and 26.9% modified, respectively). A significant change in department workflow and clinic visits occurred in March 2020 as a result of COVID-19, with transition to virtual platforms. An increased rate of simulation directive modifications was also observed for patients simulated after these changes were implemented (April – December 2020 19.3% vs. Jan – March 2020 13.5%, *P* = 0.013). No differences in modification rates were observed by modality, i.e., photon or proton therapy (*P* = 0.20). Overall, with this prospective peer review process, only 14 patients (0.9%) needed re-simulation during the entire study period.

Conclusion: Prospective peer review prior to simulation in radiotherapy identifies actionable change in approximately 18% of procedures, and results in an extremely low, < 1% rate of re-simulation. SSRDs ordered > 1 week before from simulation and gastrointestinal and pelvic sites were at higher risk of requiring modifications during peer review. As departmental processes transition to virtual meeting platforms, more thorough attention is needed to identify patients at higher risk of simulation modifications.

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Optimizing Radiation Oncology Consult Visits Using Patient Flow Analysis (PFA)

J. Weng,¹ S. Mesko,¹ P. Das,¹ A.C. Koong,¹ J.M. Herman,² D. Elrod-Joplin,¹ A. Kerr,¹ T. Aloia,³ J. Frenzel,⁴ W. Martinez,⁵ I. Recinos,⁵ U. Daftary,⁵ A.S. Alshaikh,⁵ M.S. Ning,¹ and Q.N. Nguyen¹; ¹Department of Radiation Oncology, The University of Texas MD Anderson Cancer Center, Houston, TX, ²Northwell Health Cancer Institute, Radiation Medicine, New Hyde Park, NY, ³Ascension, Houston, TX, ⁴Department of Anesthesiology and Perioperative Medicine, The University of Texas MD Anderson Cancer Center, Houston, TX, ⁵Institute for Cancer Care Innovation, The University of Texas MD Anderson Cancer Center, Houston, TX

Purpose/Objective(s): An efficient workflow in the oncology ambulatory care setting can improve patient experience and decrease provider burnout. The purpose of this study was to identify inefficiencies, develop an optimized workflow, and measure the resulting post-implementation impact in a high-volume radiation oncology department.

Materials/Methods: We conducted an IRB-approved study in Gastrointestinal Radiation Oncology (GIRO) at a large academic cancer center. Patient Flow Analysis (PFA) was used to track 556 consults from check-in to check-out. Process maps were created and an improved clinical workflow was designed based on the findings. The specific roles and responsibilities of each clinical team member were defined and clearly communicated. Timepoints were collected using the electronic medical record (EPIC) status board, which was updated by clinical staff. Pre- vs. post-implementation

metrics, including total clinic cycle times, waiting times, rooming times, and time spent with each clinical team member were compared.

Results: Initial PFA led to recommendations targeting four principal inefficiencies: (1) protracted patient rooming, (2) delays due to inefficient communication, (3) duplicated tasks, and (4) ambiguous clinical roles. There were 485 pre- and 71 post-implementation consults available for analysis. The optimized workflow resulted in reduction in overall median cycle times by 21% (91 vs. 72 min; *P* < 0.001). Consults > 2 hours in duration occurred in 22% of pre-implementation vs. 0% of post-implementation visits (*P* < 0.001). Similarly, the proportion of visits requiring < 1 hour was 16% pre- vs. 34% post-implementation (*P* < 0.001). Patients spent significantly less time in the waiting room (14 vs. 5 min; *P* < 0.001) despite no significant differences in the proportion of patients arriving early, on-time, or late. Overall, wait times at each step in the visit process were reduced by 55-70% (Table 1).

Conclusion: PFA can be used to identify clinical inefficiencies and optimize workflows in radiation oncology. Utilizing this patient-centric model reduced waiting times and total consult duration, which may improve patient satisfaction, decrease staff burnout, and provide a framework for financial savings through innovative staffing models. Efforts are currently underway to expand this process across all sections within our department.

Abstract 181 – Table 1: Pre- and post-implementation metrics reported in minutes (median and interquartile range)

Metric	Pre	IQR	Post	IQR	Delta	P-value*
Waiting room	14	8-26	5	3-14	-64%	< 0.001
Arrived > 15 min early	20	11-41	10	4-20	-50%	< 0.001
Arrived within 15 min	12	7-19	4	3-12	-67%	< 0.001
Arrived > 15 min late	8	5-15	2	1-8	-75%	< 0.001
Rooming (RN/MA)	13	9-18	12	9-14	-8%	0.066
Waiting for APP/Resident	11	5-20	5	3-8	-55%	< 0.001
With APP/Resident	22	12-32	19	12-26	-14%	0.490
Waiting for MD	20	11-33	6	3-15	-70%	< 0.001
With MD	33	25-48	23	15-31	-30%	< 0.001
In Room to with MD	54	39-72	47	33-60	-13%	0.003
Total cycle time	91	71-114	72	52-82	-21%	< 0.001

* Mann-Whitney U test.

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Incident Learning During the Early COVID-19 Pandemic

B.S. Chera,¹ K. Kujundzic,² A. Raldow,³ J.R. Olsen,⁴ H. DeMoss,⁵ S.M. Weintraub,⁶ B.J. Salter,⁷ and S.B. Evans⁸; ¹Department of Radiation Oncology, University of North Carolina at Chapel Hill, Chapel Hill, NC, ²ASTRO, Arlington, VA, ³Department of Radiation Oncology, University of California, Los Angeles, Los Angeles, CA, ⁴Department of Radiation Oncology, Memorial Hospital, University of Colorado, Colorado Springs, CO, ⁵Clarity Group, Inc., Chicago, IL, ⁶Southcoast Health, Fairhaven, MA, ⁷University of Utah Huntsman Cancer Institute, Salt Lake City, UT, ⁸Department of Therapeutic Radiology, Yale School of Medicine, New Haven, CT

Purpose/Objective(s): To assess the impact of the early COVID-19 pandemic on incident learning through evaluation of events reported to RO-ILS: Radiation Oncology Incident Learning System®. The Radiation

Oncology Healthcare Advisory Council (RO-HAC) hypothesized that the COVID-19 pandemic would impact the engagement of RO-ILS participants in reporting to the patient safety organization (PSO) and that the characteristics of the reported events would differ from those reported pre-COVID.

Materials/Methods: The RO-ILS database was queried for events reported to the PSO pre-COVID (from March 1, 2019 to July 31, 2019) and during early COVID (March 1, 2020 to July 31, 2020). Events were then segregated into those submitted by the Top 5 reporting practices and those practices in early COVID hotspot states as identified by the Centers of Disease Control and Prevention (WA, CA, AZ, TX, FL, NY, NJ, CT, MA, PA, MD). Descriptive statistics were used to describe trends in reporting and differences in data elements provided by the practice and RO-HAC pre-COVID and during-COVID.

Results: There was a 16% absolute reduction in event reporting during-COVID ($n=1255$) as compared to pre-COVID ($n=1759$). Practices located in COVID-hotspots had a 33% absolute reduction in reporting, while those not in hotspots had a 23% reduction. However, initial analysis did not identify drastic change in event classification. Amongst the Top 5 reporting practices, there was a 48% absolute reduction in incident reporting; of note, three of these practices did not report any events to the PSO during-COVID. During-COVID, errors more often occurred and were discovered during treatment planning, regardless of hotspot status. RO-HAC independently rated more events as moderate-critical pre-COVID (43%) than during COVID (33%), whereas practices rated more events as moderate-severe during-COVID (25%) than pre COVID (18%). Despite an expected trend towards more hypofractionated regimens, there was neither an appreciable difference in the types of treatment techniques for all events nor magnitude of dosimetric deviations associated with incidents pre-COVID and during-COVID.

Conclusion: Reporting to RO-ILS declined during the early COVID-19 pandemic, especially in hotspot areas. This suggests that resources and time were diverted away from incident reporting to address other critical needs. Three of the five top reporting practices that ceased reporting during early COVID have since reported events after the analysis timeframe, suggesting the decline may be temporary. RO-HAC overall rated events as higher severity than the practice regardless of the pandemic. However, the drop in perceived severity by RO-HAC pre and during-COVID may be the result of changes in clarity of information provided by the practice. Stability in event classification suggests that practices continued to report a variety of events.

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Predictors of Anxiolytic Requirement During Radiation Therapy With Thermoplastic Mask Immobilization

E. Nack,^{1,2} M. Sueyoshi,^{1,3} M. Gray,⁴ D.E. Wazer,^{1,2} and R. Munbodh¹;
¹Department of Radiation Oncology, Rhode Island Hospital, Lifespan Cancer Institute, Warren Alpert Medical School of Brown University, Providence, RI, ²Department of Radiation Oncology, Tufts Medical

Center, Tufts University School of Medicine, Boston, MA, ³Department of Radiation Oncology, Tufts University School of Medicine, Boston, MA, ⁴Center for Biomedical Engineering, Brown University, Providence, RI

Purpose/Objective(s): Anxiety during radiation simulation and/or treatments is common in cancer patients and is frequently treated with anxiolytic medications. Specifically, mask anxiety has been documented in patients requiring a thermoplastic mask for immobilization and has the potential to disrupt the safety and efficacy of treatments. We sought to identify factors that predict for anxiolytic requirement (AR) during mask immobilization.

Materials/Methods: Patients who received radiation therapy with a thermoplastic mask covering their entire face (including eyes, nose, and mouth) at a single institution from 2019-2020 were identified and charts were retrospectively reviewed. The use of anxiolytic medications during simulation/treatments, possible predictive factors, and absolute number and percentage of missed treatment days were recorded. If patients underwent multiple radiation treatments, only the first was evaluated. Factors analyzed include gender, spoken language, ECOG performance status, smoking history, past psychiatric history (anxiety, depression, panic attacks, dementia, alcohol abuse, claustrophobia, or post-traumatic stress disorder), previous use of anxiety-related medications, treatment site, mask type, treatment modality, and dexamethasone use. Regression analysis using a generalized linear model was used to create predictive models for AR and for missed radiation treatments.

Results: A total of 250 patients were evaluated, of whom 124 were female and 126 were male. Median age was 63 years and median ECOG performance status was 1. Thirty-nine percent of patients had a history of anxiety, 4% of claustrophobia, 30% of depression, and 41% were previously prescribed at least one outpatient anxiety-related medication. Thirty patients (12%) required an anxiolytic medication during radiation simulation and/or treatments and 67 patients (27%) missed at least one planned treatment fraction. On multivariate analysis, history of anxiety ($P=0.0002$, OR = 5.6) and claustrophobia ($P=0.003$, OR = 7.7) were independently predictive of AR. Additionally, AR and head and neck treatment site were independently predictive of percentage of missed radiation fractions ($P < 0.01$) and AR and IMRT were independently predictive of absolute missed radiation fractions ($P < 0.01$).

Conclusion: History of anxiety and claustrophobia were independently predictive of AR during radiation simulation/treatments with a thermoplastic mask. These factors can be detected in patient charts prior to consultation and therefore have the potential to allow for early identification of individuals who may be at higher risk for anxiety during their radiation experience. Furthermore, patients who required anxiolytics during radiation therapy tended to miss more treatment days, possibly indicating that optimal anxiety management has not yet been achieved.

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The Utility of Video-Based Pre-Treatment Peer Review in the COVID Era

J.W. Shumway,¹ K. Adapa,² A. Amos,³ L. Mazur,⁴ S.K. Das,² B.S. Chera,² and L.B. Marks²;
¹Department of Radiation Oncology, University of North Carolina School of Medicine, Chapel Hill, NC, ²Department of Radiation Oncology, University of North Carolina at Chapel Hill, Chapel Hill, NC, ³University of North Carolina Chapel Hill, Chapel Hill, NC, ⁴UNC Lineberger Cancer Center and Healthcare System, Chapel Hill, NC

Purpose/Objective(s): Pre-treatment peer review has been suggested to be useful within Radiation Oncology. With the COVID-19 pandemic, our previously-applied face-to-face format was replaced with a video-based format. We herein quantify the usefulness of daily video-based peer review within a busy radiation oncology practice.