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Letter to the Editor

The Florida Radiation Oncology Resident Experience During Coronavirus Disease 2019: Perspectives and Recommendations

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To the Editor:

The novel coronavirus disease 2019 (COVID-19) is a rapidly spreading and potentially fatal viral disease that has been recognized as a pandemic-causing agent in 2020. Adapting patient care to the changing environment is critical to mitigating public health risks and often includes alterations to trainee-level curricula. The National Institutes of Health has released interim guidelines for health care institutions across the nation on strategies to cope with COVID-19 and minimize its risk to patients and clinicians. Within the field of radiation oncology, responses have largely been dictated by individual institutions, although the American Society of Radiation Oncology has released general guidelines. With a focus on resident training, we report our first-hand experience of how 4 major academic radiation oncology programs in Florida have instituted changes to address the COVID-19 pandemic and safely care for their vulnerable patients with cancer. We also discuss the dilemma associated with residency training and evaluate the role of residents in the radiation oncology clinic setting.

Departmental Changes

The radiation oncology departments of the H. Lee Moffitt Cancer Center and Research Institute, Mayo Clinic in Jacksonville, University of Florida, and University of Miami Miller School of Medicine have each implemented significant changes to adapt to the new patient environment. Although some details of each departmental change differ (Table 1), there have been several common measures taken.

All institutions have adopted a triaging system to categorize the risk associated with a patient’s cancer and potentially delay either the start of radiation therapy (RT) or initial clinic consult. The risk associated with delaying RT is often mitigated using medical management with hormone therapy, chemotherapy, and so forth, when clinically appropriate. All institutions have encouraged hypofractionation, transitioned at least some aspect of patient care to a telehealth format, moved all clinical and administrative meetings to a virtual media, and screen anyone who enters the hospital to determine their COVID-19 infection risk. Remote work is also strongly encouraged but the specific changes to department staffing vary. Lastly, the number of patient visitors is limited at each institution, with some prohibiting any visitors.

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Residents training in radiation oncology at these institutions have experienced changes to their educational experience, often for the purpose of protecting the trainees and patients (Table 2). There are several common measures taken by the programs. Residents are now limited in their ability to have in-person patient contact and in their time spent within radiation oncology departments. Which in-person patient encounter residents are involved with 

**Table 1** Detailed radiation oncology departmental changes

| Institution                                      | Patient prioritization                                                                 | Clinical encounters                                      | Patients receiving treatment                             | Radiation staffing changes                                                                 | Exposure risk                                                                 |
|-------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| H. Lee Moffitt Cancer Center and Research Institute | - Following modified guidelines based on the Ontario Pandemic Protocols               | - Telehealth as much as possible                          | - Delay RT for up to 3 mo when appropriate               | - SFU consisting of ~5 attendings covering several disease sites; 1 attending from each SFU is in clinic per day | - Consolidated hospital entrances and hours                                           |
|                                                 | - Triage by disease risk per guidelines                                               | - PDX at CT sim                                          | - Delay RT with medical management when appropriate     | - One in-person dosimetrist; all others work remotely                                      | - Screening of everyone entering the hospital                                         |
|                                                 | - Delay treatments for up to 3 mo                                                    | - Limited NPL, only with PPE                             | - Hypofractionation encouraged                           | - Physics team split to on-site and off-site duties                                       | - No visitors allowed                                                              |
|                                                 |                                                                                        |                                                           |                                                          | - Schedulers and all assistants work remotely                                               | - Not treating COVID+ patients                                                       |
|                                                 |                                                                                        |                                                           |                                                          | - Therapists following consistent shift schedule without crossover                         | - Treat COVID-suspected patients at end of day                                          |
|                                                 |                                                                                        |                                                           |                                                          | - All meetings conducted virtually                                                         | - All patients and staff required to wear surgical masks                               |
| Mayo Clinic                                     | - Triage by disease risk                                                               | - Telehealth as much as possible                          | - RT delivered 7 days a week                             | - Skeleton crew of 2 teams for all staff; teams switch daily                               | - Screening of everyone entering the hospital                                         |
|                                                 | - Delay all low-risk visits for 1-2 mo                                                | - OTVs in person                                         | - Delay RT for up to 1-2 mo when appropriate             | - Physics and dosimetry split to on-site and off-site duties                              | - One visitor allowed                                                               |
|                                                 |                                                                                        |                                                           | - Hypofractionation encouraged                           | - Consolidated LINACs and transitioned to 12-h therapist shifts                           | - Treat COVID+ patients at end of day                                                 |
| University of Florida                           | - Triage by disease risk                                                               | - Telehealth as much as possible                          | - Delay RT with medical management when appropriate     | - Attending clinic days condensed to 2-3 d per week                                        | - Screening of everyone entering the hospital                                         |
|                                                 | - Delay low-risk consults and follow-ups for 1-2 mo                                   | - PDX at CT sim                                          | - If treating COVID+ patients, plan to use a dedicated LINAC at the end of day | - All imaging review and inpatient consults covered by 1 attending per day                 | - No hospitalized COVID+ patients currently under treatment                           |
|                                                 |                                                                                        | - OTVs by attending only                                 | - Hypofractionation encouraged                           | - All meetings conducted virtually                                                         | - One visitor allowed                                                               |
|                                                 |                                                                                        |                                                           |                                                          |                                                                                           | - No children allowed unless they are the patient                                     |
| University of Miami                             | - Triage by disease risk                                                               | - Telehealth as much as possible                          | - Delay RT with medical management when appropriate     | - All staff encouraged to work remotely                                                     | - Screening of all patients outside the hospital entrance                             |
|                                                 | - Delay low-risk consults and follow-ups                                              | - Most results reviewed over phone                       | - If treating COVID+ patients, plan to use a dedicated LINAC at the end of day | - All meetings conducted virtually                                                         | - No visitors except with pediatric patients                                          |
|                                                 |                                                                                        |                                                           | - Hypofractionation encouraged                           |                                                                                           | - All patients and staff required to wear surgical masks                               |

**Abbreviations**: COVID = coronavirus disease 2019; CT = computed tomography; LINAC = linear accelerator; NPL = nasopharyngolaryngoscopic examination; OTV = on-treatment visit; PDX = physical examination; PPE = personal protective equipment; RT = radiation therapy; SFU = superfunctional unit.

**Residency Changes**

Residents training in radiation oncology at these institutions have experienced changes to their educational experience, often for the purpose of protecting the trainees and patients (Table 2). There are several common measures taken by the programs. Residents are now limited in their ability to have in-person patient contact and in their time spent within radiation oncology departments. Which in-person patient encounter residents are involved with
Table 2  Detailed radiation oncology residency changes

| Hospital                        | Patient care                                                                 | Remote work and didactics                                   | Call and inpatient consults                           | Events and redeployment                               | Wellness                                                                 |
|---------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------|--------------------------------------------------------|------------------------------------------------------------------------|
| H. Lee Moffitt Cancer Center    | - Limit in-person patient contact                                          | - Remoting strongly encouraged                              | - Call taken while in department and consists of      | - Mock orals and annual Moffitt research symposium      | - Daily wellness emails                                                 |
| and Research Institute          | - No change in attending coverage: covering 1-2 per rotation                | - All didactics performed virtually                         | triaging duties but may be asked to assist the SFU    | postponed                                             | - Frequent virtual meetings about managing COVID patients for residents |
|                                 | - Attending performs PDX                                                   | - In department only when necessary for patient care        | attending                                             | cancelled                                              | in all specialties                                                      |
|                                 | - No resident NPL examinations                                              |                                                             | - Inpatient consults seen by disease site team        | - No redeployment to date                              |                                                                        |
| Mayo Clinic                     | - Limit in-person patient contact                                          | - Call taken from home                                      | - All Mayo Clinic resident social events cancelled    | - Refresher courses on placing orders, general internal |
|                                 | - Temporarily crossover attendings to share the workload                   | - Only see inpatient consults if necessary                  | - Any examinations to be delivered virtually          | medicine, and ICU procedures                          |                                                                        |
|                                 | - Flexibility allotted to share workload among residents                    |                                                             | - Graduation ceremonies cancelled                     | - Weekly virtual meetings with the program director    |                                                                        |
|                                 |                                                                              |                                                             | - Deployment priority would be given to those         | - Free access to Talkspace for online therapy          |                                                                        |
|                                 |                                                                              |                                                             | closer to intern year                                 | - Frequent emails from the University’s Director of    |                                                                        |
|                                 |                                                                              |                                                             | - No redeployment to date                              | Wellness Programs regarding wellness, virtual support,|                                                                        |
|                                 |                                                                              |                                                             |                                                       | and other similar resources                           |                                                                        |
| University of Florida           | - Limit in-person patient contact                                          | - Remoting strongly encouraged                              | - Call taken while close to the hospital in case of   | - Mock orals to be performed virtually                 |                                                                        |
|                                 | - Single attending coverage with consolidated clinic to 2-3 days            | - All didactics performed virtually                         | emergencies                                           | - Graduation ceremonies likely cancelled               |                                                                        |
|                                 | - Attending only in-person routine follow-ups and OTVs                     | - In department only when necessary for patient care        | - Only see emergent inpatient consults                | - 2 residents per week on call and ready to be redeployed if a surge occurs |
|                                 | - Residents participate in telehealth visits and in-person consults        |                                                             |                                                       | - If residents are pulled from clinic and redeployed, they will not have clinical duties the following week |                                                                        |
|                                 | - No resident NPL examinations                                              |                                                             |                                                       | - No redeployment to date                              |                                                                        |
|                                 |                                                                              |                                                             |                                                       |                                                       |                                                                        |
| University of Miami             | - Limit in-person patient contact                                          | - Remoting strongly encouraged                              | - Call taken from home                                | - Mock orals likely postponed                         | - Free virtual yoga, meditation, and stress management resources by    |
|                                 | - Single attending coverage                                                | - All didactics performed virtually                         | - Unchanged call duties                               | - Graduation ceremony plans uncertain                  | local programs                                                          |
|                                 |                                                                              | - In department only when necessary for patient care        | - Attendings evaluate inpatient consults alone unless the attending is at-risk | - 3 residents per 2-week block on call and ready to be redeployed if a surge occurs | - Counselors made available                                           |
|                                 |                                                                              |                                                             |                                                       |                                                       | - Free local hotel lodging for                             |

(continued on next page)
varies by institution and sometimes the attending physician. Remote work is strongly encouraged for all residents unless patient care duties dictate their presence within the departments. The clinical radiation oncology, physics, and radiation biology didactics courses are continuing at all institutions but through a virtual format. Any attending-lead teaching is conducted virtually when applicable (radiation contour and plan reviews, for example). Where residents may take their call from differs by institution, but inpatient consults are generally seen by the attending physicians only. All institutions have altered the timeline, format, or entirely cancelled residency-related activities including residency graduation ceremonies. Several institutions have developed redeployment strategies if additional clinicians are needed to help manage patients with COVID-19, but no residents have experienced redeployment to date. Residents are also provided with a variety of wellness resources to help manage the stressors associated with these changing times.

Radiation oncology residents are experiencing a period of uncertainty with unclear roles as providers and trainees during the COVID-19 pandemic. Although radiation oncology is not a frontline specialty managing patients with COVID-19, the field cares for a vulnerable and at-risk population. As trainees, our in-person interaction with patients who may harbor COVID-19 unnecessarily places them and ourselves at risk. The use of personal protective equipment (PPE) offsets this risk but during a time of PPE shortage, and because all residents require attending physician oversight, the educational value of each patient interaction should be thoughtfully evaluated. Nevertheless, a prolonged decrease in resident-patient interaction could adversely affect resident training and affect our ability to practice independently in the future. This dynamic creates a dilemma regarding the ideal approach to residency training in the current climate.

The residency programs described herein have taken several common measures to address this dilemma, and we applaud their implementation. We advocate for continued resident involvement in all aspects of patient care when performed through a virtual format. If institutions or patient scenarios do not allow for this format, in-person resident involvement should be evaluated with respect to the educational value of the encounter. For example, in-person on-treatment visits and follow-ups that are “routine” and involve no toxicity management or re-evaluation should not necessitate in-person resident involvement. The highest educational priority should be placed on patients due to start RT, and we encourage discussions between residents and their attendings regarding the value of hypofractionation for each case. Even if such cases occur in person, the resident may be able to remotely prepare for the consult, formulate their treatment recommendation, and generate the treatment plan without unnecessarily placing themselves or the patient at risk. As such, the need for a resident to see an in-person consult should be limited to when the clinical encounter provides additional information that affects the treatment plan. Regardless of the inherent educational value of the case, all clinical encounters that occur through a telehealth format should involve residents, as the use of this new media itself provides valuable experience.

We do not support resident-performed invasive procedures such as nasopharyngolaryngoscopic examinations during the current pandemic state. All other physical examinations should be performed with proper PPE and only if they add value to clinical decision making. If possible, these should be performed at the time of computed tomography simulation to consolidate the frequency of patient and provider exposure. This recommendation follows our general ideology of eliminating duplicate exposure and minimizing wasteful PPE use.

The transition of structured didactics to a virtual format should be seamless using widely available videoconferencing software. The utilization of this virtual format allows for continued training of residents while protecting staff within the department. As such, we advocate for its use for all structured didactics, case reviews, mock examinations, and treatment plan reviews. With the announcement of board examination delays, we emphasize continuing all curricula related to preparing residents for these examinations without interruption. Additionally, to offset the anticipated reduction in patient volume and resident clinical encounters, we encourage more frequent virtual case sessions to hone our clinical acumen.

Given the uncertainties associated with this pandemic (eg, the possibility for redeployment to the frontlines, the
risks to ourselves and loved ones, and anxiety related to the changing job market), resident wellness should be a deliberate discussion within departments. These changing factors may precipitate underlying anxiety or depression within the residents and feigning ignorance over their presence is not a viable solution. Even changes such as prolonged remote work may introduce feelings of isolation in a distinctly lonely environment, particularly for residents who moved to new cities for their training. Coupled with the cancellation or postponement of residency-related wellness activities or examinations, the stresses for residents may accumulate when they don’t have access to their typical healthy outlets. We strongly urge programs to perform routine check-ins on residents both on a one-to-one and group basis. We also encourage residents to reach out to their colleagues and loved ones for support. For residents experiencing redeployment, we have provided a list of resources to aid in the clinical care of patients with COVID-19 (Table 3). This table also provides resources regarding crowd-sourced hypofractionation regimens, residency program changes, and protocols used to guide departmental changes during this pandemic.

Residency training and medicine itself often displace the importance of self by prioritizing the patient and providing team. Radiation oncology resident schedules are typically dictated by the attendings with whom they work, and the COVID-19 pandemic introduces uncertainties that amplify this lack of control. We promote open communication among teams and advocate for residents to express their comfort level regarding in-person patient encounters. However, it is important to recognize the hierarchal difference that exists in the structure of medicine and acknowledge that a top-down approach is more effective. We therefore ask for program directors and department chairs to consider the matters discussed in this article when implementing residency changes. These times are far from normal, but we must continue to work toward achieving normalcy where we can. We humbly thank our institutions for monitoring the unfolding events and implementing strategies to ensure the safety of their staff and our patients.

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Table 3  Resources for clinical care during the COVID-19 pandemic

| Resource                                      | Utility                                                                 | URL                                                      |
|-----------------------------------------------|------------------------------------------------------------------------|----------------------------------------------------------|
| COVID-19 USA Physician/Advances Practice Provider Facebook group | Anecdotal experiences and resource sharing with regards to caring for COVID-19 patients | https://tinyurl.com/FBcovid19                             |
| Hypofractionated radiation therapy regimens during COVID-19 | Crowdsourced document reviewing appropriate hypofractionated radiation therapy regimens. | https://tinyurl.com/RTcovid19                             |
| COVID-19 Critical Care E-Book                  | Frequently updated Internet book for critical care. Depth of knowledge extends beyond COVID-19. | https://emcrit.org/ibcc/COVID19/                          |
| UW COVID-19                                    | University of Washington’s public COVID-19 resource website            | https://covid-19.uwmedicine.org/                          |
| Radiopaedia’s COVID-19 summary                 | Basic clinical and radiographic summary of COVID-19 presentations       | https://radiopaedia.org/articles/covid-19                 |
| Residency changes during COVID-19              | Crowdsourced document recounting radiation oncology residency program changes during COVID-19 | https://tinyurl.com/REScovid19                            |
| Ontario Pandemic Protocols                     | Ontario general pandemic planning protocols and clinical guide for patients with cancer | https://tinyurl.com/OntarioCancer/PandemicProtocols      |

Abbreviation: COVID = coronavirus disease 2019.