

## Brief Opinion

# Staff and Patient Protection in Radiation Oncology Departments During Coronavirus Disease 2019 (COVID-19) Pandemic



Maurizio Portaluri, MD,<sup>a,\*</sup> Santa Bambace, MD,<sup>b</sup>  
Francesco Tramacere, MD,<sup>a</sup> Angelo Errico, MD,<sup>b</sup>  
Stefania Carbone, MD,<sup>b</sup> and Tommaso Portaluri, MSc<sup>c,d</sup>

<sup>a</sup>Department of Radiation Oncology, A. Perrino Hospital, Brindisi, Italy; <sup>b</sup>Department of Radiation Oncology, Ospedale Mons. Dimiccoli, Barletta, Italy; <sup>c</sup>IN srl, Udine, Italy; and <sup>d</sup>Centro per l'Eccellenza e gli Studi Transdisciplinari, Turin, Italy

Received 21 April 2020; revised 22 April 2020; accepted 22 April 2020

Since the onset of the coronavirus disease 2019 (COVID-19) pandemic, researchers and clinicians in the radiation oncology sector have been paying attention to the supply of radiation therapy (RT) and the safeguard of patients with regard to their infectious status. Based on the experience of 2 RT departments in Apulia (Brindisi and Barletta), Italy, we argue that the Italian guidelines currently in place are far from adequate to ensure staff and patient safety and should be strengthened with urgency.

On March 11, 2020, the staff of the RT department at A. Perrino Hospital in Brindisi was informed that 3 patients coming from the medical oncology ward were found to be COVID-19 positive. One of them had received RT treatment the previous month, on February 18, and it unclear whether, at that time, the patient was already COVID-19 positive. Moreover, some health care workers (HCWs) from our staff had met with the other 2 patients daily from March 2 to 6 without personal protective equipment (PPE). It should be noted that surgical masks for HCWs in this department have been available only since March 9<sup>1</sup>; in another RT department (Ospedale Mons. Dimiccoli in Barletta), PPE has been available since March 10 (surgical masks and Filtering Face Piece

2: filter powder fumes and aerosols damaging the human health with maximum leakage of 11% [FFP2], caps, disposable gowns, glasses, gloves, and shoe covers, and, since March 14, visors and video training for the staff on the use of PPE).

According to the guidelines of the Italian Association of Radiotherapy and Clinical Oncology (AIRO), a screening of patients coming to RT departments is prescribed, consisting of temperature measurement and an examination about respiratory symptoms and suspicious contacts.<sup>2</sup> Per the Italian Ministry of Health guidelines concerning staff protection, all HCWs—not specifically in radiation oncology, but generally those working in outpatient care—are prescribed to use PPE such as FFP2 masks, gloves, gowns, and glasses only during the examination of patients with respiratory symptoms.<sup>3</sup> These indications, based on both the scientific guidelines from AIRO and legislative provisions, are probably grounded on a rather weak assumption: temperature and anamnestic collection are sufficient precautions to avoid the entrance of COVID-19-positive patients into an RT department. Unfortunately, this is not the case.

In the Brindisi RT department on March 23, after her fifth daily RT session, a 30-year-old patient with Hodgkin's lymphoma informed us she has been quarantined because her mother, a nurse, was found to be COVID-19 positive. The patient's treatment was stopped according to

---

Sources of support: This work had no specific funding.  
Disclosures: none.

\* Corresponding author: Maurizio Portaluri, MD; E-mail: [m.portaluri@asl.brindisi.it](mailto:m.portaluri@asl.brindisi.it)

<https://doi.org/10.1016/j.adro.2020.04.030>

2452-1094/© 2020 Published by Elsevier Inc. on behalf of American Society for Radiation Oncology. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

national guidelines; subsequently, on March 31, we were informed that the patient's test for COVID-19 was positive. At the moment of writing (April 18), the patient is expected to resume her RT treatment after 2 further tests result in negatives. It should be noted that before stopping the irradiation, the patient had already been treated to the mediastinum with a cumulative dose of 10 Gy; although the patient was screened according to the abovementioned guidelines, they were insufficient to prevent the start of the treatment, exposing both the patient and the staff to COVID-19. If she had been tested for COVID-19 before her radiation therapy treatment started, the treatment would have not been started, and her risk of severe pneumonia would have been lowered.

In the Barletta RT department, on April 9, a 66-year-old patient at her 28th (out of 30) daily session of RT to the scalp for skin cancer informed the staff that her husband was COVID-19 positive after his hospitalization for diarrhea. She was immediately quarantined and tested, and the therapy was interrupted. Her first test was negative, but the test should be repeated because infection cannot be ruled out with just 1 test.<sup>4</sup> In this case, RT treatment was almost complete, but we wonder how these cases should be managed, especially when patients are at the beginning of treatment. Meanwhile, tests for all RT patients before treatment have been requested from the local management.

The large variability in the number of tests performed in Italy and the delay in the communication of the results (3-5 days on March 19, but in our experience it takes longer than that)<sup>5</sup> are not good reasons for not testing oncologic patients *before* antineoplastic treatment. The Ministry of Health recommendations state that oncologic patients have a risk up to 4 times higher than the normal population of getting COVID-19 infection and of a more severe prognosis.<sup>6</sup> We believe this information should become an integral part of the informed consent materials for RT.

Moreover, it took us by surprise that AIRO suggests nothing different from clinical screening for patients arriving at RT departments. The same applies to the first reports from Italian regions (Lombardy and Piedmont) with figures of incidence of SARS-CoV-2 closest to those of China: one of them<sup>7</sup> considers the situation of treating patients with suspected or confirmed COVID-19, and the other<sup>8</sup> states that in positive anamnestic cases, they will provide a surgical mask to the patient and will not stop the treatment. The treatment of patients with suspected (not to mention confirmed) COVID-19 is highly risky for both the staff and the patients. RT treatments may have a negative impact on patients' immune systems, thus causing the potential mortality rate for such patients to skyrocket. It is indeed impossible, in the situations described in the mentioned the previously mentioned articles, to determine whether the patients were positive

during their RT treatment. It is moreover unclear whether such risks were mentioned within the informed consent form.

The experiences we read about from Chinese colleagues may provide some useful tips. In what is likely the first report ever on RT from Wuhan, China,<sup>9</sup> the screening procedure for HCWs is described: "According to the COVID-19 diagnosis guidelines, the staff returning to work must be screened for the disease. Only those who cleared the screening could return to posts." Furthermore, "before returning to posts, the staff receives training to learn about COVID-19 prevention and protection. The staff learns the protection level of their corresponding role, the appropriate PPE for the role [ . . . ] as well as the dons and doffs." The radiation therapy center was zoned by different contamination levels and periodically disinfected based on corresponding frequencies and protocols. Patients used surgical masks under the thermoplastic mask for cranial or head and neck cancer. Moreover, patients receiving RT were screened for COVID-19, and "only patients for whom COVID-19 has been ruled out [could] receive the treatment."<sup>9</sup> Before receiving radiation therapy, patients were informed of the risk of cross contamination during treatment and signed the informed consent form.

Furthermore, the evidence that "SARS-CoV-2 has a high transmissibility rate in indoor environments and, therefore, asymptomatic patients admitted in the hospitals without respiratory symptoms have probably propagated the virus to unaware and unprotected health operators in departments other than infectious diseases"<sup>10</sup> confirms our beliefs.

Based on the experience in the 2 Apulian departments and on the literature considered, we provide the following recommendations for admission and treatment of patients undergoing RT in the current situation:

1. Every patient must undergo a COVID-19 test before starting treatment (2 samples 24 hours apart) associated with a serologic test;
2. If the treatment lasts more than 1 week, the test must be repeated weekly;
3. No patient should be admitted to treatment with uncertain test results;
4. The staff dedicated to clinical evaluation and treatment of patients have to wear PPE with all patients, as asymptomatic transmission cannot be ruled out with the current information (Figure 1); and
5. The staff must be tested at least monthly.

There is indeed evidence strongly suggesting that all patients must undergo COVID-19 testing before starting RT, and likely during the treatment as well. Moreover, staff should wear PPE and presume all patients may be COVID-19-positive. Finally, the patients must be informed, with a



**Figure 1** Technologists during patient positioning with PPE (FFP2, visor, cap, gowns, gloves). The patient wears a surgical mask under the immobilization device. *Abbreviations:* FFP2 = Filtering Face Piece 2; PPE = personal protective equipment.

dedicated consent form, about the risk of infection associated with being in the RT department and of the increased mortality risk in the case of COVID-19 infection.

## References

1. Portaluri M, Tramacere F, Portaluri T, Gianicolo EAL. Southern Italy: How the supply of radiation therapy, patient outcomes, and risk to health care providers have changed during the COVID-19 pandemic. *Adv Radiat Oncol.* 2020;5:597-600.
2. Associazione Italiana Radioterapia e Oncologica clinica. Documento di indirizzo per la valutazione e la gestione del rischio dei pazienti e degli operatori nei reparti di radioterapia oncologica in corso di diffusione del COVID-19. Available at: <https://www.radioterapiaitalia.it/wp-content/uploads/2020/03/v-2-Documento-AIRO-COVID-19-24-03-2020.pdf>. Accessed March 19, 2020.
3. Istituto Superiore di Sanità. Indicazioni ad interim per un utilizzo razionale delle protezioni per infezioni da SARS-CoV-2 nelle attività sanitarie e socio-sanitarie nell'attuale scenario emergenziale SARS-CoV-2. Available at: [https://www.iss.it/documents/20126/0/Rapporto+ISS+COVID+2\\_+Protezioni\\_REV.V6.pdf/740f7d89-6a28-0ca1-8f76-368ade332dae?t=1585569978473](https://www.iss.it/documents/20126/0/Rapporto+ISS+COVID+2_+Protezioni_REV.V6.pdf/740f7d89-6a28-0ca1-8f76-368ade332dae?t=1585569978473). Accessed March 28, 2020.
4. Ministero della Salute. Quesiti scientifici relativi all'infezione da Coronavirus SARS-CoV-2. Available at: <http://www.trovanorme.salute.gov.it/norme/renderNormsanPdf?anno=2020&codLeg=73458&parte=1%20&serie=null>. Accessed February 28, 2020.
5. Prodotto dall'Istituto Superiore di Sanità. Epidemia COVID-19. Available at: [https://www.epicentro.iss.it/coronavirus/bollettino/Bollettino-sorveglianza-integrata-COVID-19\\_12-marzo-2020.pdf](https://www.epicentro.iss.it/coronavirus/bollettino/Bollettino-sorveglianza-integrata-COVID-19_12-marzo-2020.pdf). Accessed March 12, 2020.
6. Ministero della Salute. Raccomandazioni per la gestione dei pazienti oncologici e onco-ematologici in corso di emergenza da COVID-19. Available at: [http://www.salute.gov.it/imgs/C\\_17\\_pagineAree\\_5373\\_3\\_file.pdf](http://www.salute.gov.it/imgs/C_17_pagineAree_5373_3_file.pdf). Accessed March 1, 2020.
7. Filippi AR, Russi E, Magrini SM, Corvò R. COVID-19 outbreak in northern Italy; first practical indications for radiotherapy departments [epub ahead of print]. *Int J Radiat Oncol Biol Phys.* <https://doi.org/10.1016/j.ijrobp.2020.03.007>. Accessed March 17, 2020.
8. Krengli M, Ferrara E, Mastroleo F, Brambilla M, Ricardi U. Running a radiation oncology department at the time of coronavirus: An Italian experience. *Adv Radiat Oncol.* <https://doi.org/10.1016/j.adro.2020.03.003>. Accessed March 17, 2020.
9. Wu S, Zheng D, Liu Y, Hu D, Wei W, Han G. Radiotherapy care during a major outbreak of COVID-19 in Wuhan. *Adv Radiat Oncol.* 2020;5:531-533.
10. Chririco F, Nucera G, Magnavita N. COVID-19: Protecting healthcare workers is a priority [e-pub ahead of print]. *Infect Control Hosp Epidemiol.* <https://doi.org/10.1017/ice.2020.148>. Accessed May 17, 2020.