

## Letter to the Editor

# Departments of Radiation Oncology Must Prepare for COVID-19 Outbreak



Jaehyeon Park, MD, Ji Woon Yea, MD, PhD, and  
Jae Won Park, MD, PhD\*

*Department of Radiation Oncology, Yeungnam University College of Medicine, Daegu, South Korea*

To the Editor:

In December 2019, a novel coronavirus (2019-nCoV) was first detected in Wuhan, Hubei, China. The virus is highly contagious and has quickly spread to other provinces in China and other countries within 1 month.<sup>1,2</sup> The 2019-nCoV can be transmitted by asymptomatic infectors and has been confirmed to be transmitted by droplets and contact. The 2019-nCoV is now having a serious socio-economic impact worldwide. In China, a total of 78,064 patients with coronavirus disease 2019 (COVID-19) have been identified to date, and containment in Hubei is still in progress. A total of 400 patients with COVID-19 have been reported in Italy as of 9 AM on March 26, 2020. The world is in an ongoing pandemic<sup>3</sup>. As the outbreak progresses, cancer patients receiving radiation therapy and health care professionals (eg, medical doctors, nurses, medical physicists, and radiation therapists) are at risk of infection.

The first patient diagnosed in South Korea (the nearest country to China) was on January 20, 2020. Subsequently, the Korea Centers for Disease Control and Prevention initiated an in-depth epidemiologic investigation and contact tracing. By February 18, 2020, the outbreak seemed to be well controlled, with a total of 30 patients confirmed to have COVID-19. However, outbreaks caused by gatherings of certain religious groups in Daegu rapidly increased the number of patients to 9241 on March 26, 2020. Many patients were diagnosed with

COVID-19 in Daegu, and hospital infections are increasing consecutively. According to the Korea Centers for Disease Control and Prevention guidelines, when an infected person is diagnosed, the area where the patient was present is closed for 2 to 3 days and residents are quarantined. People who had been in close contact with the infected patient are isolated for 14 days.

At a university hospital in Daegu, radiation therapy patients were also diagnosed with COVID-19. The department was closed for quarantine for 2 days and health care professionals were screened for COVID-19. Patients who receive radiation often visit the department daily for standardized treatment times. In addition, radiation therapists have no choice but to interact with the same patients for every fraction during the patient setup process. Therefore, when an infected person is diagnosed, patients treated during the same time or the radiotherapist in the treatment room are isolated as well and the department is quarantined for 2 to 3 days.

Strict scheduled treatment should be provided for outpatients. Approximately 30 patients are treated per machine per day; hence, the number of patients who are waiting for treatment generally increases. The strict slot system with longer treatment intervals aims to reduce the waiting time for radiation therapy to minimize the chance of patient–patient contact.

If a health care professional becomes infected, the situation becomes even more dangerous.<sup>4</sup> In Korea, patients receiving radiation therapy are in close contact with the therapist. Owing to the development of image guided radiation therapy, doctors often visit the treatment room directly. If the control room is not independent, infection between therapists can also be a concern. Therefore, if a health care professional is diagnosed, the radiation therapist and doctor close to the patient in the treatment room

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\* Corresponding author: Jae Won Park, MD, PhD; E-mail: [kapicap@naver.com](mailto:kapicap@naver.com)

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may also require isolation, and the department may shut down for 14 days.

Furthermore, treatment duration increases as radiation therapy is discontinued. Increasing the treatment duration adversely affects radiation therapy results.<sup>5</sup> At a time when the intervals between globally affecting epidemics, such as the severe acute respiratory syndrome in 2002, Middle East respiratory syndrome in 2012, and COVID-19 in 2019, are shortening, we believe that strategies to minimize damage in the future will be needed.

Delaying the initiation of elective radiation therapy as much as possible during the epidemic period, except for emergency treatment, is recommended. If there is any reason for induction chemotherapy, this treatment option must be considered (eg, nasopharyngeal carcinoma, nasal natural killer/T-cell lymphoma, small cell lung cancer). Postoperative radiation therapy can usually be safely postponed until 6 weeks after surgery. In prostate cancer, definitive radiation therapy can be delayed approximately 3 to 6 months with androgen deprivation therapy.

Radiation therapists who come into close contact with patients should pay attention to personal protection. Emphasis is placed on wearing personal masks and hand hygiene. In particular, hand hygiene must be strictly enforced every time a patient is treated. To prevent the risk of all facilities being closed, a line must remain between patients and therapists in each treatment room. Efforts should also be made to minimize contact among health care professionals. The therapist contact between treatment rooms or visits to treatment room by doctors

should be minimized. Image guided radiation therapy should use an online system as actively as possible.

Epidemic prolongation can no longer result in treatment delays. However, if this occurs, we must prepare a separate treatment room for infected patients. The movement, space, and treatment time of infected patients should be separated from those of the general-treatment patients. Therapists should wear protective clothing, eyeglasses, and a mask. Considering the chance for repeated epidemics, setting up a negative pressure treatment room in large-volume centers may also be needed.

## References

- 1.. Wu Z, McGoogan JM. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: Summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention [e-pub ahead of print]. *JAMA*. 2020. <https://doi.org/10.1001/jama.2020.2648>, accessed May 12, 2020.
2. Zhu N, Zhang D, Wang W, et al. A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med*. 2020;382:727-733.
- 3.. Xu B, Kraemer MUG. Open access epidemiological data from the COVID-19 outbreak. *Lancet Infect Dis*. 2020;20:534.
- 4.. Peeri NC, Shrestha N, Rahman MS, et al. The SARS, MERS and novel coronavirus (COVID-19) epidemics, the newest and biggest global health threats: What lessons have we learned? [e-pub ahead of print]. *Int J Epidemiol*. 2020. <https://doi.org/10.1093/ije/dyaa033>, accessed May 12, 2020.
5. Bese NS, Hendry J, Jeremic B. Effects of prolongation of overall treatment time due to unplanned interruptions during radiotherapy of different tumor sites and practical methods for compensation. *Int J Radiat Oncol Biol Phys*. 2007;68:654-661.