

# International Journal of Radiation Oncology • Biology • Physics

## Letter from Italy --Manuscript Draft--

<b>Manuscript Number:</b>	ROB-D-20-00397
<b>Article Type:</b>	Editorial
<b>Section/Category:</b>	Editorial
<b>Corresponding Author:</b>	Andrea Riccardo Filippi, M.D. University of Torino Pavia, ITALY
<b>First Author:</b>	Andrea Riccardo Filippi, M.D.
<b>Order of Authors:</b>	Andrea Riccardo Filippi, M.D.
	Elvio Russi, MD
	Stefano Maria Magrini, MD
	Renzo Corvò, MD

**Letter from Italy**

**COVID-19 OUTBREAK IN NORTHERN ITALY: FIRST PRACTICAL INDICATIONS FOR RADIOTHERAPY DEPARTMENTS.**

Andrea Riccardo Filippi<sup>1</sup>, Elvio Russi <sup>2</sup>, Stefano Maria Magrini<sup>3</sup>, Renzo Corvò<sup>4</sup>

1 Radiation Oncology Department, Fondazione IRCCS Policlinico San Matteo and University of Pavia Italy

2 Department of Radiation Oncology, S. Croce and Carle Teaching Hospital, Cuneo, Italy

3 Radiation Oncology Department, Ospedali Civili Hospital and Brescia University, Brescia, Italy

4 Radiation Oncology, IRCCS Ospedale Policlinico San Martino and Department of Health Science, University of Genoa, Italy

Corresponding author:

Prof. Andrea Riccardo Filippi, MD  
Department of Radiation Oncology  
Fondazione IRCCS Policlinico San Matteo and University of Pavia  
Viale Golgi 19  
27100 Pavia, Italy

Disclosures: none.

Funding: none.

## **COVID-19 OUTBREAK IN NORTHERN ITALY: FIRST PRACTICAL INDICATIONS FOR RADIOTHERAPY DEPARTMENTS.**

Andrea Riccardo Filippi<sup>1</sup>, Elvio Russi <sup>2</sup>, Stefano Maria Magrini<sup>3</sup>, Renzo Corvò<sup>4</sup>

1 Radiation Oncology Department, Fondazione IRCCS Policlinico San Matteo and University of Pavia, Italy

2 Department of Radiation Oncology, S. Croce and Carle Teaching Hospital, Cuneo, Italy

3 Radiation Oncology Department, Ospedali Civili Hospital and Brescia University, Brescia, Italy

4 Radiation Oncology, IRCCS Ospedale Policlinico San Martino and Department of Health Science, University of Genoa, Italy

### **INTRODUCTION**

The number of people infected by COVID-19 is dramatically increasing worldwide [1]. The first person-to-person transmission in Italy was reported on February 21, 2020, and led to an infection chain that represents the largest outbreak outside Asia to date [2]. As of March 12, 2020, in Italy, there are 10,590 positive patients, 827 deaths, and 1,045 healed, with numbers varying from hour to hour. The COVID-19 incubation interval varies from 5 to 14 days [3]. Since January 30, 2020, WHO declared the COVID-19 outbreak a public health emergency of international concern, and the day after the Italian Government declared a public health emergency. In the first phase, the Government defined areas at different risk of infection: a) high-risk (so-called "red zone or level 1 risk zone" b) mean risk (level 2 risk zone) and c) the rest of national territory, to be alerted but considered at low risk (level 3 risk zone). In the subsequent phases of the crisis, following the indications of a scientific and technical committee and in agreement with the WHO, the Government finally decided to extend the Red Zone to the whole Nation (March 8, 2020). All public Hospitals faced an unprecedented emergency, with drastic changes in the organization. All cancer patients were consequently involved at different levels. We here report the experience of a group of Northern Italy Radiotherapy Departments that are located inside or very close to the first "Red Zone," and thus were the first to face the emergency. The main problem was how to continue the activity while protecting patients, families, and health professionals from the infection. The Authors virtually met with other Radiation oncologists (see acknowledgments) to share experiences and possible solutions that were defined according to the local and national health authorities' indications.

1  
2 The indications we propose are structured as: a) definition of the priority, b) problem analysis, and  
3 c) suggested solutions.  
4

5  
6 **PRIORITY 1: TO ENSURE RADIATION THERAPY DELIVERY TO CANCER PATIENTS**  
7

8  
9 Problem analysis: Radiotherapy is a "life-saving" treatment and should be guaranteed to all cancer  
10 patients in which is indicated [4].  
11

12  
13 Suggested solutions: Regional and hospital management must ensure the full functioning of Italian  
14 radiotherapy facilities, even in emergency conditions.  
15

16  
17 **PRIORITY 2: TO ENSURE SAFETY OF HEALTH PROFESSIONALS, PATIENTS, AND CAREGIVERS**  
18

19 Problem analysis: A widespread infection of the staff working in a radiotherapy facility would  
20 effectively result in the closure of part of the activities. Failure to identify the suspect or infected  
21 patients would increase the risk of spreading to operators and patients undergoing treatment.  
22

23  
24 Suggested solutions:  
25

26  
27 1. If a triage point at the entrance to the hospital has not been activated, the indication is to  
28 carry out a triage at the access of the radiotherapy department, to verify possible contacts with  
29 COVID-19 positive patients and evaluate suspect symptoms in all others (patients, caregivers)  
30 accessing the radiotherapy areas.  
31

32  
33 2. To provide a hydroalcoholic solution for hand disinfection at the entrance of the  
34 radiotherapy center.  
35

36  
37 3. To wear surgical masks, as recommended for all health professionals and patients  
38 according to WHO indications [5], and in particular in the following cases: 1) if the operator has  
39 respiratory symptoms, to protect others; 2) if the operator is in close contact with a person who  
40 has respiratory symptoms, to protect herself/himself.  
41

42  
43 4. To use sterile disposable overalls (tunic and trousers), sterile disposable gown, FFP2 masks,  
44 clogs, and overshoes when treating patients with suspect COVID-19 positivity, if they need to  
45 continue radiotherapy according to medical indications.  
46  
47  
48  
49  
50  
51

52  
53  
54 **PRIORITY 3: MANAGEMENT OF COVID 19 SUSPECT OR POSITIVE PATIENTS**  
55

56  
57  
58 Problem analysis: We need practical guidelines on the appropriate behavior in case of  
59 symptomatic, suspect, or COVID-19 infected patients accessing radiotherapy facilities. The triage  
60  
61  
62  
63  
64  
65

1  
2 evaluation should immediately report to the appropriate internal structures all patients who have  
3 symptoms possibly related to COVID-19 infection, according to existing regional regulations.

4 Suggested solutions:

- 5  
6 1. If the patient has a cough or fever or dyspnea due to pre-existing morbidity: the patient  
7 should wear a protective mask, and radiotherapy should be continued.  
8  
9 2. If a new patient is COVID-19 positive: do not start treatment.  
10  
11 3. If a patient on treatment is suspect for the onset of COVID-19 typical symptoms (cough  
12 and/or fever and/or dyspnea) and is waiting for microbiological diagnosis: stop treatment. \*  
13  
14 4. If a patient on treatment results COVID-19 positive and is symptomatic: discontinue  
15 treatment \*  
16  
17 5. If a patient on treatment results COVID-19 positive but is asymptomatic: discontinue  
18 treatment\*  
19  
20 6. If a patient resulted COVID-19 positive is declared healed by Infectious Disease Clinic: plan  
21 carefully to start or restart treatment according to clinical cancer condition  
22  
23  
24  
25  
26  
27

28 \* Patients may continue treatment only in selected cases if their general medical conditions are  
29 not compromised by COVID-19 infection, if the oncological condition requires continuation of  
30 radiotherapy, if it is permitted by local health authorities, and with the use of adequate disposable  
31 protective equipment. We suggest personalized clinical assessment.  
32  
33

34 If possible, these patients should be treated at the end of the LINAC shift to limit the chances of  
35 infection for other patients.  
36

37 After the treatment of positive patients (or patients waiting for diagnostic confirmation), the  
38 waiting and bunker areas should be sanitized at the end of the treatment session.  
39  
40  
41  
42  
43  
44

#### 45 46 PRIORITY 4: STAFF RE-ORGANIZATION 47

48  
49  
50 Problem analysis: It is necessary to avoid the usual professional behavior that favors the  
51 aggregation of the professional figures working in the radiotherapy facility.  
52

53 Suggested solutions: Medical, technical, nursing, and administrative staff must operate in separate  
54 areas, avoiding meetings that cannot ensure the safety distances required for prevention.  
55  
56

57 In case of infection of health professionals and therefore in case of a severe shortage of staff:  
58  
59  
60  
61  
62  
63  
64  
65

1. report the current situation to the hospital management, for getting help in solving the problem (e.g., hiring new staff);
2. connect with other radiotherapy centers for the use of external personnel to avoid the interruption of ongoing therapies;
3. call for service of retired personnel following the procedures already defined by the administrations;
4. redistribute patients on available machines, and a variation of fractionation, when feasible, is advised.

#### PRIORITY 5: REDUCTION OF PATIENTS' ACCESS TO RADIOTHERAPY FACILITIES

##### Problem analysis:

It is advisable to limit patient access to radiotherapy facilities while maintaining optimal care conditions.

##### Suggested solutions:

1. To adopt hypo-fractionated regimens when possible;
2. To postpone follow-up visits;
3. To use palliative medical treatments at home, instead of radiotherapy, when deemed to be of similar efficacy;
4. To delay non-urgent and deferrable radiotherapy treatments for patients with a better prognosis (e.g., adjuvant radiotherapy of breast cancer patients, radical radiotherapy of patients with low-intermediate risk prostate disease, others);
5. To postpone therapies for benign and functional diseases.

#### **DISCUSSION**

The COVID-19 spread in Italy was initially subtle, and then unexpectedly rapid in its expansion. Based on the information obtained from the Wuhan Region in China, it was initially thought to confine the outbreak areas while protecting the rest of the nation with lighter measures. As the first affected regions are characterized by a very high population density, the virus dramatically spread in a few weeks throughout Northern Italy. As a consequence, all cancer patients' therapeutic flows were altered: surgery, systemic therapies, and radiotherapy. The radiotherapy

1 centers located in the hospitals that were the first to face the emergency gained rapid field  
2 experience and then started monitoring the situation and collecting data. This report presents a  
3 few practical suggestions that came up from the first two weeks of collective work under  
4 emergency conditions and is the result of a joint effort to ensure continuity of therapies while  
5 protecting patients, health professionals, and the general population. The indications were  
6 integrated with the WHO recommendations and with the local health authorities' guidelines. The  
7 primary aim was to share information and provide guidance to radiotherapy departments  
8 worldwide. The report is mainly focused on how to deal with symptomatic, suspect, or COVID-19  
9 positive patients undergoing radiation therapy. Since international indications for radiotherapy  
10 units facing COVID-19 outbreak have not been developed yet, we identified five key priorities,  
11 here described, together with a brief analysis of the problems and the possible solutions.  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22

## 23 REFERENCES

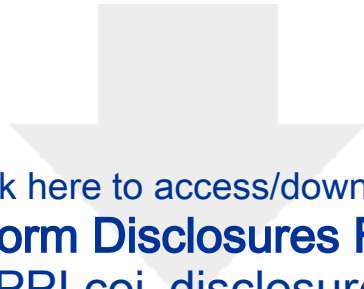
- 24  
25  
26  
27 1. Wu Z, McGoogan JM. Characteristics of and Important Lessons From the Coronavirus  
28 Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases From  
29 the Chinese Center for Disease Control and Prevention. *JAMA* 2020; published online Feb  
30 24. DOI:10.1001/jama.2020.2648.  
31  
32
- 33  
34  
35  
36 2. Spina S, Marrazzo F, Migliari M, Stucchi R, Sforza A, Fumagalli R. The response of Milan's  
37 Emergency Medical System to the COVID-19 outbreak in Italy. *The Lancet* 2020; published  
38 online Feb 28. DOI:10.1016/S0140-6736(20)30493-1.  
39  
40
- 41  
42  
43 3. Rothe C, Schunk M, Sothmann P, *et al.* Transmission of 2019-nCoV Infection from an  
44 Asymptomatic Contact in Germany. *New England Journal of Medicine* 2020; 382: 970–1.  
45  
46
- 47  
48 4. The Royal College of Radiologists: Timely delivery of radical radiotherapy: guidelines for the  
49 management of unscheduled treatment interruptions, fourth edition | The Royal College of  
50 Radiologists. 2019; published online Jan. [https://www.rcr.ac.uk/publication/timely-  
51 delivery-radical-radiotherapy-guidelines-management-unscheduled-treatment](https://www.rcr.ac.uk/publication/timely-delivery-radical-radiotherapy-guidelines-management-unscheduled-treatment)  
52  
53
- 54  
55 5. World Health Organization 2020. Some rights reserved. This work is available under the CC  
56 BY-NC-SA 3.0 IGO licence., WHO. Advice on the use of masks in the community, during  
57 home care and in health care settings in the context of the novel coronavirus (2019-nCoV)  
58 outbreak. Interim guidance 29 January 2020.  
59  
60  
61  
62  
63  
64  
65

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65

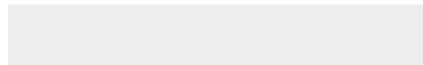
**ACKNOWLEDGMENTS**

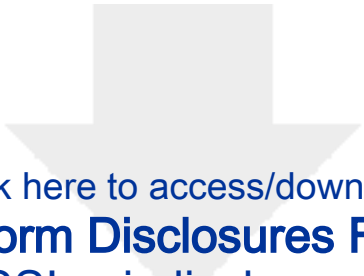
The Authors would like to thank the following Italian Radiation Oncologists who contributed in extending these preliminary recommendations: Roberto Tortini (Lodi), Sandro Tonoli (Cremona), Michela Buglione di Monale e Bastia (Brescia), Giovanni Mandoliti (Rovigo), Giampaolo Montesi (Rovigo), Stefano Pergolizzi (Messina), Anna Merlotti (Cuneo),






Click here to access/download  
**Uniform Disclosures Form**  
FILIPPI coi\_disclosure.pdf





Click here to access/download  
**Uniform Disclosures Form**  
RUSSI coi\_disclosure.pdf





Click here to access/download  
**Uniform Disclosures Form**  
MAGRINI coi\_disclosure.pdf





Click here to access/download  
**Uniform Disclosures Form**  
CORVO coi\_disclosure.pdf

