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Radiology Department and Residency Program Response and Adaption to COVID 19

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Dear editor,

Since the onset of the COVID-19 pandemic in our country, Iran, we quickly moved to make necessary changes to adapt to this unprecedented and rapidly developing situation. Two weeks after the COVID-19 was first diagnosed in our country, there was a shelter in place order across the country as well as an order to cancel or limit all nonessential activities. Any gathering of more than five people was banned. As a result, all our educational activities were halted. At the same time, the hospitals across the country were hit by an unprecedented wave of COVID-19 patients that saturated the emergency rooms, ICUs, and internal medicine wards. Meanwhile, our radiology department has been at the forefront of diagnosing COVID-19 due to the high sensitivity of CT scans (1), which are widely available across the country while there were insufficient COVID 19 laboratory test kits.

To adapt to this rapidly evolving pandemic, we have made two major changes in our radiology department: changes related to clinical practice and changes in our teaching system. The changes in clinical practice were made with the goal of providing immediate results of chest CT scans obtained for suspected COIVD-19 infection. A small but agile group of radiology attendings and residents was created to focus our response. They immediately developed a low dose screening chest CT technique (2) and a reporting template for rapid, consistent, and reliable interpretation and reporting of these chest CT scans. The CT technique and reporting template were readily adapted by the Iranian Society of Radiology and distributed across the country (3,4). This group also reported all related CT scans across our nine-hospital health system via a central enterprise wide Picture Archiving and Communication System. As the volume of the CT scans increased, a second parallel group was created to address the surge in the volume. A few days later, in coordination with the Iranian Society of Radiology, a WhatsApp group was created and these two groups provided their services across the country, to ensure that every facility in the country, could receive the same high quality and fast interpretation of the screening CT scans for suspected COIVD 19 infection.

These two groups also advanced research related to COVID 19. Urgent interventional procedures were performed using national protocols and personal protective gear. Attending radiologists took a primary role in interpreting the radiologic examinations. The minimum number of radiology residents needed to maintain the clinical work of the radiology department were retained and, after an 8-hour refresher course, the rest of the radiology residents joined the frontline physicians in caring for the COVID 19 patients. They helped overworked internal medicine and infectious disease specialists, under supervision of internal medicine attending physicians and had similar rotations and responsibilities as the internal medicine residents.

The second series of changes made in our department were related to the teaching activities. We have approximately 130 radiology residents distributed across nine teaching hospitals. Their educational program is a network of teaching activities in each hospital that is carefully coordinated across the system. These activities include daily lectures by the attending radiologists, group textbook reading and presentations by the residents, weekly journal clubs held in each hospital, monthly department-wide grand rounds, and monthly written examinations and Objective Structured Clinical *Examination* exams for the residents. Additionally, the senior class who prepare for the national radiology board exam, have a series of lectures one morning a week presented by the attending radiologists. In response to halting the in-person teaching activities due to COVID 19, all the local lectures were moved online and presented live to all the residents across our department, regardless of their current hospital and rotation.

Additionally, webinars and question and answer sessions were held online. Four weeks into the online lectures, case presentation sessions, weekly journal clubs, monthly grand rounds, and residents' presentation and defense of their thesis assertion, a requirement of graduation, were also moved online and continued without disruption. Resident's participation in the lectures increased significantly as they could listen to the lectures from any hospital or any location in their respective hospital. There was a quick positive feedback from the residents and a survey showed 98% resident satisfaction with the new online teaching activities.

While virtual and online lectures continue our educational activities (5), it comes with limitations. Virtual training cannot replace some necessary in person training. For example, the residents cannot be trained to perform an ultrasound and

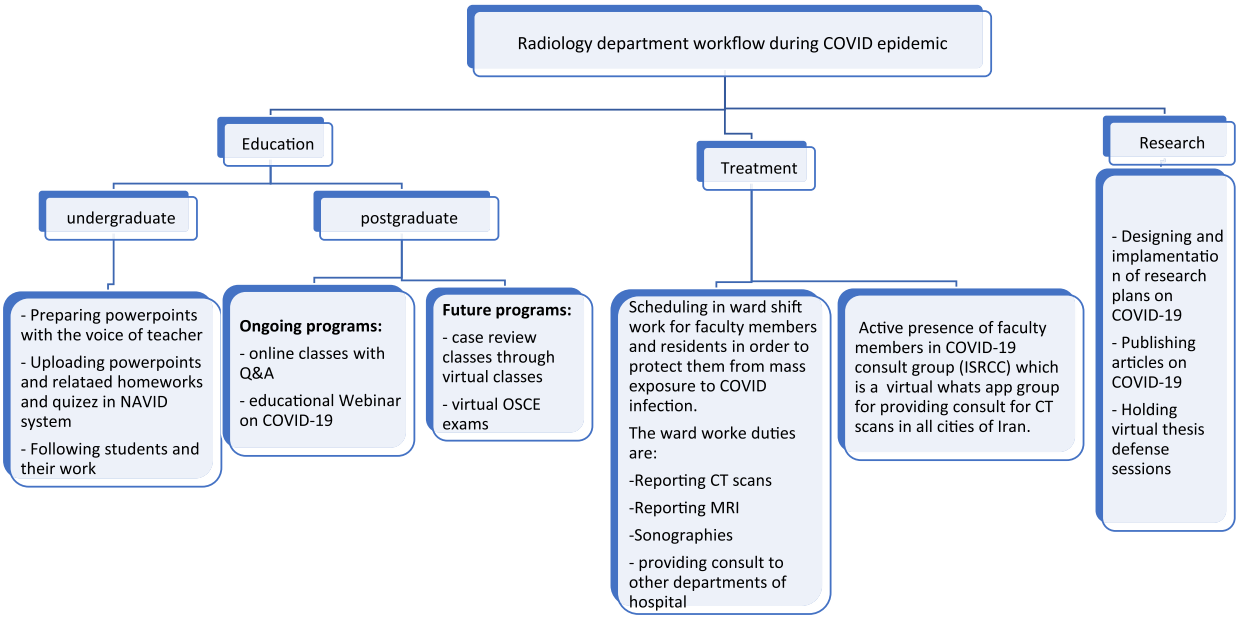

Figure 1. Components and workflow of radiology department.

hone their scanning skills merely through online activities. Similarly, developing adequate skill to perform procedures need in person and hands on training. The changes we made to our routine workflow in response to COVID 19 are summarized in the flowchart below (Fig 1). These changes were necessary to provide adequate care to COVID 19 patients across our health system as well as across the country and to ensure uninterrupted training of our radiology residents.

PRIOR PRESENTATIONS

No

AUTHOR CONTRIBUTION

S.A.A, T.F, H.H, E.K, and M.S.T have designed the article and S.A.A, H.B, M.S.T, A.K, and S.H. have written the article.

FUNDING

None.

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https://doi.org/10.1016/j.acra.2020.04.039