



COVID-19 Management

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than Ever

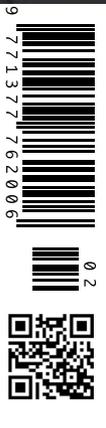
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How is the Pandemic Affecting Radiology Practice?

An overview of how the Radiology Department at Hospital Clínic in Barcelona handled the COVID-19 pandemic and how this disease will change the way radiology is practiced.

The COVID-19 pandemic has led to major changes in clinical activity at our radiology department. The radiology department at Hospital Clínic in Barcelona carries out more than 350,000 imaging examinations per year. When COVID-19 appeared, we cancelled 70%-80% of clinical and all research imaging examinations. We drew up radiology guidelines for the safe imaging of patients, with contingency staffing planning to reduce the risk of nosocomial spread.

We had to adapt our daily activities to take care of both COVID-19 and non-COVID 19 patients whilst implementing safety measures. Activity was maintained for oncologic patients, non-delayable interventional procedures and emergency patients.

We adapted our priorities and instructed all staff to work from home wherever possible. As we had already set up tele-work resources (a VPN–virtual private network) for all staff, this did not present any major problems in the department. During the course of the pandemic we increased the number of staff working from home.

We have had more than 900 hospitalised COVID-19 patients, 195 of whom were in the intensive care unit at the height of the pandemic (Figure 1). Radiology plays a key role in the diagnosis of COVID-19 patients (Rubin et al. 2020). During the pandemic, the number of chest x-rays (Figure 2) and chest CTs (Figure 3) in COVID patients increased considerably, which led to an increase in workload for the chest radiology section (Revel et al. 2020). From March 16 to April 24, we performed more than 9000 chest x-rays and more than 600 chest CTs. We introduced a structured report template to provide guidance to radiologists reporting chest x-ray and CT findings (Simpson et al. 2020).

The fact that these patients will need exhaustive follow-up studies within established time limits, when added to existing activity, will entail an increased workload for the radiology department (Mossa-Basha et al. 2020).

Research

The pandemic has slowed down most current research projects, while also opening up new lines of research that must take priority at the present time. We are still not fully aware of many aspects related to this pandemic. Rigorous data collection is of prime importance; both now and in the future, if we are to actively participate in research on this disease.

We are participating in COVID-19 data-sharing with other centres and imaging societies, developing projects in response to COVID-19-related requests for proposals and preparing educational lecture series on imaging for trainees and clinical staff.

Restoring Activity

1. Protection

We are currently facing the complexity of imaging COVID-19 and non-COVID patients in the radiology department. Waiting rooms will have to be adapted respecting the appropriate distance to prevent cross-transmission. The department should adhere strictly

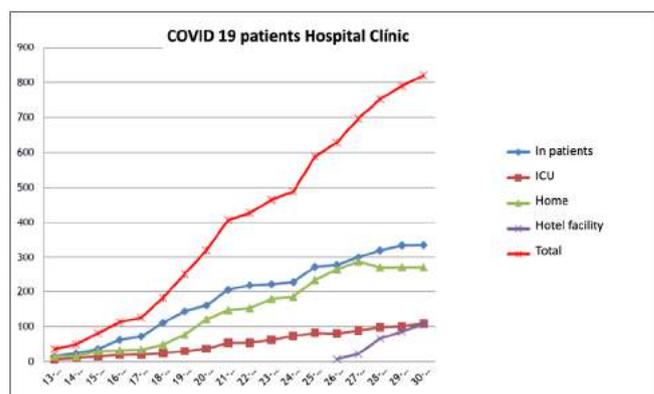


Figure 1: Increase of COVID-19 cases since the start of the pandemic in different areas of care

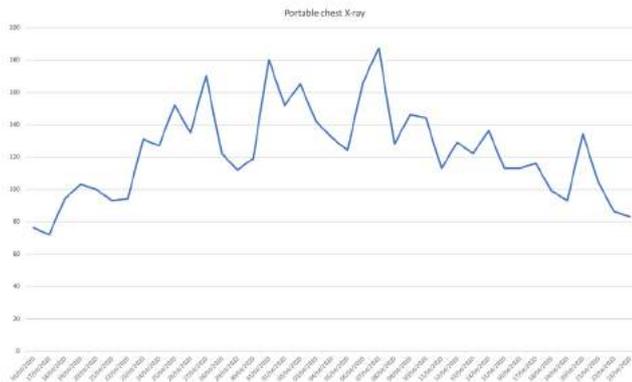


Figure 2: The evolution of the number of chest x-rays from the beginning of the pandemic to the present

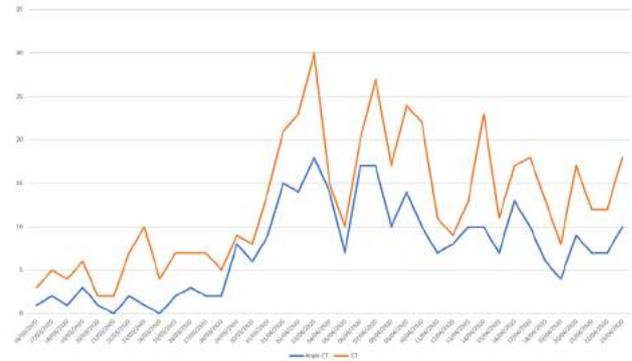


Figure 3: The evolution of the number of CT imaging studies from the beginning of the pandemic to the present

to infection control measures, including adequate hand hygiene, equipment hygiene and proper PPE supplies (Politi et al. 2020). We have developed radiology-specific guidelines for safe imaging.

2. Workload

Cancellation of programmed imaging studies has led to a substantial increase in the waiting list. The return to regular activity will not be easy and must be progressive. The overall capacity of the radiology department will be reduced in order to sustain hygiene measures

radiologists. In the future, working from home will come to be seen as standard in the radiology department. Telephonic consultations with patients prior to interventional procedures and as part of follow-up will become more common. This new challenge is also an opportunity for the radiologists to get closer to the patient. Increased communication and visibility to patients can only have a positive impact on our future practice.

With board and expert meetings being held online, radiologists must lead the coordination and promotion of these innovative solutions to maintain their involvement

During the pandemic, the number of chest x-rays and chest CTs in COVID patients increased considerably, which led to an increase in workload for the chest radiology section

and provide the time to sanitise imaging rooms between patients, in order to guarantee patient and staff safety.

A detailed operational plan has been prepared to increase the activity in the radiology department over a period of four weeks, but scheduling patients to a specific timetable so as to avoid an excess number of patients in the waiting room at any one time. Furthermore, we have established a plan for the progressive incorporation of staff members to avoid an excess number of people in the common areas, with strict infection control procedures.

We have established new priority filters based on clinical criteria, in agreement with the referral physicians to define the re-schedule time for pending imaging studies.

3. Working approaches

We will probably see changes in how we practice as

in all decision-making meetings. This will also require a more flexible working day and close collaboration with the IT team to provide these tools, whilst also considering all aspects related to data protection and confidentiality.

Artificial intelligence, using deep learning technology, has seen great success in the field of medical imaging. Right now, these approaches are being developed to identify COVID-19 pneumonias. We will see a great development in artificial intelligence tools that will affect the organisation and management of radiology departments of the future.

Conclusions

Radiology departments must adapt to the new situation created by the pandemic, learn from it and reorganise working procedures to be prepared for new outbreak clusters in the future.

What we have learned from the pandemic is the importance of following strict safety guidelines and the need for close collaboration between radiologists, radiographers, nurses, transporters and clinicians to provide a united front against the virus during such a critical time as the one we are now facing.

We all need to rise to this challenge, making choices that will actively enhance the value of radiology in patient care. By carefully setting our priorities, being aware of the difficulties and our limitations, our contribution can be part of that solution. ■

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✓ Key Points

- The radiology department at Hospital Clínic in Barcelona carries out more than 350,000 imaging examinations per year.
- During COVID-19, the department cancelled 70-80% of clinical and research imaging examinations.
- More than 9000 chest x-rays and more than 600 chest CTs have been performed between March and April.
- Rigorous data collection is of prime importance; both now and in the future, if we are to actively participate in research on this disease.
- Radiology departments must adapt to the new situation created by the pandemic, learn from it and reorganise working procedures to be prepared for new outbreak clusters in the future.

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