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Covid-19 infections and imaging

Proposals and recommendations from the APHP College of Radiologists. This document is apt to change over time due to new findings.

1. OBJECTIVES

The proposal of assistance to and due considerations to be taken imaging services with respect to caring for Covid-19 patients, ensuring both their own safety as well as that of caregivers. This document is supplementary to other recommendations available.

2. ORGANISATION OF ACTIVITIES

Our supervisory bodies - more specifically hospital management - have asked us to cancel all non-urgent medical and surgical care for the purposes of putting all manpower towards intensive care and ensuring proper monitoring tools are in place.
We should therefore adapt our own care offering to this request.

2.1 Which outpatient diagnostic imaging services should be preserved outside of priority Covid-19 cases?

Imaging services' external activities should be grounded on medical selection procedures taking into account patients' pathologies, acceptable timeframes for performing imaging as well as those imaging procedures affected.
These objectives are:

- providing adapted care
- whilst not generating any delays in diagnosis
- or overlooking severe cases.

Oncology would be one of the unquestionable clinical priorities.
A decision should be taken very quickly alongside the French regional health agencies (ARSs) and G4s (radiology boards) concerning increasing the amount of testing in cities due to a number of offices being closed there.

2.2 How should we organise interventional radiology activities?

Interventional radiology activities should be maintained under the same rules and regulations for medical/surgical care and organised based on clinicians' endorsement. Embolisation, drainage, biopsy, tumour ablation and antalgic operations remain priorities.
Maintaining access to advanced imaging for emergency cases (bleeding, trauma, etc.) is crucial so should be categorised as a priority as part of post-op intensive care.

2.3 How should we organise imaging for Covid-19 cases?

First and foremost, any suspected cases of Covid-19 should be identified to limit the spread of infection via:

- Thorough analysis of test instructions.
- Strengthening dialogue with the clinician radiologist.
- Understanding and disseminating care procedures for our hospitals.
- Strengthening patient interviews conducted at reception services as well as when taking the pre-imaging inventory.

Priority should be given to Covid-19 circuits inasmuch as possible based on those technical facilities available and premises. The possibility of dedicated Covid-19 imaging rooms has been looked into.

With respect to what types of imaging will be ordered, chest scans will play a key role in patients who are strongly suspected of having Covid-19.
- Patients with severe clinical signs or secondary aggravation: chest scans, with no contrast.
- Patients on intensive care with aggravated symptoms: scan with contrast to exclude thrombo-embolic complications, which will also help determine the extent of pneumopathy as well as whether one of the lungs has collapsed under ventilation.

Care procedures for imaging patients will be covered in a separate recommendations document (issued by the SFR/ARS).

1. Access to the examination room should be free and uncluttered upon a patient's arrival.
2. The patient must be accompanied in person by the requesting doctor or someone from Reception for unstable patients.
3. The patient should be removed from the imaging structure once the examination has ended.
4. At least two handlers should be assigned to each patient: one for the room the patient is in, the other in the control room and who should be kept isolated from the examination room.
5. Human resource requirements - including for nights and weekends - in terms of hospital porters trained by local hygiene teams should be duly taken into consideration and adjusted by management so as not to limit Imaging's access to their services.

Radiological diagnostic aids are available courtesy of the French Thoracic Imaging Society (SIT). A tutorial on more sophisticated symptoms with a series of case studies by SIT experts has been put online by the SFR.
A tutorial on health monitoring is also available, as is a structured report.
There is also a structured report available for all sites via your organisation's PACS and which should be used by all teams.

Non-medical staff are particularly at risk when taking chest X-rays from a patient's bed. This procedure should therefore entail the reorganisation and redeployment of non-medical staff whilst taking into account rules governing care for infected patients. The systematic prescription of bed chest X-rays should be avoided. Dedicated mobile radiography units should be prioritised. To this end a list of potential purchases required to cover the growing need of intensive care and resuscitation departments should be prepared by each DMU (medical university department) centrally (via the AGEPS) for suitable phasing-in. One mobile phone per Covid-19 unit is recommended.

3. KEEPING MEDICAL CARE STAFF PROTECTED

Why?

Radiology services are high density areas in terms of viral presence. In terms of medical care personnel at risk of being infected by Covid-19, at present radiologists and X-ray technicians are just under anaesthetists and emergency doctors.

How?

College recommendations state surgical masks should be worn at all times by all of health care personal in combination with frequent handwashing.
The FFP2 mask should be worn for high risk activities, which include interventional radiology and direct care of Covid-19 patients (or suspected cases) within dedicated units (see APHP Recommendations - 20 march 2020 .pdf).

Keyboards, computer mice and microphones may likewise be vectors of infection. They should be cleaned regularly. Use of an alcohol-based rubbing solution is recommended both before and after using a work station.

All personnel should be notified of these protective measures. Particular attention should be given to ensuring younger health care professionals, operators, interns, clinic heads and younger hospital practitioners are protected, who more often than not make up the front line of care and will be who we rely on for medical care in future.

Is there a risk of contracting Covid-19 when performing ultrasounds?
Performing ultrasounds presents a high risk of contamination for radiologists. Instructions should be properly discussed and considered, with other imaging options raised based on the reasons why the ultrasound would be performed. For paediatric use, where ultrasounds are crucial to diagnosis and most young children will not be willing to wear a mask, specific preventative measures should be defined.

4. ORGANISING WORKING TIMES

How will clinical staff and multidisciplinary meetings be held?
Measures have been taken to reduce in-person meetings. The use and/or development of teleconferencing tools should be considered to ensure radiological diagnoses services remain in operation during clinical staff and multidisciplinary meetings. Skype For Business should be implemented on the broadest scale possible.

How should we ensure interns are trained up?
Interns play a core, dynamic role in the running of any service, and this is undoubtedly true for imaging services.
Teaching activities within the service itself should be suspended for the time being to ensure proper, effective confinement (distance learning is being mooted as a possible solution with courses, clinical case studies and reading up on bibliographies).
The college recommend implementing shift rotation policies with an on-site presence where needed and then working from home. The balance between these two approaches should be adapted as required, as should the allocation of teleworking tasks: APHP academic Covid-19 imaging, diagnosis from home, etc. based on the requirements of each DMU.

What role does teleradiology play in all of this?
Having a radiologist on the ground is still crucial in terms of organising daily imaging activities, ensuring the junior/senior buddy system works, dealing with prescriptions, interacting with other areas, managing emergencies, etc.
Nevertheless, due consideration should be given concerning those additional roles which can be dealt with remotely: on-call diagnoses, switching geriatric sites over to working remotely, etc.
All radiologists should configure their own personal VPN access as quickly as possible so they will be able to access all the tools they need to work from home (see the VPN access and PACS access .pdf).

What is the best way to manage human resources during an epidemic?
Radiology services should adapt to those absences arising from medical staff becoming infected over the short- and mid-term.

Closing city radiology offices will generate human resources in terms of operators and substitute radiologists for some of the tasks set out above. The solution simply exists of going where there is demand.

5. COVID-19 IMAGING RESEARCH - APHP EDS

Our services are the front line in the fight against Covid-19 and involve producing a large number of images as part of diagnosing the virus. We hope to confirm the start of a research project with PI Radiology soon.

REFERENCE DOCUMENTS

- SFR/SIT links: For Covid-19 Download case studies
- SIRM (Italy) links: https://www.sirm.org/category/senza-categoria/covid-19/
- Paediatric recommendations: See SFIPP recommendations
- Structured reports: Download reports
- SIT/MP Revel scientific watchdog services: View scientific watchdog services
- Hygiene recommendations - many thanks to SF2H for their support
- Regional Covid-19 recommendations: ARS medical imaging care
- VPN access and PACS access
- Recommendations for wearing masks