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Interventional Radiology activity during the COVID-19 epidemic AP-HP College of Radiologists

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1. Background

The COVID-19 epidemic has been majorly affecting hospitals of the Greater Paris Public Hospital Authority (AP-HP) and hospitals across the whole of France for several weeks. One of the recommendations issued by our College is to provide patients with diagnostic treatment. It is important to have specific recommendations for the organisation of interventional radiology during this period of crisis.

2. Appointments and planning

Regardless of the local procedure for patients attending appointments, priority should be given not to allow COVID-19+ patients to enter an IR room without medical and paramedical teams being warned.

3. Indications

These are listed in the decision tree (**appendix 1**), in accordance with the following principles:
All indications are discussed between the treating clinician and a senior radiologist.
Life-threatening situations must be dealt with immediately, regardless of the patient's COVID status. The procedures in effect at the hospital apply (e.g. regarding transport). Due to current serious bed shortages in intensive care, it is particularly important to transfer the patient back to the hospital of origin before agreeing to provide emergency treatment to a patient from another hospital. If a scan is indicated as part of the treatment, it is recommended to combine it with a chest scan without contrast, in order to record any radiological signs indicating a positive COVID status.
In non-emergency situations:
Indications are selected based on an assessment of the patient's risk/benefit ratio.

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The factors influencing this assessment are as follows:

- Procedures that can be postponed without loss of chance should be discussed on a case-by-case basis and a new date given for the operation after the pandemic.

- Procedures which, if delayed, would involve a risk of loss of chance should go ahead, depending on the decision of a multidisciplinary case conference and the particular circumstances of the patient. Such procedures include, among others, percutaneous ablation procedures, drainage and biopsies, chemoembolisation, angioplasties for life-threatening ischaemia and procedures for pain management in patients whose pain cannot be managed by pain killers.

- At local level, the need to preserve sufficient operational resources in the medium term, in terms of staffing and organisation of activities as regards interventional radiology.

- With regard to venous access (PAC, PICC and midline), PACs are indicated for the administration of chemotherapy, which should be postponed except in cases of infection. Whether or not PICCs and midlines are indicated is determined on a case-by-case basis, taking into account the extent to which these devices contribute to a reduced morbidity rate in terms of repeated venous punctures and/or allow the patient to be transferred to less overwhelmed units.

4 Planning procedures and patient preparation

- Question the patient again for clinical signs indicative of a positive COVID status and put on a surgical mask before entering the preparation room or intervention room.

  If the patient is hospitalised in intensive care, the intensive care team should accompany the patient.
- All patients entering the interventional radiology room must wear a surgical mask, use hand sanitiser and be questioned again about having a fever or a cough, even if their COVID status is negative.

- Patients brought by the emergency medical services who are not in a condition to be questioned should be treated as suspected COVID+.

5 Patient procedure

- Ideally, there should be a separate procedure for COVID+ patients.

- When the patient leaves his/her room, the relevant clinical department should ensure the patient reaches the radiology department or the interventional radiology unit/department.

- If there is a waiting room for beds, a COVID area should be marked out and confined (using detachable partitions), although direct entry into the intervention room should be prioritised, as far as possible.

- The corridor should be empty before the patient's arrival and departure, in order to minimise the patient's contact with furniture and staff.

- The bed should remain in the intervention room if the layout allows (the emergency medical services can leave with the stretcher immediately).

6 Rooms exclusively for COVID+ or suspected COVID+ patients

- It is recommended to signpost a room especially for COVID+ patients (possible if there are two rooms available). If demand increases, a second room can be opened, which allows one room to be in use while the other is being disinfected.

- For vascular activities, an exclusive angiography room should be available, if possible (see above), which should be chosen based on it having enough space for the patient's bed to be left behind.

- Drainage and ultrasound-guided punctures should be performed in the angiography room exclusively for COVID+ patients, if it is a multi-purpose room.

- The procedure for procedures requiring an imperative interventional scan is the same as for diagnostic scans, although the radiographer and operator must be dressed in accordance with the COVID+ protocol (FFP2 mask).

- It is recommended to prepare a COVID+ cart containing gowns, bouffant caps and sanitiser wipes, according to an empty-for-for replacement system. Being a resource that must be protected, FFP2 masks should not be stored there unless the cart is locked (watch out for common theft at this time).

- There should be a yellow bin for infectious waste in each room for COVID+ patients, to dispose of gloves and gowns.

- Place a "COVID+" sign on the door of the room during the procedure, in order to deter people from entering.

- Mobile cabinets in the room should be locked and no items left on top.

7 During the procedure

- Only staff absolutely necessary for the procedure should enter during the appointment, after which they should not leave for the duration of the procedure.

- If a heavy patient requires help from a healthcare assistant, the assistant should wear PPE and an FFP2 mask when helping the patient onto the table and then remove the PPE in the room, without leaving during the procedure.

- The operator and non-medical staff must wear an FFP2 mask, bouffant cap, protective glasses, apron, visor and gloves. There should be two non-medical staff in the room, regardless of the procedure: one 'dirty', wearing an FFP2 mask and handling the patient, and the other 'clean', wearing a surgical mask and handling the materials being used from the cabinet and the imaging equipment.

- Place a single-use sheet under the patient.

7. Supervision

- If possible, during the day, appoint a supervisor to ensure compliance with good practice, in particular as regards undressing. The supervisor may also fetch reserve materials, if necessary.

8. If the patient is on mechanical ventilation

- He or she should remain on the transport ventilator so as not to contaminate the ventilator of the interventional radiology room.

- If it is absolutely necessary to use the ventilator of the interventional radiology room, unplug the entire circuit at the end of the procedure to ensure it is not re-used by another patient.

- In the daytime, call the nurse anaesthetist to change the circuit.

- At night, turn around the room if there is another patient to be operated on and call the nurse anaesthetist in the morning to change the circuit.

9. End of the procedure and decontamination of personal protective equipment:

- All single-use items should be disposed of in infectious waste bins.
- Staff must remove gloves and masks in the room before using hand sanitiser, and protective glasses and caps in an airlock before using hand sanitiser. Hand sanitiser should be used after every stage.
- A poster may be displayed in the room as a reminder of the dressing and undressing procedures.
- If the control room serves both rooms, temporarily interrupt the programme of the other room.
- **Protective eye guards**
    - Remove dirty gloves
    - Put on clean gloves
    - Clean protective glasses with sanitising wipes (from the cart)
- **Sterilise aprons**
    - Usual procedure

10. Sterilisation of the room

- **PPE of HCAs:**
    - Fluid-proof gowns
    - Surgical mask
    - Gloves
    - Bouffant cap
    - Usual sterilisation procedure, taking care to sterilise everything.
    - Allow 15 minutes or more for drying after sterilisation.

11. Managing medical and paramedical staff

The number of staff present in the room should be limited to the lowest necessary for procedures to be properly performed, generally one radiologist per room.

Ideally, it is recommended to organise two separate teams which should not cross over.

Activities not requiring direct contact with patients/colleagues should be carried out remotely/via teleworking (e.g. giving opinions, appointment scheduling, etc.).

Appendix 1
Decision tree for patients in interventional radiology during the COVID-19 pandemic