

The Canadian Association for Interventional Radiology (CAIR) and Canadian Association of Radiologists (CAR) Guidelines for Interventional Radiology Procedures for the Patients with Suspected or Confirmed COVID-19

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Background:

This document aims to **guide interventional radiologists and radiologists performing Interventional Radiology (IR) procedures in decision making for management of patients with confirmed or suspected COVID-19 in the IR division during the pandemic.** Interim information regarding the COVID-19 outbreak and management in health facilities has been issued by the [World Health Organization](#) and by [Health Canada](#).^{1,2} Links to these and other related society guidelines are found at the [Society of Interventional Radiology](#). Information regarding patient screening, imaging, infection prevention/disinfection in imaging departments and imaging prioritization are available in the Joint CAR-CSTR statement ([CAR/CSTR Statement on COVID-19 Management in Imaging Departments](#)).³⁻⁵

In addition, other measures specific to an IR division should be considered. Elective procedures that will not impact the patient's well-being in the short term should be rescheduled. Urgent and semi-urgent (eg. oncology and critical limb ischemia) procedures should be considered on a case-by-case basis. Outpatient consultations and follow-up appointments should be converted to telemedicine consultations, if possible.

These recommendations are based on the current situation and may change as new information becomes available.

Guidelines for IR procedures in patients with suspected or confirmed COVID-19:

1. Review of procedure indication:

- Determination of whether the IR procedure should be performed, guided by whether it will have a significant near-term impact upon a patient's outcome.
- Development of a list of urgent and emergent procedures that can be offered for COVID-19 patients.⁶
- Determination of additional procedures that can be delayed/re-scheduled in case of worsening local infection rates.⁶

2. Development of a plan to minimize cross contamination before the intervention:

- If possible, **perform IR procedures at the patient's bedside** to minimize transfer, at the discretion of the interventional radiologist.
- When transporting the patient to IR, identify the lowest traffic/risk path, including avoiding areas with critically ill patients, if possible.
- Maintain spatial distance of at least 1 meter whenever possible between patient and staff during transfer

- Identify a procedure room with adequate ventilation / air-exchange (ideally a negative pressure room).
- Ideally, dedicated rooms should be identified for US-guided, CT-guided and fluoroscopic-guided IR procedures.
- Develop a plan to minimize the number of healthcare professionals (HCP) involved in the care of COVID-19 patients whenever possible.
- Ensure that there is adequate personal protection equipment (PPE) in those dedicated rooms.
- Ensure [proper cleaning supplies](#)⁷ are available for re-usable eye protection (e.g. leaded glasses) and lead aprons, and for proper cleaning of the room and equipment.
- For academic centers, develop or incorporate plans to limit trainee exposure in accordance with the university's policy and best practices.
- Place appropriate signs indicating the presence of a COVID-19 patient (e.g. 'COVID-19 patient: DO NOT ENTER') on the room entrance.
- Staff and physicians remove PPE using the appropriate technique to avoid self-contamination, and wash hands with soap and water or an alcohol-based hand rub.

3. Appropriate use of PPE according to the type of procedure:

- It is important to optimize the use of PPE to prevent shortage of supplies⁸; however, staff safety must not be compromised.
- Refer to [Health Canada](#) and [WHO](#) guidelines for appropriate use of PPE and ensure local policy is followed.⁸
- For non-aerosol generating procedures, the staff and physicians should wear the following PPE at minimum: gowns, gloves, surgical mask and eye protection (goggles or face shield).
- For aerosol generating procedures (AGP), the staff and physicians should wear the following PPE at minimum: gowns, gloves, N95 or equivalent respirator and eye protection (goggles or face shield).
- N95 respirators/masks must be properly fitted in order to provide maximum protection. Use of an improperly fitted N95 mask is strongly discouraged.
- In IR, **potential** AGP procedures include: nasogastric / nasojejunal and gastrostomy / gastrojejunostomy / jejunostomy feeding tube insertion, esophageal/tracheal dilatation, bronchial artery embolization, chest tube insertion, lung / mediastinal biopsy, procedures requiring airway intubation or extubation in the IR suite, combined IR and endoscopic procedures, CIPAP, BIPAP, high flow nasal oxygenotherapy, oxygenotherapy with a facial mask and lastly a procedure performed on a patient with a tracheostomy. In addition, IR procedures where airway compromise or suctioning is likely, CPR is likely, or procedures that provoke respiratory difficulty or heavy coughing are also considered high risk for aerosol generation.^{9,10}
- N95 should also be considered when treating COVID 19 patients with criteria of severity (MSSS recommendation, Quebec)

4. Cleaning the room after the procedure:

- Following the procedure, all the disposable material must be disposed in a dedicated garbage for material at high risk of contamination.
- Depending on the air exchange rates, rooms should be unavailable for a period of time, allowing decontamination following procedures performed on suspected or confirmed COVID-19 patients (in concordance with hospital regulations). Air circulation in rooms can be tested in advance to determine this period of time.¹¹
- Contact equipment vendors to find the safest effective disinfectant for each piece of equipment.¹²

Work environment during COVID-19 pandemic:

The CAIR and the CAR recognize the importance of protecting healthcare workers in IR including physicians, nurses and medical radiation technologists, along with other essential staff (receptionists and cleaning staff, among others).

It is incumbent on hospitals to provide a safe working environment during this pandemic. This includes following all the Health Canada, provincial and hospital guidelines, with respect to infection protection and control, along with allocation of adequate PPE resources.

IR divisions may also consider looking at the workforce. Individuals who are at higher risk of serious illness if they contract COVID-19, including staff **>60 years of age, and/or with underlying medical conditions or those who are immunocompromised** should reconsider working on the front lines. Although pregnancy is not considered a risk factor, this can be taken into consideration on a case by case basis.

Conclusion:

Interventional radiologists have an important role to play in the care of patients with COVID-19 infection. By adopting these policies, hospitals will protect the interventional radiologists, staff, and patients who may benefit from their care.

These guidelines are based upon the available evidence currently available and are subject to change as additional information becomes available.

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