

**The Canadian Association for  
Interventional Radiology (CAIR) and  
Canadian Association of Radiologists (CAR)  
Guidelines for Interventional Radiology  
Procedures for Patients with Suspected or  
Confirmed COVID-19  
April 14, 2020 – Version 2**

## Background

This document aims to **guide interventional radiologists (IR) and radiologists performing IR procedures in decision making for management of patients with confirmed or suspected COVID-19 in the IR division during the pandemic.** The guidelines cover the following topics:

1. Review of procedure indication
2. Development of a plan to minimize cross contamination before the intervention
3. Appropriate use of PPE according to the type of procedure
4. Cleaning the room after the procedure
5. Work environment during COVID-19 pandemic

Interim information regarding the COVID-19 outbreak and management in health facilities has been issued by the [World Health Organization](#), the [United States' Centers for Disease Control and Prevention](#) and [Health Canada](#).<sup>1-3</sup> 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 is available on the Joint CAR, CSTR and CSBI statements.<sup>4-6</sup>

In addition, other measures specific to an IR division should be considered. Elective procedures that will not reasonably 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.

For additional COVID-19 information and resources visit - <https://car.ca/covid-19/>

*The CAR would like to acknowledge its Board of Directors and the CAIR Board of Directors who provided the direction for these guidelines.*

## 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 patient outcome.
- Development of a list of urgent and emergent procedures that can be offered for COVID-19 patients.<sup>7</sup>
- Determination of additional procedures that can be delayed/re-scheduled in case of worsening local infection rates.<sup>7</sup>

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

- If possible, **perform IR procedure 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 health care 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**<sup>8</sup> 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 supplies<sup>8</sup>; however, staff safety must not be compromised. Some PPE items may potentially be reused (e.g. N95 masks), and the IR team is encouraged to follow local hospital policy.

- Refer to [Health Canada](#) and [WHO](#) guidelines for appropriate use of PPE and ensure local policy is followed.<sup>9,10</sup>
- All patients (regardless of symptoms) should wear level 1 (low fluid resistance) surgical masks (not N95), preferably donned upon arrival to the waiting room or centre. This allows protection for others from respiratory droplets and saliva, which are known to be the chief mechanisms of infectivity for COVID-19.<sup>10-12</sup>
- 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.
- If there are inadequate PPE supply, the IR team should consider whether the procedure can be postponed until there is adequate PPE supply.
- In IR, **potential** AGP procedures include: nasogastric / nasojejunal and gastrostomy / gastrojejunostomy / jejunostomy feeding tube insertion, esophageal / tracheal dilatation, bronchial artery embolization, thoracentesis, chest tube insertion, lung / mediastinal biopsy, endovascular stroke intervention, 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.<sup>13,14</sup>
- In addition to those procedures, the IR physician, nurse or technologist should make a point of care assessment of every patient, prior to the procedure. If they determine, based on their clinical and professional judgement that the appropriate health and safety measures are required in the delivery of care to the patient, they should have access to these measures.<sup>15</sup>

N95 should also be considered when treating COVID 19 patients with criteria of severity.<sup>16</sup>

#### 4. Cleaning the room after the procedure:

- Following the procedure, all of the disposable material is disposed of, or reused in accordance with local institutional protocols. 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 rooms can be tested in advance to determine this period of time.<sup>17</sup>

- Contact equipment vendors to find the safest effective disinfectant for each piece of equipment.<sup>11</sup>

## 5. Work environment during COVID-19 pandemic

The CAIR and the CAR recognize the importance of protecting health care workers in interventional radiology, 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 of 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 evidence currently available and are subject to change as additional information is presented. The updated guidelines can be viewed at <https://car.ca/covid-19/>.

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