Practice guidelines for Canadian neurophysiology laboratories during the COVID-19 pandemic.

Developed by:

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Purpose:

To provide guidelines for safe functioning of neurophysiology laboratories during the COVID-19 pandemic.
Recommendations are based on expert opinion and review of relevant published guidelines. They are not intended to replace institutional, regional, or provincial protocols.

General infection control recommendations[1-13]:

1. Scheduling should be guided by medical urgency, laboratory/staff limitations, and waiting room occupancy considerations (respecting 2-meter social distancing).

2. All patients should undergo screening for COVID-19 exposure by questionnaire or patient transport service checklist. If local institutional versions do not exist, on-line versions are available.

3. Clinical Neurophysiological investigations require prolonged, close contact with patients. All patients and companions, doctors and technologists should be required to wear a mask and gloves unless otherwise contraindicated.

4. Testing of COVID-19 positive patients should be performed only if critical for patient diagnosis and medical management.

5. In the training laboratory, the number of personnel should be minimized. One instructor and one trainee is preferable. Accompanying escorts/caregivers should be accommodated only if essential, with close adherence to distancing requirements.

6. Use of PPE and precautions consistent with institutional or other conventionally accepted guidelines for known or suspected COVID-19 positive patients must be applied. Staff must complete PPE use training and use PPE consistent with institutional/provincial guidelines.

7. Whenever possible, disposable equipment should be used. All exposed non-disposable neurodiagnostic equipment should be sanitized between patients with facility approved disinfectant preparations according to manufacturer's recommendations.

8. Consider dedicating portable units for use in high risk areas and/or with positive/probable cases of COVID-19

EMG/NCS and Somatosensory Evoked Potential Specific Recommendations[5-8,13]

1. Testing should be the minimum required for diagnosis and management including the number of conduction studies and/or the number of muscles assessed with needle EMG.

2. When time-sensitive interventions or diagnostic accuracy are hinging upon EMG/NCS these should be prioritized and performed using appropriate precautions. Examples include (but are not limited to) patients waiting for nerve transfers or those with suspected Guillain-Barré syndrome, Myasthenia Gravis, or Amyotrophic Lateral Sclerosis.

3. Surgical mask and facial shield or goggles are considered satisfactory for the majority of EMG procedures. Although performing facial SFEMG is not considered an aerosolization maneuver, due to the proximity to involuntary sources of rapid exhalation (i.e. cough, sneeze) and the length of time exposed to the patient, a preference for using an N95 mask and facial shield or goggles seems reasonable based on individual risk assessment at the time.

EEG, Visual Evoked Potential, and Brainstem Auditory Evoked Potential Specific Recommendations[1,2,8-14]

1. For electrode application the decision to use collodion versus paste & tape must consider possible aerosolization risk with collodion application against the need to reapply paste & tape electrodes due to poor adherence.

2. Hyperventilation should not be routinely performed. If justified for high diagnostic yield (e.g., paediatric absence epilepsy), patients must wear surgical masks.

3. Equipment should be outside the patient room using long wires if possible. Stimulation for reactivity assessment can still be performed.

4. Nasal/Oropharyngeal swab test for rapid COVID-19 detection could be considered at admission to EMU with the aim to mitigate contagious risks.

5. Epilepsy monitoring unit (EMU) admissions should consider whether a single companion is allowed in the EMU when needed for safety and/or diagnostic accuracy.

6. Priority indications may include but are not limited to: potential for management changes based on monitoring, pre-surgical workup (phase I, II, ictal SPECT), high seizure burden, SUDEP risk, threat of disease worsening, and frequent emergency department visits.

7. If ambulatory EEG is used as an EMU alternative it should include video, ideally with outpatient dis/connection.

8. VNS/DBS insertion for epilepsy, setting revisions or battery exchange should be considered only if seizure frequency and severity outweighs COVID-19 risks.

Future Directions[15-16]

The COVID-19 pandemic has created an opportunity for innovation and improvement in delivery of diagnostic testing and care for patients with neurological disorders.

1. Clinicians may consider providing some part of the care via virtual platforms. This could include screening of referrals, initial history taking, discussion of results with either patients or other health care personnel, and/or follow-up visits.

2. Development or revision of local guidelines on appropriate referral criteria for neurodiagnostic studies could help to optimize the use of clinical neurophysiology resources.

3. Local guidelines could also address the need for and frequency of follow-up studies.

4. Validation of the utility and the cost-effectiveness of remote-virtual care needs further assessment.

5. These guidelines may be revised if and when more evidence become available.

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NOTE:
For further reading, please refer to the full free-access manuscript:

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