



Indian Academy of Neurology

Clinical Neurophysiology Subsection

**Guidelines for performing Neurophysiology
Procedures Electroneuromyography (ENMG),
Evoked Potentials and Electroencephalography
(EEG): COVID- 19 update**

Message from Chairperson, IAN Clinical Neurophysiology Subsection

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Dear Members,

In the current scenario of COVID-19 there are many challenges in ensuring safety of neurologists, neurophysiologists, technicians and supporting staff involved in performing diagnostic procedures. Indian Academy of Neurology has taken an important initiative to develop guidelines.

The tremendous efforts of Dr. Khushnuma Mansukhani and Dr. Ravishankar Naik are highly commendable. The comments and inputs of the advisors were very useful.

It must be recognized that depending on the situation, appropriate changes have to be put in place and hence this is a dynamic process.

I am delighted to release the “Guidelines for performing Neurophysiology procedures, Electroneuromyography (ENMG), Evoked potentials, and Electroencephalography (EEG): COVID-19.

Prof. M. Gourie-Devi

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(EEG): COVID- 19 update**

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Disclaimer

- This document is for informational purposes only and cannot replace your judgment for providing the best care required, for your patient and the safety of health-workers in your department. Each physician or healthcare facility must review these guidelines in light of their practice and the geographic area where they practice. *Institutional and governmental policies and guidelines would take precedence to this guidance document.*
- Guidelines would change as the pandemic pattern varies

Aim

These guidelines are compiled to ensure safe practice parameters with respect to prevention of spread of COVID- 9 infection while performing Electroneuromyography (ENMG), Evoked Potentials (EP) & Electroencephalography (EEG) tests keeping in mind both the patient and the department staff and healthcare workers.

Source

- AANEM Covid-19 Practice Parameters
- General guidelines are taken from a standard operating procedures (SOP) prepared by Dr. S. V. Khadilkar (Dean)& Dr. Sanjay Wagle (Intensivist), Bombay Hospital.
- Practice parameters we hope to follow in the Clinical Neurophysiology laboratories / department in India as per existing conditions.

Extra facilities to be added to the department

- 3 ply face masks at the first contact - desk in case patient is not wearing one
- Sanitizing solution in each room (patient area) and all first-contact desks
- 70% isopropyl alcohol solution for cleaning equipment
- Disposable surface electrodes for nerve conduction study
- Closed foot-pedal operated dustbins
- Central facility for cash payment OR a plastic box with a slit in which the patient can deposit the money -after counting it himself in front of the hospital staff
- A card-board box with a slit on the top to deposit the consent forms for the test - alternatively it can be obtained via email
- Wi-Fi facility at each front desk so that patients can email the reports and doctor's reference notes prior to the test
- Where possible, turn off central air-conditioning and keep windows open
- **Stagger the duties** of the doctors and other staff to one per doctor & staff per day or one doctor & staff for 4 consecutive days to avoid infection of the entire department if a patient tests positive subsequently.

General individual precautions before reaching work

- Do not carry non-essential or extra objects to work
- Wear a mask while travelling and maintain social distancing
- Do not wear any jewelry or watches
- Keep essential items like hospital badges, train passes, driving license in a water-resistant plastic sealable pouch (Ziploc)
- Wear long sleeves and clothes that can be washed after reaching home
- Clothes like sari, dupatta, shawls etc. are to be avoided since they can splay out causing spread of infection and are difficult to wash daily.

General individual precautions : all department staff when at work

- Donning of N95 mask: at least for the next few weeks during the entire period of attending hospital duty. Follow proper mask etiquette as per directions.
- Not more than 2 persons in a room / area with social distancing (*including food breaks*)
- Frequent handwashing as per training
- Sanitizing of hands often
- Avoiding touching of face, mouth, nose and eyes
- No sharing of personal items – including pens.
- No handling of patients reports / papers / forms
- Do not attend work if you or your family members living with you have fever or cough
- All items used at work are considered potentially infected – hence need to be cleaned / wiped down with alcohol
- Avoid taking out the mobile phone to work
- Use disposable cups / plates

Environmental precautions in the department

- Wipe down of all equipment and electrodes after every patient with proper solution. Wearing double gloves is necessary
- Wipe down of doorknobs / bed/ chairs
- Frequent cleaning of floors – every 3 hours
- Cleaning of telephones (if there are landlines)
- Cleaning of desktop, laptop, keyboard, mouse
- Cleaning of any items used by the patient – pens etc.

Individual precautions for the health worker doing the tests

All precautions as above plus

- Direct contact with the patient including electrode application (and stimulation in ENMG – EP) should be done by the Neurologist / Technologist.
- Neurophysiology equipment (EEG / ENMG – EP) should be handled by the assistant.
- Donn N95 face mask, face shield or goggles, double gloves or good quality single gloves
- Clean all reusable electrodes and wipe down the machine taking care to avoid seepage of liquid along the buttons and knobs into the ENMG / EEG system.
- Other routine precautions related to the tests to continue

General individual precautions to be taken by all patients

- No patient with history of cough or fever will be allowed into the department
- **Triage screening and consent to be taken at a central area in the hospital**
- Only one accompanying person to be allowed with the patient
- Social distancing of patients and accompanying personals – chairs can be marked for sitting > 1m apart.
- Donning of masks by all patients and relatives

General individual precautions for all department staff when reaching home

- Remove shoes at the door or spray the soles with dilute hypochlorite solution if possible
- Immediately change out of work clothes and soak in hot water
- Shower immediately
- Clean the frequently touched objects you may have used while travelling / or in the car
- Clean hands with sanitizer

During LOCK-DOWN PERIOD

- **NO** routine or OPD procedures to be done except in case of emergencies as listed below
- **URGENT cases** : Those with a disease which would affect life e.g. undiagnosed rapidly progressive weakness with bulbar or respiratory involvement or status epilepticus
- **POSSIBLY URGENT** : In whom delaying the test could lead to harm by not being able to give adequate treatment
- **All Inpatient tests** if required to be done as above: physician would require full personal protective equipment (PPE) if Covid 19 test results are not available for the patient being tested. This would imply donning of the entire gear (N95 mask, face shield/ goggles, shoe covers, double gloves, medical cap and suit). The test should be done along with an assistant to handle the equipment. All care required in general precautions must be followed
- Minimize the number of health workers who are going to come into contact with such patients from the point of entry to all levels of care.

After the lock- down period :

- Day 1: Training of staff and health workers with reference to
 - proper mask etiquette
 - hand washing
 - sanitizing of the exposed areas
 - patient counselling and reassuring
 - general department and patient safety
 - training regarding appointments and report collection
 - sneezing and coughing etiquette
- Regular supervision and drills may need to be conducted once a week

Training for giving appointments and reports

- Screen appointments on phone for symptoms or contact with persons with symptoms
- Schedule the appointments such that there is no crowding in the waiting rooms
- Counsel and reassure the patient that every precaution is being taken to ensure his / her safety
- Inform the patient that only ONE person can accompany him
- Ask the patient to carry an exact amount of cash - if not paying by credit card / digital options.
- Ask the patient to carry a pen

- Ask the patient to send his doctors referral note and reports by email or WhatsApp earlier
- Initially, restrict appointments to one every 2 hours till a routine is set
- Reports must be couriered or sent digitally or can be informed to referring doctor on the telephone if urgent

Flow chart:

Once patient comes to the department

Secretarial duties

- Welcome the patient - reassure him / her
- Keep him at a distance of > 1m - make a mark on the floor from the desk level.
- Check that the patient and the accompanying person are wearing a 3-ply mask
- Patient information / ENMG record form to be filled by the secretary as required along with detailed address for couriering report OR if possible email or WhatsApp as a pdf
- Consent form to be handed to the patient and ask him to fill and sign it with his own pen and drop it in the box as above (box should not be handled)
- Do not handle ANY papers or forms given by the patient
- Carry the patient form to the doctor's room
- Check that the chairs etc are cleaned every 3 hours and the floor is mopped with the sanitizing solution provided
- Do not handle the cash - ask for payment by Credit card if possible.
- Make patient / accompanying person count the cash in front of you and put it in the plastic box as above mentioned
- Print receipt and hand over carefully without need to take it back from the patient at ANY stage
- Inform that report will be conveyed to the doctor or couriered / emailed/ sent by WhatsApp

Staff duties

Clean all surfaces that patient comes in contact with sanitizing solution AFTER EVERY TEST and wearing single use gloves as per check list below:

- Chairs and arm rests in waiting room / at front desk and examining rooms
- Doorknobs / door surfaces – both sides of the test room
- Patient bed and pillow
- Plastic curtain / screen
- Telephone receiver
- Take away all clothes the patient may have used during the test from the test-room(short pants, gown, bed-sheets)
- Mop the floor of the test room, waiting areas and corridors every 3-4 hours

Mask etiquette

Use of a N95 respirator

Please obtain guidance from the hospital infection control committee regarding the reuse of the N95 masks

- Learn to wear the mask properly
- Do not touch the outside of any mask at any time

- Wear a 3-ply mask over the N95 mask. The 3-ply mask should be discarded after completion of the day's work.
- As the N95 masks are in short supply, reuse / prolonged use may be considered as per hospital policy.
- ***N95 mask extended use by rotation***
 - Start with 5 masks and 5 plastic box / paper bag (box / bag should be labelled 1 to 5)
 - End of the workday remove the N95 mask only by using the strings / elastic straps. Do not touch the outside of the mask.
 - Place the N95 mask into the bag / box labelled Day 1 and keep in a dry place not touched by anyone else.
 - Sanitize hands immediately after removing the mask or if you have touched the mask / face.
 - On day 2, use the mask labelled 2. After use, this should be placed in box / bag labelled 2. This cycle will continue till day 5.
 - On day 6, use the mask labelled Day 1. This cycle may continue up to 5 cycles (25 workdays). The five used masks should be put in a yellow bag and disposed as per hospital policy.
 - Obtain new set of 5 N95 masks at the end of the cycle.

Electrode care

Nerve conduction study :

- Use disposable electrodes when possible and discard after every patient.
- If re-usable electrodes are used: wipe the plates and leads with a tissue soaked in a solution of 70% isopropyl alcohol OR use the solution recommended by the manufacturer
- Wipe the stimulating electrode plates, ring electrodes and leads with a solution of 70% isopropyl alcohol OR use the solution recommended by the manufacturer
- Wrap around earth electrode (E0) will need to be soaked in a soapy solution after every patient and washed out – use a metal plate electrode instead- which can be wiped with 70% isopropyl alcohol
- Remember to wipe down the measuring tape with soap (alcohol will remove the markings)

Needle electromyography:

- Wipe the cable / lead with a solution of 70% isopropyl alcohol
- Use only disposable needle electrodes

Do's and Don'ts for Equipment care

- ❖ Power down the EEG / ENMG system and disconnect the electrode and stimulation cables before wiping. Use a lint-free cloth. Do not use commercial cleaning liquids on any system components.
- ❖ Be careful not to allow any fluid to seep into the internal electronic components of the system.
- ❖ Use cleaning solution sparingly. The wiping cloth should be soaked in small amount of disinfectant. Excessive solution can flow into the amplifier and cause damage to internal components.
- ❖ **A disinfecting solution of 70% isopropyl alcohol is recommended.**
- ❖ Do NOT soak or immerse the amplifier in any liquid.
- ❖ Follow manufacturer's guidelines for transporting the EEG and ENMG equipment
- ❖ Do NOT autoclave, pressure sterilize or gas sterilize this amplifier as it may permanently damage the unit.
- ❖ Do NOT touch, press or rub the LCD with abrasive cleaning compounds, instruments, brushes, rough-surface materials, or bring them into contact with anything that could scratch the panel.
- ❖ Do NOT use petroleum-based or acetone solutions, or other harsh solvents, to clean the amplifier. These substances attack the device's materials and device failure can result.