

# **Recommendations for Minimum Standards for the Education and Training of Neurophysiological Technologists**

## **Peripheral Neurophysiology Unit: Record and Report Nerve Conduction Studies**

### **Sections:**

- 1. Equipment Characteristics**
- 2. Electrodes**
- 3. Preparing for the investigation**
- 4. Preparing the patient for the investigation**
- 5. Performing nerve conduction studies**
- 6. Reporting nerve conduction studies**
- 7. Patient care**
- 8. Structure, function and pathology of the Peripheral Nervous System**

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The following assumes:

1. A secondary school education or an equivalent background, with proven competence in mathematics, physics, biology and chemistry
2. Completion of the Minimum Standards for Recording and Reporting conventional electroencephalograms, in adults and children under 5 years, including polygraphy

**1. Equipment characteristics:**

The practitioner should be able to set up and calibrate the recording system in accordance with the required standard of performance:

1. Identify the component parts of the recording system
  - a. Opto-isolation
  - b. Stimulator
  - c. Averager
  - d. Amplifiers
  - e. Audio unit
  - f. Central processing unit
2. Describe the main function of the component parts in 1. above
3. Draw a schematic diagram of the signal pathway
4. Assess and document machine performance
5. Identify and document equipment faults

## **2. Electrodes:**

The practitioner should be competent in the application of non-invasive electrodes for recording nerve conduction studies in Carpal Tunnel syndrome:

1. Describe the range of electrodes available in the department for recording nerve conduction studies
  - a. Sensory
  - b. Motor
2. Describe the types of stimulators used in recording nerve conduction studies
  - a. Bipolar
  - b. Monopolar
3. Compare and contrast types of stimulator
  - a. Bipolar
  - b. Monopolar
4. Explain the care, maintenance and sterilisation procedures required for electrodes and stimulators used in recording nerve conduction studies
5. Apply electrodes using standard electrode placement for the stimulation and recording from motor and sensory nerves
  - a. Median
  - b. Ulnar
6. Explain the consequences of incorrect electrode placement when nerve acquiring conduction data
  - a. Recording electrodes
  - b. Stimulating electrode

### **3. Preparing for investigation of the peripheral nervous system:**

The practitioner should be able to demonstrate apparatus calibration, electrode connections and preparation of the environment:

1. Select and prepare appropriate electrodes and stimulators
2. Prepare the environment for the investigation
  - a. Ambient temperature
  - b. Lighting
  - c. Patient position
3. Calibrate and configure the recording system in accordance with the required standard of performance
  - a. Assess and document machine performance
  - b. Give reasons for performing the required checks

### **4. Preparing the Patient for nerve conduction studies:**

The practitioner should be able to correctly identify the patient and enter details onto the recording system, evaluate the information contained in the referral and perform the investigation with any procedural modification:

1. Retrieve and check patient information
2. Explain the procedure to the patient and carers
3. Explain the importance of accurately recording relevant clinical details
  - a. Medication
  - b. Symptoms
  - c. Relevant medical conditions (e.g. Diabetes)
4. Demonstrate the input of data into the system
5. Explain the necessity to record and maintain skin temperature in limbs under investigation during nerve conduction studies

## **5. Perform Nerve conduction studies**

The practitioner should be able to accurately apply non-invasive electrodes to appropriate recording and stimulation points, acquire and record data from the investigation. Measure latency and amplitude of the recorded potentials and calculate the nerve conduction velocity for both motor and sensory conduction velocities:

1. Select optimum control settings (amplifier bandwidth, gain, time base, averager settings)
  - a. Motor NCVS
  - b. Sensory SAPs
2. Apply correctly positioned electrodes
  - a. Recording nerve conduction velocities
  - b. Stimulation of appropriate nerves
  - c. Ensure appropriate electrode/skin interface impedance
3. Deliver and record supramaximal stimulus in accordance with standard procedures
4. Accurately measure and record distances between recording and stimulation sites
5. Review and modify the procedure as necessary
  - a. Electrode positions
  - b. Control settings
6. Identify and eliminate or minimise artefacts
7. Annotate the recorded data

## **6. Report nerve conduction velocities**

The practitioner should be able to generate a report covering electrophysiological findings and clinical events but is not expected to offer clinical interpretation

1. Accurately measure latency and amplitude of nerve action potentials
  - a. Calculated nerve conduction velocities
  - b. Compare results to local normative data
  - c. Discuss the affect limb temperature and limb length may have on recorded data

## **7. Patient Care**

The Practitioner must conform to the Principles of good practice

The beliefs and rights of the patients must be acknowledged, and the Trainee must take into account the patient's communication needs when discussing, explaining and conducting the investigation. The Trainee must also seek to maintain the patient's sense of dignity and self esteem during the investigation. These principles are presumed to apply throughout every part of this document

1. Understand and observe the policies relating to confidentiality of patient information
2. Understand and observe the local policies and procedures for dealing with Medical and Nursing Staff, Parents and Relatives
3. Explain the procedure and put patients at ease
4. Describe how the patients condition may affect the recording of NCVs
  - a. Anxiety, pain, limb position, temperature
5. Evaluate the information given on the request form and obtain additional information from the patient
  - a. Medication
  - b. Other conditions
  - c. Relevant medical history/recent surgical intervention
  
6. Recognise situations in which the planned investigation may be contraindicated by the physical or clinical state of the patient

## **8. Structure, function and pathology of the Peripheral Nervous System**

The practitioner will understand and discuss in detail the structure and function of the Peripheral Nervous System

1. Maturation of the PNS
2. Anatomy of the PNS with particular reference to upper limbs
3. Pathophysiology of the PNS
4. Influence of patient height on data