NEUROPHYSIOLOGIC INTRAOPERATIVE MONITORING PRACTICE ANALYSIS 2021

This Document represents a delineation of the tasks (T) performed and knowledge (K) applied by neurophysiologic intraoperative monitoring technologists in the practice of their profession. This practice takes place in the context of their unwavering commitment to patient care and safety and their adherence to the highest principles of ethical behavior.

(25%) Domain I – Pre-Operative Phase

T-1 Patient History

Review planned intraoperative procedures and patient diagnosis, history, and imaging results to determine the structures at risk, pre-existing conditions, comorbidities, and the relevant modalities that should be monitored.

Review patient history, physical, and medical conditions to identify pre-existing conditions that might affect the monitoring or outcomes.

Perform pre-operative neuro assessment in relation to modalities being monitored and structures at risk that could impact the study.

The safe and effective performance of this task requires knowledge of:

K-1 ACNS Guidelines
K-2 Medical terminology
K-3 General anatomy
K-4 Neuroanatomy, central and peripheral
K-5 Neurological disorders
K-6 Risks associated with specific disorders/surgical procedures
K-7 Medical conditions that might affect monitoring protocols
K-8 Age-specific criteria
K-9 Elements of a patient history/test results (MRI, CT, MEG, laboratory values, diagnostic procedures, etc.)
K-10 Significant patient factors (e.g., implanted devices, contraindications)
K-11 Allergies/sensitivities (e.g., latex, tape)
K-26 Documentation and communication techniques (including “closed loop communication”)
K-27 Techniques for establishing rapport
K-33 HIPAA standards (including data management and storage)
K-34 Infection control, skin preps

K-36 ABRET Code of Ethics

T-2 Equipment and Electrode Setup

Determine and prepare the equipment and supplies required for the monitoring and ensure proper set up of equipment that minimizes risk to surgical team and optimizes quality of data acquisition.

The safe and effective performance of this task requires knowledge of:

K-13 Montage modifications
K-15 Electrical safety techniques
K-16 Surgery-specific monitoring protocols (based on surgical risk and underlying diagnosis)
K-17 Uses of stimulating electrodes, recording electrodes and modality devices
K-19 Electrode placement systems (e.g., 10-20)
K-20 Electrode application techniques (e.g., paste, collodion, needle electrodes), including needle count documentation/confirmation
K-22 Evoked potentials, motor evoked potentials, EEG, and EMG clinical correlations
K-23 Conditions affecting impedance
K-25 Digital instrumentation concepts (e.g., S/N ratio, sampling rate, analog to digital conversion)
K-26 Documentation and communication techniques (including “closed loop communication”)
K-32 SDS/OSHA standards
K-33 HIPAA standards (including data management and storage)
K-34 Infection control, skin preps
K-36 ABRET Code of Ethics

T-3 Troubleshooting

Identify artifacts or technical problems and employ troubleshooting techniques as appropriate to optimize data acquisition.

The safe and effective performance of this task requires knowledge of:

K-20 Electrode application techniques (e.g., paste, collodion, needle electrodes), including needle count documentation/confirmation
K-22 Evoked potentials, motor evoked potentials, EEG, and EMG clinical correlations
K-23 Conditions affecting impedance

K-25 Digital instrumentation concepts (e.g., S/N ratio, sampling rate, analog to digital conversion)
K-29 Troubleshooting techniques, Artifact identification, and elimination

(25%) Domain II – Intraoperative Phase

T-1 Baseline Signal Acquisition

Check impedance and obtain pre-incision baseline values.

The safe and effective performance of this task requires knowledge of:

K-1 ACNS Guidelines
K-2 Medical terminology
K-3 General anatomy
K-4 Neuroanatomy, central and peripheral
K-5 Neurological disorders
K-6 Risks associated with specific disorders/surgical procedures
K-7 Medical conditions that might affect monitoring protocols
K-10 Significant patient factors (e.g., implanted devices, contraindications)
K-13 Montage modifications
K-15 Electrical safety techniques
K-16 Surgery-specific monitoring protocols (based on surgical risk and underlying diagnosis)
K-17 Uses of stimulating electrodes, recording electrodes and modality devices
K-18 Metric system
K-19 Electrode placement systems (e.g., 10-20)
K-21 Range of standard impedance values
K-34 Infection control, skin preps

T-2 Monitoring/Signal Change Recognition

Collect data and monitor for neurophysiologic changes using NIOM modalities.

Assess impact of any significant surgical, anesthetic, technical, or physiologic events in a contemporaneous manner.

The safe and effective performance of this task requires knowledge of:

K-1 ACNS Guidelines
K-2 Medical terminology
K-3 General anatomy
K-4 Neuroanatomy, central and peripheral
K-5 Neurological disorders
K-6 Risks associated with specific disorders/surgical procedures
K-7 Medical conditions that might affect monitoring protocols
K-10 Significant patient factors (e.g., implanted devices, contraindications)
K-12 Effects of instrument settings (e.g., filters, display gain, epoch)
K-13 Montage modifications
K-14 Characteristics of the differential amplifier (e.g., polarity)
K-15 Electrical safety techniques
K-16 Surgery-specific monitoring protocols (based on surgical risk and underlying diagnosis)
K-17 Uses of stimulating electrodes, recording electrodes and modality devices
K-22 Evoked potentials, motor evoked potentials, EEG, and EMG clinical correlations
K-23 Conditions affecting impedance
K-24 Modality-specific potential waveforms, and anatomical generators of waveforms
K-25 Digital instrumentation concepts (e.g., S/N ratio, sampling rate, analog to digital conversion)
K-28 Effects of medications/anesthetic agents on recordings
K-30 Physiologic effects (e.g., blood pressure, MAP, temperature, normative values, ect.)
K-31 Significant surgical events (e.g., clamping, rotation, distraction)

T-3 Troubleshooting

Identify artifacts or technical problems and employ troubleshooting techniques as appropriate to optimize data acquisition.

The safe and effective performance of this task requires knowledge of:

K-7 Medical conditions that might affect monitoring protocols
K-10 Significant patient factors (e.g., implanted devices, contraindications)
K-13 Montage modifications
K-15 Electrical safety techniques
K-17 Uses of stimulating electrodes, recording electrodes and modality devices
K-23 Conditions affecting impedance
K-25 Digital instrumentation concepts (e.g., S/N ratio, sampling rate, analog to digital conversion)

K-29 Troubleshooting techniques, Artifact identification, and elimination

(13%) Domain III - Post-Operative Phase

T-1 Remove electrodes from the patient and equipment from the surgical field, clean the electrode sites, and safely dispose of sharps.

The safe and effective performance of this task requires knowledge of:

K-11 Allergies/sensitivities (e.g., latex, tape)
K-35 Needle/sharp count documentation/confirmation and disposal, protocol for injury

T-2 Clean and disinfect reusable equipment per infection control standards.

The safe and effective performance of this task requires knowledge of:

K-32 SDS/OSHA standards
K-34 Infection control, skin preps

T-3 Perform post-operative neuro assessment in relation to modalities being monitored and structures at risk that could impact the study.

The safe and effective performance of this task requires knowledge of:

K-1 ACNS Guidelines
K-2 Medical terminology
K-3 General anatomy
K-4 Neuroanatomy, central and peripheral
K-5 Neurological disorders
K-6 Risks associated with specific disorders/surgical procedures
K-36 ABRET Code of Ethics

(27%) Domain IV – Provider Communication and Documentation

T-1 Confirm and document the surgical plan and monitoring requirements with the surgical team to determine appropriate monitoring plan or communicate monitoring protocol and confirm and document any variations ordered by attending surgeon.

The safe and effective performance of this task requires knowledge of:

K-1 ACNS Guidelines
K-2 Medical terminology
K-4 Neuroanatomy, central and peripheral
K-5 Neurological disorders
K-7 Medical conditions that might affect monitoring protocols
K-13 Montage modifications
K-16 Surgery-specific monitoring protocols (based on surgical risk and underlying diagnosis)
K-18 Metric system
K-22 Evoked potentials, motor evoked potentials, EEG, and EMG clinical correlations
K-26 Documentation and communication techniques (including "closed loop communication")
K-28 Effects of medications/anesthetic agents on recordings
K-29 Troubleshooting techniques, Artifact identification, and elimination
K-31 Significant surgical events (e.g., clamping, rotation, distraction)
K-32 SDS/OSHA standards
K-33 HIPAA standards (including data management and storage)
K-35 Needle/sharp count documentation/confirmation and disposal, protocol for injury
K-36 ABRET Code of Ethics

T-2 Communicate the monitoring plan to the patient/caregivers in a manner consistent with their ability to understand and obtain consent.

The safe and effective performance of this task requires knowledge of:

K-7 Medical conditions that might affect monitoring protocols
K-11 Allergies/sensitivities (e.g., latex, tape)
K-26 Documentation and communication techniques (including "closed loop communication")
K-27 Techniques for establishing rapport
K-33 HIPAA standards (including data management and storage)

T-3 Confirm, report, and document pre-incision baseline data with interpreting physician and surgical team.

K-13 Montage modifications
K-16 Surgery-specific monitoring protocols (based on surgical risk and underlying diagnosis)
K-22 Evoked potentials, motor evoked potentials, EEG, and EMG clinical correlations
K-26 Documentation and communication techniques (including "closed loop communication")

T-4 Communicate any significant surgical, anesthetic, technical, or physiologic events in real time with the interpreting physician and surgical team.

K-26 Documentation and communication techniques (including "closed loop communication")
K-28 Effects of medications/anesthetic agents on recordings

T-5 Annotate or document any significant surgical, anesthetic, technical, or physiologic events in a contemporaneous manner.

The safe and effective performance of this task requires knowledge of:

K-26 Documentation and communication techniques (including "closed loop communication")
K-27 Techniques for establishing rapport
K-28 Effects of medications/anesthetic agents on recordings'
K-36 ABRET Code of Ethics

(10%) **Domain V – Safety and Ethics**

T-1 Perform post-operative inspection of all NIOM equipment, ensuring equipment is in working order and recognizing need for routine service or impoundment.

Practice universal precautions and respect proper distance from sterile field.

The safe and effective performance of this task requires knowledge of:

K-1 ACNS Guidelines
K-6 Risks associated with specific disorders/surgical procedures
K-8 Age-specific criteria
K-11 Allergies/sensitivities (e.g., latex, tape)
K-15 Electrical safety techniques
K-17 Uses of stimulating electrodes, recording electrodes and modality devices
K-20 Electrode application techniques (e.g., paste, collodion, needle electrodes), including needle count documentation/confirmation
K-32 SDS/OSHA standards
K-33 HIPAA standards (including data management and storage)
K-34 Infection control, skin preps
K-35 Needle/sharp count documentation/confirmation and disposal, protocol for injury
K-36 ABRET Code of Ethics