ABNMP STANDARDS

Summary

GOAL:

The goal of the ABNMP is to provide a voluntary accreditation for programs providing intra-operative neurophysiologic monitoring (IONM) services to hospitals where surgery requiring such monitoring is performed. Such programs may be mobile services or hospital-based, and could in principle range from a single individual to a large corporation. Nevertheless, the ABNMP expects that any certified IONM program should meet a common set of standards which are detailed in the accompanying document.

STANDARDS:

The standards by which each program will be evaluated are divided between those governing the qualifications and utilization of personnel in the program, those describing the practice of IONM, and those describing the organization of the program. The importance of each standard in the evaluation process is listed in the accompanying spreadsheets.

Each program must have a program director who is responsible for staffing, program organization, policy manual development and quality assessment and improvement. The program director should have extensive experience in intra-operative neurophysiologic monitoring, at least to the level required for DABNM certification. Physician program directors must be certified by the ABNM, ABEM, ABCN, or hold the added qualification in clinical neurophysiology of the ABPN. Non-physician program directors must hold the DABNM and possess a doctoral degree. It is the responsibility of each program director to make certain that all program activities are consistent with state and local regulations regarding the practice of medicine.

Each program must provide, for each case, the technical, professional, and medical components of IONM. The technical component of IONM may be provided by an appropriately supervised and/or credentialed technologist. Supervision of a CNIM credentialed technologist may be by a professional intra-operative neurophysiologist either on-site, or via a real-time on-line connection. Technologists not practicing under the personal supervision of an intra-operative neurophysiologist require the CNIM credential and may provide only waveform descriptions to the surgeon. In addition to their role in the OR, technologists assume important roles in QA/QI processes, policy and procedure development and other administrative aspects of the program.

The professional component must be provided by an intra-operative neurophysiologist with extensive experience in IONM at least to the level required for DABNM certification. Non-physician intra-operative neurophysiologists must be certified by the ABNM. Physician intra-operative neurophysiologists must be certified by the ABNM, ABEM, ABCN, or hold the added qualification in clinical neurophysiology of the ABPN.

The medical component, which must be provided by a physician intra-operative neurophysiologist, is important in each case. This physician must be licensed in the state in which the surgery is taking place, and the degree of involvement is to be determined for each case according to the skills of the team and surgeon as well as the type of case, modalities monitored and local and state regulations.

In addition to appropriate personnel providing the medical, professional, and technical levels of IONM, it is important that appropriate monitoring protocols be followed and for there to be good communication and documentation.

Ongoing education for all members of the program is necessary as well as quality assessment and quality improvement activities. Ongoing assessment of the capabilities of each staff member and a detailed policy manual are also critical to quality monitoring.

Each accredited program will be reassessed every 3 years to ensure ongoing compliance with the standards currently in effect. Any changes in key personnel (program director or medical director) should be submitted to the ABNMP to ensure continued compliance with the currently applicable standards.
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>3</td>
</tr>
<tr>
<td>Basic Principles</td>
<td>3</td>
</tr>
<tr>
<td>Program Organization and Staff Qualifications</td>
<td>4</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>4</td>
</tr>
<tr>
<td>Program Director Qualifications</td>
<td>5-6</td>
</tr>
<tr>
<td>Medical Director Qualifications</td>
<td>6-7</td>
</tr>
<tr>
<td>Technologist Qualifications</td>
<td>8-10</td>
</tr>
<tr>
<td>Intra-Operative Neurophysiologist Qualifications</td>
<td>10-12</td>
</tr>
<tr>
<td>General Work Principles</td>
<td>12</td>
</tr>
<tr>
<td>Work Hours</td>
<td></td>
</tr>
<tr>
<td>Real Time Remote Monitoring</td>
<td></td>
</tr>
<tr>
<td>Requirements for Performing IONM Studies</td>
<td>12-14</td>
</tr>
<tr>
<td>Ongoing Education and Quality Assessment/Improvement</td>
<td>14-15</td>
</tr>
<tr>
<td>Policies and Procedures</td>
<td>15-16</td>
</tr>
<tr>
<td>Disclaimer</td>
<td>16</td>
</tr>
</tbody>
</table>
ABNMP STANDARDS

1. Introduction

The field of Intra-Operative Neurophysiologic Monitoring (IONM) is constantly evolving, yet there are a number of standards that govern good practices. These form the core of the ABNMP standards which are the criteria that will be used in evaluating applicant programs. The ABNMP board will periodically review these standards and update them as there are changes in our knowledge in IONM or general medical practice. Applicant programs will be judged by the criteria in force at the time an application is submitted.

The ABNMP Board recognizes that not all “best practices” are attainable at the present time by all practitioners but we also recognize that these goals will not be reached unless the field makes a concerted effort in this direction. For this reason, there are certain specific standards that are explicitly designed to change over time. It should be noted that the importance of each standard to the accreditation process is set in a spreadsheet that accompanies these standards.

2. Basic Principles

Intra-operative neurophysiologic monitoring (IONM) is a term describing the use of physiological techniques to assess the integrity of, or map neural structures during, surgical procedures in which these structures are at risk. There are three distinct components to IONM: technical, interpretative and diagnostic/therapeutic. The technical component involves the placement of appropriate electrodes, the acquisition of high quality signals, troubleshooting recording problems, and providing a description of the findings. At the interpretative level, these findings are combined with a knowledge of neuroanatomy, neurophysiology and scientific literature to describe the possible implications in the context of the current surgical procedure of these findings. At the diagnostic/therapeutic level, this information is used to make a diagnosis regarding the status of the nervous system and plan therapeutic interventions to reduce the chance of neurological injury. Although there are three distinct components to IONM, an individual practitioner may be involved in one or more than one of these components based on training, skill, education, and experience. In general, based on the skills, education, and experience of the practitioners a team approach provides for optimal patient care.

Good practices in IONM require that all three of the above roles be performed by practitioners that are qualified and competent to perform their specific roles. They also require that all clinical activities are consistent with federal, state, and local regulations on the practice of medicine. It is the responsibility of each applicant program to ensure that it is in compliance with these regulations. The ABNMP will not make decisions in this regard and defers to these regulations but some general considerations are in order.

The basic principle behind these standards is the desire to provide the highest level of IONM services for patients undergoing surgical procedures that place neural structures at risk.

In these standards, the elements required of a high quality IONM program will be divided into sections:

1) Program Organization and Staff Qualifications
2) Intra-Operative Neurophysiologic Study Standards
3) Ongoing Education and Quality Assurance
4) Policies and Procedures

3. Program Organization and Staff Qualifications

3.0 Definitions. In order to clarify the meaning of these standards, it is important to begin with the following definitions:

3.0.1 IONM Program. For the purpose of accreditation, an IONM program is defined as a group of practitioners of IONM working under a single administrative structure. For example, a large single company providing IONM in different locations would be considered a single program as long as the program director and administrative reporting in all locations were the same. A hospital-based IONM program providing services at multiple different hospitals would be considered a single program as long as the program director and administrative reporting in all locations were the same. If either the program director or the administrative reporting structure in these locations were different, then these would be considered as two separate programs. If a single program has multiple sites of activity, it is expected that IONM at each site of activity would be consistent with these standards.

3.0.2 Intraoperative Neurophysiologist. An intraoperative neurophysiologist is a person who, by virtue of education and training and experience, provides real time interpretation and supervision of IONM recordings. This definition is not meant to include or preclude any other activities in which this person may engage. An intraoperative neurophysiologist, if appropriately trained, may also perform the functions of an IONM technologist. The specific qualifications for an intraoperative neurophysiologist working in IONM are outlined in section 3.4.6. Non-physician intraoperative neurophysiologists must have the DABNM credential and physician intraoperative neurophysiologist must have one of the credentials specified in 3.4.6.2.5 below.

3.0.3 IONM Technologist. An IONM Technologist is a person who, by virtue of education and training and experience, can prepare patients and acquire and troubleshoot IONM recordings. The specific qualifications for an IONM technologist are outlined below.

3.0.4 Neuromonitorist. The term neuromonitorist will be used to signify a person who is either an intraoperative neurophysiologist or an IONM technologist.

3.1 Organization.

Accredited IONM programs can range in size from a single practitioner to a large group of practitioners. Regardless of size, each program will benefit from good organization and to that end, it is expected that each program should have an organizational chart along with a description of the program organization and personnel responsibilities. Each program must have appropriate leadership in order to provide the highest level of care to the patient. This involves decisions on appropriate staffing, policies and procedures, education, compliance with governmental regulations, quality assessment, quality improvement, and documentation among others.

There are two critical roles in the administration of an IONM program: the program director, and the medical director. Based on skill, education, and experience, these roles may be filled by one or more than one person. If more than one person fills these roles, cooperation between these individuals is essential to a quality program.
Programs with technologists should have technologists in leadership roles in program.

3.2 Program Director.

Each program must have an identified PROGRAM DIRECTOR. The program director is responsible for all the elements involved in providing clinical IONM services. The program director may delegate some specific responsibilities to other staff but this needs to be explicitly noted as part of the program policy manual.

3.2.1 Some responsibilities of the program director include:

3.2.1.1 Makes certain that professional staff are appropriately credentialed at each site of practice.

3.2.1.2 Ensure that the activities of all staff within the program fall within the standards set by national and local entities concerned with IONM and their own policy and procedure manual.

3.2.1.3 Ensures that there are ongoing education, quality assessment and quality improvement activities.

3.2.1.4 Approves the program policy and procedures manual.

3.2.1.5 Overall responsibility to make sure that equipment is adequate for its intended purposes and receives appropriate care, maintenance and inspections.

3.2.1.6 Consults with both the program professional and technical staff in the development of policies and procedures.

3.2.2 Program Director Qualifications

The program director must be a physician or non-physician intra-operative neurophysiologist who has demonstrated skill and expertise in the field of IONM as well as continuing clinical experience. Although the following standards outline minimal qualifications, the size and scope of the program as well as the type of cases being monitored also affect the optimal qualifications of the program director. Program director qualifications should also depend on the staff being supervised. Foreign medical graduates who are not licensed physicians in any state will have the qualifications outlined under the “non-physician” standards.

It is strongly preferred that the program director assess the program quality and activities by at least intermittent physical presence in the operating room.

3.2.2.1 Minimum Qualification for non-physician program directors

3.2.2.1.1 Degree. The program director must have a doctoral degree in a physical science, a life science or clinical allied health profession from an institution that is accredited by an organization recognized by the U.S. Department of Education or the World Health Organization in the case of foreign medical graduates. If the program director’s doctoral degree is not in life sciences or a clinical allied health profession, then documentation of graduate coursework in neuroanatomy and neurophysiology will be required.

3.2.2.1.2 Current certification by the American Board of Neurophysiological Monitoring (ABNM) is required.

3.2.2.1.3 Documentation of completion of at least 50 hours of continuing education in clinical neurophysiology in the in last 3 years (list must be provided) at least 30 of which must be specifically related to IONM. The continuing education must consist of AMA Category I CME’s, ASHA credits, or ACE credits. The equivalency of any other credits will be made by decision of the board.
3.2.2.1.4 Documentation of active supervision or performance of at least 250 cases in the last 3 years (list must be provided). It is not sufficient for the program director to supervise only the administrative aspects of the program. He/she must be clinically involved in neurophysiologic monitoring. In addition, the program director must have 5 or more years of experience in the field of IONM. The program director must have had actual experience either performing or supervising IONM in the operating room.

3.2.2.2 Minimum Qualification for physician program directors

3.2.2.2.1 MD or DO.

3.2.2.2.2 Valid license to practice medicine in every state where they (personally) practice IONM activities and credentialed to interpret IONM in all sites where they personally practice IONM.

3.2.2.2.3 Documentation of completion of at least 50 hours of continuing education in clinical neurophysiology in the in last 3 years (list must be provided). The continuing education must consist of AMA Category I CME’s. The equivalency of any other credits will be made by decision of the board.

3.2.2.2.4 Documentation of supervision or performance of at least 250 IONM cases in the last 3 years (list must be provided). It is not sufficient for the program director to supervise only the administrative aspects of the program. He/she must be clinically involved in neurophysiologic monitoring. In addition, the program director must have 5 or more years of experience in the field of IONM.

3.2.2.2.5 One of the following (copy of certificate must be provided):

3.2.2.2.5.1 Current certification by American Board of Neurophysiologic Monitoring (ABNM)

3.2.2.2.5.2 Current certification by the American Board of Clinical Neurophysiology (ABCN)

3.2.2.2.5.3 Current certification by the American Board of Electroneurodiagnostic Medicine (ABEM)

3.2.2.2.5.4 Current certification through the American Board of Psychiatry and Neurology (ABPN) added qualification exam in clinical neurophysiology.

3.2.2.2.5.5 If the physician program director does not have one of the above certifications, he or she must be board certified in a relevant medical specialty (such as anesthesia, neurology, neurosurgery, or physical medicine) that is recognized by the American Board of Medical Specialties (ABMS) and must also satisfy all of the following additional requirements.

3.2.2.2.6.5.1. Attestations of skill in providing IONM services from at least two intraoperative neurophysiologists (as defined above) who have personally observed the physician in question providing IONM services (letters must be provided).

3.2.2.2.5.5.2 Documentation of supervised training in IONM (Letter of attestation by mentor must be provided.) OR evidence of significant scholarship in the field of clinical neurophysiology (Documentation must be provided for evaluation by the Board.) All decisions of the board on the adequacy of the provided information are final.

3.3 Medical Director

Involvement of a physician intra-operative neurophysiologist is important in each case. The degree of involvement is to be determined for each case according to the skills
of the team and surgeon as well as the type of case, modalities monitored and local and state regulations.

All programs will require a medical director. The purpose of the medical director is to advise the neurophysiologic monitoring program concerning good medical practices. The scope of this position will depend strongly on the makeup of the program and on local and state regulations as discussed in section 2. In this section, only the minimal requirements for this position are discussed. There are situations in which the medical director position would need to take on additional responsibilities in order to assure quality monitoring. Whether this role involves the practice of medicine is determined by local governmental regulations to which the applicant program must adhere and the duties performed.

If appropriately qualified, the same person may function as both the medical director and the program director.

3.3.1 Medical Director-Minimal Duties.

3.3.1.1 Reviews policy and procedures and makes suggestions that optimize clinical practice.
3.3.1.2 At the request of program director reviews staffing and program operations. Assists the program director in keeping current with medical regulations and standards.
3.3.1.3 Available to answer general medical practice questions.
3.3.1.4 Assists the program director in quality assessment and quality improvement activities as defined in the program policy and procedures manual.

3.3.2 Medical Director Qualifications

3.3.2.1 The medical director must be a licensed physician in every state in which he or she practices medicine as determined by state and local regulations.
3.3.2.2 The medical director must have an understanding of intra-operative neurophysiologic monitoring. The board will review the credentials of the medical director and make final decisions.

3.3.3 Program Administration

There are a number of general issues in program administration that are important to a good IONM program especially when a program involves the cooperation of personnel with differing skills and backgrounds.

3.3.3.1 It is important that any technical personnel involved in the program have input to the program director on all aspects of the program functioning. If there are technologists as part of the program, it is important to document that they have input into the development of the policy and procedures manual.
3.3.3.2 It is important that the personnel (or team) assigned to monitor given case have appropriate credentials to perform the required monitoring. Thus, it is important that the person making these assignments understand IONM and cooperate with the program director and medical director. A technologist with significant administrative skills and the CNIM credential commonly performs this function.
3.3.3.3 It is important that technologists take a leadership role in coordinating and implementing quality assessment and quality improvement activities.

3.4 IONM Staffing
Since the day to day practice of IONM is performed at both interpretative and technical levels, staff must be available to perform both of these functions. The person providing interpretations may also perform the technical function as well. However, when the technical function is not performed by a qualified intra-operative neurophysiologist, it must be performed by a qualified technologist. It is important to understand that the provision of IONM services is a team effort and the specific duties of each team member will vary based on the composition of the team. It is also important to recognize that physician involvement either on the part of the surgeon or a separate physician intra-operative neurophysiologist is critical.

3.4.1 Unattended Neurophysiologic Monitoring

3.4.1.1 In no case, can neurophysiologic monitoring be performed without a neuromonitorist in personal attendance in the OR during the course of the monitoring.

3.4.2 Technologist Responsibilities

3.4.2.1 The general responsibilities of a technologist providing neurophysiologic monitoring services have been described by the American Society of Electroneurodiagnostic technologists (ASET). Although the ASET policy covers this in more detail, a technologist will:

3.4.2.1.1 Use existing policies and procedures to place electrodes appropriate for monitoring a given case.
3.4.2.1.2 Use existing policies and procedures to determine which monitoring modalities may be performed for a given case.
3.4.2.1.3 Informs supervising intra-operative neurophysiologist of any significant changes in the monitored parameters or deviations in the surgical procedure from that planned.
3.4.2.1.4 Maintains and documents excellent communications with the anesthesia and surgical teams.
3.4.2.1.5 Documents all recorded waveforms and communications with the surgeons and anesthesia team. Documents all significant events.
3.4.2.1.6 Provides description of waveforms to the surgical team. This includes a description of latencies and amplitudes of identified waves but does NOT include forming interpretations regarding the implications of these changes. Provides “alerts” to the surgeon according to criteria in the program’s policy and procedure manual.
3.4.2.1.7 Contacts the supervising intra-operative neurophysiologist if there are issues related to the surgical or anesthetic management of the patient noted.
3.4.2.1.8 Informs the surgeon and anesthesiologists regarding relevant statements in the policy and procedures when there are issues. For example, if the policy and procedure manual recommends TIVA for MEP monitoring, the technologist may make this suggestion to the anesthesiologist and provide the appropriate sections of the policy and procedures manual. The technologist should NOT demand that specific procedures be followed but should contact the intra-operative neurophysiologist if there are questions.
3.4.2.1.9 Informs the program director if any problem is noted in the interpretations or availability of the supervising intra-operative
neurophysiologist. The program director must keep track of such reports and must formally address their significance.

3.4.2.2 The technologist will NOT:

3.4.2.2.1 Provide clinical correlations of recorded waveforms to the surgeon.

3.4.2.2.2 Leave the operating room during the course of neurophysiologic monitoring unless another technologist takes over.

3.4.2.2.3 Suggest any changes in surgical activity or anesthetic management. For example, the technologist should NOT suggest that an anesthetic dose be changed because of some findings noted during the neurophysiologic monitoring. This would require an interpretation which can be performed only by the intra-operative neurophysiologist. The technologist may however point out that according to the policy and procedures manual, certain anesthetics may interfere with various neurophysiologic monitoring modalities.

3.4.3 Technologist Qualifications

In order to provide adequate neurophysiologic monitoring, it is critical that technologists be appropriately qualified before providing independent services in the OR. The qualifications required of the technologist will depend on the level of independence required and on the type of case monitored (as documented in the policy and procedures manual).

3.4.3.1 A technologist who performs studies in a setting where an intra-operative neurophysiologist is not physically present on site to supervise the technical aspects of neurophysiologic monitoring must have the CNIM credential or other credential (such as R.EEGT for surface EEG recordings) as specified by the American Society of Electroneurodiagnostic Technologists (ASET).

3.4.3.2 A technologist performing a case as a trainee, may work under the personal supervision (ie supervisor physically present in the operating room) of an appropriately trained intra-operative neurophysiologist or technologist. The details of what constitutes appropriate training for supervisors of trainees should be detailed in the policy and procedures manual and be consistent with national guidelines.

3.4.3.3 If an intra-operative neurophysiologist is present ON SITE who can provide personal supervision during setup and all critical parts of surgery, then a technologist that does not meet the criteria outlined in 3.4.3.1 may perform the technical aspects of neurophysiologic monitoring provided that the performance of the technologist has formally been evaluated in the OR previously and judged adequate by the Program director (The standards on which this judgment are made must be clearly delineated in the policies and procedures manual. They must include the number and type of cases in which the technologist has been supervised and a note about quality of the care provided. It will be generally true that the technologist should have performed 50 cases under personal supervision but this may vary.).

3.4.3.4 The program director must keep a log of the number and type of cases performed by each technologist. The program director must avoid assigning technologists to independently monitor cases in which they are not experienced. It should be noted that the American Society of Electroneurodiagnostic Technologists (ASET) has provided descriptions of various levels of competency for technologists specializing in IONM that provide useful information for the program director.
3.4.3.5 Documentation of completion of at least 36 hours of continuing education in clinical neurophysiology in the last 3 years (list must be provided). The continuing education must consist of AMA Category I CME’s, ASHA credits, or ACE credits. The equivalency of any other credits will be made by decision of the board.

3.4.4 Technologist Utilization.

3.4.4.1 It is not acceptable for the technologist to send waveform samples to the intra-operative neurophysiologist by such means as a fax and wait for interpretations.

3.4.4.2 It is not acceptable for the intra-operative neurophysiologist to discuss with the technologist the findings (without the capability of reviewing the waveforms) and on the basis of this discussion provide an interpretation. The acquired waveforms (raw or processed) must be immediately available to the intra-operative neurophysiologist.

3.4.4.3 The technologist providing neurophysiologic monitoring services, should be wholly dedicated to the current case and should be responsible for monitoring only one case at a time. The technologist should NOT engage in nonessential activities during neurophysiologic monitoring.

3.4.5 Supervising intra-operative neurophysiologist responsibilities.

The intra-operative neurophysiologist must supervise or perform the neurophysiologic monitoring in each and every case. The intra-operative neurophysiologist assigned to a case takes the responsibility for making sure that the neurophysiologic monitoring of that case is performed according to the policy and procedures manual.

3.4.5.1 In particular, the intra-operative neurophysiologist is responsible for providing interpretations regarding the meaning of all significant changes in the tests monitored. Whether interpretations are provided in person or by real-time remote neurophysiologic monitoring, it is important that the intra-operative neurophysiologist be able to provide an interpretation within 3 minutes (or sooner as specified in the policy and procedures manual) of the onset of a significant change. The intra-operative neurophysiologist providing an interpretation must have the ability to view and review all data acquired contemporaneously.

3.4.5.2 The intra-operative neurophysiologist is responsible for providing direction to the technologist if either the surgical or anesthetic conduct of the procedure materially deviates from the norm as specified in the policy and procedures manual.

3.4.5.3 The intra-operative neurophysiologist is responsible to contact the program director (outside the OR) if any problems with a given technologist are noted.

3.4.5.4 The intra-operative neurophysiologist should confirm before each case that the technologist performing the case understands the case, what types of monitoring changes may be expected and the types of neurophysiologic monitoring that should be performed. The intra-operative neurophysiologist should also confirm that the technologist understands the alarm criteria for each modality being utilized.

3.4.6 Intra-operative Neurophysiologist Qualifications

3.4.6.1 Minimum Qualification for non-physician intra-operative neurophysiologists

3.4.6.1.1 Degree. The standard for degree will be that currently employed by the American Board of Neurophysiologic Monitoring. The intra-operative neurophysiologist must possess a minimum of an earned degree at the masters level (or
equivalent), in a physical science, a life science or clinical allied health profession from an institution that is accredited by an organization recognized by the U.S. Department of Education or the World Health Organization in the case of foreign medical graduates. Evidence of this information must be provided with each application.

3.4.6.1.2 Certification by the American Board of Neuropysiological Monitoring (ABNM) is required by independent practitioners. As part of a training program, a non-ABNM certified monitorist who holds Certification in Intraoperative Neurophysiological Monitoring (CNIM) by ABRET, who has demonstrated experience with and training in monitoring of all cases performed can provide interpretations under the guidance of an intra-operative neurophysiologist. The program director must document the training, education, and experience of each intra-operative neurophysiologist. The program director must also note the types of cases for which each intra-operative monitorist has experience and training to provide supervision. This documentation must be present in the program application. Any other non-physician participating in IONM who uses the skills captured under another allied health credential such as RN, CRNP, PA, etc during their practice must keep that credential current.

3.4.6.1.3 Documentation of completion of at least 50 hours of continuing education in clinical neurophysiology in the in last 3 years (list must be provided). The continuing education must consist of AMA Category I CME’s, ASHA credits, or ACE credits. The equivalency of any other credits will be made by decision of the board.

3.4.6.1.4 Documentation of active supervision or performance of at least 250 cases in the last 3 years (list must be provided).

3.4.6.1.5 Must have 3 or more years of experience in the field of IONM.

3.4.6.1.6 Must comply with specific hospital criteria required for providers of IONM interpretation at each hospital where such services are rendered.

3.4.6.2 Minimal Qualification for physician intra-operative neurophysiologists

3.4.6.2.1 MD or DO (Note: Non-licensed physicians will follow the criteria outlined in 3.4.6.1 for non-physician intra-operative neurophysiologists).

3.4.6.2.2 Valid license to practice medicine in each state where IONM activities are practiced. Credentials to provide IONM interpretation at all hospitals where supervision is practiced.

3.4.6.2.3 Documentation of completion of at least 50 hours of continuing education in clinical neurophysiology in the in last 3 years (list must be provided). The continuing education must consist of AMA Category I CME’s, ASHA credits, or ACE credits. The equivalency of any other credits will be made by decision of the board.

3.4.6.2.4 Documentation of supervision or performance of at least 250 IONM cases in the last 3 years (list must be provided).

3.4.6.2.5 One of the following certifications (copy of certificate must be provided):

3.4.6.2.5.1 American Board of Neuropysiological Monitoring (ABNM)

3.4.6.2.5.2 American Board of Clinical Neurophysiology (ABCN)

3.4.6.2.5.3 American Board of Electroneurodiagnostic Medicine (ABEM)
3.4.6.2.5.4 American Board of Psychiatry and Neurology (ABPN) added qualification exam in clinical neurophysiology.

3.4.6.2.5.5 If the physician intra-operative neurophysiologist does not have one of the above certifications, he or she must be board certified in some medical specialty that is recognized by the American Board of Medical Specialties (ABMS) and must also satisfy all of the following addition requirements.

3.4.6.2.5.5.1 Attestations of skill in providing IONM services from at least two other intra-operative neurophysiologists who have personally observed the physician in question providing IONM services (letters must be provided).

3.4.6.2.5.5.2 Documentation of supervised training in IONM (Letter of attestation by mentor must be provided.) OR evidence of significant scholarship in the field of clinical neurophysiology (Documentation must be provided for evaluation by the Board.) All decisions of the board on the adequacy of the provided information are final.

3.4.6.3 Attention. Any intra-operative neurophysiologist must be able to devote their full attention to a particular IONM case when necessary.

3.4.7 General Work Principles

3.4.7.1 Limit on number of work hours. There is a balance between the provision of adequate patient services in the face of the need to provide coverage for emergencies and cases of prolonged duration and the need for the neurophysiologic monitoring team to maintain a high level of attention to monitoring. To this end it is strongly suggested that direct work in the OR should be limited to 12 hours in any 24 hour period and 80 hours in any 7 day period. It is realized that strict adherence to this standard may be impossible, but times when working hours exceed the limits discussed above should be the exception rather than the rule.

3.4.7.2 Real time remote supervision. There is a limit on the ability of a single person to provide real time remote supervisory services in a way that benefits the patient. The number of patients that can be supervised simultaneously depends on the type of cases being supervised. Except in emergencies, no more than 3 simultaneous cases should be supervised by a single intra-operative neurophysiologist. There are situations such as intracranial aneurysm and posterior fossa tumor removal where fewer cases should be supervised. The quality of real time remote supervision must be assessed on a regular basis as discussed in section 5.2.2.

4.0 Intra-Operative Neurophysiologic Study Standards

4.1 Prior to Neurophysiologic Monitoring

4.1.1 Patient Education----Prior to neurophysiologic monitoring, whenever possible the patient should be informed that neurophysiologic monitoring is taking place and its purpose. This should be documented and the documentation should be kept with the technical neurophysiologic monitoring report.

4.1.2 Order for Neurophysiologic Monitoring: Written documentation of the order for IONM from the surgeon should be present in the medical record and a copy must be kept with the neurophysiologic monitoring report.

4.2 Starting Neurophysiologic Monitoring

4.2.1 Baseline Recordings—Baseline recordings should be obtained as soon as feasible but at least prior to skin incision. It is encouraged to obtain tracings prior
to any changes in position in order to determine if there are any position or procedure
dependent changes in the neurophysiologic monitoring.

4.2.2 Time of neurophysiologic monitoring—It is important to make sure
that the date and time on the equipment being used for monitoring be correct and close to
the room time. If there is a significant difference between these times, a notation should
be made on the record.

4.2.3 Vital Signs---It is important for the neuromonitorist to record the
patient’s baseline vital signs so that if changes occur in the monitored variables, it is easy
to see if this could be due to a change in physiologic parameters such as blood pressure or
temperature.

4.3 Neurophysiologic Monitoring Protocols

4.3.1 There are a number of sources that describe appropriate protocols for
performing basic neurophysiologic testing in the operating room. It is the responsibility
of the program director to understand and synthesize the data presented in these
guidelines into the program policies. Some helpful guidelines include:

4.3.1.1 American Clinical Neurophysiology Society (ACNS)
Guidelines. These guidelines can be found at www.acns.org. Not every guideline has
information specific to neurophysiologic testing in the operating room but they do
indicate good practices and are a valuable guide.

4.3.1.2 American Society for Neurophysiologic Monitoring
(ASNM). This guideline project is still in process. The guidelines are published in the
Journal of Clinical Monitoring and Computing. The current guidelines are on
Somatosensory Evoked Potentials, Auditory Evoked Potentials, and EMG and Reflexes.
These are a valuable guide to best practices. Additional guidelines will be available in
the future.

4.3.1.3 American Society of Electroneurodiagnostic Technologists
(ASET). There are many guidelines available and these can be found at www.aset.org.
Not every guideline is specific to intra-operative neurophysiologic monitoring but they
are a valuable guide to good practices.

4.4 Documentation

It is important that good documentation be kept during the surgery.
This includes a number of elements including:

4.4.1 Evoked Potential Traces---It is preferred with the advent of
electronic devices that each completed evoked potential recorded be saved so that in case
there is a negative outcome, a detailed re-evaluation of the course of neurophysiologic
monitoring can be performed. Representative samples of significant EMG activity should
be saved as well. Policies surrounding this must be documented in the policy and
procedure manual.

4.4.2 Physiologic Parameters---These include blood pressure,
temperature and the rate of administration (or concentration) of various anesthetics. This
information should be observed continuously and recorded at frequent intervals as
warranted based upon events during the procedure.

4.4.3 Communication—All communications between the
neurophysiologic monitoring team and the surgical or anesthesia teams should be
documented and the responses from these teams should also be documented.
4.4.4 When real time remote monitoring is utilized, either electronic or paper documentation of the remote connection (along with times) with the interpreter is required.

4.5 Reports
Reports must be generated for each IONM session. The report must list a pertinent patient history, the procedure(s) performed, detail the type of neurophysiologic monitoring performed, give a description of the baseline responses, detail any significant changes in responses during the procedure, and describe the responses at closing in relation to the baseline findings. Additionally, a description of any significant communications throughout the procedure, between the neurophysiologic monitoring team and the surgical team must be provided. A summary of the major IONM findings throughout the surgery should be given.

5.0 Ongoing Education and Quality Assurance
Every program needs to grow and improve over time especially in response to changes in the field of intra-operative neurophysiologic monitoring. In order for this to occur, it is important for each program to provide for ongoing education and quality assurance.

5.1 Ongoing Education
Each program must be able to provide documentation of ongoing educational programs. The details of the education program will vary with the size of the program.

5.1.1 For programs larger than 4 members, it is important that educational conferences be held at least every month. These need to be documented including the topic of discussion. These educational conferences may be integrated with quality improvement conferences to be discussed below.

5.1.2 For programs of 4 or smaller members, it is important to document at least 30 hours of educational activities each year at least 20 of which must be in the field of neurophysiology for each staff member in each year. These may be acquired in local educational meetings or by attending national or international meetings. They may also be acquired through on-line educational programs.

5.1.3 Each program is encouraged to send members to national and international meetings on IONM in order to keep current with the newest developments in the field.

5.1.4 It is important for the program director to keep track of the educational activities undertaken by each person participating in the IONM program.

5.2 Quality Assessment (QA) activities.
5.2.1 For the purposes of this accreditation, the outcome of each patient undergoing neurophysiologic monitoring must be reported post-operatively and documented. Intraoperative neurophysiologic monitoring results must be correlated with the documented post-operative neurological function. Any new neurological problems arising after surgery that were not predicted and any falsely predicted deficits must be discussed at a staff conference. Means of improving monitoring results must be discussed. In addition, any complications of neurophysiologic monitoring must be noted and discussed at staff conferences.
5.2.2 It is important to document the response time for the intra-operative neurophysiologist during the surgical procedure. This is defined as the time that passes before the intra-operative neurophysiologist can review the signals and provide an interpretation. If supervision by real-time remote neurophysiologic monitoring is employed, the technologist should at least once per case send a query to the supervising intra-operative neurophysiologist to check some parameter being recorded in the case. The technologist records the time from the request to a correct response. If supervision is carried out by other means, the same test should be employed. Response times greater than 3 minutes should be improved. Response times greater than 5 minutes are unacceptable for the purposes of this accreditation. This data should be presented to the program director and kept as part of the QA activities of the program.

5.3 Quality Improvement (QI) activities

5.3.1 Each program should take actions to improve the quality of their neurophysiologic monitoring services. These activities should be documented.

6.0 Policies and Procedures

A clear, detailed policy and procedure manual is critical to appropriate IONM. Each program must have a detailed policy and procedures manual.

6.1 Policy and Procedures manual content

6.1.1 General Policies of the IONM Program (Organizational chart, staffing policies, job descriptions, competencies, etc.)

6.1.1.1 Structure of the neurophysiologic monitoring program including chain of responsibility for various aspects of neurophysiologic monitoring.

6.1.1.2 Outlines the responsibilities of each functional member of the program in accord with national guidelines and these standards.

6.1.1.3 Outlines the performance criteria required from each member of the program.

6.1.2 IONM Procedures Policy (Description of the types of cases monitored and a detailed description of how neurophysiologic monitoring will be carried out for these cases.)

6.1.2.1 List of modalities to be employed for each type of case.

6.1.2.2 Notations regarding any anesthetic requirements for the case.

6.1.2.3 List of the critical points during the procedure and the expected changes that may be seen.

6.1.2.4 Notes of specific warning criteria.

6.1.3 Electrical Safety Policy (Including a description of equipment maintenance procedures, compliance with individual hospital safety checks. etc.)

6.1.4 Infection Control Policy (electrode storage, sterilization information and other infection control procedures).

6.1.5 Description of sterile procedures.

6.1.6 Continuing Education Requirements Policy

6.1.7 Quality Improvement Policy
6.2 Policy and Procedure updates.

The policy and procedure manual should be updated at least yearly and this review should be documented by the program director and the medical director.

Disclaimer

These Standards, developed by the American Board of Accreditation for Intraoperative Neuromonitoring Programs ("ABNMP"), are intended to serve as a voluntary set of goals for Intra-Operative Neurophysiologic Monitoring Programs ("IONM") programs to achieve. These Standards are not intended, and should not be used, to support a cause of action, create a presumption of legal duty, or form a basis for civil liability or regulatory or disciplinary proceedings. These Standards are intended to encourage high quality patient care, but ABNMP makes no representation, guarantee or warranty that observing them will result any specific patient outcome. In addition, these Standards are subject to revision from time-to-time, as required by the evolution of technology and practice.

In each case, the practice of IONM should conform to the regulations of the state and hospital in which the monitoring is performed. The ABNMP makes no representation that these standards are in compliance with all governmental regulations and ordinances. In any case in which there is a potential conflict, governmental regulations as well as local hospital regulations are to be followed.