



Education for Perioperative Neuroscience Excellence

PROGRAM REQUIREMENTS FOR ADVANCED TRAINING IN PERIOPERATIVE NEUROSCIENCE

NEUROANESTHESIOLOGY

Version 33

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INTRODUCTION

Residency and fellowship programs are essential dimensions of the transformation of the medical student to an independent practitioner. As postgraduate learners, they begin the life-long continuum of medical education, a physically, emotionally, and intellectually demanding process.

The specialty education of physicians to practice independently is largely experiential, and necessarily occurs within the context of the health care delivery system. For the fellow, the essential learning activity is interaction with patients under the guidance and supervision of faculty members who give value, context, and meaning to those interactions. Fellows ultimately exercise independent skills based on their capability to synthesize knowledge and experience in a given patient context. This concept - graded and progressive responsibility - is one of the core tenets of graduate medical education. Supervision in the setting of graduate medical education assures patients safe and effective care. This supervision also assures that the fellow expands their skills, knowledge, and attitudes as required to independently practice neuroanesthesia and all related fields.

Neuroanesthesia fellows prepare to become outstanding clinicians, educators, and researchers. Fellowship instills the commitment to lifelong professional growth and development of in-depth knowledge in a specific area of anesthesiology beyond that acquired in residency. Specialty trained physicians become leaders in their respective clinical and academic fields. ICPNT promotes all facets of perioperative neuroscience training. The ICPNT program requirements outline the neuroanesthesiology and neuroscience standards for program accreditation for fellowship training.

I. DEFINITION AND SCOPE

a. Definition of Neuroanesthesiology

Neuroanesthesiology is the subspecialty of anesthesiology devoted to the comprehensive anesthetic and perioperative management of patients undergoing surgical and radiologic procedures on the central and peripheral nervous systems where neural tissue is at risk.

Neuroanesthesiologists should be involved in the overall care of patients who are undergoing any surgical procedure that places any component of the nervous system at risk; this includes neurosurgery, neuroradiology, structural spine, critical care and all other medical or surgical conditions that require neuroscience expertise. The neuroanesthesiologist executes an anesthetic plan that incorporates patient co-existing medical conditions and surgical management needs to optimally support neurologic outcome.

The neuroanesthesiologist is an expert in neuroscience and has a unique knowledge of neuropharmacology, action of anesthetic and adjunct drugs used for neurosurgery and other surgical procedures. This area delves into mechanisms of anesthetic actions, potential neuroprotective and neurotoxic effects of anesthetics, interactions of anesthetic and non-anesthetic drugs with the pathophysiology of neurosurgical problems as affected by the procedural intervention and other intra-procedure physiologic aberrations.

Neuroanesthesiology is not just focused on intraoperative issues. Indeed, reforms in health care worldwide are supporting increasing involvement of anesthesiologists in the perioperative continuum.

Neuroanesthesiologists are expected to be involved in activities that will include perioperative and neurocritical care assessment and management of complex neurologic disease.

Neuroanesthesiology also involves an understanding of issues in perioperative neuromonitoring. Given that the anesthetic paradigm used for a given patient can significantly impact the data obtained from intraoperative neuromonitoring, this is an important and essential body of knowledge unique to neuroanesthesiology. As such there is overlap with the growing discipline of perioperative neuromonitoring.

b. Duration and Scope of Training

Fellows must spend a minimum of 80% of their fellowship engaged in guided and supervised perioperative neuroscience activities to include clinical care and scholarly activity. Fellows ultimately exercise independent skills based on their capability to synthesize knowledge and experience in a given patient context. Activities are approved by the Program Director and in agreement with ICPNT recommendations. Clinical training should be completed within a maximum of 24 months from beginning the program. The clinical training time may be discontinuous and interspersed with academic time devoted to research, other nonclinical academic pursuits or medical practice outside the fellowship (e.g., independent practice of anesthesia or other medical specialties).

II. ORGANIZATION REQUIREMENTS

a. Programs

i. Sponsoring Organization

A single sponsoring organization, Anesthesiology Department, Hospital or Medical School, must assume ultimate responsibility for the program, and this responsibility extends to guaranteeing all fellowship requirements at all participating sites are met. The sponsoring organization's Letter of Agreement (LOA) must be provided to the ICPNT and should contain the following:

1. An organizational leadership contact.
2. A designated fellowship leader (program director) must be identified.
3. The sponsoring institution and the fellowship program must ensure that the program has sufficient financial, administrative and academic resources to meet program requirements. This should include the customary support to the program director to meet the responsibilities

- outlined in the program requirements outlined by the ICPNT (III.A.S).
4. A statement of assurance that the Fellowship Program Director and the sponsoring institution will maintain a Sponsoring Letter of Agreement (SLOA) for all participating programs as outlined in requirements and assure compliance with program requirements.
 5. It is recommended but not required that the Sponsoring Institution sponsor or be associated with a regionally accredited anesthesiology or other postgraduate clinical (residency) program.
 6. An updated version of the Sponsoring Letter of Agreement (SLOA) must be submitted to the ICPNT within 30 days of a change in any of the elements identified above in this section.

ii. Participating Sites

There must be a Clinical Site Letter of Agreement (CSLOA) or equivalent between the program and each participating clinical site providing a required experience. The CSLOA must be renewed by the sponsoring institution at least every five years. The CSLOA should:

1. Identify the faculty who will assume both educational and supervisory responsibilities for fellows.
2. Specify the faculty's responsibilities for teaching, supervision, and formal evaluation of fellows (See III a-d).
3. Specify the duration and content of the educational experience.
4. State the policies and procedures that will govern fellow education during the assignment at each participating site.
5. Identify the institutional official who oversees the fellowship program director at the participating site.
6. Submit an updated Clinical Site Letter of Agreement (CSLOA) to the ICPNT within 30 days of a change in any of the elements identified above (II, A, 2.).

b. Setting

The setting for a neuroanesthesiology educational program must encompass a clinical location which includes operating suites, post anesthesia care area, interventional radiology suite, surgical critical care/therapy unit devoted entirely to neurological critical care or a blended surgical neurological care/therapy unit, and perioperative neuromonitoring facilities. This education may take place in various settings that provide for the care of critically and neurologically ill surgical patients, including those with traumatic injuries, cerebrovascular insults, neuro-oncologic/infectious disorders, status epilepticus, neuromuscular, and spine and spinal cord disorders.

c. Educational Sites

An adequate volume and diversity of clinical experience must be available in the sponsoring and affiliate health care organizations. All facilities providing clinical training must be appropriately accredited and/or licensed by the regional, national or international regulatory organization(s) responsible for hospital accreditation within the local region (i.e., Japan Medical Services Accreditation for International Patients (JMIP), Healthcare Organizations Accreditation Programme, France). The accrediting organization must be regionally recognized. The facilities are licensed inpatient hospitals and are in good standing with their accreditation organization and local public health regulatory associations.

Sites must cumulatively provide sufficient experienced personnel, adequate procedural diversity and volume to meet ICPNT recommendations. (Appendix 2, 3, 4). The sponsoring and affiliated institutions must have interventional radiology facilities sufficient to fulfill the fellowship experience requirements. The sponsoring institution or affiliated programs must have a Neurologic/Neurosurgical Intensive Care Unit or have beds devoted to neurological and neurosurgical conditions and patients in a mixed-use ICU.

Educational experiences must meet the local sponsoring institution standards and are required to provide the ICPNT recommended educational experience. Programs may use modular rotations (continuous fixed time period) or longitudinal training (experience when clinical material is available) but the end result must meet the ICPNT educational guidelines (Appendix 3). Clinical experience obtained during elective specialty interest rotations apply to the minimum time required in mandatory rotations when appropriate. Participating

program rotations must have their facilities and their faculty submitted with the application as part of the accreditation process (a.-f.). Unique or single event educational modules at internal or external organizations do not need a CSLOA but should be documented in the yearly report to the ICNPT with a description of the rotation period. The clinical rotation facility must be locally accredited.

Verification of participation with a description of expectations and documentation of successful completion of the educational experience is necessary for all educational activities (Appendices 2, 3).

III. PROGRAM PERSONNEL AND RESPONSIBILITIES

a. Program Director

i. Program Director Qualifications:

1. Current medical licensure and appropriate institutional medical staff appointment as appropriate for the geographical locale of the fellowship program (e.g., Canada FRCPC, UK FRCA).
2. Current certification in anesthesiology as regionally required or possess other acceptable qualifications or experience that allows the practice of anesthesiology. The individual should be an active member of the anesthesiology faculty and must devote a significant part of their practice to neuroanesthesiology.
3. Current certification or formal education in neuroanesthesia or neurocritical care is desirable. In lieu of specialized training, regionally or internationally recognized, or extensive experience and expertise is needed.
4. Requisite clinical expertise and documented educational and administrative experience is necessary. Optimally the individual should have a minimum of five years' experience in clinical and academic neuroanesthesiology. Established academic productivity is desirable.
5. Academic achievements may include following:
 - a. Publications in peer reviewed journals.
 - b. The development of national, regional or local educational curriculum.
 - c. Engagement in quality development activities.
 - d. Significant involvement in neuroanesthesia educational efforts for anesthesiology residents.
 - e. Invitations to deliver regional, national, or international lectures and seminars relevant to neuroanesthesiology, or;
 - f. Recognized research in the fields of clinical anesthesiology and basic science research. A program director must have continuing significant time devoted to clinical neuroanesthesia practice.
6. Facility to communicate in English is an expected attribute of the program director.
7. Active membership the Society for Neuroscience in Anesthesiology and Critical Care (SNACC) is required for the program director as a means to foster the necessary communications between and among program directors and ICPNT, which is administratively in SNACC.

ii. Program Director Responsibilities:

The program director must administer and maintain an educational environment conducive to educating the fellows in each of the delineated competency areas. The program director shall:

1. Prepare and submit all information required and requested by the ICPNT.
2. Be familiar with and oversee compliance with ICPNT policies and procedures.
3. Maintain communication with ICPNT:
 - a. Complete the ICPNT formal initial application including materials requested to

- maintain and support program accreditation.
 - b. Communicate significant program changes (e.g., change in personnel or leadership, educational site, fellow activity) within 30 days.
 - c. Assure faculty and fellow participation in ICPNT activities designed to improve and expand neuroanesthesiology education.
 - 4. Administrative requirements include but are not limited to:
 - a. New program application for ICPNT accreditation.
 - b. Continuing program requirement documentation.
 - c. Provide appropriate clinical supervision/guidance to the fellows.
 - d. Develop and enforce a supervision policy of the fellow that meets the definitions endorsed by the ICPNT and meet regional standards. Specific ICPNT recommendations are found at VIIa. The policy must specify fellow's oversight responsibility for the anesthesiology residents or other direct providers.
 - e. Maintain a written outline of the educational program goals to include didactic knowledge, technical skills, clinical performance and professionalism expected during each module, academic activity or other program assignment that include ICPNT expectations (Appendix 2, 3).
 - f. Regularly organize teaching and academic activities for the fellows such as journal clubs, case conferences, morbidity and mortality meetings, continuous quality improvement activities, didactic conferences, webinars, internet based educational opportunities, and research conferences. Participation in these activities should be an educational expectation with documentation of attendance suggested.
 - g. Support adherence to the Code of Ethics and Professional Conduct of the World Health Organization (APRIL 2017) relating to non-discrimination in selection of fellows as allowed by local custom.
http://www.who.int/about/ethics/code_of_ethics_full_version.pdf
 - 5. Evaluation of program, fellows and faculty:
 - a. Implement a formal fellow evaluation process in compliance with local requirements. Assess for satisfactory accomplishment of educational, clinical and technical goals and objectives. It is recommended that periodic feedback through evaluation (formative) be provided to the fellow, faculty, module leadership and affiliated institutions.
 - b. A summative evaluation with the fellow at the end of the training is encouraged but not required. Anonymous notification to the ICPNT regarding the final status of all fellows is required yearly.
 - c. Provide a formal avenue for appeal of an adverse action that meets local standards.
 - 6. Participate in the sponsoring institutional process for recruitment of fellows and faculty.
 - 7. Report major change in the program structure outlined in original application, including:
 - a. Adverse local program citations, responses and mitigation of adverse actions regarding the educational programs involving fellow activities.
 - b. Requests for appeal of an adverse action by the ICPNT regarding the fellowship program.
 - c. Voluntary withdrawal from the ICPNT-accredited program.
 - d. Update faculty annually with ICPNT.
 - 8. Certify and document fellowship outcome to ICPNT
 - a. Inform ICPNT of fellowship outcome for each uniquely identified enrolled fellow: successful, unsuccessful, or incomplete/withdrawn.

- i. A start and anticipated completion date for each fellow must be submitted to the ICPNT within 30 days enrollment.
 - ii. A fellow's status is determined solely by the sponsoring organization. Consequently, all inquiries except to verify the sponsoring organization accreditation status will be redirected to the sponsor program.
 - iii. The ICPNT may receive uniquely identified fellow transcripts and other documents. For educational research a waiver or release will be provided to the program to allow participation.
- b. Maintain up to date records of all fellowship activities. Maintain a transcript of successful fellowship rotations including the number and type of clinical experiences as suggested by the ICPNT (Appendix 2, 3). Submit to the ICPNT within 30 days of the fellowship completion on the ICPNT provided documents.
- c. Report to ICPNT any unsuccessful completion, program withdrawal or termination of fellowship within 30 days.
- d. Upon successful completion of the fellowship, the sponsoring organization must provide to the graduating fellow an institutional certificate documenting completion of the fellowship. As allowed by institutional protocols, the certificate should indicate the accrediting program is the International Council on Perioperative Neuroscience Training (ICPNT), a component of Society for Neuroscience in Anesthesiology and Critical Care (SNACC).

b. Core Faculty

- i. The program director must appoint core faculty and they must be included in the fellowship program accreditation application. A neuroanesthesiology fellowship training program should have dedicated faculty for mentoring, training, providing feedback, and evaluating performance of the trainees.
- ii. There must be at least two core faculty members (including the program director) with documented qualifications to instruct and supervise fellows. Core clinical faculty must be active in the clinical practice of anesthesiology, neuroanesthesiology or critical care.
- iii. The neuroanesthesiology core faculty should have the following qualifications:
 - 1. The core physician faculty should demonstrate a strong interest in the education of neuroanesthesiology fellows. They will be expected to teach, supervise, and provide formal feedback and evaluations of fellows to ICPNT standard.
 - 2. The core physician faculty must possess current medical licensure, institutional medical staff appointment, and a current certification in anesthesiology as appropriate for the local requirements.
 - 3. The core physician faculty must have as regionally required or possess other acceptable qualifications or experience in neuroanesthesiology, neurocritical care, and neurointerventional radiology.
 - 4. The core physician faculty, in leu of fellowship training, should have a minimum of three years of post-residency experience in respective.
 - 5. The core physician faculty should be encouraged to be academically productive in a fashion relevant to neuroanesthesiology (with at least one of the following: publications, educational development, formal quality improvement programing, or clinical/basic research (Appendix 4).
 - 6. It is recommended that the core faculty be members in good standing of a professional neuroscience-oriented organization or interest group.

c. Ancillary Faculty

- i. The program director must appoint ancillary anesthesia trained faculty who may practice at the primary organization or affiliated organizations (i.e., another hospital), and they must be included in

- the fellowship program accreditation application. The ancillary faculty must devote sufficient time to the educational program to meet the supervisory and teaching responsibilities requested by the program director.
- ii. Ancillary faculty must be willing to supervise, organize, educate and develop a fellowship rotation as requested by the program director. In that capacity they will be expected to teach, supervise, and provide formal feedback and evaluations of fellows to ICPNT standards.
 - iii. Ancillary faculty must be willing to participate in the didactic educational program.
 - iv. This faculty should participate in fellow selection process at the request of the program director.

d. Adjunct Faculty

- i. The program director must appoint adjunct faculty and they must be included in the fellowship program accreditation application. Adjunct faculty will be faculty from other subspecialty training programs (such as neurological intensive care, neurosurgery, neurology, pain management, interventional neuroradiology, neuroscientist) that provide clinical, research or academic experiences valued in the fellowship program.
- ii. Neuroscientist faculty who do not fulfill qualifications for core clinical faculty may possess significant experience in clinical or basic neuroscience and should be designated as adjunct faculty. They can supervise one or more fellowship rotations in their area of expertise at the request of the program director.

e. Non-physician Program Personnel

Perioperative neuromonitoring technicians, transcranial doppler sonographers, and research staff, advanced practice medical professionals may contribute to the training of the neuroanesthesiology fellows without formal title or submission of qualifications to the ICPNT.

f. Administrative Personnel

A well-functioning program requires administrative support in the form of sufficient appropriately equipped and supplied personnel to enable performance of support functions such as scheduling, organizing educational events, and reporting activities and educational statistics to ICPNT.

IV. RESOURCES

- a. There must be access to neurocritical care service with specialized nursing for neurocritical care which may be a component of a mixed-use intensive care (or therapy) unit. There must be access to dedicated neuroradiological clinical services capable of providing educational experience interpreting and where applicable performing Computerized Tomography (CT) scan, Magnetic Resonance Imaging (MRI), neuroangiography, and interventional neuroradiology procedures.
- b. There must be access to dedicated neuroradiological services capable of performing CT scan, MRI, neuroangiography, and other interventional neuroradiology procedures. In addition, there must be access to specialized training in neuroradiology.
- c. Education in Intraoperative Neuromonitoring (IONM) services is required and clinical experience is recommended. At the discretion of the program director, exposure to IONM services when not locally available can be pursued using ICPNT and SNACC referrals.
- d. There must be suitable access to consultation with other disciplines, including cardiology, critical care medicine, emergency medicine, neurology, pulmonology, laboratory medicine and surgical fields. There must be allied health staff, other support personnel and facilities to provide ICPNT suggested standards of care. This care must also be applicable to the regional medical community.

- e. **Medical Information Access**
Fellows, faculty, and staff must have ready access to specialty specific and other appropriate reference material in print or electronic format. Internet-based medical literature databases with search capabilities and institutional access to research publications should be available.

V. FELLOW APPOINTMENTS

a. Eligibility Criteria

i. Each Fellow Must:

1. Be eligible for a medical license (independent, training, or institutional) as required by law and applicable to the institution(s) participating in the fellowship program.
2. Have successfully completed an accredited (as customarily defined in the relevant region) anesthesiology residency, or;
3. For an enrolled (during residency) fellowship, be a resident in good standing in an accredited residency program (as customarily defined in the relevant region) and have completed a minimum of two years of clinical anesthesiology residency.

ii. Each Program Must:

1. Document that each fellow has met the eligibility criteria.
2. Advocate adherence to the Code of Ethics and Professional Conduct of the World Health Organization relating to non-discrimination in selection of fellows while adhering to the local institutional requirements. http://www.who.int/about/ethics/code_of_ethics_full_version.pdf

b. Number of Fellows

The program's educational resources must be adequate to support the number of fellows appointed to the program. The number of fellows cannot exceed the number of core faculty. The presence of other learners or staff members must not interfere with the appointed fellows' education.

A fellowship program without enrolled fellows can be accredited.

VI. Educational Program

a. Competencies:

Fellows must spend at least 80% of their fellowship in supervised then guided neuroscience activities to include required and elective clinical care and scholarly work as designated by the program director.

The ICPNT recommends the following competencies are integrated into the local didactic and clinical curriculum. The details of the requirements are outlined in Appendix 2, 3.

i. Patient Care and Procedural Skills

Fellows must be able to provide safe, effective, evidence-based patient care that is compassionate and appropriate. Under the direction of faculty members fellows must demonstrate:

1. The ability to provide clinical consultation for neurosurgical and neuroradiology patients, including assessment of the appropriateness of a patient's preparation for anesthesia care during surgery or interventional neuroradiology.
2. The ability to provide clinical consultation for non-neurosurgical patients with neurological diseases, regarding assessment of the appropriateness of a patient's preparation, preoperative clinical management and neuromonitoring. Knowledge to recommend IONM studies during

interventional radiology, cardiac, vascular surgery and peripheral procedures involving neurologic tissue e.g., brachial plexus schwannoma or neurofibrosarcoma is required.

3. Competence in intraoperative patient management and perioperative care of patients with neurologic disease during neurosurgery, intracranial, spine and spinal cord and interventional neuroradiology is required.
4. The ability to independently execute technical procedures, manage the invasive device and interpret the information provided during patient care procedures is necessary. The extent of required competency should reflect local medical practices.
5. Competence in the comprehensive anesthetic management of patients undergoing neurosurgical, structural spine and neuroradiology procedures is available in Appendix 2 and Appendix 3. This must include:
 - a. Preoperative assessment, optimization and risk stratification. Obtaining then interpreting appropriate diagnostic tests and specialty medical consultations.
 - b. Effective communication with the multi-disciplinary teams.
 - c. Anesthetic drug selection and administration.
 - d. Appropriate positioning.
 - e. Post anesthesia recovery and neurocritical care management.
 - f. Detection and management of venous air embolism, hemorrhage and other complications.
 - g. Monitoring and management of patients with brain edema, intracranial hypertension, cerebral ischemia, and epilepsy.
 - h. Anesthesia care for awake craniotomy with cortical mapping, awake placement of Deep Brain Stimulators (DBS) for movement disorders, seizure foci ablation.
 - i. Provision of anesthetic care for surgical procedures in MRI and CT locations.
 - j. Perioperative pain management.

ii. Medical Knowledge

Fellows must demonstrate knowledge of established and evolving relevant neuroscience (e.g., biomedical, clinical, and social-behavioral science), as well as synthesize and apply this knowledge to patient care. Fellows must demonstrate competent application of their knowledge, with specific emphasis on the anesthetic implications of the altered central and peripheral nervous system.

iii. Professionalism

Fellows are expected to have mastered professionalism during residency training skills and habits related to professionalism. However, they should participate and demonstrate leadership in required professionalism activities that are a component of the residency or hospital-based programs.

b. Didactic Component

- i. The didactic curriculum should be provided through journal clubs, lectures, case conferences, morbidity and mortality meetings, research conferences, facilitated self-learning, and workshops, and should supplement clinical experience all of which should include participation and/or leadership of a fellow.
- ii. Faculty members should lead the majority of the sessions. Conferences may be supplemented by attendance at external meetings, webinars, or other methods of internet-based education.
- iii. The didactic curriculum should include all topics previously listed as expected medical knowledge competencies.

c. Clinical Components

Curriculum elements will be addressed in a clinical or practice setting. The curriculum must have a goal to incorporate principles and knowledge in neuropathophysiological, neuropharmacological, and general medicine in order to provide high level care to patients undergoing neurosurgical, structural spine, and neurointerventional procedures. The clinical curriculum should be structured to acquire necessary knowledge and experience. Educational structure should be adapted to optimize educational opportunity in the local environment.

Specific suggestions for competencies acquired in each module can be found in Appendix 2, 3.

d. Scholarly Activities

This area addresses the curriculum elements that will be related through scholarly activities and included:

- i. Each fellow is encouraged to conduct or be substantially involved in a scholarly project which leads to presentations, preferably by the fellow, at a national or regional meeting, and/or publication. At a minimum each fellow should deliver local presentations related to their interests or research.
- ii. The fellow must have a faculty mentor overseeing the project and any presentations or publications.

e. Educational Program Resources and Facilities

- i. The institution and the program must jointly ensure the availability of adequate resources for fellow education.
- ii. The patient population must include medically complex patients undergoing high- and low-risk surgical procedures in sufficient volume and variety to provide a broad clinical and educational experience for each fellow.
- iii. There must be an active critical care service that is regularly involved in multidisciplinary care including neurocritical care.
- iv. An active intraoperative neuromonitoring service that is regularly involved in perioperative multidisciplinary care is recommended but not required. This service must be overseen by a neuroanesthesiologist, neurologist, PhD-level neurophysiologists or neurosurgeon with appropriate qualifications, certification, and experience may also oversee this program. An external rotation with duration specified by the program director may be arranged if this service is not available.
- v. There must be facilities and space for the education of fellows, including meeting space, conference space, space for academic activities, and access to computers and medical records. Interactive electronic communication (i.e., "Zoom") should be provided.
- vi. Fellows, faculty, and staff must have ready access to specialty-specific and other appropriate reference material in print or electronic format. Internet-based medical literature databases with search capabilities and institutional access to research publications should be available.

VII. Program Assessment and Quality Activities

a. Supervision of Fellows

To assure high quality patient care, and fellow education, there must be explicit expectations regarding the transition from supervision to guidance. These are specifically outlined in Appendix 3.

- i. In the clinical learning environment, each patient must have an identifiable, appropriately credentialed and privileged attending physician who is trained to local level of expected expertise (licensed independent practitioner as approved by each institution). They are ultimately responsible for patient care. This would be the supervising faculty but could be the fellow who has successfully completed training and required local credentialing.
- ii. Application of Supervision Policy
The privilege of progressive authority and responsibility, conditional independence, and a supervisory role in patient care delegated to each fellow must be assigned by the program director and faculty members and be consistent with local regulations.

The suggested progression of clinical independence will depend on the assessment of the program director, the faculty and compliance with the progression of responsibility defined in the accredited sponsoring organization.

Levels of Supervision: To ensure oversight of fellow supervision and graded authority and responsibility, the program must use the following classification of supervision by clinical faculty:

1. Direct Supervision - The supervising physician is physically present with the fellow and patient.
 2. Indirect Supervision - Direct supervision immediately available when requested. Customary supervision requires a designated supervising physician for all clinical activity that are considered to contribute to the fellowship experience. The supervision attributes should be determined by the program and outlined for the ICPNT.
 - a. The supervising physician is physically within the hospital or another site of patient care and is immediately available to provide direct supervision and/or consultation.
 - b. The supervising physician is not necessarily physically present within the hospital or other site of patient care but is immediately available by means of telephone and/or electronic modalities and is available to provide consultation and/or direct supervision.
 - c. Depending on institutional rules indirect supervision may entail the fellow having an appointment as an instructor or junior faculty. Fellows can be allowed to function as junior faculty, as allowed by institutional guidelines and local laws and regulations, and will still be indirectly supervised or guided by core faculty consultants. Advancement to this level of independence requires that the fellow demonstrates satisfactory improvement during the training program.
 3. Oversight - The supervising physician is available to provide review of procedures/encounters with feedback provided when immediate consultation and advice is requested or after care is delivered.
- iii. The program director must evaluate each fellow's abilities based on achievement of competencies described in this document.
 - iv. Faculty members functioning as supervising physicians should delegate portions of care to fellows, based on the needs of the patient and the skills of the fellows.
 - v. Fellows should serve in a supervisory role of residents or junior fellows in recognition of their progress toward independence, based on the needs of each patient and the skills of the individual fellow. Fellow supervision of residents must be in agreement with the program director of the residency program.
 - vi. For indirect and direct supervision, the plan for each anesthetic should be discussed with the supervising faculty. Programs must set guidelines for circumstances and events in which indirectly supervised fellows must communicate with appropriate supervising faculty members, such as the transfer of a patient to an intensive care unit, changes in anesthetic plan or patient condition, or end-of-life decisions.
 - vii. Each fellow must know the limits of their scope of authority and the circumstances under which they are permitted to act with conditional independence.
 - viii. Faculty supervision assignments should be of sufficient duration to assess the knowledge and skills of each fellow and delegate to them the appropriate level of patient care authority and responsibility.
 - ix. Trainees undergoing an enrolled fellowship in which they are not yet fully trained anesthesiologists must be supervised as residents according to guidelines of the institutional residency program for a given level of prior residency experience.

b. Clinical Responsibilities

The clinical responsibilities for each fellow must be based on post medical school years of training, years of anesthesiology training and experience, patient safety, fellow education, severity and complexity of patient illness/condition and available support services.

i. Teamwork

Fellows must care for patients in an environment that maximizes effective communication. This must include the opportunity to work as a member of effective inter-professional teams that are appropriate to the delivery of care in the specialty

ii. Fellow Duty Hours

1. Hours per week and per shift should be dictated by local custom. It is important to recognize undo fatigue negatively affects learning and performance.
2. In unusual circumstances, fellows, on their own initiative, may remain beyond their scheduled period of duty to continue to provide care.
3. Moonlighting defined as unsupervised practice should not be counted towards the training and must not interfere with the ability of the fellow to achieve the goals and objectives of the educational program. However, rules on local custom dictate program decisions.

c. Evaluation

i. Fellow Evaluation

1. Formative Evaluation for education purposes
 - a. The faculty must evaluate fellow performance in a timely manner. The ICPNT expectation is the method of evaluation will be dictated by local custom. The following information is considered best practice and is strongly encouraged.
 - b. The faculty should provide evaluations of each fellow's progress and competency to the program director after each rotation and when requested by the program director.
 - c. The program should:
 - i. Provide objective assessments of competence in patient care and medical knowledge according to the academic guidelines of the institution.
 - ii. Use multiple evaluators (e.g., faculty, peers, patients, self, and other professional staff); and,
 - iii. Provide each fellow with documented evaluation of performance with feedback at least semiannually.
 - iv. Provide each fellow with feedback evaluation at the end of each rotation.
2. The evaluations of fellow performance must be accessible for review by the fellow in accordance with institutional policy and ICPNT recommendation.
3. Disciplinary and remedial actions:
 - a. Fellows who violate local rules and expectations regarding behavior or professionalism should be subject to disciplinary actions in accordance with local institutional policy.
 - b. Fellows who are progressing poorly in terms of achieving competency goals of the fellowship may, at the discretion of the program director, be subject to remedial action which may include slowing the rate of increasing responsibility, repeating rotations, increasing duration of the fellowship, attending additional conferences or lectures, participating in simulation activities, or other constructive endeavors.
 - c. The primary consideration for any educational program is the future patients who will be under the care of the trainee. Based on this, there should thus be no reluctance to discharge a poorly performing trainee who is deemed to be unlikely to

achieve the goals of the fellowship.

4. **Summative Evaluation**

The program director must provide a summative evaluation for each fellow upon completion of the program. This evaluation may include a summary of monthly evaluations or an oral and/or written examination consistent with institutional academic guidelines and must become part of the fellow's record as maintained by the institution and should be accessible for review by and discussed with the fellow in accordance with institutional policy. This evaluation must:

- a. Document the fellow's performance during the final period of education, and;
- b. Verify that the fellow has demonstrated sufficient competence to enter advanced and independent neuroanesthesiology practice after completion of required anesthesiology training.
- c. Summarize the case experience (based on ICPNT definition of case credits) of each fellow during their fellowship.

ii. Faculty Evaluation

1. At least annually, the program must incorporate faculty performance evaluation as it relates to the educational program.
2. These evaluations should include a review of the faculty's clinical teaching abilities, commitment to the educational program, clinical knowledge, professionalism, and scholarly activities.
3. Steps should be taken to assure anonymity of the evaluations as dictated and available in local customs.

iii. Program Evaluation

1. The program director must document formal, systematic evaluation of the curriculum at least annually. The program must monitor and track each of the following areas:
 - a. Fellow performance
 - b. Faculty development
2. Both faculty and fellows should have the opportunity to provide anonymous feedback regarding all aspects of the program. This should include program director, core, adjunct and ancillary faculty as well as each rotation and each institution. Assessment by the residents is required.
3. Residents should be directed to the appropriate local authority to perform the evaluation. Timely evaluation, within 15 days of the event is strongly recommended.
4. If local deficiencies are found, the program should prepare a written plan of action to document initiatives to improve performance. This will be submitted by the program director and the Organization leadership to the ICPNT. The action plan for remediation should be reviewed and approved by the teaching faculty and documented in meeting minutes.

d. Program Quality Improvement

Quality improvement is a standard requirement for faculty. It improves organizational and most importantly patient outcomes. All neuroanesthesia faculty, fellow(s), ancillary staff and residents should organize and execute a yearly quality project and monitor the impact the activity had within the organization. A brief report on these activities will be expected yearly or at the program review.

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