

REQUIREMENTS FOR POST-RESIDENCY NEUROLOGIC TRAINING IN CLINICAL NEUROMUSCULAR PATHOLOGY

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(Note: this document has not been adopted by the United Council for Neurologic Subspecialties and is currently under review: August 2005)

I. Introduction

A. Definition of the Subspecialty

Clinical Neuromuscular Pathology is a subspecialty area of neurology defined by special competence in the interpretation of muscle or nerve pathology. It differs from neuropathology because it is highly integrated with the clinical management of neuromuscular disease. All UCNS training programs in Clinical Neuromuscular Pathology must incorporate the evaluation of muscle or nerve biopsies in the context of clinical patient care.

B. Duration and Scope of Education

1. The training period in Clinical Neuromuscular Pathology must be at least 12 months of education subsequent to satisfactory completion of an Accreditation Council for Graduate Medical Education (ACGME) or Royal College of Physicians and Surgeons of Canada (RCPSC) accredited residency in neurology.

2. Training in Clinical Neuromuscular Pathology that occurred during general neurology residency training will not be counted toward meeting this requirement.

3. Neuromuscular training is a minimum of 12 months of defined training. If integrated with a research program, the Clinical Neuromuscular Pathology training program may be extended for a maximum of 24 months.

C. Educational Goals and Objectives

1. Clinical Neuromuscular Pathology programs must provide an organized post-residency educational experience for neurologists seeking additional competence in muscle and nerve pathology. Programs must emphasize scholarship, self-instruction, development of critical analysis of clinical specimens and the ability to make appropriate clinical-pathological correlation and clinical-pathological correlation and decisions.

2. Programs must offer organized education in all current aspects of Clinical Neuromuscular Pathology including basic science and clinical neuromuscular disease, laboratory procedures, laboratory management, and quality assurance.

II. Institutional Organization

A. Sponsoring Institution

1. One sponsoring institution must assume the ultimate responsibility for the program and this responsibility extends to fellow assignments at all participating institutions.

2. The program should be sponsored by a Department of Neurology in a medical institution that has an ACGME or RCPSC accredited residency in neurology.

B. Participating Institutions

1. Assignment to an institution must be based on a clear educational rationale, integral to the program curriculum, with clearly-stated activities and objectives, and should provide resources not otherwise available to the program. When multiple participating institutions are used, there should be assurance of the continuity of the educational experience.
2. Assignment to a participating institution requires a letter of agreement with the sponsoring institution. Such a letter of agreement should:
 - a. Identify the faculty who will assume both educational and supervisory responsibilities for residents;
 - b. Specify their responsibilities for teaching, supervision, and formal evaluation of fellows, as specified later in this document;
 - c. Specify the duration and content of the educational experience; and
 - d. State the policies and procedures that will govern fellow education during the assignment.
3. Assignments at participating institutions must be of sufficient length to ensure a quality education experience, and should provide sufficient opportunity or continuity of care. Although the number of participating institutions may vary with the subspecialty's needs, all participating institutions must demonstrate the ability to promote the program goals as well as educational and peer activities. Exceptions must be justified and prior-approved by the UCNS.
4. The training must take place in facilities that have been approved under the Clinical Laboratory Improvement Act (CLIA) and who are supervised by physicians who meet all state licensing requirements.

- C. If more than one facility is used in the program, there must be a clear educational rationale for the use of each participating unit.

III. Faculty and Staff

A. Program Director

1. The Program Director must be:
 - a) a physician who has a valid license to practice medicine in the state where the program is located.
 - b) certified in neurology by the American Board of Psychiatry and Neurology¹ or the RCPSC..

¹Individuals holding a current certificate in Child Neurology or other neurologic area that may be recognized by the American Board of Psychiatry and Neurology are also acceptable.

- c) qualifications in Clinical Neuromuscular Pathology recognized by the UCNS.
- d) a member in good standing of the medical staff of the program's sponsoring institution.

2. The program director should be an experienced, active clinician, and must devote sufficient time to the program to ensure achievement of the educational goals and objectives.
3. The program director should be based primarily at the main program teaching site.
4. The program director should be qualified by training and experience in Clinical Neuromuscular Pathology, education and administration to direct and supervise the program.
5. The program director should participate in scholarly activities appropriate to the profession such as local, regional and national specialty societies, research, presentations, and publications.

B. Program Director Responsibilities

1. Authority and primary responsibility for the effective conduct of the program.
2. Supervising the recruitment and appointment process for applicants, including compliance with appropriate credentialing policies and procedures.
3. Ensuring and documenting proper, direct, supervision of all trainees at all times by appropriately qualified faculty. Such supervision must be appropriate to the level and experience of the trainee.
4. Monitoring the progress of each Clinical Neuromuscular Pathology trainee, including the maintenance of a training record that documents completion of all required components of the program, as well as the evaluations of performance by supervisors and teachers.
5. Monitoring the quality of didactic and clinical experiences, including the collection and review of periodic written evaluation by the trainee of all such supervision and experiences.
6. Maintaining all training records, including those related to appointment, departmental processes regarding due process, sickness and other leaves, call responsibilities, and vacation time.
7. Placing a statement in the training record of each trainee upon the completion of the program that documents the satisfactory completion of all program requirements.
8. Notifying the Accreditation Council of the UCNS promptly of any major changes in the program or its leadership and preparing timely, accurate program information forms and related materials in preparation for review.

C. Other Faculty and Personnel

1. There must be a sufficient number of qualified physician faculty, at least one faculty per every two fellows, to maintain a quality didactic and clinical educational program.
2. These individuals must be certified in neurology by the American Board of Psychiatry and Neurology or have equivalent qualifications in neurology. These individuals must be additionally qualified by experience in Clinical Neuromuscular Pathology to provide the expertise needed to fulfill the didactic, clinical, and research goals of the program.
3. The faculty must devote sufficient time, at least 70% of a standard schedule, to the educational program in Clinical Neuromuscular Pathology to assure fulfillment of its goals and objectives.
4. Physician faculty should participate in the specialty societies of the field, and participate in clinical and/or basic research.
5. The laboratory must be directed by qualified physicians who are licensed to practice medicine and are members in good standing of the institution medical staff.
6. There must be a sufficient number (at least one) of qualified histotechnologists as well as clinical and other staff to support laboratory work and the educational program.

IV. Facilities and Resources

- A. The core neurology program must be a part of, or affiliated with, clinical care facilities, that have the full range of patient services.
- B. There must be adequate equipment, laboratory space, office facilities, meeting rooms, classrooms, and research space to support service, teaching, and educational responsibilities.
- C. The Clinical Neuromuscular Pathology program should be integrated into a full-service clinical program providing evaluation of the patient.
- D. The Clinical Neuromuscular Pathology program must provide the trainee a sufficient variety and volume of pathological material from concurrent material and teaching files. These shall include at least 60 nerve biopsy specimens and 100 muscle biopsy specimens during the training period to guarantee an adequate educational experience.

V. The Educational Program

- A. Role of Program Director and Faculty
 1. The program director, with assistance of the faculty, is responsible for developing and implementing the academic and clinical program of fellow education by:
 - a. Preparing and implementing a written statement outlining the educational goals of the program with respect to the knowledge, skills, and other attributes of fellows for each major assignment and each level of the program. The statement must be distributed to fellows and faculty and reviewed with fellows prior to the assignment.

- d. Formalin-fixed segments of nerve embedded in paraffin, appropriately sectioned, and stained applying to these nerve sections a battery of stains addressing the clinical problem at hand.
- e. H&E, trichrome, PAS, methyl violet, and Congo red.
- f. the importance and application of immunostaining using selected antibodies directed at the clinical problem.
- g. Glutaraldehyde-fixed segments of nerve, post-fixed in osmium tetroxide and embedded in epoxy resin, sectioned and stained using basic aniline dye and/or paraphenylenediamine for light microscope evaluation.
- h. electron microscopic evaluation of nerve biopsies.
- i. teased nerve fiber preparations from segments of nerve fixed in glutaraldehyde and post-fixed in osmium tetroxide placed on slides for evaluation by the trainee.
- j. methods of nerve fiber teasing.
- k. development of frequency-distribution histograms of myelinated and unmyelinated nerve fibers.

I. Muscle Laboratory

- 1. Within the nerve laboratory the trainee should become familiar with and competent in the following areas:
 - a. competent services for the preparation, transportation, sectioning and staining of muscle biopsy specimens
 - b. Rapidly frozen, unfixed segments of muscle appropriately sectioned and stained using a battery of stains directed at establishing the diagnosis.
 - c. stains that includes: hematoxylin and eosin, modified trichrome, NADH dehydrogenase, succinate dehydrogenase, cytochrome c oxidase, ATPase reactions at pH 4.3, 4.6, and 9.4, acid phosphatase, periodic-acid Schiff, oil red O, nonspecific esterase, and Congo red.
 - d. the principles of immunostaining using selected antibodies addressing the clinical problem undergoing evaluation.
 - e. the fixation and embedding of material for electron microscopy and should spend time viewing the muscle under the electron microscope.
 - f. Familiarity with morphometric analysis should be incorporated into the training program.

J. Competencies

The fellowship program must require that its fellows obtain competence in the ACGME core competency areas listed below to the level expected of a new practitioner. Programs must define the specific knowledge, skills, behaviors, and attitudes required and provide educational experiences as needed in order for their fellows to demonstrate the following:

1. *Patient Care* that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health;
2. *Medical knowledge* about established and evolving biomedical, clinical, and cognate sciences, as well as the application of this knowledge to patient care;

3. *Practice-based learning and improvement* that involves the investigation and evaluation of care for their patients, the appraisal and assimilation of scientific evidence, and improvements in patient care;
4. *Interpersonal and communication* skills that result in the effective exchange of information and collaboration with patients, their families, and other health professionals;
5. *Professionalism*, as manifested through a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to patients of diverse backgrounds;
6. *Systems-based practice*, as manifested by actions that demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

K. Duty Hours and Work Environment

1. During clinical patient care rotations, the trainee duty hours and working environment should be in accordance with requirements for post-doctoral trainees as delineated in the ACGME document: <http://www.acgme.org/IRC/Ircpr900.asp>.

VI. EVALUATION

- A. There must be regular written evaluation (at least quarterly) of the trainees by faculty and results must be discussed with the trainee. A permanent record of evaluation must be maintained and be accessible to a trainee and other authorized personnel.
- B. The performance of the faculty must be evaluated by the program no less frequently than at the midpoint of the accreditation cycle and again prior to the next site visit. The evaluations should include review of their teaching abilities, commitment to the educational program, clinical knowledge, and scholarly activities. Annual written confidential evaluations by fellows must be included in this process.
- C. Trainees should submit written evaluations of the program at least once a year.