

Neuromuscular Medicine Fellowship

1. Introduction

Specialists in neuromuscular disorders possess expert knowledge in the science, clinical evaluation and clinical management of disorders of the anterior horn cell, peripheral nerve, neuromuscular junction and muscle. This encompasses knowledge of the pathophysiology, pathology, diagnosis and treatment of these disorders at a level that is significantly beyond the training and knowledge expected of a general neurologist.

2. Goals and Objectives

The University of Colorado Department of Neurology has continuously provided structured and comprehensive training for neuromuscular fellows for over 40 years. The goal of the Neuromuscular Medicine Fellowship at the University of Colorado is to train neurologists to gain subspecialty expertise in neuromuscular disorders. Our program is a combined **ACGME-accredited** Neuromuscular Medicine and **UCNS-accredited** Clinical Neuromuscular Pathology Fellowship. Our program is one of five programs that are currently accredited by UCNS. Graduates of the program will serve to advance the science and understanding of nerve and muscle abnormalities. They will also provide state-of-the-art diagnoses and care for patients with nerve and muscle disorders and will educate other physicians (including internists, family practitioners, neurology residents, general neurologists and other neuromuscular subspecialists), other healthcare personnel and the public about these disorders.

Fellows who complete the program will acquire expertise in the evaluation and management of patients with nerve and muscle pathology. This includes: skill in the interview and examination of patients with neuromuscular complaints, knowledge of the appropriate laboratory investigations for diagnosis of neuromuscular disorders, knowledge of the differential diagnoses for the various clinical presentations of nerve and muscle problems and expertise in the management of these conditions. Fellows will also become proficient in: the performance of nerve and muscle biopsies, interpretation of nerve and muscle biopsies and performance and interpretation of electrodiagnostic studies (including electromyography, nerve conduction studies and autonomic studies).

Graduated fellows are eligible to sit for ABEM Electrodiagnostic Medicine Boards, Neuromuscular Medicine and UCNS Clinical Neuromuscular Pathology boards.

3. Definitions

Neuromuscular disorders are a subsection of neurology that includes abnormalities of the anterior horn cells, nerve roots, peripheral nerves, neuromuscular junction and muscle, including disorders that affect adults and children.

4. Content of Subjects to be Taught

Fellows will be provided with an advanced and extensive background in neurophysiology, neuroanatomy and neuropathology of these conditions. They will also be exposed to the clinical presentation, laboratory investigation and management of a wide-range of neuromuscular disorders.

5. Prerequisites for the Trainee

Applicants for the neuromuscular fellowship program must have completed an accredited residency program in either child neurology, adult neurology, or physical medicine & rehabilitation before the fellowship begins. The University of Colorado offers one fellowship position each year.

6. Personnel Needed for the Training

The University of Colorado fellowship program has 8 full time faculty members who each have expertise in adult and pediatric neuromuscular disorders.

7. Qualifications of the Faculty

The Program Director, Dianna Quan, MD has more than two decades of experience practicing and teaching neuromuscular medicine and electrodiagnostic medicine. Other faculty members include Matthew Wicklund, MD, Vera Fridman, MD, Stacy Dixon, MD, PhD, Julie Parsons, MD, Melissa Wright, MD and Michelle Yang, MD. These faculty members have over 100 years of combined experience in neuromuscular practice and education.

8. Facilities Needed for the Training

This Neuromuscular Medicine Fellowship program is ACGME and UCNS approved and is offered under the auspices of the University of Colorado Department of Neurology, which also has its own ACGME-approved residency program. The University of Colorado is a quaternary referral center with state of the art medical and educational facilities to support its training programs. Fellows have ready access to the Dennison Medical Library, which has a collection of 271,833 bound volumes and access to 57,915 journal titles, a large selection of monographs, and a wide variety of computer databases. The library provides searching on MEDLINE, PubMed, and other databases from within the library or from home or office, 24 hours a day, seven days a week.

9. Set-Up for the Training

The fellowship program provides a clinical experience in which the fellow develops expertise in the evaluation and treatment of patients with a variety of neuromuscular disorders. The program design and structure are approved by the University of Colorado's Graduate Medical Education review committee. Dr. Quan is responsible for the overall coordination of the program and the selection of fellows for appointment to the program in accordance with University of Colorado and Department of Neurology policies and procedures. Dr. Quan is also responsible for selection and supervision of the teaching staff and personnel at each institution participating in the program. Dr. Quan and other faculty members have responsibility for the instruction and supervision of fellows in the program.

10. Methods of Training

The fellow receives instruction and practical experience sufficient to develop diagnostic and therapeutic skills to provide care for patients with neuromuscular disorders. The clinical experience includes opportunities to observe, evaluate, and manage patients with a wide variety of disorders of muscle and nerve. Clinical experience includes inpatient care and outpatient care. Supporting services in pathology, radiology, and electrodiagnosis are available. Fellows receive training in the performance and interpretation of nerve and muscle biopsies, motor and sensory nerve conduction studies, electromyography and single-fiber electromyography and testing of autonomic function.

The fellowship program conducts formal lectures and teaching conferences. These conferences include discussions of neuropathology, neurophysiology, genetics and the clinical diagnosis and management of neuromuscular disorders.

Clinical assignments include progressively increasing responsibilities for patient care with direct supervision by appropriate faculty. Subspecialty experience can be provided to accommodate a fellow's individual interests.

The neuromuscular fellow takes an active role in the teaching and training of neurology residents.

11. Timetable for Training

The University of Colorado's ACGME accredited Neuromuscular Medicine and UCNS-accredited Clinical Neuromuscular Pathology Fellowship program is one year long. Fellows who are interested in additional training in clinical research methods are encouraged to pursue an additional year of non-ACGME accredited training.

12. Methods of Evaluation of the Trainee

Dr. Quan, with participation of members of the teaching staff, will:

- Quarterly evaluate the knowledge, skills and professional growth of the fellow, using appropriate criteria and procedures.
- Communicate each evaluation to the fellow in a timely manner.
- Provide a written final evaluation for each fellow who completes the program. This evaluation will verify that the fellow has demonstrated sufficient professional ability to practice competently and independently. This final evaluation will become part of the fellow's permanent record retained by the University of Colorado.

13. Methods of Evaluation of the Training Process

The educational effectiveness of the Neuromuscular Medicine Fellowship is evaluated in a regular and systematic manner. The quality of the curriculum and the extent to which the educational goals have been are formally assessed once a year. Regular evaluations by fellows are utilized in this process.

14. Mechanisms for Feedback

Fellows are given the opportunity to provide feedback on the faculty and curriculum every three months during the fellowship. In addition, Dr. Quan is available to meet with the fellow on a weekly basis to discuss any concerns that the fellow has regarding the program. Dr. Quan is also available on a weekly basis to discuss concerns that the faculty may have with regard to the conduct of the fellowship.

15. Methods of Constantly Upgrading Knowledge

The faculty and fellow participate in continuing education in order to expand their knowledge base and remain up-to-date in their understanding of neuromuscular disorders. In recent years, these activities have included:

- Weekly participation in clinical discussions, clinical rounds and conferences.
- Monthly journal clubs or research conferences.
- Presentations at regional or national professional and scientific societies, such as the American Academy of Neurology, American Association of Neuromuscular and Electrodiagnostic Medicine, International Symposium on ALS/MND, Peripheral Nerve Society, and International Congress of Clinical Neurophysiology.
- Participaton in clinical research in the areas of ALS, nerve disease, muscle disease and myasthenia gravis.