I. INTRODUCTION

1. Neuromuscular Medicine (NMM) is a sub-discipline of neurology that deals with the pathophysiology, genetics, pathology, diagnosis, and treatment of neuromuscular disorders at a level significantly beyond the training and knowledge expected of a general neurologist or child neurologist. The mission of the Neuromuscular Section is to provide core competency standards of training for the evaluation and treatment of patients with neuromuscular disorders; to reduce death and disability for these diseases; and to improve coordination and treatment of patients with neuromuscular disorders.

2. Specialists in NMM possess specialized knowledge in the science, clinical evaluation, and management of disorders of the motor neuron, nerve roots, peripheral nerves, neuromuscular junction and muscle that affect patients of all ages. Specific diseases within NMM include amyotrophic lateral sclerosis, peripheral neuropathies, the muscular dystrophies, inflammatory myopathies, myasthenia gravis and related disorders of neuromuscular transmission, and other less common disorders. Diagnostic procedures relevant to NMM include nerve conduction studies and electromyography, autonomic testing; nerve, muscle, and skin biopsy; genetic testing, nerve and muscle imaging, forearm exercise testing, and immunologic testing. Therapeutic modalities include pharmacologic therapies, immunomodulatory therapies (immunosuppressive drugs, plasmapheresis and IVIg) and rehabilitation of neuromuscular disorders.

3. The practice of NMM is based on a fundamental, detailed knowledge of the anatomy, physiology, and biochemistry of the peripheral nervous system and muscle and requires an interdisciplinary approach involving basic science, epidemiology, clinical neurology, risk factor identification and management, pharmacology, electrophysiology, pathology, neurological critical care, rehabilitation and supportive services, and counseling. The field of NMM is of major importance to all areas of patient care.

4. The purpose of this document is to provide the Neuromuscular Section and the AAN with a comprehensive yet succinct review of the current state of the discipline, an assessment of the future needs and problems facing the field, and an analysis of how the section and the AAN can partner in achieving the unique goals and needs of the neuromuscular medicine community. The report is designed to be used mainly by groups and committees within the AAN, but may also be provided to external agencies (e.g. funding agencies and other neurologic organizations).

II. BACKGROUND/HISTORY OF THE SUBSPECIALTY OR SECTION

A. The AAN created a Neuromuscular Section (NMS) in 1998 with a membership of 145. The section has grown to its current membership nearing 1,000.

C. In 2003, the AAN Board requested that the NMS develop a plan for subspecialty training in NMM, with the goal of seeking approval of subspecialty certification in NMM under the ABMS. A proposal was developed under the direction of Dr. Vinay Chaudhry, with the support of the section’s Executive Committee and input from the AAN, and in collaboration with the American Board of Physical Medicine and Rehabilitation. NMM certification as a subspecialty was approved by the ABMS in September, 2005, and the first certification examination was held in September, 2008.

D. Other professional and disease-related organizations relevant to NMM include:

III. CURRENT STATE OF THE SUBSPECIALTY OR SECTION
A. In the area of patient care, the subspecialty may be divided into two groups: those caring for adult patients and those caring for children. In addition, further subdivisions consisting of those who perform neurophysiologic studies as a major part of their practice, and those who perform/interpret muscle & nerve biopsies seems appropriate. The AAN has collected demographic and practice information surveying 17,872 AAN members. Of the 6,804 U.S. neurologist respondents, 1,755 (27.9%) indicated that NMM was the focus of their practice. Interestingly, 2,570 respondents (40.8%) listed electromyography (EMG) as a practice focus, indicating that a substantial number of U.S. neurologists perform significant numbers of EMGs, but do not consider themselves NMM specialists. Similar information for U.S. pediatric neurologists was not available, but the number of pediatric neuromuscular subspecialists is limited. The American Medical Association (AMA) Physician Master File lists 15,831 physicians with the primary self-designation of neurology, child neurology, or clinical neurophysiology. Using AAN data, it can be estimated that there are approximately 4,416 (27.9% of 15,831) U.S. neurologists who consider themselves neuromuscular specialists. This does not account for physiatrists who have a primary practice interest in NMM.

B. Research. Many of the disorders embraced by NMM specialists are rare and neglected by national health authorities and the pharmaceutical industry, increasing the challenges of carrying out basic, translational and clinical research. Funding for all research programs in NMM is quite limited. Recent initiatives by the National Institutes of Health (NIH) have created programs promoting basic and translational research in NMM (see below) to address this deficit. For clinical trials, multi-center trials are often needed to enroll adequate numbers of patients for study, increasing their cost and complexity.

Clinical Research
Many neuromuscular diseases are so uncommon that collecting sufficient numbers of patients through randomized controlled trials (RCTs) to answer even simple questions regarding therapeutic interventions with mild or even moderate effects is difficult. Meeting regulatory requirements for an approved indication of a therapeutic agent in neuromuscular disease is
often a challenge. In addition, there is often wide phenotypic variability in patients with particular neuromuscular diagnoses and the rate of progression and, in some cases fluctuating nature of disease, make it difficult to establish stable, homogeneous study cohorts. In addition, rates of improvement in patients treated with placebo can often be quite high.

Basic/Translational Research
Currently there is a gap between basic science discoveries and patient benefit in the study of neuromuscular disorders. To reduce this gap, the NIH and various other associations (MDA, ALSA) have established programs encouraging translational research and the establishment of multidisciplinary translational research centers in NMM. Translational research is the process of applying ideas, insights, and discoveries generated through basic scientific inquiry to the treatment or prevention of human disease.

NINDS and NIAMS expanded the scope of the Program Announcements that were originally released in 2005 for preclinical therapy development in muscular dystrophy. These new PARs now address diseases of all of the components of the motor unit—the motoneuron (e.g., ALS, SBMA, and SMA), the axon (e.g., all types of inherited and acquired peripheral neuropathy), the neuromuscular junction (e.g., myasthenia gravis, Lambert-Eaton myasthenic syndrome, and the congenital myasthenic syndromes) and muscle fiber (muscular dystrophies and inflammatory myopathies). A part of the rationale for this unified program is that “progress and lessons learned about the process of developing therapies for any one of these diseases likely can benefit all of the others.”

In NMM, the main areas of ongoing basic/translational investigation include the study of the genetics of inherited neuromuscular disease and gene therapy approaches, strategies targeting neurodegeneration (including stem cell technology), and studies involving the immunology or immunotherapy of autoimmune neuromuscular disease. Given the recent emphasis on translational research, collaborations between basic scientists and clinicians have been forged, as requests for proposals are frequently requiring a translational component to the research. The precise numbers of clinician/scientists working in the area of NMM is not known.

Much basic research in NMM relies on high-quality biomaterials (DNA, cells and tissue), while clinical trials rely on suitable patient cohorts. For new treatments to make their way into practice, it is essential that access to these resources is facilitated between and among investigators. The establishment of biobanks and the introduction of large patient databases for neuromuscular diseases can facilitate this important requirement for research. Biobanks provide a network of facilities that encourage the storage of biomaterials obtained from patients with neuromuscular disease, and help scientists to obtain the specific material they need for their experiments on these diseases. These resources are becoming available through programs run by the NIH and MDA.

Sources of funding for neuromuscular researchers include NIH/NINDS, NIH/NIAMS, FDAS Orphan Products Division (OPD) Program, and private organizations like the Muscular Dystrophy Association. “Disease specific” associations (e.g. MGFA, Myositis Association, FSH Society, etc.) also fund work in their area of interest.
C. Education
Training in the neuromuscular disorders is an essential component of any neurology residency program. However, formal rotations in NMM are rare in most neurology residency programs, if they exist at all. In most cases, NMM is covered during the resident’s EMG rotation. A typical resident schedule comprising a total of 36 months of training typically includes a mean of 1.9 months in EMG training (range 0-4 months) (AAN Adult Neurology Program Director Survey, 4/26/2007) during which residents may or may not be exposed to the clinical care of patients with neuromuscular diseases.

In recognition of the above, a formal educational process that includes one year of fellowship training in NMM following residency training in Neurology or Physical Medicine and Rehabilitation has recently been approved by the Accreditation Council for Graduate Medical Education (ACGME). Currently, of program directors for fellowship programs in NMM, EMG, or clinical neurophysiology, 72.9% have what they consider predominantly NMM training programs. 47.8% of these have a single fellow, 32.6% have two fellows, and 15.2% have three fellows (AAN Adult Neurology Program Director Survey, 4/26/2007). The length and breadth of NMM training clinical neurophysiology/EMG fellowships is quite variable. Many applicants for these fellowships are primarily interested in learning the electrophysiologic techniques for private practice. The preferred method for obtaining training in NMM will become the ACGME-approved NMM fellowships, as the availability of these programs increases. There are currently 19 NMM training programs certified by ACGME, with a total of 38 approved positions. The first NMM certification examination was administered in September, 2008. There were 230 examinees (201 ABPN diplomates and 29 diplomates of the American Board of Physical Medicine and Rehabilitation). The overall pass rate was 92.2%. Most of the candidates qualified by virtue of “grandfathering,” as the first graduates of the NMM fellowships became eligible for examination on the basis of fellowship training in 2008. The next examination will be offered in 2009. Thereafter, it will be offered alternate years. While there is currently no standard or preferred organization providing educational materials or administering in-service examinations relevant to the neuromuscular medicine training program, the American Association of Neuromuscular and Electrodiagnostic Medicine (AANEM) has developed a Neuromuscular Medicine Self-Assessment Examination (NMSAE) as a teaching tool for this residency program. The first proctored examination was held on May 9, 2008.

D. Medical Economics Issues
Despite the rarity of most NMM disorders, a significant portion of medical care dollars are spent in the diagnosis, treatment, rehabilitation, and long-term management of these disorders. Effective treatment strategies that prevent long-term disability and medical complications would have a significant impact on the cost of caring for these patients. It is important to identify the economic and psychosocial components of such treatment.

There is little data on the economic impact of neuromuscular disorders. The limited data that is available demonstrate that the economic cost of neuromuscular disorders is significant. A study on the economic cost of Guillain-Barré syndrome (GBS) in the United States (Neurology, 2004) estimated a total annual cost of 1.7 billion dollars, which included costs directly attributable to medical care as well as indirect costs associated with loss of productivity and
premature death. Another study evaluating the loss of earnings among patients who filed workers’ compensation claims due to carpal tunnel syndrome in Washington State showed $45-89,000 per claimant in lost wages over six years (American Journal of Industrial Medicine, 2007). The annual cost of diabetic neuropathy in the United States is estimated to be 10.9 billion dollars per year (Diabetes Care, 2003). The Muscular Dystrophy Association in Australia reported an estimated economic burden of 126,000 Australian dollars per year for each patient affected with muscular dystrophy. Furthermore, the annual cost of care of a non-ambulatory patient with Duchenne Dystrophy (DMD) has been estimated at $500,000 U.S. per year. It is evident that economic cost neuromuscular disorders is significant, the financial burden is underappreciated, and research in this area is limited. Additional research will be necessary to fully determine the true cost of these disorders.

Patient Care Practices that Impact Clinical Outcome
The AAN has published eight practice guidelines over the past 11 years on neuromuscular disorders. The focus of these guidelines includes diagnostic testing, therapeutic intervention, definition of neuromuscular syndromes for clinical research, and the care of patients with ALS. There has been no systematic study to determine whether these guidelines have led to improved clinical outcomes.

Pay-for-Performance
The current CMS pay-for-performance program is known as Physician Quality Reporting Initiative (PQRI). Physicians are currently not required to participate in this program, but there is financial incentive for practices that choose to enroll in the PQRI. In the 2008 program, several changes have been made. There are now 127 reportable measures, an increase from 74 in 2007. Practices who report on selected quality measures for 80% of reportable cases will receive a bonus of up to 1.5% of their total Medicare billing. An alternative to the program is a half year version where a single measure for 15 consecutive patients is reported, but the bonus is smaller. Ten to twenty percent of the 2008 quality measures may be applicable to neuromuscular practices. The number of neuromuscular specialists who are participating in this program is unknown.

E. Legislative issues
Total Number of People in U.S. Affected by One of the NM Diseases
There are few national registries to determine the incidence and prevalence of different neuromuscular disorders. Most of the available data are approximations and may underestimate the actual number of patients affected. One of the most common neuromuscular disorders in the U.S. is diabetic neuropathy, and it is estimated that 20 million Americans have neuropathy and 5.5 million patients have DPN. Data available for other disorders are more limited and include myasthenia gravis (estimated US prevalence 60,000), DMD (US prevalence ~12,500), Emery-Dreifuss dystrophy (fewer than 300 cases), limb-girdle muscular dystrophy (estimated US prevalence in the low thousands), facioscapulohumeral dystrophy (~13,000 people are affected in the US), myotonic dystrophy (more than 30,000 patients in the US), ALS (~30,000 patients in the US), and inflammatory myopathy (annual incidence of 0.1 to 0.93 per 100,000).
Accessibility of Specialized Care – Home Care, Assistive Devices, etc.
Access to specialized care is dependent on the payer for the patient’s care. Nearly all payers offer basic assistive devices and some forms of physical and occupational therapy. Home care is often restricted to patients who are home bound. The Veterans Affairs and Medicaid provide limited funding for home health aides, which is not available through most commercial payers and Medicare. In general, 24 hour nursing care is an out-of-pocket expense and is not covered by third party payers.

Promoting Awareness to Enhance Federal Research Dollars
Several organizations representing neuromuscular disorders and the AAN have advocacy departments in Washington, D.C. The AANEM, ALS Association, Muscular Dystrophy Association, Neuropathy Association, Myositis Association, and the Myasthenia Gravis Foundation of America all have advocacy programs. The AAN has an annual advocacy event in Washington D.C. known as Neurology on the Hill where the “asks” of the academy is presented to Congressional members by participating neurologists. The ALS Association also has an annual advocacy event where patients, family members, and physician present the “asks” of the Association. In addition, the AAN sponsors the Palatucci Advocacy Leadership forum, where AAN members are trained on developing and implementing advocacy plans locally, promoting legislation, and organizing state neurological societies. A public policy fellowship is also available through the AAN.

IV. SWOT ANALYSIS OF THE SUBSPECIALTY
A. Strengths
1. Patient Care
   - A culture within the neuromuscular community aimed at providing safe, timely, effective, efficient, equitable and patient-centered care.
   - Prominent and active patient support groups (e.g. MDA, ALSA, Peripheral Nerve Association, MGFA, Guillain-Barré Foundation, Myositis Association, CMT Association, FSH Society, Parent Project Muscular Dystrophy)
   - American Association of Neuromuscular and Electrodiagnostic Medicine (AANEM) and other physician-centered associations and academies.
   - Emerging novel techniques – DNA testing for inherited diseases; ultrasound for nerve and muscle diseases; motor unit number estimate (MUNE) for ALS; electrical impedance myography (EIM) for diagnoses; skin biopsy for intraepidermal nerve fiber density for small fiber neuropathy diagnoses and for the diagnosis of congenital muscular dystrophy; MR neurography to visualize nerve elements; MRI for muscle disorders; in vivo confocal microscopy of Meissner’s corpuscles for early neuropathy diagnoses; autoantibody testing for nerve and NMJ disorders
   - Ready access for most patients to neuromuscular specialty clinics, and EMG testing at academic centers (even if the EMG is the second study).
   - Establishment of comprehensive, multidisciplinary clinics across the country.
2. Research
   - Emergence of research consortia for ALS (e.g. NEALS, WALS) and muscle disorders (e.g. Muscle Study Group, Wellstone Research Centers).
• Research support provided by patient support groups (e.g. MDA, ALSA, MGFA, FSH Society, Parent Project Muscular Dystrophy).
• Emergence of the internet to facilitate data-mining and literature-searching.
• Adoption of email in order to allow efficient collaborations
• Relatively recent creation of the Office of Rare Diseases in the NIH.
• NIH support for development of Rare Disorders Networks of NMM diseases
• The creation of NIH CTSA centers to promote translational research.

3. Education
• Excellent NMM fellowship programs with ABMS certification.
• High quality education curricula at meetings (e.g. AAN, AANEM, MGFA).
• High quality journals dedicated to NMM and electrodiagnosis (Muscle and Nerve, Neuromuscular Disorders, Journal of Clinical Neuromuscular Disorders, etc).
• Incipient emergence of on demand audio podcasts and other web-based tools to facilitate continuing neuromuscular education (e.g. AANEM podcast).

4. Economics
• Patients with neuromuscular diseases don’t tend to have a lower socioeconomic status than other patients with neurological or psychiatric disease, and thus have similar—but not worse—obstacles to care and reimbursement.
• Support by patient support groups for clinical services otherwise not covered.

5. Legislative
• AAN NMM Section has one of the largest AAN memberships (1000 members).
• AAN, MDA, ALSA, AANEM and other organization advocacy groups.
• MDA, Parent Project Muscular Dystrophy, FSH Society and other patient organization advocacy groups (e.g. pushed through the MD Care Act).

B. Weaknesses
1. Patient Care
• Low reimbursement for non-procedural patient care, which discourages nonprocedural-centered practice of neuromuscular medicine, including pain management. Anecdotally, this appears to result in overuse of diagnostic procedures (e.g., performance of electrodiagnostic studies by non physicians or untrained physicians, use of unapproved electrodiagnostic techniques).
• High cost of DNA testing for hereditary disorders and insurance plans general unwillingness to pay for DNA testing.
• High cost and overuse of many treatments (e.g. IVIg, pain injections)
• The fact that many NM diseases are rare, which limits the ability to perform randomized, controlled trials to provide evidence-based care.
• Difficulty obtaining insurance authorization treatments for rare neuromuscular diseases because treatments haven’t been proven. Insurance plans often claim treatments remain “experimental” and thus not covered.
• Multiple “social” needs of patients (e.g. accessible housing, transportation) that negatively impact patients by increasing risks and decreasing access to health care.
• Lack of knowledge of NM diseases by other health care professionals (e.g. GI specialists, cardiologists, pulmonologists, orthopedic surgeons to partner with).
Neuromuscular Strategic Plan

• Lack of general knowledge of appropriate inpatient treatment for patients with NM diseases, especially muscular dystrophy and ALS.
• Under-representation of minorities in the practice of neuromuscular medicine.

2. Research
• Low rate of NIH funding
• Governmental restrictions on research (e.g. stem cell therapy regulations).
• Nerve and muscle pathology is more than ever performed by pathologists rather than neurologists, limiting experience, training and opportunities of neurologists for nerve and muscle pathology research.
• Many NM disorders are rare, which makes it difficult to perform clinical trials.

3. Education
• Many neuromuscular clinicians, particularly those in community practice, do not have access to neuromuscular journals and thus miss out on important advances.
• Effort to educate patients and families is limited (e.g. web-based education).
• Relatively small number of NMM fellowship programs.
• Limited number of NMM fellowship positions for pediatric neurologists.
• The lack of guidelines, timelines or rules for the application process for NMM and clinical neurophysiology fellowships.
• Lack of standardized teaching program or paradigm for neurology residents to learn NMM and NMM-related clinical neurophysiology.
• Neurology residencies continue to be primarily inpatient oriented while NM disease management is primarily outpatient medicine.

4. Economics
• High percentage of uninsured patients in the United States.
• High cost of many treatments for NM diseases (e.g. IVIg, enzyme replacement).
• High costs of DNA and autoantibody testing.
• Minimal coverage available for home health and other supportive care needs.
• Annual threat for declining Medicare reimbursement (and other insurers).
• High administrative costs associated with current payment plans: Private insurers spend ~15% of income on administrative overhead and profits, in contrast to ~ 3% spent by Medicare on overhead; physicians spend another 10-15% of gross practice income on billing, collections, documentation, appeals and authorization.
• Rising health care costs and spending per beneficiary.
• Inefficiency in health care across the country, as evidenced by the lack of a correlation between measures of quality and annual spending per beneficiary.
• The current system encourages overutilization
• Direct-to-consumer advertising.

5. Legislative
• Because our practices our extremely busy it is inherently difficult to find time or energy to follow and influence important legislative issues.
• Absence or paucity of position papers from the NM Section and other AAN sections about legislative matters.
Neuromuscular Strategic Plan

- Medicare Fee Schedule’s Relative Value Update Committee has a voting plurality that favors procedures over E/M care. This result can be viewed as a legislative weakness and efforts to correct the disproportionate RVU credit for procedures must remain a major legislative focus.
- Degree of communication to NM Section members about legislative issues.

C. Opportunities

1. Patient Care
   - Development of more evidence-based and consensus-based practice parameters for NM disease, to codify practice norms and improve efficiency of medical care.
   - Improving quality standards for EMG.
   - Production of more educational material for practicing NM physicians.
   - Encourage development of more multidisciplinary clinics that include rehab specialists, genetics counselors, cardiologists, pulmonologists etc.
   - Further research into the cost of care for patients with NM diseases.
   - Acceptance by insurance carriers of NM treatments considered “experimental”

2. Research
   - Involvement of multiple disciplines in basic science research in NM diseases.
   - NIH commitment and increased spending in recent years in translational research in muscular dystrophy and spinal muscular atrophy.
   - Development of clinical trials networks, similar to those for ALS and muscular dystrophy.
   - A critical look at the randomized, controlled trial (RCT) paradigm for evidence-based medicine.
   - More collaboration with other organizations, such as the WFN, AANEM, Peripheral Nerve Society and IFCN.
   - Evaluation of new approaches to the study of these diseases to substantiate the effectiveness of various treatments and provide guidelines for their use. These approaches might include longitudinal studies, retrospective studies and comparison studies. A prerequisite for these types of studies is the development of standardized protocols, outcome measures, and standards of care.
   - Establishment of national and international patient databases and biobanks that should be integrated with preexisting databases and biobanks.

3. Education:
   - Encourage and support efforts among program directors to increase the outpatient NMM experience for neurology residents.
   - Develop standardized curriculum and “core” syllabus for medical students, non-neurology residents, and neurology residents.
   - Support modification and development of ACGME requirements for neurology residency and NM fellowship training that are meaningfully measurable.
   - Encourage adoption of a publishing model that allows universal access to all journal articles (e.g. termination of subscription fees for journals).
   - More podcasts and other web-based educational tools, particularly for continuing NMM education, and improved coordination of these educational tools.
Neuromuscular Strategic Plan

- Increase the number of NMM Fellowship programs.
- Increase the number of NMM Fellowship opportunities for pediatric neurologists.
- Further development of an annual neuromuscular course at the AAN meeting.
- Establishment of research-related awards to encourage NMM research.

4. Economics
- Improved efficiency and price transparency of NM disease care.
- Improvement in proper and efficient utilization of NMM.
- Increase the value and reimbursement of non-procedural patient care in NMM.

5. Legislative
- An opportunity for all specialties to work together and view their own threats and opportunities within the context of the entire health care system to provide efficient and effective care to all patients in the United States.
- Development of position papers from the NM Section about legislative matters that affect our patients and our practice.

D. Threats
1. Patient Care
   - Electrodiagnostic studies and other studies (e.g. ultrasound) performed by physicians or non-physicians with inadequate training.
   - Performance and reporting of electrodiagnostic studies that are inconsistent with practice parameters of the AAN and AANEM.
   - Declining reimbursement for electrodiagnostic studies.
   - Profit-driven use of automated nerve conduction devices, by inadequately trained physicians and therapists.
   - Limited patient access to NM clinics and EMG studies.
   - Cost of many of the treatments (e.g. IVIg, plasmapheresis).
   - Rising costs of health care, with increasing number of uninsured patients.
   - Limited reimbursement for muscle/nerve procedure fees and pathology fees.
   - Skin biopsy for nerve fiber density is considered investigational by some insurers.

2. Research
   - Low NIH funding rates, further dampening enthusiasm of investigators, particularly young investigators considering career path options.
   - Increasing restrictions on industry supported research.
   - Need for clinical revenue to support academic activity, which competes with protected time for research and teaching.
   - Governmental restrictions on research.
   - Institutional Review Board burden, including costs in submitting IRB proposals.
   - Educational debt, which forces potential investigators into private practice.

3. Education
   - Bureaucracy and costs inherent in the development and maintenance of fellowships, such as the NMM fellowship.
   - ACGME requirements for neurology residency and NM fellowship training that are vague and not meaningfully measurable.
Potential for further duty hour restrictions, which would even further limit educational opportunities for trainees.

4. Threats in economics:
   - Annual threat for Medicare reimbursement rate cuts.
   - Increasing numbers of uninsured patients.
   - Rising health care costs, particularly rising health care spending per beneficiary.
   - Over-utilization of health care, accepted by experts as around 30% in the United States, which presumably occurs also in neuromuscular medicine.
   - Direct-to-consumer advertising, encouraging the use of expensive medications.
   - Increased use of automatic electrodiagnostic instruments by untrained physicians.
   - Increasing pressure on academic NMM specialists to see more patients to generate income, compromising the ability to do academic work.

5. Legislative
   - Allowance by some state legislatures for non-physicians (e.g. therapists) to perform electrodiagnostic studies.
   - Potential imposition of further duty hour restrictions for trainees, which would even further limit the teaching and training experience.

V. SPECIFIC VISION, GOALS AND OBJECTIVES FOR THE SUBSPECIALTY
A. Short Term (over the next five years)
   1. To increase the membership of the NM section:
      a. Operational strategy: To assure that all qualified AAN members become members of the NM Section
      b. Action items: Current members of the section to encourage and participate in recruiting new graduates and trainees to become members of the NM section.
      c. Role of AAN:
         i. Encourage increased membership in the section by general practice neurologists with particular interest and expertise in NMM through email contacts and mailings.
         ii. Encourage all new members of the AAN with neuromuscular training, and those in training, to join the NM section.
         iii. Include information about Section activity in all AAN meeting publicity.
      d. Benefit to AAN and NMS: Increased participation by qualified and interested AAN members in activities and issues relevant to their practice will enhance the role and reputation of the AAN and the NMS, and have a positive impact on other sections (e.g. General Neurology).
      e. How to assess success/failure? Monitor the number of NMS members, and the number of members actively participating in identified Section activity.

   2. To become the main resource for all issues pertaining to NMM within the AAN.
      a. Operational strategy: To enhance the role of the NM Section within the AAN.
      b. Action items: AAN to refer all NMM matters (educational, clinical, financial, administrative, or research) to the NMS for review and recommendations. In areas of overlap with other sections (e.g. neurophysiology, neurorehabilitation, child neurology,
autonomic disorders) collaboration and consensus should be encouraged through combined committees and task forces.

c. Role of AAN: Develop procedures to refer NMM issues to the NMS.
d. Benefit to AAN and NMS: Will assure that AAN issues relevant to NMM are dealt with by the most qualified members and will provide incentive for members to become active participants of the NM Section.
e. How to assess success/failure? NMS will monitor AAN Courses, handouts, and other initiatives to assure NMS participation. The NMS Chair will report on Section activity at the annual Section General Meeting and on the Section website.

3. To enhance the role of the NMS within the AAN.
   a. Operational strategy: The NM Section will take a pro-active role in developing initiatives within the AAN that are relevant to NMM.
   b. Action items:
      i. Establish focus groups on financial issues in NMM (e.g. coding & billing).
      ii. Establish ad hoc subcommittees/task forces to critically evaluate emerging NM diagnostic tests, technologies and therapies, and provide recommendations. This may be done in collaboration with AAN committees or organizations, eg AANEM. Position papers from these efforts would be published in NMM journals and NMS newsletter.
      iii. Support the efforts of the AAN, UCNS, ACGME and ABPN in developing appropriately credentialed neuromuscular specialties and subspecialties.
   c. Role of AAN: to provide logistical and infrastructural support and information.
   d. Benefit to AAN and NMS: Will increase the role of the NMS within the AAN, assure that AAN issues relevant to NMM are dealt with by the most qualified members, and will provide incentive for members to become Section participants.
   e. How to assess success/failure? The NMS Chair will report on Section activities at the annual Section General Meeting and in the Chair Letter on website.

4. To develop methods to assess and study the economic impact of NM diseases.
   a. Operational strategy: To disseminate information on the costs of NM diseases.
   b. Action items: The Section will form a NM Disease Impact Task Force to collate and disseminate what is known, and what needs to be studied about the costs of NM diseases. Participation and support can be sought from disease-specific organizations, eg the MDA, MGFA, ALS societies.
   c. Role of AAN: To provide logistical and infrastructural support, and to facilitate collaboration with the Neuroepidemiology Section.
   d. Benefit to AAN and NMS: Will enhance the role of the AAN and NMS.
   e. How to assess success/failure? Results will be published. The Section Chair will report to the membership.

5. To establish an annual NMS achievement award for a junior (usually a fellow) or senior member, to be selected by an award subcommittee of the section.
   a. Operational strategy: To recognize the contribution(s) of NMM Section members
   b. Action items: A NMS Awards Committee to be established. Funding for the award would be sought from philanthropy.
6. To encourage and support clinical trials for investigation of and therapy of NM diseases
   a. Operational strategy: To increase the number and quality of clinical NMM trials
   b. Action items: The NMS will disseminate information to members about trials in progress and in development, and help recruit referrals from members. The NMS will also disseminate information on protocols, diagnostic criteria, and outcome measures for clinical trials in NM disorders.
   c. Role of AAN: Provide infrastructural support in disseminating information.
   d. Benefit to AAN and NMS: Establish and enhance the role of the AAN and the NM section in clinical research in NM disorders.
   e. How to assess success/failure? Monitor the use of AAN and NM section resources as sources of information about clinical trials in NM diseases.

7. To encourage development of ACGME requirements for NMM fellowship training that are meaningfully measurable.
   a. Operational strategy: To reduce the administrative burden on NMM training programs and to enhance the educational value of these programs.
   b. Action items: Establish a committee within the NMS to participate with counterparts in other AAN Sections to provide input on criteria for meaningful training requirements for NMM fellowships.
   c. Role of AAN: Identify/establish relevant AAN committee(s).
   d. Benefit to AAN and NMS: Enhance the training of NMM specialists.
   e. How to assess success/failure? Input from NMM fellowship directors.

8. To encourage research on health care regulations’ impact on the cost of US health care.
   a. Operational strategy: To bring to legislative attention the effects of government regulation on the quality and costs of health care and research
   b. Action items: Encourage and participate in AAN initiatives to assess the cost:benefit ratio of health care regulations.
   c. Role of AAN: To develop a Task Force to assess the cost:benefit of current and future health care regulations.
   d. Benefit to AAN/NMS: Enhance the role of the AAN in public policy.
   e. How to assess success/failure? AAN leadership to report to membership.

B. Specific Long-term Goals (over the next five to ten years)
   1. Continue to increase and broaden the participation of members in the activities of the NM Section, including by international members.
      a. Operational Strategy: promote the activities and accomplishments of the Section at national and international meetings and widely within the AAN.
      a. Specific action items: All AAN and other national meetings to include information about the Section’s activities.
b. Role of AAN: include information about Section activities in all AAN and other meeting publicity; and assist in identifying relevant meetings of other organizations.

c. Benefit to AAN and the sub-specialty: Will recognize the efforts by those NMM experts, enhancing the reputation of the AAN and the NMS.

d. How to assess success/failure? Monitor the number of members participating, and number of meetings with NMS participation.

2. Maintain and encourage the independent practice of neuromuscular pathology, peripheral electrophysiology, autonomic testing, nerve and muscle ultrasound, and new technologies relevant to NMDs by qualified NMM specialists.

   a. Operational strategies: vigorous representation by the AAN and Section leadership and members to credentialing agencies and regulatory bodies.

   b. Specific action items: AAN to maintain a registry regarding regulatory actions at the national and state level. NMS to identify individual members in each state to monitor and respond to impending regulatory actions.

   c. Role of AAN: To provide logistical support for these registries.

   d. Benefit to AAN and the sub-specialty: Will assure that Academy and Section members continue to be able to utilize current and emerging technologies within their practice of NMM. Will enhance the role of the AAN and the NMS in providing service to its members.

   e. How to assess success/failure? The Section can periodically poll its members on their ability to maintain their independent practice of these technologies, and publicize the results of regulatory actions.

3. Establish a NMM speakers bureau for physician groups and societies e.g. American College of Physicians, AMA, and American Thoracic Society for their CME activities.

   a. Operational strategy: To provide NMM expertise for educational activities.

   b. Action items: The Section to establish a committee to determine relevant topics, and to solicit and review nominations.

   c. Role of AAN: To determine the need and interest by other groups in such a program, and to publicize it.

   d. Benefit to AAN and the sub-specialty: Will enhance the role and recognition of the AAN and NMS within the larger medical community.

   e. How to assess success/failure? Monitor the number of annual lectures and requests, and in which topics, and the CME quality feedback.

4. Provide, and expand, support for competitive fellowships in NM diseases.

   a. Strategy: To increase the number of NMM specialists.

   b. Action items: Identify potential sponsors (governmental, non-governmental and philanthropic).

   c. Role of AAN: share information regarding the success and sources of scholarships in other areas.

   d. Benefit to AAN and NMS: increase the opportunities to obtain advance training in NMM, thus enhancing the specialty, and the role of the AAN.

   e. How to assess success/failure: Monitor the number of NMM fellowships.
5. Develop and support focused group meetings to address specific issues, with the goal of disseminating the proceedings to membership via an appropriate medium.
   a. Strategy: To provide and publicize expert opinion on issues within NMM.
   b. Action items: NMS to develop a list of “hot” issues or diseases that merit a focused meeting. Support can be sought from appropriate NIH sources and from disease-specific organizations, eg the MDA, MGFA.
   c. Role of AAN: Provide the logistics and infrastructure for these meetings.
   d. Benefit to the AAN & NMS: Enhance the visibility and reputation and the value of AAN/NMS membership.
   e. How to assess success/failure? Periodic assessment by Section leadership on issues pending evaluation. The Section chair will report annually at the General meeting and periodically via the Chair Letter on the Section website.

6. For the NMS to become the preeminent organization within US medicine in developing and furthering initiatives in NMM.
   a. Operational strategy: The NMS will undertake broad and selective initiatives affecting all aspects of the field of NMM.
   b. Action items:
      i. Encourage and provide expertise for establishing multicenter consortia and/or networks for different NM diseases.
      ii. Encourage research in developing animal models for NM diseases.
      iii. Increase participation in neurorehabilitation research. Encourage neuromuscular rehabilitation training within NMM fellowships. This can be accomplished by collaboration with the Neurorehabilitation Section and Neurorehabilitation Societies and Organizations.
      iv. Develop mechanisms to encourage graduates of MD/PhD programs to select NMM as subspecialty.
      v. Encourage the development of neuromuscular tissue banking (spinal cord, CSF, muscle and nerve) for research and establish guidelines for maintenance and usage of these depositories. This goal will entail working with other academic and funding institutions (e.g. NIH).
      vi. Develop mechanisms to enhance translational research by increasing the numbers of trained clinical investigators. This might entail special funding mechanisms be set up within the AAN to fund such programs.
      vii. Encourage, and obtain funding, for research in the aging motor unit in parallel with the increasing aged population. This can be accomplished by close collaboration with Advocacy Groups both within and without AAN.
      viii. Promote research, basic and clinical, on muscle repair and regeneration.
   c. Role of AAN: To provide logistic and infrastructural support, and to disseminate information about the progress and results of these initiatives.
   d. Benefit to AAN and NMS: These initiatives will enhance the recognition of the AAN and the NMS within Neurology and within the broad field of medicine in the US and internationally.
   e. How to assess success/failure? Each of these initiatives will be assessed individually and reported to the Section and the AAN by the Section chair.
VI. SUMMARY/CONCLUDING STATEMENT

A. Summary of mission/vision/values for specialty.

The wealth of advances in the understanding of the pathophysiology, genetics, diagnosis, and treatment of neuromuscular disorders has created a clear need for the subspecialty of NMM. The scientific knowledge required for confident diagnosis and treatment of neuromuscular disease is beyond the level of training of most general neurologists, child neurologists, or physiatrists. The overall mission of the Neuromuscular Section is to facilitate development and maintenance of training standards for specialists in NMM; foster cooperation between NMM specialists and other disciplines within neurology and medicine in general; to encourage and conduct basic, translational, and clinical research in neuromuscular diseases; to promote an appropriate legislative agenda and administrative support for issues relevant to the field; and, most importantly, to improve the overall clinical care for patients and reduce the morbidity, disability, and mortality associated with these diseases.

B. Global conclusion and assessment of sub-specialty’s place within the larger scope of the AAN, other specialties, neurology in general, and related fields (e.g., neurosurgery).

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