I. Introduction

A. Definition of Neural Repair and Rehabilitation
Neurorehabilitation is the process of restoration of function for persons with disorders of the nervous system. This process involves strategies aimed at reducing impairments and disabilities, and ultimately improving participation and quality of life for persons with neurological disorders. Areas of functioning include mobility, activities of daily living, and cognitive and communicative abilities. Neurorehabilitative treatments promote restoration and reorganization of damage in the nervous system, and facilitate compensatory and adaptive strategies to improve functioning. The practice of rehabilitation involves a team process, highly dependent on the interaction of multiple disciplines and treatment agents. The patient, his/her family, caretakers and other members of their social network are integral members of the treatment team effort.

B. General Statement of the Conditions Neural Repair and Rehabilitation Covers and Its Core Procedures
The core curriculum for neurorehabilitation can be divided into the following content areas that cover the basic science and theoretical underpinnings of neurologic recovery, and the disease areas, syndromes, treatment procedures and processes that make up clinical neurorehabilitation.

C. Overview of Interaction with Other Specialties
Neurorehabilitation is a unique field. The focus of the field is not on specific diseases, but more on the effects of the disease. The disease leads to impairments that lead to limitations in performing the activities of life at home and in the community.

Neurorehabilitation practitioners must interact with those of many specialties. The patients come to the neurorehabilitation program with many illnesses that came further limit their ability to participation in the program and reach their neurorehabilitation goals. These illnesses must be evaluated and treated effectively if the neurorehabilitation outcome is to be optimized. Therefore, the list of specialties is very long and includes any or all of the specialists treating the patient’s co-morbidities.

D. Purpose of the Document – Why this is needed
This strategic plan is needed to plot the course of Neural Repair and Rehabilitation as an important specialization of Neurology over coming years and to assess current strengths and weaknesses as well as to target specific areas needed to enhance the specialty and its interaction with other disciplines.

E. Overall Mission Statement
The purpose of the Section is to increase awareness of and interest in Neurorehabilitation as an important component of the comprehensive continuing care of the neurologic patient by principal care physicians; to expand neurologist’s responsibilities by developing their expertise in Neurorehabilitation through the formal unification of Neurology and Rehabilitation Medicine; to pursue and disseminate additional research and teaching in Neurorehabilitation through seminars, publications, and presentations at Scientific Sessions of the Academy; to enhance the future role of Neurology by educating both newly certified and currently established neurologists on Neurorehabilitation; and to advise the Academy on the acts of the Section’s Executive Committee.

II. Background/history of Neurorehabilitation and Neural Repair and Rehabilitation Section

A. Landmark early work/milestones
The idea for a section on neurorehabilitation for the American Academy of Neurology was generated in 1985 by Labe Scheinberg, who had developed a comprehensive outpatient program for patients with multiple sclerosis at the Einstein College of Medicine. He found that most of what therapy patients needed easily came under the heading of rehabilitation. Consequently, he proposed to Nelson Richards, then president of the Academy, that there should be some way to interest those involved in rehabilitation in neurology and in the Academy. This was presented to the
Executive Board and the Section of Neurorehabilitation was established in 1986. From that date on, each meeting of the Academy has had a program on neurorehabilitation.

Labe Scheinberg was the first chairman of the section, from 1986 to 1988. Chairmen since that time have been Jack Burks, 1988 to 1990; Norman Namerow, 1990 to 1992; Fletcher McDowell, 1992 to 1994; Kenneth Johnson, 1994 to 1996; and James Couch, 1996 to 1998.

B. Growth of subspecialty/section
Neurologists have become increasingly involved in the practice of rehabilitation as rehabilitation has developed as a medical discipline and as the array of treatments for neurological disorders has expanded. Neurorehabilitation has evolved as a subspecialty of neurology. Increasing numbers of neurologists have included or focused on rehabilitation in their clinical practice and research activities. The growth of this subspecialty led to the formation of the Rehabilitation Section (now Neural Repair and Rehabilitation Section) of the American Academy of Neurology in the mid-1980s and subsequently, the American Society of Neurorehabilitation (ASNRE) in 1991. The ASNRE has been active in training, credentialing and continuing education as the subspecialty has developed.

Neurologists bring a unique perspective to the rehabilitation team, adding an understanding of neurologic disorders to the rehabilitation mix, including pathophysiology, clinical presentations, natural history, neuropharmacologic treatment and the processes of neurological recovery. For instance, neurologists can inform therapy decisions in targeting specific neurologic impairments impeding function, manage pharmacologic treatments that may augment or inhibit functional recovery, help recognize when rehabilitation efforts might be futile or when treatable complications may impede the rehabilitative path.

The body of evidence supporting neurorehabilitative treatments has been growing rapidly in recent years but still lags behind some other neurotherapeutic areas. Neurologists and neuroscientists of other disciplines are now playing a key role in developing this evidence with the basic science underpinnings of neural repair and neuroplasticity and well-designed clinical studies of neurorehabilitative treatments.

In order to stimulate interest in neurorehabilitation, the Executive Board agreed for the first time to hold a course away from the site of the meeting. In 1987 an all-day course on neurorehabilitation was held at the Burke Rehabilitation Hospital in White Plains, New York, while the Academy was meeting in New York City. Fletcher McDowell had established a Section of Neurorehabilitation at the Burke Rehabilitation Hospital, where neurologists were in charge of services for neurologic problems resulting from physical disability such as stroke, head injury, and spinal cord injury. This course was attended by more than a hundred physicians from the conference in New York City. The all-day program introduced them to what could be done by neurologists in the rehabilitation of patients with neurological problems.

The course was received with enthusiasm and as a result, further courses were planned under the auspices of the Academy. Those planning the course believed that, to be effective, courses should be longer than one day and expose those attending to hands-on management of patients. The first course took place at the Burke Rehabilitation Hospital in 1990 under the direction of Reding. This was a week-long course on the rehabilitation of patients with stroke with about 15 physicians in attendance. This was followed in 1991 by a similarly structured course on traumatic brain injury at the Daniel Freeman Hospital in Los Angeles, under the direction of Norman Namerow, and another on stroke in Springfield, Illinois, under the direction of James Couch and David Good. In 1992 a course on spinal cord injury was held at the Burke Rehabilitation Hospital and St. Agnes Hospital in White Plains, under the direction of Labe Scheinberg and Mindy Aisen.

Neurologists have shown an increasing interest in developing skills in neurorehabilitation and a number of neurorehabilitation services have been developed in the United States. In view of the fact that a large percentage of patients with neurologic diseases have permanent physical disability and all need some long-term rehabilitative care, neurologists must assume some responsibility for such care. Their willingness to do so will enlarge the scope of neurologic practice and benefit such patients. Neurologic practice should include responsibility for patient care from diagnosis to death. The assumption of this responsibility by those with an understanding of the nervous system
and its diseases will undoubtedly improve the outlook for victims of neurologic disease who are left with chronic physical disability.

C. Genesis of Pertinent Journals and Societies
In 1992 the Academy turned the sponsorship of such courses over to the newly formed American Society of Neurorehabilitation, which was started in 1991. Since then, numerous successful courses in neurorehabilitation have been conducted under their auspices at various neurorehabilitation centers in the United States.

D. Current board certification and other sub-specialty organization/boards
After its founding in 1990, the American Society of Neurorehabilitation developed the first certification for this sub-specialty.

In the near future, certification will become the responsibility of the United Council of Neurologic Sub-specialties.

E. Other Professional and Disease Related Organizations Relevant to the specialty
The uniqueness of Neurorehabilitation as a field of medicine justifies close relationships with many professional and disease related organizations.

The neurorehabilitation process is applied from onset of disease to functional stabilization and continuation of abilities. The support and services provided by the many professional and disease related organizations are essential resources for the patient and their families. Likewise, the list of such organizations is very long.

III. Current State of the Neurorehabilitation and Neural Repair and Rehabilitation Section

A. Patient Care and Practice
Pay-for performance by Medicare is becoming an active consumer of health care rather than a passive payer. As with most government programs, this is now voluntary, but will soon to be mandatory and will soon be copied by commercial payers. We need to be part of the process used to define quality measures and clinical performance measures. We need to join the AAN in pro-active input to quality alliances with groups such as the National Quality Forum (NQF) and the AQA Alliance (AQA). With reimbursement tied to “quality” we need to make sure that the process is truly transparent, especially when the private payers jump in.

Guidelines and measures need to be very narrowly focused on items within the neurology scope of practice. We have already seen "e-Prescribing" mandates, and need to be wary of unreasonably complex and expensive electronic health record (EHR) and e-Reporting software, and other unfunded mandates to comply with this new era of regulation which would spell the end of individual and small group practices.

The Academy has shouldered its way into a seat at the table with Physician Quality Reporting Initiative (PQRI) measures development and we need to make the most of the Academy input into PQRI and the quality alliances alluded to above.

No practice agenda would be complete without a mention of the malpractice crisis. Here again the AAN has developed a relationship with coverage sources, now available in several (8-10) states. Problems of coverage specific to neural rehabilitation need to be identified and possible solutions need to be investigated.

B. Research
In the last decade, our knowledge about the mechanisms of neurological injury and recovery has improved. There is now considerable evidence that cortical representations are continuously modulated in response to practice and training. Brain plasticity can also be elicited by lesions in the central and peripheral nervous systems and may take place in cortical as well as subcortical structures. Research activities in Neurorehabilitation have evolved rapidly as a consequence of these rapid developments in basic sciences and also as a consequence of a renewed interest by members in the Neurorehabilitation team to test bench side premises in the clinical arena. This translational effort is presently under way and is starting to change the face of neurorehabilitation as we know it. It is expected that many of the proof of principle studies presently under way will evolve into well controlled multicenter clinical trials
in the next few years, generating a required evidence-based body of research. This research activity is likely to radically change the face of Neurorehabilitation in the next decade and result in substantial benefits for the patient and society.

C. Education

No one medical specialty is sufficiently broad to encompass acquisition of the multi-disciplinary skill-set needed to deliver state of the art Neurologic Rehabilitation. Neurorehabilitation Fellowship programs and UCNS Credentialing requirements are designed to meet these needs.

Most Neurorehabilitation Specialists are currently Board Eligible or Board Certified in either Neurology or in Physical Medicine and Rehabilitation. It is the intent of the AAN Section on Neurorehabilitation and Neural Repair to develop an appropriate credentialing system that will allow physicians from different backgrounds to demonstrate that they have acquired the requisite knowledge and skills needed to deliver optimum care for patients with disabilities due to neurologic disorders.

Neurologists are trained in the basic neurosciences that inform our understanding of the multiple brain, spinal cord, peripheral nerve and neuro-muscular disorders which cause neurologic impairment, disability and handicap. Relevant neuroscience areas are Molecular Neurobiology, Neuro Pharmacology, Neuro Physiology, Neuro Behavior, Neuro Psychiatry, Neuro Ophthalmology, Neuro Otology, Neuro Urology, Neuro Anatomy, and Neuro Epidemiology. The neurologist is not expected to have mastered the skill-set required for board eligibility in Physical Medicine and Rehabilitation.

Physiatrists are not expected to have mastered the basic Neurosciences. Physiatrists are expected to be expert in the use of remediation techniques, compensatory strategies and use of assist devices which can ameliorate disability due to the effects of neurologic impairment. They are expected to be familiar with each of the treatment strategies used by Allied Health Professionals. This includes knowledge of appropriate selection criteria, putative mechanism of action and expected outcome for each intervention. Examples include: Constraint Induced Therapy, Functional Electrical Stimulation, Functional Tone Management, Orthotic and Robotic interventions. These and many other relevant rehabilitation treatment strategies are not covered in most Neurology residency programs.

Neurology residency programs have traditionally focused on the importance of interactions between and among each of the body’s organ systems and their effects on neurologic impairment. Indeed, in some institutions, Neurology is a division within the department of Internal Medicine. Physical Medicine and Rehabilitation programs may, however, spend less time studying Internal Medicine in order to master trans-disciplinary management of neurologic impairment, disability and handicap. Trans-disciplinary management requires integration of care with our Allied Health Professionals: Physical Therapy, Occupational Therapy, Speech-Language Pathology, and Social Work. Neurology training programs usually do not provide adequate physician training in trans-disciplinary management of neurologic disorders.

Due to the above mentioned differences in training backgrounds it is important to document that the Neurorehabilitation Specialist demonstrates competency in 4 key areas: 1) Knowledge of the Neuro Sciences underlying neurologic injury and treatment; 2) Internal Medicine knowledge and skills needed for management of acute and sub acute medical co-morbidities and complications associated with debilitating neurologic disorders; 3) knowledge of appropriate selection criteria, putative mechanism of action and expected outcome for specific physical therapy, occupational therapy, and speech-language pathology interventions; 4) Knowledge and skill in the trans-disciplinary organization and management of care across multiple neurologic, medical, and allied health care providers.

The AAN Section on Neurorehabilitation and Neural Repair has defined a one year Fellowship program which will assure that entrants completing ACGME approved Neurology or Physiatry residency programs will receive adequate didactic and practical training in each of the above areas. Some of these Neurorehabilitation fellowship programs may offer an additional year or two to provide additional supervision and training in order to allow the fellow to develop a neurorehabilitation research career.
Once competency has been demonstrated, scheduled re-certification within UCNS guidelines will assure continued neurorehabilitation knowledge and skill.

D. Medical Economics Issues
The economic arena affects NREH in both inpatient and outpatient aspects.

Some Section members are medical directors for rehabilitation units. Reimbursement to hospitals for inpatient rehabilitation is being restricted further each year. This includes actual payments per hospital day as well as restrictions on the diagnoses for which inpatient rehabilitation is covered. Federal programs, especially Medicare, lead the way in making these restrictions. Insurance companies follow suit, often with stricter policies. This makes it more difficult to deliver care in this environment.

Practicing in the outpatient environment is increasingly less viable economically. Medicare and most insurance companies reimburse physician services using the Resource Based Relative Value System. Flawed since implementation, this system attributes higher work value to procedures than to non-procedural services. This misallocation results in over-utilization of procedures. In a system of budget neutrality for Medicare payments, this lowers the amounts available for reimbursement for non-procedural services. In addition, the total amounts available for reimbursement for non-procedural services. In addition, the total amount of money available for physician payment each year is determined by a difficult equation (Sustained Growth Rate) that results in cuts due to over-utilization that RBRVS perpetuates. The SGR mandated by Congress, and in the current there is little likelihood that anything will change without a complete overhaul of the payment system.

Many patients requiring rehabilitation intervention fall under state Medicaid programs, especially younger patients. The funds available for rehabilitation are often severely restricted in favor of using the small amounts available for acute care coverage. Federal funding of Medicaid programs is also continuously in danger of being legislatively reduced.

Coverage for the durable medical equipment our patients require is increasingly limited as well. Unfortunately over-utilization, and sometimes fraudulent utilization, results in increased burden of documentation to get patients the equipment they need. The extra work involved is essentially unreimbursed by the system.

E. Legislative Issues
There are a few ongoing legislative issues of pertinence to the members of this section and need our support.

The ‘75% Rule’ has been settled only temporarily by the freezing of the effective percentage at 60% and the continued allowing of co-morbidities in determining justification for inpatient rehabilitation. However, CMS has developed another rule that has an even greater negative effect, the very strict definition of medical necessity that basically requires patients to be so ill as to need to be hospitalized as if they don’t need rehabilitation. The finalization of these rules awaits further congressional action in the next congress.

Stroke is the nation's third leading cause of death, killing 160,000 Americans each year, and the number one cause of adult disability. Landmark legislation is currently pending before the U.S. Congress that will advance the fight against this often devastating and costly disease. The Stroke Treatment and Ongoing Prevention Act (STOP Stroke Act) will provide resources for stroke education and patient care programs across the country. Specifically, STOP Stroke will authorize a national public awareness campaign about stroke; establish a grant program for states to establish stroke care systems; educate medical professionals about newly developed stroke treatments; and create a clearinghouse registry of best practices and disparities in stroke treatment.

NIH funding was doubled between 1997 and 2003, but since then its levels have marginally increased each year. However, according to one report, the agency’s purchasing power in real dollars has decreased by 13 percent since 2003. This has had many negative effects on research funding: the overall success rate for the vital NIH R01 (or Research Project) grants, or their equivalents, decreased from 32 percent in 1999 to 24 percent last year; the success
rate for applications on their first submission dropped from 29 percent in 1999 to 12 percent last year; the average age of researchers receiving their first R01 grant was 43 last year, compared with 39 in 1990; and, a quarter of R01 grants go to first-time investigators, compared with 29 percent in 1990.

IV. SWOT Analysis of the Subspecialty
A. Current Strengths in each of the 5 areas (patient care, research, education, economics, legislative)

Patient Care and Practice Strengths
1. Our organization represents the best practitioners in this field. We have members with knowledge and experience in the general and subspecialty areas of neurorehabilitation.
2. We can give very valuable input to decision makers at the state and federal level who make decisions affecting the scope and measures (quality and performance) of our practice.

Research Strengths
1. Increasing, albeit insufficiently yet, interest of clinicians of different backgrounds (neurologists, physical and occupational therapists and physiatrists between others) in interacting within a team.
2. Common interest in seeking understanding of the neural substrates underlying recovery of function after brain lesions.
3. Increasing respect for each field for the contribution of others.
4. Improvement in the quality of outcome measurements as well as development of investigative tools like neuroimaging and brain stimulation that help to understand mechanisms of disease and provide possible target for intervention development.
5. Improved basic science understanding of mechanisms of neuroplasticity in the human brain, which underlie recovery of function after brain lesions.

Education Strengths
1. The Neuroscience base for Neurorehabilitation has experienced significant growth over the past 15 years.
   New treatment strategies which have been validated include: Constraint Induced therapy for upper limb motor impairment; Partial Body Weight Supported Treadmill Training for enhancing hemiparetic and paraparetic gait; Application of Motor Learning Theory to optimize physical and occupational therapy motor training programs; Use of commercially available robotic systems to improve upper limb motor recovery. Other more novel treatment strategies currently being explored include Transcranial Magnetic Stimulation and Transcranial Direct Current stimulation.

Medical Economics issues Strengths
1. AANPA has a very active Medical Economics and Management and Legislative Affairs Committees to assist sections in regard to health care policy.
2. AAN has been a leader in the areas of guidelines and quality measures.
3. Medicare does still reimburse for rehabilitation.
4. The Department of Defense and the Veterans Administration have recently increased funding for traumatic brain injury.

Legislative Affairs Strengths
1. Neurorehabilitation is a subspecialty of Rehabilitation in general. As such, we are not alone in advocating for legislative relief and action on the issues on concern to us.
2. We have specific alliances with the American Society of Neurorehabilitation and the American Brain Coalition and can also work with the Legislative Affairs Committee of the AAN.

B. Weaknesses in the 5 areas

Patient Care and Practice Weaknesses
1. We have not been asked to give, nor have we been proactive in offering our assistance to appropriate AAN and external entities to ensure that our needs and beliefs will be heard and incorporated into new policy.
2. Our membership is generally quiet and could be more active in the Section meetings and increase their participation in the educational efforts of the AAN.
3. The opportunity and funding support for research in Neurorehabilitation is limited.

Research Weaknesses
1. Paucity of translational initiatives around common bench to bedside hypotheses, which require integration between basic scientists and clinicians at the project inception level.
2. Limited support for testing in clinical arena of recently developed proof of principle or basic science studies.
3. While growing, still limited interaction across specialties in the design and implementation of translational projects.
4. Limited understanding of neural mechanisms underlying recovery of function

**Education Weaknesses**

1. The neuroscience base for Neurorehabilitation is dispersed among multiple related but independent specialties: Neurology, Physical Medicine and Rehabilitation, Internal Medicine, Geriatrics, Neuropsychiatry, Neuropsychology, Neurophysiology, Neuroimaging, Neuroanatomy, Neuropharmacology, Molecular Biology, and Neuro Genetics.

**Medical Economics Weaknesses**

1. The current reimbursement system poorly rewards evaluation and management services which make up the majority of billings of the neurologist in neurorehabilitation
2. NIH budgets for research are slimmer
3. Insurances severely restrict rehabilitation services to patients
4. Hospitals are restricted in the types and numbers of rehabilitation patients they may accept, and length of stay is continually reduced
5. Are we being represented by too many organizations and does that dilute our efforts?

**Legislative Issues Weaknesses**

1. Our weaknesses in these areas are also similar for Rehabilitation in general.
2. We are a small group and do not command a great deal of ‘clout’. We must join with other interested parties if our voice is to be heard.

C. Opportunities for growth in each area

**Patient Care/practice Opportunities**

1. It would be prudent for us to try to find mechanisms whereby we can reduce the above mentioned weaknesses.
2. The COS might afford us an opportunity to be heard. AAN committees could make it a routine for issues under consideration to be sent to the Sections for feedback and suggestions. This should lead to greater consensus building and membership support by and for AAN decisions and policies concerning issues important to Neurorehabilitation and other sections.

**Research Opportunities**

1. Two levels of opportunities could be thought of. First, neurologists have two crucial roles, which other specialists cannot cover easily: a. carrying out rational, hypothesis-driven studies to advance understanding of neural substrates of functional recovery in humans and b. designing the most appropriate interventional strategies in humans involving new technologies (i.e., brain stimulation and brain computer interfaces).

**Education Opportunities**

1. There are important advances being made in each of the basic neurosciences that have potential importance for the field of neurorehabilitation. Transcranial magnetic stimulation techniques allow one to study the effects of neuropharmacologic agents on intracortical and transcallosal facilitation and inhibition. Transcranial DC stimulation may provide tonic facilitation or inhibition of motor, speech-language, and/or visual-spatial deficits during rehabilitation treatments. Awareness of genetic polymorphisms for Apolipoprotein E, Catechol-O-Methyl-Transferase, and Brain Derived Neurotrophic Factor may identify differential patient susceptibility for recovery or lack thereof. Awareness of these polymorphisms may eventually identify patients responding to appropriate pharmacologic intervention strategies to ameliorate adverse effects of the deleterious allele phenotype.

**Medical Economics Opportunities**

1. The country is eager for health care reform, and we have an opportunity to be at the table for ourselves and for our patients.
2. Defining quality with evidenced based medicine can work for neurorehabilitation
3. AANPA has new relationships with major insurers, and rehabilitation policy can be addressed.
4. Researchers can take advantage of the increased emphasis on neurorehabilitation by DoD/VA.

Legislative Affairs Opportunities
1. The opportunity exists for us to be more proactive in voicing our concerns to appropriate committees of the AAN for consideration by the entire board.
2. Our relationships with other physician and advocacy and disease specific groups can help us move our issues forward and help them gain needed support from the AAN.

D. Threats to achieving goals in each area

Patient Care/practice Threats
1. Said simply, if we don’t get involved, decisions will be made about us and without us. We should not let this happen. State and Federal agencies continue to look for ways to ‘cut back’ and our practices and our patients’ health must be protected.
2. There also exist entities such as the AAPM&R that seem to look for opportunities to limit the involvement of neurologists in this field. We must remain ever vigilant and prepared to respond swiftly and effectively when necessary.

Research Threats
1. The first is cultural. Neurologists are uniquely positioned to coordinate work of the neurorehabilitative team given our understanding of the mechanisms of disease and recovery and our ability to test in the clinical arena the design of interventional trials in patients with neurological disease. Few neurologists understand this point. Second, we need to create an understanding of the need for multidisciplinary contribution to the rehabilitation plan and research (understanding that all specialties involved can and should provide crucial input to the design of these trials). Third, research in Neurorehabilitation, with its high personal, familiar and financial cost to the society as a whole is probably underrepresented in NIH budgets.

Education Threats
1. The primary impediment to Neurorehabilitation education is the fragmentation of new information not readily shared among the relevant clinical specialties and basic neurosciences. Efforts should be made to increase transdisciplinary communication via meetings or journals attended or read by both clinicians and basic neuroscience researchers. Greater communication should also be fostered within the various clinical specialties providing Neurorehabilitation care: Neurologists, Physical Medicine and Rehabilitation, Internal Medicine, and Geriatrics. Each clinical specialist usually reads their respective journals, and attends their national and international meetings, but is unlikely to be aware of new developments in related fields or in the basic neuroscience literature.

Medical Economic Threats
1. In this poor economy, physician reimbursement issues are not seen as high priority
2. Likewise, investment in research lessens in the poor economy
3. We are competing with physiatrists for the same research dollars

Legislative Affairs Threats
1. There are no specific threats to the Neural Repair and Rehabilitation Section in this area.

E. Current status of AAN input to each area

Patient Care
AAN activities can be seen as both proactive and reactive.

The proactive areas are not specific to Neurorehabilitation, but do affect all neurologists and are thus of great importance to all of us. Areas of great importance include practice management, patient safety, pay-for-performance, coding and reimbursement, and electronic health records.

Reactive issues include areas where we are fortunate to have AAN support. A recent issue regarding CARF standards for Medical Director of Spinal Cord System of Care Programs was settled amicably utilizing the excellent
input from AAN staff. The AAN staff is available to help in many areas in which we could become involved such as quality initiatives and practice guidelines.

**Research**
The influence of the AAN in Neurorehabilitation can be assessed in two different ways. First, AAN members are at the forefront of different organizations like VA Research, NCMRR, and ASNR indicating an important influence of neurologists in the field. On the other hand, most AAN members probably do not feel Neurorehabilitation is an area in which they can provide substantial input, an issue that the AAN could educate more actively in.

**Education**
The AAN and the American Society of Neurorehabilitation have agreed to co-sponsor a United Council for Neurologic Subspecialties (UCNS) effort to standardize neurorehabilitation fellowship training programs, credentialing of these fellowship programs, development of a certification examination, and development of ongoing recertification procedures. These efforts will assure quality education, training, and documentation of neurorehabilitation competence for those holding UCNS Neurorehabilitation Certification Credentials.

**Economics**
The Payment Policy Subcommittee of the Medical Economics and Management Committee has recently developed relationship with major payers. In turn some of these companies are asking AAN to review certain of their policies for appropriateness. When these policies regard issues of neurologic rehabilitation the NREH section is consulted.

**Legislative**
The Advocacy Committee of the AAN has developed positions on many issues of importance to our membership. The information is updated in a timely manner and the membership is informed of how they can become involved in proactive efforts to affect legislative action. The AAN provides opportunity for members to learn how to be more involved in these activities at the federal and state levels. See Advocacy section on AAN website for details.

An issue that looms for us is that of access to a full continuum of rehabilitation services for our patients. This issue, along with physician and other provider reimbursement will very likely be addressed in the next congress and will need AAN and membership partnership to be effective.

V. Specific Vision, Goals, and Objectives for the Subspecialty/Section

A. Short Term (over next 5 years)

1. Specific defined goals and targets
   a. Support efforts to protect the rights of our patients to competent neurorehabilitation services in this volatile economic environment.
   b. Develop quality measures and clinical performance measures.
   c. Support the UCNS accreditation and certification processes.
   d. Support appropriate NIH funding for research and education funding.
   e. Recognize, encourage and disseminate research generated information regarding ‘nervous system plasticity’ and other advances in the neurosciences appropriate to neurorehabilitation and functional recovery.

2. Operational strategies to achieve goals
   a. Assign ‘goals’ to individual committees with the charge to develop action plans, time lines and responsibilities for the development of processes that would lead to progress towards achieving each goal and the monitoring of the ‘moving target’ environment.
   b. Empower the individual committees to draw from AAN and other organizational resources for information and collaboration.

3. Specific action items for each goal
   a. Collaborate with AAN committees such as Advocacy, and other medical and disease related organizations to support federal and local initiatives supporting efforts to ensure patients rights to general and neurologic rehabilitation.
   b. Develop and/or sponsor quality measures and clinical performance measures.
   c. Continue process, already begun, in conjunction with the ASNR.
   d. Support AAN efforts in this area and work with other professional and disease focused organizations to do the same.
e. Proactively monitor new ‘research’ and information that can be disseminated to our membership and encourage individual and multicenter efforts to further advances in these areas.

4. **Role of AAN in achieving goals**
   a. Input from AAN working committees and AAN membership (through the COS) is essential in the success of these strategies. The NRR needs the expertise in information and process development of the AAN. The AAN needs to become more open and available to help all sections achieve their goals. The achievement of each goal may require sharing of working committee information and the generation of unique plans and actions by working with each section on the specific issues.

5. **Benefits to AAN and sub-specialty in achieving goals**
   a. The above plan is eminently consistent with the Vision and Mission and Core Values of the AAN. The AAN has the critical mass of knowledge and experience that is needed by each section in the achievement of its goals. The AAN benefits from the recognition of involvement of the Section in issues of great import in the provision of the most effective and appropriate care of the patient. The sub-specialty benefits from the achievement of its goals and the enhancement of the member’s ability to be involved the protection of the patient’s right to the best care and outcomes possible.

6. **How will sub-specialty assess and address success/failure for each goal/area?**
   a. The committees assigned the responsibility for developing and carrying out the actions relative to each goal will review the success or failure of these actions on a yearly or more frequent basis and modify the plan as needed to respond to the systemic and environmental and informational changes that have occurred in the time since last review. (The ADDIE or similar process.)

B. Long Term (over the next 5-10 years)
The experience of the last year and especially the last 4-6 months makes clear that it is very difficult to look into the future with any degree of certainty. Review of goals to be achieved needs to be an active and on-going process. The process referred to in A.6.a would be very appropriately applied to the development of new goal sets and the retirement of goals achieved. (Example, the focus on retention and retirement of goals could be the responsibility of the chair elect during the six month prior to the beginning of the new term.)

VI. **Summary/Concluding Statement**

1. **Summary of mission/vision/values for specialty**
The purpose of the AAN Neural Repair and Neurorehabilitation Section is to increase awareness of an interest in Neurorehabilitation as an important component of the comprehensive continuing care of patients with neurologic disorders. This care is expected to be provided by Neurologists, Physiatrists, and other allied health care professionals. The NNR Section mandate is to expand the Neurologist’s responsibilities for patient care by developing the Neurologist’s expertise in Neurorehabilitation. This will be accomplished by the formal unification of Neurologic care with Neurologic Rehabilitation. Every neurologic impairment implies a neurologic disability with its resultant societal handicap. Neurologists treating patients with neurologic impairments should be well aware of and well equipped to help the patient deal with the consequences of their neurologic disorder. The AAN Section of Neural Repair and Neurorehabilitation will enhance the care of patients with neurologic disorders by fostering improvements in Neurorehabilitation treatment, education, and research. It will serve as a treatment and educational resource for clinicians by sponsoring seminars, publications, and presentations at scientific sessions of the Academy. It will foster the development of Neurorehabilitation Skills by both newly certified and currently established Neurologists. It will advise the Academy of larger Legislative and Medical Economic threats that may impair adequate delivery of care to patients with neurologic impairments.

2. **Global conclusion and assessment of sub-specialty’s place within the larger scope of AAN, other subspecialties, neurology in general and related fields (e.g. neurosurgery).**
The global vision of the AAN Section of Neural Repair and Neurorehabilitation is that Neurologists bring a unique perspective to the rehabilitation team. The Neurologist’s training adds an understanding of neurologic pathophysiology, clinical presentation, natural history, neuropharmacologic treatment and the
processes of neurological recovery. Neurologists and neuroscientists of other disciplines are now playing an important role in developing an evidence based approach to treatment strategies which may improve recovery following neurologic disorders. These strategies are based on the scientific underpinnings of neural repair and neuroplasticity. Their value will be evaluated by well-designed prospective randomized controlled clinical trials.

Another value of the Section of Neural Repair and Neurorehabilitation is to formally document and certify that the Neurorehabilitation specialist has demonstrated competency in 4 key areas: 1) Knowledge of the Neuro-Sciences underlying neurologic injury and treatment; 2) Internal Medicine knowledge and skills needed for management of acute and sub-acute medical co-morbidities and complication associated with debilitating neurologic disorders; 3) Knowledge of appropriate selection criteria, putative mechanism of action and expected outcome for specific physical therapy, occupation therapy, and speech-language pathology intervention; 4) Knowledge and skill in the trans-disciplinary organization and management of care across multiple neurologic, medical and allied health care providers.

The Section of Neural Repair and Neurorehabilitation serves as a forum within the AAN for developing and advancing the research, education, legislative and medical economic agendas described above. Implementation of these initiatives will assure optimum impact of the AAN on Neurorehabilitation care for patients with neurologic impairment, disability and handicap. The Neural Repair and Neurorehabilitation Section’s focus on the neuroscience base for minimizing neural injury and optimizing neural repair serves as a key component of the AAN’s mission to facilitate translation of basic neuroscience discoveries to improvement in patient care and recovery.

*Contributors: Leonardo G. Cohen, MD, John P. Feerick, MD, FAHA, Douglas I. Katz, MD, FAAN, Laura Lennihan, MD, FAAN, Laura B. Powers, MD, FAAN, Michael J. Reding, MD, Jeffrey A. Samuels, MD, FAAN.*