Strategic Plan
AAN Neuroimaging Section, 2009

I. Introduction
A. Definition of the subspecialty: Neuroimaging is a neurological subspecialty based on accessing visual representations of the nervous system to aid in the diagnosis, treatment, and research of brain, spine, peripheral nerve and muscular disorders. The Neuroimaging Section, one of the five original clinical sections of the AAN, was established in 1975.

B. Conditions and procedures: Most neurological conditions can be studied effectively with structural or functional imaging. Imaging techniques include: magnetic resonance imaging (MRI), computed tomography (CT), neurosonology, positron emission tomography (PET), single photon emission computed tomography (SPECT), and interventional (catheter-based) endovascular procedures.1

C. Interaction with other subspecialties: Neuroimaging plays a central role in virtually all of the neurological subspecialties.

D. Purpose of this document: In this document, the Section will lay out a strategic plan for growth and success of the Neuroimaging (NI) Section.

E. Mission Statement: To further patient care, research, and teaching in neuroimaging. The mechanisms to accomplish this goal will include seminars, publications, presentations at scientific sessions of the AAN, and various other events and modalities that encourage interest and proficiency in neuroimaging.

II. Background/History of the Subspecialty
A. Landmark early works:2 In 1895, Wilhelm Roentgen, a physicist, demonstrated the first radiograph and opened a new window to medical diagnosis. His revolutionary discovery set the state for progressive advances in general medical and neurological imaging. Walter Dandy, a neurosurgeon, first performed ventriculography and pneumoencephalography in 1918 and 1919.3,4 Egaz Moniz, a neurologist, accomplished the first cerebral arteriogram in 1927.5 Neurologist William Oldendorf developed the basis for CT in 1961, and the technique was applied to clinical diagnosis by an electrical engineer, Godfrey Hounsfield, in 1973.6,7 In the early 1980s, MRI introduced: Paul Lauterbur, a physicist, published the first spatially differentiated MRI images; Raymond Damadian, an internist, recognized MRI's role in tumor detection.8,9 The inventors of CT and MRI have been awarded Nobel Prizes in Medicine,10 attesting to the revolutionary contributions of these discoveries to science and medicine.

B. Growth of the subspecialty to current status: Before the advent of CT, neurosurgeons, neurologists, and some radiologists performed most of the neuroimaging procedures.2 As catheter angiography became more advanced, so did the field of neuroradiology, and in university hospitals neuroradiologists assumed the major role in these studies. By the 1970s and 1980s, only a few academic neurologists maintained direct control of neuroimaging, notably those in Buffalo, Winston-Salem, and Los Angeles. Private practice neurologists, however, such as those in New York, California, Georgia, Pennsylvania, Maine Florida, Texas, Michigan, and Virginia, continued to expand the field of neuroimaging practice. In 1975, the AAN stated that “Neuroimaging is an integral part of the practice of neurology that requires broad knowledge of neuroanatomy, neuropathology, pathophysiology, and clinical neurology. Proper interpretation of neuroimaging requires knowledge of the effects of disease on the neuroimaging examination, its indications, performance and interpretation.”11 Two years later, neurologists came together to form the American Society of Neuroimaging (ASN), which has grown to more than 700 members. In the 1990s, MRI and other neuroimaging technology continued to expand, with the introduction of techniques such as echo-planar imaging, transcranial Doppler, and MR angiography, increasing the role of neuroimaging in both neurologic research and clinical practice. Neurologists increased their role in providing official neuroimaging interpretation and ownership of neuroimaging...
equipment. In 1975, the Neuroimaging Section of the AAN was established as one of the five original clinical sections of the AAN. Currently, with increasing numbers of neurologists involved in neuroimaging, organized radiology has assiduously attempted to resist the trend of clinician neuroimaging. The American Medical Association (AMA), however, has steadfastly supported organ-specific imaging by clinical subspecialists such as neurologists and cardiologists. AMA policy guidelines assert that: (1) individual character, training, competence, experience, and judgment should be the criteria for granting privileges in hospitals; and (2) physicians representing several specialties can and should be permitted to perform the same procedures if they meet these criteria. In the last 10 years, neuroimaging opportunities for neurologists have flourished, largely due to the rise of partnerships between privately owned imaging centers and neurologists, the latter providing patient referrals and interpretations of neuroimaging studies. For example, currently there are approximately 80 neurologists officially reading MRI scans in Texas and 70 in Florida in collaboration with free-standing imaging centers as well as in the setting of large neurology group practices with in-house imaging capabilities. There are now six formal fellowships to train neurologists in MRI/CT and more than 20 in interventional procedures. The AAN currently has at least five neuroimaging courses at its Annual Meeting, including two full days of courses devoted to general neuroimaging techniques and applications in the brain and spine. This is a marked increase in neuroimaging content compared to the 1990s and early part of this decade. Neurologists increasingly participate in the evaluation of their patients’ imaging studies: In 1996, a survey of AAN members revealed that many neurologists relied on their own neuroimaging reading alone, and a clear majority relied on a combination of their own and someone else’s reading (58% for CT and 68% for MRI) to make clinical decisions. Less than 8% relied solely on someone else’s CT or MRI interpretation. A more recent survey by the AAN showed a growing self-reliance by neurologists in the interpretation of MRI. In a 2002 international survey, 79% of neurologists stated that they made clinical decisions on stroke care based solely on their independent review of neuroimaging studies. Neurologists are now continuing to pursue a growing interest in neuroimaging; and through appropriate education and credentialing they are demonstrating compelling justification for their involvement.

C. Genesis of pertinent journals: In 1996, the Journal of Neuroimaging (JON) was first published as the official journal of the ASN. Leon Prockop, M.D., the sixth ASN president, served as the founding editor. His successor, Lawrence Weschler, M.D., is currently the President-elect of the ASN. The current editor, Joseph Masdeu, M.D., Ph.D., is also a past president of the society. In the ISI 2006 Journal Citation Reports Ranking, the Journal of Neuroimaging ranked 7th of 13 neuroimaging journals, 94th of 146 clinical neurology journals and 58th among 85 medical imaging journals (including all of radiology and nuclear medicine). The number of paper submissions to JON has almost tripled from 2005. Currently, the article acceptance rate is about 45%.

D. Current certification and organizations: The current AAN guidelines for neurologist certification and training in neuroimaging were published in 1997. Different sets of guidelines were written for those who would perform and interpret the studies and those who would independently operate a neuroimaging facility. The importance of neuroimaging training for neurology residents has been stressed by the Association of University Professors of Neurology, which in October 2000 stated that residents in neurology must have adequate experience in neuroimaging that assures proficiency in CT, MRI, and neurosonology. In 2008, the United Council for Neurologic Subspecialties (UCNS), representing all of organized neurological subspecialties in the United States, launched a new certification and accreditation pathway for neurologists in neuroimaging. From the standpoint of technical laboratory accreditation of neuroimaging centers, the AAN has supported the development of three important entities, all falling under the umbrella of the Intersocietal Accreditation Commission (IAC). These organizations, ICAVL (neurosonology), ICAMRL (MRI), and ICACTL (CT), help to ensure that the process for neuroimaging and other organ-specific imaging laboratory accreditation, while comprehensive and stringent, is open,
fair, and inclusive (intersocietal), not operating under the exclusive control of a single-specialty proprietary entity. Currently, the only other organization offering technical accreditation is the American College of Radiology (ACR). While the UCNS has now supplanted the ASN as the certifying body for MRI/CT professional credentials, the ASN continues to authorize certification in the field of neurosonology. Besides the ASN, other professional organizations related to neuroimaging include the International Society for Magnetic Resonance in Medicine, American Society of Neuroradiology, American Society of Interventional and Therapeutic Neuroradiology (now known as the Society of NeuroInterventional Surgery), and the Society of Vascular and Interventional Neurology.

E. Other professional organizations related to the subspecialty: There are many neurological subspecialty organizations that deal with neuroimaging, due to its importance in nearly all disorders relating to the nervous system (e.g., stroke, neuro-oncology, epilepsy, multiple sclerosis, trauma, and dementia).

III. Current State of the Subspecialty

A. Patient care/practice: In Section 1B, we have summarized the increasing involvement and reliance of neurologists in their own interpretation of neuroimaging studies. In a 2005 survey of randomly chosen AAN members, neurologists indicated that they order a large number of neuroimaging studies in their practice: on average, one SPECT, one angiography, 10 neurosonology, 12 CT, and 27 MRI studies per neurologist per month. Some of these studies are read for reimbursement by neurologists; this included 1% of all SPECT, 2% of angiography, 15% of neurosonology, 6% of CT, and 7% of MRI studies. Twenty percent of respondents stated that their practice either currently owned an MRI or CT scanner (15%) or planned to own MRI/CT in the next year (5%). Most neurologists (68%) stated the reason for not performing official neuroimaging interpretation was political (e.g., exclusive hospital contract with radiologists or third-party payer rules). More than 75% of respondents felt that neurologists are one of the appropriate specialists to formally interpret neuroimaging studies and are more qualified than general radiologists. Thus, despite the significant initiative and competent skill-level that neurologists bring to neuroimaging, there remains an unfortunate reality, restricting neurologists’ access to MRI/CT in their daily clinical practice; political and economic obstacles prevent most neurologists from ever officially interpreting and billing for neuroimaging studies.

B. Research: All of the neuroimaging modalities are playing an increasing role in the research areas of neurology. MRI has become the preferred tool for structural investigation of brain and spinal cord tissue integrity and has been more recently introduced into peripheral nerve and muscular imaging. The array of tools within MRI continues to expand to include diffusion imaging, magnetization transfer, and spectroscopy, providing new insights into neurochemical and microscopic changes. Functional MRI can also specify real time localization of brain activation during tasks, using functional MRI. Catheter angiography advances have spawned the field of endovascular neuroimaging, which includes both diagnostic and therapeutic strategies such as coiling and stenting of cerebrovascular lesions. Nuclear imaging has brought new ligands particularly with PET imaging to identify cellular events such as amyloid deposition and microglial activation. Neurosonology has brought new diagnostic and therapeutic opportunities for extracranial and intracranial cerebrovascular disease. With this technological revolution, neurologists have been at the forefront in investigation of the clinical applications of neuroimaging techniques. The major neurology journals such as Brain, Annals of Neurology, Neurology, and Archives of Neurology contain neuroimaging-related articles in virtually every issue. The largest neurology scientific meetings, such as the AAN’s, include heavy scientific content related to neuroimaging investigations. Several years ago the NIH created a new branch, the National Institute of Biomedical Imaging and Bioengineering, reflecting the heightened interest in imaging research. Neuroimaging promises to provide continuing opportunities for neurologists to do important research for years to come.
C. **Education**: Education in neuroimaging is at a crossroads. Since its inception, neuroimaging was taught during training in the specialties that generated the field, namely neurosurgery and neurology. With the advent of CT in the 1970s and of MRI in the 1980s, education in neuroimaging receded in many departments of neurology, as their leaders felt that this field should be left to the specialty of radiology. With the growing complexity in the field, the need to integrate imaging within a rational diagnostic patient work-up, and the central use of neuroimaging in the treatment of stroke and other neurological disorders, it has become obvious that neurologists need to be trained in neuroimaging. As indicated before, two surveys (10 years apart) of AAN members document that a majority of neurologists in practice read their own neuroimaging studies, whether they are reimbursed or not for their reading. Thus, a need exists to provide for residency and CME training in neuroimaging. In 1997, the AAN published a set of training guidelines, primarily addressing neurology residency training programs. Since neuroimaging’s inclusion into the ACNS in 2007, oversight of subspecialty training at the fellowship level and monitoring of the neuroimaging certification process have advanced significantly. Currently there are six approved fellowship training programs, some of them at the most prestigious academic departments, and many more are expected to be organized in the next few years. A large proportion of neurology trainees are interested in this field. As stroke treatment is becoming more proactive, interventional neuroimaging is gaining momentum. More than 20 programs train neurologists in interventional procedures. Neuroimaging CME programs have figured prominently in the AAN Annual Meeting since its inception. Currently there are at least five neuroimaging courses, including two complementary full-day courses devoted to the application of neuroimaging to various disorders of the brain and spine. The AAN also supports neuroimaging education through the yearly Residency In-service Training Exam (RITE), which contains 60 questions on neuroimaging.

D. **Medical economics issues**: Please see a recent comprehensive review on this topic. Based on recent surveys and membership numbers in the ASN and our Section, we estimate that approximately 1000 neurologists in the United States currently officially interpret neuroimaging studies and receive reimbursement for such services (see also Section IIIA above). The most common modalities for which neurologists have reading privileges are neurosonology (carotid Doppler and TCD) and MRI. There is also a growing number of neurologists practicing interventional, catheter-based neuroimaging. Neurologists have had the most success in obtaining neuroimaging practice opportunities in non-hospital based private imaging centers, either through partnerships with centers owned by another entity or in imaging centers owned by neurologists in a Stark-compliant model (such as an imaging center physically attached to a neurology group practice and owned by that practice).

E. **Legislative issues**: Please see a recent comprehensive review on this topic. In response to increased costs for medical services at all levels, including high technology imaging, Medicare regulators, largely through the Medicare Payment Advisory Commission (MedPAC), have provided information and advice promoting stepped-up Congressional oversight for Medicare’s payment policies. Congress has initiated a multi-pronged approach to legislative authority, including the so-called Stark Laws, and reimbursement measures in the Deficit Reduction Act (DRA). As initially conceived as part of the Omnibus Budget Reconciliation Act of 1989, and many times since amended and revised, the Stark Laws basically invoke a relative prohibition on a physician’s referrals to any entity in which he has financial interest. As with many legislative concerns, there are specific, and at times complex and contradictory, exceptions attached to the general prohibitive rule; these so-called “carve outs, substantially modify the ultimate effect of this legislation which addresses Medicare payments for specific “designated health services” (DHS). As final regulations are presently, and will likely continue for some time to be, a moving target, neurologists must await final clarification and interpretation of Stark’s ever-changing regulatory complexion. As part of the Deficit Reduction Act of 2005 (DRA), Congress initiated amendments to the payment rules for the “technical component” (TC) of office-based (outpatient) imaging services. According to DRA
regulations, reimbursement for outpatient imaging services is mandated to be the lesser of the respective payments provided under the Medicare Physician Fee Schedule (MPFS), or the Hospital Outpatient Prospective Payment System (HOPPS). Estimates as to the specifics of DRA effects suggest a net reduction for technical payments greatest for MRI and CTA (35%, 37%), followed closely by MRA (25%). A separate, superimposed reimbursement reduction attached by CMS to the MPFS (final rule 2006), cutting payments for “contiguous body part” imaging procedures in the same session by 50%, magnified the negative financial impact for a majority of outpatient imaging centers. It has been noted with some irony that while the DRA may result in Medicare savings in per-test technical payments to providers, it does little to control inappropriate utilization, and therefore overall spending; also, it may have unintended adverse effects, particularly, in marginally profitable markets, decreasing patient access to imaging facility care. In July 2008, Congress passed and overrode a presidential veto of the Medicare Improvements for Patients and Providers Act of 2008 (MIPPA). This law now mandates accreditation of facilities that provide advanced diagnostic imaging services by 2012. The Department of Health and Human Resources (HHS) must designate acceptable accreditation bodies by 2010. Obviously the need for neurologists’ continued involvement with, and full support of, the Intersocietal Accreditation Commission (IAC) and its individual divisions dealing with MRI/CT (ICAMRL/ICACTL) becomes paramount with the advent of new MIPPA regulations.

IV. SWOT Analysis (Strengths, Weaknesses, Opportunities and Threats) of the Subspecialty
A. Current strength in each of five areas:
   1. **Patient care:** Neurologists have a deep understanding of anatomy, physiology, and clinical findings to give foundational meaning to imaging studies. Neurologists review imaging studies as part of their routine training and clinical practice. It should also not be lost on our specialty that neurologists have the “power of referral,” in that they order neuroimaging studies, and in that process, have a duty to their patients to select the most competent providers of neuroimaging studies both in terms of technical performance and interpretation. This process often involves referral to a neurologist with superior expertise in the subspecialty of neuroimaging.
   2. **Research:** The field of neurology tends to attract active and motivated researchers by virtue of the many unanswered questions of the nervous system and the clinical relevance of those questions; neuroimaging plays a critical role in advancing leading edge neurological research able to address these queries. The proximity of neuroimaging research to clinical practitioners in many academic neurology programs often places the most recent advances within the scope of our specialty’s practice sooner than in many other fields, including radiology.
   3. **Education:** Neurology residency includes many of the components necessary to perform imaging such as intensive exposure to inpatient and outpatient neurologic conditions, longitudinal monitoring of those patients, neuroanatomy, neuropathology, and electrophysiology. Neurology residents routinely review imaging studies on their patients and correlate those findings with the clinical findings of their patients.
   4. **Medical economics:** Neurologists find natural allies with other clinician imagers such as cardiologists, neurosurgeons, and orthopedists; promotion of such alliances through the IAC and its component divisions (ICAMRL/ICACTL) prove invaluable from an economic and political perspective. Neurology department in large academic centers are responsible for a large percentage of neuroimaging referrals to hospital owned imaging centers, and thus neurologists are responsible for income generation. Large private practice neurology groups can leverage their purchasing power and benefit economically from owning their own imaging equipment. Neurologists can partner with freestanding imaging centers to be able to read studies on their own patients. Most third-party payers
such as Medicare, Medicaid, and private insurers will pay neurologists for interpreting neuroimaging studies.

5. **Legislative issues**: Neurologists have leverage with governmental agencies because they are treating physicians and have direct relationships with, and responsibility for, patients. Through alliances such as the Coalition for Patient Center Imaging (CPCI) and the American Medical Association, neurologists have combined lobbying efforts with other clinician-imagers such as cardiology in advocating for imaging rights at the state and federal levels.\(^{21}\)

B. **Weaknesses in each of the five areas:**

1. **Patient care**: Neurologists are a relatively small group within hospital systems and across physician groups at large, giving them a relatively small voice in patient policy issues. Hospital contracts often exclude neurologists from performing imaging studies.

2. **Research**: Neurologists need to have better access to imaging equipment and imaging scientists to be able to perform the highest quality neuroimaging research. Neurologists are often shut out of conversations related to research in neuroimaging at large academic centers.

3. **Education**: There is no formal requirement for neurology residents to perform official neuroimaging interpretations during their training. Radiology departments may not provide adequate access and training for neurology residents in neuroimaging studies. There is a relative dearth of neuroimaging fellowship training opportunities for neurologists in neuroimaging. Most neuroradiology fellowships are controlled by radiology departments and do not allow neurologists access to neuroimaging training.

4. **Medical economics**: Hospital contracts commonly exclude neurologists from performing and interpreting imaging studies. Some health insurance companies have restrictive rules preventing compensation to neurologists for neuroimaging work performed. For example, health insurance companies may use gateway, so-called “radiology benefit managers” (RBMs) to restrict neurologists’ participation. Both commercial carriers and Medicare are “belt tightening” and look at wholesale limitations to access in neuroimaging as a way to reduce overall costs.

5. **Legislative issues**: Organized radiology has launched a well-organized, well-funded strategy to enact legislation at the state and national level preventing or severely limiting neurologists and other clinician imagers access to professional opportunities, thereby gaining a de facto imaging monopoly. Many of radiology’s legislative efforts have not so subtly implied an inherent impropriety in clinician imagers’ self-referral patterns, charging an a priori link with over-utilization; it should be noted that that charge has been vigorously refuted by clinician imagers.\(^{20}\) While many of these legislative efforts have been defeated, they continue to recur with persistent regularity.

C. **Opportunities for growth in each area**

1. **Patient care**: Neuroimaging technology continues to unfold, providing increasingly sophisticated and cost-effective tools to diagnose, treat, and monitor neurologic conditions. These advances continue to improve the quality of care and hold the promise of even more improvements in care in the future.

2. **Research**: Advances in neuroimaging technology also foster scientific advances in the neuroscience field. The synergy between neuroimaging research and other neuroscience research has provided myriad clinical advances in the diagnosis and treatment of disease. For example: imaging biomarkers are utilized to diagnose and track responses to treatment in multiple sclerosis. Quantitative neuroimaging markers of brain atrophy have also become increasingly accurate in the classification of patients with mild cognitive impairment, Alzheimer’s disease and other degenerative dementias, bringing the goal of early diagnosis in the preclinical stages of dementing illness closer to fruition and, it is hoped, thereby accelerating the eventual development of neuroprotective treatments for the prevention or cure of these devastating illnesses.
3. **Education**: With the availability of the UCNS certification pathway for neurologists in neuroimaging, there is an urgent need for more fellowship and tutorial training and enhanced residency training of neurologists in neuroimaging.

4. **Medical economics**: There is an urgent need to expand neuroimaging technology availability and clinical interpretation expertise throughout the country, particularly in underserved areas, where access to high quality neuroimaging is limited. This creates a major economic opportunity for neurologists to fill this void, where imaging technology is inadequate or neuroradiologists are not available to interpret or perform studies.

5. **Legislative issues**: Neurologists can gain prominence in the imaging field by designating cost-containing models that promote the appropriate use of imaging studies, such as appropriateness criteria. These should serve to limit cost without compromising quality of care. Under the AAN imprimatur, neurologists should work together, along with intersocietal allies, towards elimination of any anti-competitive legislative barriers limiting their involvement in neuroimaging.

D. Threats to achieving goals in each area

1. **Patient care**: Reduced reimbursement of imaging studies by third-party payers. Safety concerns regarding radiation dosage and iodinated contract agents in the case of CT, and of gadolinium contrast in the case of MRI.

2. **Research**: Reduced funding opportunities for research. Limited access to imaging scientists, such as physicists, to support research. Institution-specific limitations as to neurologists’ access to imaging equipment, both in hospital-based and academic settings.

3. **Education**: Efforts by organized radiology, including some of the academic leadership within the field, to prevent neurologist training in neuroimaging. Dearth of formal neuroimaging fellowships open to neurologists.

4. **Medical economics**: Declining reimbursement for neuroimaging procedures. Increasing scrutiny of imaging costs by third-party payers. Efforts by prominent members of the radiology specialty to limit reimbursement of neurologist imaging work.

5. **Legislative issues**: Efforts by radiology to limit reimbursement of neurologist imaging work (see D4, above).

E. Current status of AAN input in each area

1. **Patient care**: The AAN Professional Association recently issued a practice statement supporting the role of neurologists in performing neuroimaging. The AAN is a charter member of the ICACTL and ICAMRL, both of which support credentialing of neuroimaging centers. The AAN is a charter member of UCNS, which offers certification of neuroimagers and accreditation of neuroimaging fellowships.

2. **Research**: The AAN annual meeting includes a strong component of neuroimaging in the scientific sessions. The AAN currently does not offer any research awards or grants in neuroimaging. Also see item B3.

3. **Education**:
   a. **Residency**: AAN offers a strong component of imaging training in the Annual Meeting. The AAN has recently published a *Continuum* issue dedicated to neuroimaging. The AAN currently does not offer any teaching awards in neuroimaging. The AAN should partner with the ASN to help mandate that neurology residency training includes formal training in neuroimaging.
   b. **Fellowship**: The AAN should partner with the ASN and assist in selecting pilot academic neurology departments to proceed in the planning, funding and establishment of new centers of excellence. Such pilot centers should have as their mission the advancement neuroscience research, teaching, and evidence-based clinical service. The cornerstone of each center should be a neuroimaging division that consists of mutually interactive and synergistic clinical and research
branches, each incorporating fellowship training in clinical neuroimaging and basic science, respectively. Such centers should be actively engaged in grants-based research in conjunction with high clinical neuroimaging procedure volumes provided by an adequate referral base of departmental and extra-departmental neurologists. Neuroimaging volumes also should be of sufficient variety to ensure adequate breadth and depth of the service-based educational experience for fellows. Finally, imaging volumes should be sufficient to achieve adequate statistical power when conducting research on imaging biomarkers in neurological disease, to provide a rich source of data for the basic research missions of the centers of excellence.

4. **Medical economics**: The AAN Professional Association recently issued a practice statement supporting the role of neurologists in performing neuroimaging. The AAN has partnered with the ASN on conversations with third-party payers to enhance the role of neurologists in imaging studies. The AAN should play a stronger role in advocating to third-party payers for neurologists’ professional (interpretive) and technical (entrepreneurial) practice opportunities in neuroimaging.

5. **Legislative issues**: The AAN has partnered with the ASN on lobbying at the state and federal levels to enhance the role of neurologists in imaging studies. The AAN should play a stronger role advocating in these legislative arenas for neurologists’ practice opportunities in neuroimaging.

V. **Specific Vision, Goals, and Objectives of the Subspecialty**

A. **Short term (over the next 5 years)**

1. **Specific defined goals and targets**:

   a. Expand the number of UCNS-compatible neuroimaging fellowships. A minimum of 10 additional academically-afflicted fellowships should be established by 2014 in order to ensure the viability of neuroimaging as a subspecialty. A search committee specifically geared towards identifying academic departments of neurology that possess attributes necessary towards the establishment and long-term success of the neuroimaging fellowships, within the context of new, economically self-sustaining neuroimaging divisions within these departments. A team should be established, under the direction of the search committee, to develop comprehensive economic *pro forma* analyses for department chairs as well as to assist departments of neurology in contracting with providers of expertise in facility planning, staffing, and imaging equipment purchase. Given the time demands and high levels of expertise involved, the planning and development process itself should be designated to be economically viable.

   b. Develop both research grants and teaching awards for neuroimaging through the AAN.

   c. Start formal discussions with the ACGME to require formal neuroimaging training in neurology residencies.

   d. Gain more AAN support for economic and legislative neuroimaging initiatives.

   e. Increase section membership by 20% within 2 years.

   f. Have a stronger link between ASN, NI Section, and AAN leadership; improve intra- (neurological) and inter- (with other specialties) societal networking and connectivity.

   g. Development of a neuroimaging self-assessment examination (NeuroimagingSAE) in a format analogous to the AAN NeuroSAE, for first administration at the 2010 ASN meeting.

   h. Comprehensive update and upgrade of the Neuroimaging Fellowships section of the ASN website.

2. **Operational strategies to achieve goals**:

   a. Provide political and financial support to potential fellowship sites.

   b. Solicit donations from neuroimaging vendors for AAN awards; encourage neuroimaging exhibitors at AAN/ASN meetings.

   c. Coordinate a strategy to approach ACGME with help of AAN leadership.
d. Ask AAN to provide material support and funding for ASN advocacy efforts and more AAN staff time for such efforts

e. Increase reach of AAN NI Section into AAN membership and other imaging societies.

f. Ask AAN to provide non-voting positions to the ASN President and NI Section head on the AAN board and/or other committees. Offer an AAN board member a non-voting position on the ASN board.

g. Obtain clarification from UCNS Board of Directors regarding the criteria for NeuroimagingSAE committee eligibility. If not advertised as a board review, it may be appropriate for UCNS examination committee members to participate in the design of the new NeuroimagingSAE.

h. Request proposals for funding to hire web developer to upgrade the Neuroimaging Fellowships section of the ASN website.

3. **Specific action item for each goal:**

a. AAN president to send letter to all neurology chairs asking them to help AAN develop neuroimaging fellowships for neurologists. AAN to create a $100,000 education fund to support new neuroimaging fellowships.

b. AAN NI Section leadership to raise $100,000 from imaging companies to support AAN research and teaching awards.

c. AAN and ASN leadership to approach ACGME leadership for meeting.

d. AAN to provide $50,000 per year to support ASN neuroimaging advocacy efforts and strategic planning. AAN to also have one FTE staff dedicated to neuroimaging advocacy efforts.

e. AAN NI Section to partner with ASN on advertising for membership of both entities in journals and scientific meetings.

f. ASN to discuss leadership exchanges with AAN.

g. ASN or AAN president to send letter to the UCNS Board of Directors asking their permission to establish a NeuroimagingSAE and clarification of eligibility criteria for NeuroimagingSAE committee membership.

h. Proposals to upgrade the Neuroimaging Fellowships section of the ASN website should be approved by October 15, 2009.

4. **Role of AAN in achieving goals:**

a. AAN president to send letter to all neurology chairs asking them to help AAN develop neuroimaging fellowships for neurologists. AAN to create a $100,000 education fund to support new neuroimaging fellowships.

b. AAN NI Section leadership to raise $100,000 from imaging companies to support AAN research and teaching awards.

c. AAN and ASN leadership to approach ACGME leadership for meeting.

d. AAN to provide $50,000 per year to support ASN neuroimaging advocacy efforts.

e. AAN NI Section to partner with ASN on advertising for membership of both entities in journals and scientific meetings.

f. ASN to discuss leadership exchanges with AAN.

g. Proposals to upgrade the Neuroimaging Fellowships section of the ASN website should be approved by October 15, 2009.

5. **Benefit to AAN and subspecialty in achieving goals:** Increased neurologist participation in neuroimaging will boost the need for neurologists and the quality of candidates entering neurology residencies. It shall also boost the ability of neurologists to perform neuroimaging research. The net result will be better education, patient care, and neurology practice.

6. **How will subspecialty assess/address and success/failure for each goal:**
a. The Section will monitor the number of fellowships posted on the AAN and UCNS fellowship listings
b. The Section will coordinate and monitor the solicitation and establishment of these awards.
c. The Section will coordinate and monitor the formal discussions with ACGME.
d. The Section will coordinate and monitor the solicitation and establishment of such AAN support.
e. The Section will coordinate and monitor the growth of Section membership.
f. The Section will coordinate and monitor the formal discussions with ASN and AAN.
g. The Section will assess the functionality of the Neuroimaging Fellowships section of the ASN website at the 2010 annual meeting.

B. Long term (over the next 5-10 years)

1. Specific defined goals and targets:
   a. Expand the number of UCNS compatible neuroimaging fellowships to 15.
   b. Remove most of the economic and legislative barriers to neuroimaging practice.
   c. Increase section membership by 40% from current.

2. Operational strategies to achieve goals:
   a. Provide political and financial support to potential fellowship sites.
   b. Have a robust AAN and ASN partnership in advocacy.
   c. Increase reach of AAN NI Section into AAN membership and other imaging societies.

3. Specific action item for each goal:
   a. AAN president to send letter to all neurology chairs asking them to help AAN develop neuroimaging fellowships for neurologists. AAN to donate an additional $100,000 to education fund to support new neuroimaging fellowships.
   b. AAN to continue to provide $50,000 per year to support ASN neuroimaging advocacy efforts. AAN to also continue to have one FTE staff dedicated to neuroimaging advocacy efforts.
   c. AAN NI Section to continue to partner with ASN on advertising for membership of both entities in journals and scientific meetings.

4. Role of AAN in achieving goals:
   a. AAN president to send letter to all neurology chairs asking them to help AAN develop neuroimaging fellowships for neurologists. AAN to donate an additional $100,000 to education fund to support new neuroimaging fellowships.
   b. AAN to continue to provide $50,000 per year to support ASN neuroimaging advocacy efforts. AAN to also continue to have one FTE staff dedicated to neuroimaging advocacy efforts.

5. Benefit to AAN and subspecialty in achieving goals: Increased neurologist participation in neuroimaging will boost the need for neurologists and the quality of candidates entering neurology residencies. It shall also boost the ability of neurologists to perform neuroimaging research. The net result will be better education, patient care, and neurology practice.

6. How will subspecialty assess/address and success/failure for each goal:
   a. The Section will monitor the number of fellowships posted on the AAN and UCNS fellowship listings.
   b. The section will work closely with the AAN and ASN to monitor and respond to economic and legislative threats to neuroimaging.
   c. The Section will coordinate and monitor growth of Section membership.

VI. Summary/Conclusion

A. Summary of mission/vision/values: In March 2008, the AAN Board of Directors approved the current AAN Neuroimaging Position Statement, submitted at the Board’s invitation by the AAN Neuroimaging Work Group. This document summarizes the Neuroimaging Section’s mission, vision and values. The
Position statement basically affirms the right and need of AAN members to access the full range of our neurological education for provision of superior imaging services for our patients. It is stipulated that neurologists should continue to play a primary role in the development of quality and appropriateness measures in neuroimaging while also addressing issues of certification, accreditation and utilization. In establishing these parameters, the position statement suggests that the AAN will: expand and support educational opportunities in neuroimaging as a standard and required component of neurology training; promote comprehensive appropriateness guidelines; and increase neurologist access to neuroimaging certification through appropriate post-graduate fellowship resources. It is hoped by all in our specialty that in these ways neurologists can come to achieve their rightful and appropriate role of leadership in the field of imaging of the nervous system.

B. Global conclusion and assessment of subspecialty’s place within larger scope of AAN, other specialties, neurology in general, and related fields: With the recent addition of Neuroimaging to the UCNS, and the increased practical and educational activity at all levels of the AAN and ASN as noted, the entire concept of neurologist neuroimaging is now undergoing a promising examination and emphasis. Central to this new momentum is the goal of utilizing neuroimaging to provide quality neurological diagnosis and care for our patients. Neurological advocacy, at both the resident training and practitioner levels, and promotion of practice domain prerogatives, must start at the top of the AAN: as neuroimaging is increasingly sanctioned by the AAN leadership as a rightful extension of the neurologist’s purview, with increased educational offerings at the formal training and CME levels, a golden opportunity for our specialty will be realized.

References
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