

After neurology residency

New opportunities, new challenges

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An ever-increasing number of choices are now available for the neurology house officer after completion of residency. Most residents pursue a fellowship (74%), enter into a neurology practice (19%), or proceed directly into an academic position (5%). Of those who obtain further training, many continue in academics (57%), some will join a private practice (39%), and a few are employed in industry (1%).¹

A fellowship can provide core research training and expertise within a subspecialty of neurology that may assist the trainee for a future career within academic, industrial, or private practice arenas. This training can also provide the necessary requirements for board certification within subspecialty areas and can shield the trainee from the already long-deferred confrontation with the real world. A close relationship with a senior mentor may also be forged during this time and can allow for the shaping of future career goals. This article examines the different options that are available after completing a neurology residency. The table provides a summary as well as additional information concerning possible careers after completing residency.

Academic neurology

Overall, about one half of all neurology residents (44%) intend to pursue a career in academics.¹ Those pursuing an academic career will be required to successfully bal-

ance clinical, research, and teaching obligations. Three possible options are available for the resident interested in pursuing a career in academic neurology: basic neuroscientist, teacher/clinician, or patient-oriented researcher.

Basic neuroscientist

Interest in the basic sciences section of academic neurology may be related to burgeoning treatment options and expanding neuroscience research that has occurred during the Decade of the Brain. Focused research within a particular area of interest may help define future pathways as a basic scientist and can lead to a strong mentorship relationship. Funding mechanisms, from those supported by NIH (K02 and K08) to smaller funding organizations within a particular field, exist for those interested. Involvement in local and national meetings (specialty subsections) can allow for further definition of a career as well as provide additional contacts and collaborations with investigators and institutions. Basic scientists usually spend most of their time performing research (50 to 85%), with some clinical responsibilities (5 to 30%) and teaching obligations (10 to 15%).

Salary is often garnered through grants and is usually less than what could be obtained in private practice. Patient interaction is limited (often clinic once a week and attending for 1 month a year) and is usually focused within a particular field of exper-

tise in neurology. Night call is usually not required and the degree of interaction with house staff through teaching and attending responsibilities varies depending on the institution.

Teacher/clinician tract

As a higher percentage of residents are pursuing careers in neurology, fiscal challenges are increasing for academic centers as they compete within health care markets. A potential solution has been created by the addition of teacher/clinician tracts. This new field offers a great diversity to those interested in academic neurology. Teacher/clinicians are members of an academic department at major teaching institutions and are actively involved in diagnosing and treating patients with poorly differentiated neurologic symptoms. Teacher/clinicians spend most of their time on clinical responsibilities (50 to 70%), with additional time allocated for teaching residents and medical students (20 to 40%), and some time devoted to research (5 to 10%). Individuals in this field have direct contact with house staff and are actively involved in teaching the nuances of neurology. These individuals are the molders of the future leaders of neurology. Night call is not usually required and the degree of attending responsibilities varies with institution.

Additional fellowships in medical subspecialties (i.e., rheumatology, cardiology, infectious disease)

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Table Possible careers after completing neurology residency

Type	Advantages	Disadvantages	Preparation	Possible sites
Basic scientist	Research, teaching, focus on specific disease within patients	Fewer patient interactions, publication requirement, less income compared to private neurology	Solid research plan within a particular area, strong mentorship needed, involvement in local and meetings	http://www.aan.com http://www.aneuroa.org
Clinical/teacher	Teaching, increased time with patients, mold future leaders of neurology	Recently been established, few mentors or organizations for support, limited funding	Fellowship in other medical subspecialties, good mentorship	http://www.aan.com
Patient oriented research	Direct link between clinical presentation and research, few currently involved and large need exists	Limited number of institutions involved, few mentors or organizations	Courses in biostatistics, epidemiology, outcomes research, ethics, public health	http://www.aan.com
Private practice	Variety, long term relationship, more consistent income, flexibility	High volume, less time with patients, increased overhead costs	Financial preparation, spend time with those in private practice	https://www.aan.com http://www.ama-assn.org http://www.aneuroa.org
Industry	Link between bench and bedside, dynamic interdisciplinary team, potential for higher income compared to other fields	Defined projects, no direct interaction with patients	Prior research within a particular field, expertise in scientific writing	http://www.shsinc.com

may be pursued with knowledge gleaned from these subspecialties applied to neurology. A career as a teacher/clinician is relatively new and quite undeveloped with no national organization existing and relatively few mentors present. General neurology fellowships are currently being created that will provide those interested in this area greater flexibility. At the present time limited funding mechanisms exist for pursuing a career within this area of neurology but additional funding opportunities should be created.

Patient-oriented researcher

Great concern has existed regarding the disconnection between the translation of new advances in basic neuroscience and the delivery of better health care. The patient-oriented research tract has been created to meet this demand. Those attracted to this area are trained to conduct high-quality clinical research within neurology. Often a MA or PhD in epidemiology and health services research is obtained during the further training phase. The goal of these addi-

tional educational studies is to prepare patient-oriented researchers with a basic understanding of biostatistics, epidemiology, outcomes research, and other public health issues. Attending responsibilities, degree of protected time, and interaction with house staff may vary with institution.²

Support for research is through grants and scholarships from funding agencies as well as partnerships with industry. Often research activities are multifaceted and involve both basic science and clinical departments. Currently, only a limited number of institutions offer this type of program and no national organizations have been created within neurology. Limited funding from the NIH (K23 and K24), mounting regulatory burdens, fragmented infrastructure, and a shortage of qualified investigators and patients are constraining factors for those interested in pursuing a career in this area.³

Private practice neurology

The average neurologist in private practice works about 58 hours

a week with more than three quarters of this time devoted to patient care.⁴ A career in private practice neurology allows an individual to see a variety of patients. A number of billable procedures can be performed leading to a well-compensated career with a flexible schedule. Depending on the privileges and type of practice, a spectrum of interaction and support with house staff can exist. The amount of night call and coverage of other partners varies depending on the size of the practice and the status of the individual within the practice.

In a private neurology practice long-term relationships with patients can be nurtured. However, increasing changes in health care delivery system have resulted in greater interaction with managed care institutions and more time spent on paperwork. The result has been less time available for evaluating patients. A high patient volume is often required for maintaining a superior income. In addition, increased financial acumen is required to successfully navigate administra-

tive demands, negotiate contracts, establish dictation services, and create reliable medical records and billing services. Overhead costs (including hiring of additional staff, renting office space) and determination of the type of practice (solo practice, small group, large group, or multispecialty) should be considered. Difficulties in obtaining malpractice insurance and rising rates need to be considered within certain states.

Pharmaceuticals

Increasing political pressure has led to the development of administrative, regulatory affairs, or marketing areas within pharmaceutical industry. As a member of a pharmaceutical or biotechnology company an individual can help bring needed therapeutic interventions to medicine. Neurologists involved in pharmaceutical or biotechnology firms may serve as

an insightful conduit for research funding into new developing areas of neuroscience research. This career path allows the individual to assist in the discovery, development, manufacturing, and selling of a particular drug. Working in industry provides challenge and opportunity to operate in a dynamic environment as a part of an interdisciplinary team. The ability to succeed within a firm depends on familiarity with a broader range of scientific, medical, and business issues that are seen during a neurology residency. Excellent skills in scientific writing, an ability to interpret and synthesize data, and good interpersonal skills are required. Prior research in a particular area of interest as well as previous experience in research and development within a pharmaceutical company are beneficial and can lead to more focused future directions and greater finan-

cial benefits. A well-compensated career with significant potential for future earnings awaits an inquisitive individual who is able to synthesize information gleaned from the bench and apply it to the bedside.

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