



Examining topics affecting the recruitment and retention of physicians and advanced practice professionals

Neurology Recruiting and Compensation Trends in an Era of Physician Shortages

A resource provided by Merritt Hawkins, the nation's leading physician search and consulting firm and a company of AMN Healthcare (NYSE: AMN), the largest healthcare workforce solutions company in the United States.

Corporate Office:

Merritt Hawkins
8840 Cypress Waters
Blvd #300
Dallas, Texas 75019
800-876-0500

Eastern Regional Office:

Merritt Hawkins
100 Mansell Court East
Suite 500
Roswell, GA 30076
800-306-1330

© 2018 Merritt Hawkins

www.merrithawkins.com



Introduction

Merritt Hawkins, the nation's leading physician search and consulting firm, produces a series of surveys, white papers, speaking presentations and other resources intended to provide insight into physician recruiting, physician supply and demand, physician compensation and a range of related topics.

This white paper examines recruiting and related trends in the specialty of neurology medicine.

What Neurologists Do

Neurologists specialize in the diagnosis, treatment, and care of patients with brain and nervous system issues, including behavioral disorders, brain injuries, strokes, sleep disorders, multiple sclerosis, spine injuries, and a wide array of degenerative diseases.

Some of the commonly encountered conditions treated by neurologists include headaches, radiculopathy, neuropathy, stroke, dementia, seizures and epilepsy, Alzheimer's disease, attention deficit/hyperactivity disorder, Parkinson's disease, Tourette's syndrome, multiple sclerosis, head trauma, sleep disorders, neuromuscular diseases, and various infections and tumors of the nervous system. Neurologists are also asked to evaluate unresponsive patients on life support to confirm brain death.

Training to become a neurologist includes a years of undergraduate work, four years of medical school, one year of basic clinical training, and four years of residency, with one year devoted to internal medicine and the other three years of neurology.

Some neurologists receive additional subspecialty training focusing on a particular area of the field. Neurology fellowships are typically two years in duration. Subspecialties include brain injury medicine, clinical neurophysiology, epilepsy, hospice and palliative medicine, neurodevelopmental disabilities, neuromuscular medicine, pain medicine,



Examining topics affecting the recruitment and retention of physicians and advanced practice professionals

sleep medicine, neurocritical care, vascular neurology (stroke), behavioral neurology, child neurology, headache, multiple sclerosis, neuroimaging, neurorehabilitation, and interventional neurology.

Neurology includes direct patient diagnosis through CAT, MRI, ultrasound, lumbar punctures, genetic testing and other methods and the formulation of treatment plans and ongoing care maintenance in potential conjunction with therapists, neurosurgeons, psychiatrists, and other clinicians.

Neurology offers challenging work for doctors who want to focus on research and treatments to advance medicine. Parkinson's disease, Alzheimer's disease, and ALS are among the brain and neurological conditions that currently have limited treatment options. Research in these areas continues in an effort to develop more viable treatments to improve the lives of patients and perhaps discover a cure.

The Evolution of Neurology

The study of neurology dates back to prehistoric times, but the academic discipline did not begin until the 16th century. Research shows that both the Incas and the ancient Egyptians used techniques similar to those used today to provide treatment for head and brain injuries. The ancient Greeks dissected the nervous system and learned about the existence and function of the nerves in the brain (*American Journal of Physical Anthropology, September 2008*).

The first real advances in neurology occurred during the Renaissance. The invention of the printing press allowed the publication of anatomical textbooks and the dissemination of knowledge. A revolution took place in neurology when Andreas Vesalius published *De humani corporis fabrica* in 1543. The publication includes detailed images depicting the ventricles, cranial nerves, pituitary gland, structures of the eye, the vascular supply to the brain and spinal cord, and an image of the peripheral nerves. In 1549, Jason Pratensis was the first to use the word "neurology" (*Archives of Neurology, March 1998*).

In the 19th century, physicians devoted entirely to neurology developed tools and procedures for clinical investigation, including the tendon hammer and ophthalmoscope. Historians routinely associate the origins of neurology in the United States with studies of wounded soldiers conducted during the Civil War. The American Neurological Association was organized a few years later in 1875 (*Journal of Neurosurgery, June 2004*).

By 1909, neurology had become so prevalent that three physicians successfully established the Neurological Institute of New York, the first hospital for the care and treatment of patients with nervous conditions in North America. In 1930, Harvard Medical School, with the backing of Abraham Flexner, became the first medical school to recognize neurology with the establishment of a small independent department and training center for neurology at the Boston City Hospital. In 1935, the American Board of Psychiatry and Neurology was established (*Oxford University Press, February 2010*).

Today, neurology is an established medical specialty nationwide and nearly \$800 billion are spent annually

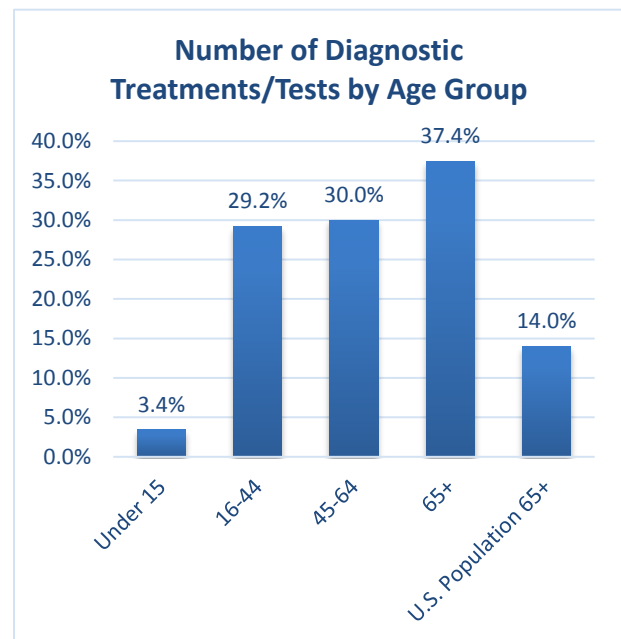
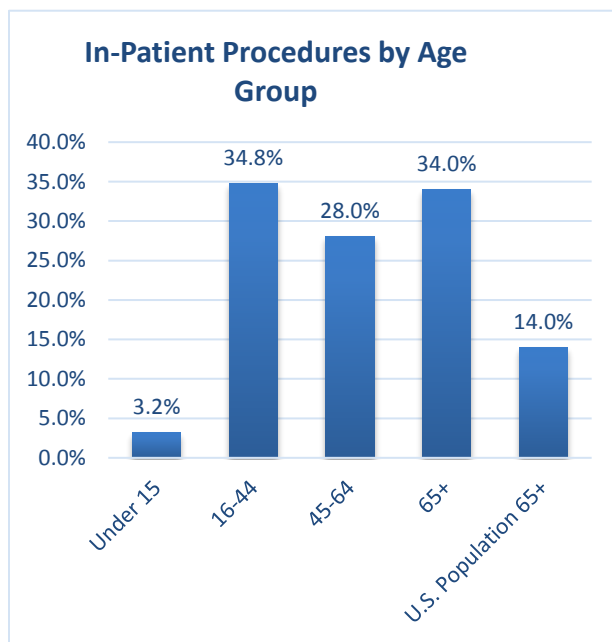
Examining topics affecting the recruitment and retention of physicians and advanced practice professionals

treating the most common neurological diseases (*Annals of Neurology*, April 2017).

Neurology Supply and Demand Considerations

Over 100 million Americans, close to a third of the population, suffer from neurological diseases such as Alzheimer’s, multiple sclerosis, migraines, epilepsy, and spinal cord injuries. Approximately 5.3 million Americans are afflicted with Alzheimer’s (*Annals of Neurology*, April 2017). According to the United Nation’s News Centre, about 1 in 6 people in the world will suffer from a neurologic disease.

In addition, neurological disorders disproportionately affect older adults. With over 10,000 baby boomers turning 65 every day, the demand for neurologists will only intensify. The graphs below illustrate the way in which population aging drives utilization of medical services in the United States.



Source: Centers for Disease Control and Prevention

As the graphs indicate, though people 65 or more comprise just 14 percent of the population, they account for 34 percent of inpatient procedures and 37.4 percent of diagnostic treatments and tests.

As noted above, close to \$800 billion is spent on the most common neurological disorders in the U.S., ranked as follows:

Examining topics affecting the recruitment and retention of physicians and advanced practice professionals

Annual Spending on Common Neurological Disorders

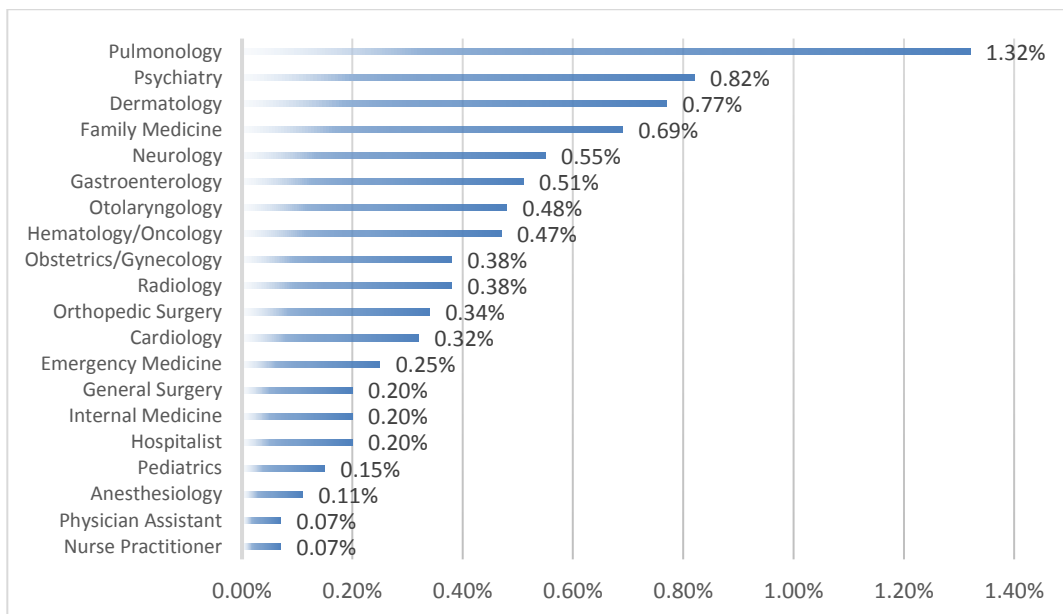
Parkinson's	\$15 billion
Traumatic spinal cord	\$29 billion
Multiple sclerosis	\$25 billion
Migraine headaches	\$76 billion
Traumatic brain injuries	\$85 billion
Stroke	\$110 billion
Chronic low back pain	\$177 billion
Alzheimer's or other dementia	\$243 billion

Source: Annals of Neurology, April 2017

Neurologists remain one of the most in-demand types of physicians in the United States. Merritt Hawkins' *2017 Review of Physician and Advanced Practitioner Recruiting Incentives* includes data from 3,287 search assignments the firm conducted from April 1, 2016 to March 31, 2017. In that 12-month period, neurologists ranked 17th on the list of the firm's most in-demand physicians to fill permanent openings.

However, neurologists rank much higher when specialties are rated by number of job openings as a percent of all active physicians in a given specialty (or what Merritt Hawkins calls "absolute demand"). The chart below ranks demand for particular types of physicians in this manner.

Merritt Hawkins Top Search Assignments as a Percent of all Physicians in Various Specialties



Source: Merritt Hawkins 2017 Review of Physician and Advanced Practitioner Recruiting Incentives



Examining topics affecting the recruitment and retention of physicians and advanced practice professionals

As calculated by “absolute demand,” neurologists rank fifth among most in-demand specialties, preceded only by pulmonology, psychiatry, dermatology, and family medicine.

According to the AMA Master File, there are approximately 15,370 neurologists in practice today. While demand for neurologists continues to rise, the supply of neurologists is increasing at a much slower rate. In April 2013, researchers at the American Academy of Neurology (AAN) published an article in the journal *Neurology* examining supply and demand trends in the specialty. The study found that the demand for neurologists will grow faster than the supply, and that there was an 11% deficit of neurologists at the time the study was published. By 2025, the study projected that the deficit will grow to 19% (*Study: U.S. Facing a Neurology Shortage. Science Daily. April 17, 2013*). AAN also observed increased wait times for neurologist appointments, with times increasing from 28 business days in 2010 to 35 business days in 2012.

The Association for Staff Physician Recruiters’ recruitment benchmarking survey reported that open neurology positions are the least likely to be filled, particularly for healthcare organizations located in communities with a population of 10,000 or less.

Neurologists Required Per Population

There are a variety of sources that indicate the number physicians in various specialties required to serve a population of 100,000 people. The most recently of these ratios of which Merritt Hawkins is aware were developed by the late Richard “Buz” Cooper, M.D., a nationally recognized expert in physician supply and utilization studies based at the University of Pennsylvania. Dr. Cooper’s ratios are “demand-based” and reflect the number of people required to economically sustain a medical practice by specialty based on historic usage patterns nationally, regionally and at the community level. We believe these are real world numbers and are the most current and useful of the most commonly referenced physician-to-population ratios.

According to Dr. Cooper, on a national level, a population of 100,000 people can support 5.1 neurologists, or one neurologists per approximately 20,000 people. This is a general number and is likely to vary depending on the economic, social, and health profiles of particular populations.

Like physicians in other specialties, the number of neurologists per population varies widely, as the chart below indicates:

Ratio of One Neurologist Per Population by Selected States & Percent of Neurologists 60 or Older

	Population per One Neurologist	Percentage over 60
Wyoming	49,935	N/A
Texas	33,658	33.7%
Iowa	31,385	37.4%
Mississippi	31,093	26.0%



Examining topics affecting the recruitment and retention of physicians and advanced practice professionals

South Carolina	30,780	33.1%
South Dakota	27,818	32.3%
California	25,478	39.9%
Illinois	24,394	39.6%
Connecticut	20,552	33.7%
Massachusetts	10,827	34.0%

Source: AMA Physician Master File, 2017

It also should be noted that over one-third of neurologists in many states are 60 or older and that a large number of retirements from the specialty can soon be anticipated, further inhibiting supply.

Recruiting Neurologists

Because of the heavy demand for neurologists, recruiting and retaining the top neurologists has become a challenge for hospitals, medical groups, and health systems. Neurology includes a number of possible career paths and areas of specialization further increasing the level of competition.

According to Merritt Hawkins' *2017 Survey of Final-Year Medical Residents*, younger physicians today are seeking a controllable lifestyle that allows for a balance between their practice and their personal life. "Lifestyle" was rated a most important factor by 74% of residents. Neurologists benefit from a high level of job stability as they receive a stable patient flow and predictable lifestyle. For physicians seeking to spend more time with their families or pursuing other interests, a stable schedule is a major selling point.

Additionally, some neurologists search for jobs in order to leverage the subspecialty training they received in a fellowship program. According to the 2011 American Academy of Neurology Resident Survey, 86 percent of neurology residents intended to complete a fellowship, up from 78 percent in 2008. For many neurologists just coming out of training, the increasing complexity of medicine creates a perfect scenario for their desired style of practice.

A positive neurology practice environment is likely to include competitive compensation (see below), an outpatient only setting, and the opportunity to specialize in one or more in areas such as epilepsy, headaches, sleep, or other specialty areas of interest to particular candidates. An opportunity for an academic affiliation or the ability to conduct research also are pluses.

Having a telemedicine program in place is a further way to attract neurologists to your facility. As a tool for bridging time and distance, telemedicine allows neurologists to treat more patients and gives more patients access to neurologists, particularly in rural areas, according to the American Association of Neurological Surgeons. Tele-neurology programs are becoming increasingly common, and they provide an additional outlet to neurologists to treat patients with concussions, Parkinson's disease, or headaches.



Examining topics affecting the recruitment and retention of physicians and advanced practice professionals

Neurology Compensation

Hospital and health system administrators should also be aware of the market rate for neurologists in order to offer them a competitive salary offer. The competitive nature of neurology searches is reflected in rising neurology starting salaries. The chart below illustrates the increase in neurology starting salaries over the last several years as tracked in Merritt Hawkins' *2017 Review of Physician and Advanced Practitioner Recruiting Incentives*:

	Low	Average	High
2016/17	\$220,000	\$305,000	\$400,000
2015/16	\$220,000	\$285,000	\$500,000
2014/15	\$180,000	\$277,000	\$350,000
2013/14	\$180,000	\$262,000	\$400,000

Source: Merritt Hawkins 2017 Review of Physician and Advanced Practitioner Recruiting Incentives

As the numbers indicate, the average salary offer for neurologists as tracked by Merritt Hawkins' data increased by 16.4 percent since 2013, signaling a growing buyer's market in the specialty. Listed below are average compensation numbers for neurologists in 2017 as tracked by various other sources, as well as by Merritt Hawkins.

Average Neurology Compensation

Compdata	\$314,500
Sullivan Cotter	\$307,584
Merritt Hawkins	\$305,000
AMGA	\$295,211
ECG Management	\$291,861

In addition to base salaries, neurologists are generally provided with a sign-on bonus, CME allowance and relocation allowance (see chart below).

Additional Recruiting Incentives/Neurology

Average Signing Bonus	\$29,670
Average Relocation Allowance	\$11,070
Average CME	\$3,560

Source: Merritt Hawkins 2017 Review of Physician and Advanced Practitioner Recruiting Incentives

Physician employment contracts today, whether for neurologists or others, also usually feature paid malpractice insurance, health insurance and a 401k or other retirement option.

Examining topics affecting the recruitment and retention of physicians and advanced practice professionals

Revenue Generated by Neurologists

Hospitals, medical groups, and other healthcare facilities recruit physicians primarily to offer needed services to their patients. However, there also is an economic component to physician recruitment. Physicians generate substantial direct and indirect revenue on behalf of their affiliated hospitals, which provides them with an additional incentive to recruit.

Merritt Hawkins tracks average annual net revenue generated by physicians in various specialties for their affiliated hospitals in our *Survey of Physician Inpatient/Outpatient Revenue*. Average annual revenue generated by neurologists for their affiliated hospitals exceeded \$1 million, the 2016 survey indicates (see chart below).

Annual Net Inpatient/Outpatient Revenue Generated by Neurologists for Their Affiliated Hospital

2016	\$1,025,536
2013	\$907,317
2010	\$557,916
2007	\$924,798

Source: Merritt Hawkins 2016 Physician Inpatient/Outpatient Revenue Survey

As these numbers indicate, neurologists typically generate considerably more in “downstream revenue” than they receive in the form of salaries or income guarantees.

Conclusion

There is a near consensus among policy makers and academics that the U.S. faces a shortage of primary care physicians. What is less discussed is that a shortage of physicians also is emerging in a number of medical specialties, including neurology. Neurologists, like various other types of specialists, are likely to become more difficult to recruit in the future, and hospitals, medical groups and other healthcare organizations should shape their staffing plans accordingly.

For further information on the shortage of medical specialists, see the Merritt Hawkins white paper ***Physician Supply Considerations: The Emerging Shortage of Medical Specialists***.



Examining topics affecting the recruitment and retention of physicians and advanced practice professionals

About Merritt Hawkins

Established in 1987, Merritt Hawkins is the leading physician search and consulting firm in the United States and is a company of AMN Healthcare (NYSE: AMN), the largest healthcare workforce solutions organization in the nation. Merritt Hawkins' provides physician and advanced practitioner recruiting services to hospitals, medical groups, community health centers, telehealth providers and many other types of entities nationwide.

The thought leader in our industry, Merritt Hawkins produces a series of surveys, white papers, books, and speaking presentations internally and also produces research and thought leadership for third parties. Organizations for which Merritt Hawkins has completed research and analysis projects include **The Physicians Foundation, the Indian Health Service, Trinity University, the American Academy of Physician Assistants, the Association of Academic Surgical Administrators, and the North Texas Regional Extension Center.**

This is one in a series of Merritt Hawkins' white papers examining a variety of topics directly or indirectly affecting the recruitment and retention of physicians and advanced practice professionals, including physician assistants (PAs) and nurse practitioner (NPs).

Additional Merritt Hawkins' white papers include:

- ❖ Physician Supply Considerations: The Emerging Shortage of Medical Specialists
- ❖ Physician Emotional Intelligence: Going Beyond "A Type" Personalities
- ❖ Ten Keys to Enhancing Physician/Hospital Relations: A Guide for Hospital Leaders
- ❖ Rural Physician Recruiting Challenges and Solutions
- ❖ Psychiatry: "The Silent Shortage"
- ❖ NPs and PAs: Supply, Distribution, and Scope of Practice Considerations
- ❖ The Physician Shortage: Data Points and State Rankings
- ❖ RVU FAQ: Understanding RVU Compensation in Physician Employment Agreements
- ❖ The Economic Impact of Physicians
- ❖ International Physicians and Immigration Requirements: An FAQ
- ❖ The Growing Use and Recruitment of Hospitalists
- ❖ Staffing and Recruiting Considerations in Emergency Medicine

For additional information about Merritt Hawkins' services, white papers, speaking presentations or related matters, contact:

Corporate Office:

Merritt Hawkins
8840 Cypress Waters Blvd #300
Dallas, Texas 75019
800-876-0500

Eastern Regional Office:

Merritt Hawkins
100 Mansell Court East
Suite 500
Roswell, Georgia 30076
800-306-1330