Is Fellowship Training Necessary for Neurohospitalists?

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Abstract
Neurohospitalists are an emerging subspecialty group in neurology.¹ A recent survey of neurohospitalists found 75% of respondents had completed general neurology residency plus additional fellowship training (54% vascular neurology, 13% neurocritical care, and 33% other).² A limited number of neurohospitalist fellowship positions³⁴ are offered in the United States, however, a standardized curriculum or subspecialty certification examination does not currently exist. Given the recent dialogue surrounding the utility of neurohospitalist fellowship training, the purpose of this article is to provide 2 contrasting perspectives on the perceived need for neurohospitalist fellowship training.

Keywords
neurohospitalist, fellowship, education

Neurohospitalist Fellowships (Pro): An Opportunity to Deliver a Unique Skill Set
The value of neurohospitalist fellowship training will depend upon acquiring clinical experience and skills beyond the requisites achieved during general neurology residency training. Within a structured curriculum, a neurohospitalist fellow could be provided mentored exposure to acute neurologic illness across a wide spectrum of inpatient settings (ie, emergency department, wards, neurointensive care units, telemedicine) complemented by concurrent acquisition of procedural skills, involvement in clinical research opportunities, and exposure to the administrative aspects of hospital-based practice that are not emphasized during residency. The graduate would be prepared to lead quality-improvement initiatives, implement cost-effective and evidence-based diagnostic/therapeutic protocols for common inpatient neurological diagnoses, develop outcome-based research projects, and champion institutional disease-specific accreditation. Neurohospitalist fellowship programs will be unlikely to attract trainees by simply offering “another year in the hospital” to “see more patients,” particularly when graduates of neurology residency programs are faced with the financial realities of medical school debt and attractive reimbursement packages offered by potential employers.

The landscape of neurologic education is changing with the majority of recent mandates directly impacting training at the resident level.⁵ Duty-hour restrictions that limit residents to 80 hours of work per week and no more than 16 consecutive hours on call have resulted in a fragmented inpatient clinical experience. Hospital-based experience for current and future graduates of neurology residencies has been further eroded by increases in time allotted to outpatient experiences and added flexibility within residency training programs to pursue nonclinical endeavors such as laboratory research.⁶ Many residency programs continue to staff hospital teaching services with departmental members, including outpatient-based subspecialists and clinician scientists that do not define themselves as inpatient neurological subspecialists. Therefore, residents may have limited exposure to neurohospitalists with expertise in acute neurological disorders, time-sensitive therapies, and the intricacies of providing acute neurological care in an increasingly complex inpatient environment.

Fellowship programs are likely to emerge in medical centers that have adopted a neurohospitalist staffing model. A dedicated inpatient neurologist without competing outpatient responsibilities provides a fellow with the opportunity to develop clinical experience under the mentorship of neurohospitalists skilled in the intricacies of modern inpatient neurological care. Neurohospitalist fellowship training in such an environment can impart additional skills in areas not

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fully developed during residency training such as palliative and end-of-life care, and competency with hospital-based procedures such as transcranial Doppler and electroencephalography. Neurohospitalist fellowships can distinguish themselves from other hospital-based subspecialties (ie, vascular neurology/neurointensive care) by providing structured exposure to critical elements of inpatient care likely to be incorporated into future reimbursement models such as quality metrics, resource utilization, length of stay, and re-admission rates. Effective communication with outpatient and post-acute care providers to ensure smooth and effective transitions of care is an additional skill that can be developed during fellowship. The administrative aspects of hospital-based practice such as the revenue cycle, documentation, billing, and coding could be covered in a didactic format as part of ongoing practice-based learning.

The future demand and supply of neurohospitalists is uncertain, despite a growing number of advertisements for neurohospitalist positions. Many neurologists no longer provide hospital-based or emergency call coverage because of low reimbursement and perceived increases in medicolegal risk. Although neurohospitalists can fill these coverage gaps, they are not the only solution to lack of emergency neurological coverage. Telemedicine platforms can make neurologic expertise available 24/7 in centers that do not have an on-site neurologist, often at lower costs than employing a full-time neurohospitalist. However, a fellowship-trained neurohospitalist prepared to lead quality-improvement initiatives, outcome-based research projects, and efforts to achieve institutional disease-specific accreditation (ie, primary and comprehensive stroke centers) may justify the increased cost compared to telemedicine solutions to fill gaps in clinical coverage. As academic centers begin to implement neurohospitalist models of care, fellowship trained candidates who have performed well in a mentored environment are likely to be more competitive for such positions.

Implementing evidence-based practices across a broad spectrum of neurologic disease, commitment to improving inpatient systems of care, and navigating the changes necessary to sustain hospital-based practice amid evolving health care reform policies are likely to become defining characteristics of the neurohospitalist. Neurohospitalist fellowship programs have the opportunity to deliver the unique skill set necessary for future leaders of this emerging subspecialty to further promote the field and sustain successful careers as a neurohospitalist.

**Neurohospitalist Fellowship (Con): Neurology Residency Provides the Necessary Clinical Skills**

The neurology hospitalist or “neurohospitalist” has recently become a recognized subspecialty of neurology. The first meeting of the Neurohospitalist Section of the American Academy of Neurology was held in 2009 and the listserv has over 250 members. A neurohospitalist has previously been defined as a neurologist who spends at least 25% of their time admitting and managing inpatients with neurologic conditions. In reality, large numbers of neurohospitalists have always been part of our ranks known as general neurologists.

The general private practitioner of years past not only cared for inpatients (usually >25% of their time) but also had a busy outpatient practice. This type of private practice is dwindling for a multitude of reasons:

1. The new breed of physicians who have trained under the limited duty-hour rules is generally not willing to work more hours after residency than during residency. The balance of a busy inpatient and outpatient practice seems to leave little time for a home life.
2. Hospital-based practice has much lower reimbursement and is much less efficient than an office-based practice. As outpatient overhead has climbed and reimbursement has declined, it has become more difficult for the private general neurologist to cover their expenses if they spend a significant portion of their time covering hospitalized patients.

In my own experience working as a hospital neurologist half-time and an outpatient neurologist half-time for 2 years in a tertiary-referral community hospital setting, the receipts for inpatient care returned ~20 cents for every dollar billed versus ~60 cents per dollar for my outpatient billing and was a much less efficient workday. Given this type of experience, it is no wonder that neurologists have pulled out of hospital medicine. At 20% reimbursement for admissions and consultations, it often seems more reasonable to spend your time with your loved ones than admitting patients in the emergency room.

Hospitals have responded to the dearth of neurologic inpatient coverage in 1 of the 3 ways. They (1) provide reasonable call pay to reimburse the neurologist for lost productivity; (2) have found neurologists who are only inpatient based, avoiding the issue of covering overhead; or (3) have internists admit neurologic patients with neurologists giving advice by phone, telemedicine, and/or in consultation the following day. Hospitals have significant financial incentives to draw neurologic patients to their site, including reimbursement for intravenous tissue plasminogen activator and facility fees for the numerous magnetic resonance imaging (MRI) and computed tomography (CT) scans ordered.

The emergence of this “new” subspecialty therefore seems more an issue of finances and lifestyle and not actually indicative of a new area of expertise. Per the Accreditation Council of Graduate Medical Education, a major requirement of neurology residency is that residents “must demonstrate competency in the management of outpatients and inpatients with neurological disorders across the lifespan including those who require emergency and intensive care.” A minimum of 6 months of residency time is spent in inpatient care, where
a resident is expected to have “exposure to and understanding of evaluation and management of patients in various settings including an intensive care unit and an emergency department with neurological disorders and for patients requiring acute neurosurgical management.”9 In addition to this requirement for inpatient neurologic care, many programs have required neuro intensive care unit (ICU), emergency department (ED), epilepsy monitoring unit, pediatrics, and elective months of additional training in inpatient care. This usually totals 16+ inpatient months during neurology residency on top of the 6 to 8 months of inpatient care required during the internship year. Over the 4 years of training, approximately 2 years are spent training residents in the evaluation and management of inpatients, with a progression of responsibilities. A neurologist who completes an accredited residency and is able to become boarded in neurology should be fully qualified to manage most inpatients with neurologic issues. Any person who does not have that competence may need to examine their training program.

Fellowship should be a time to acquire additional knowledge and expertise. The year should open up more career opportunities to the fellow, more paths to go down. A fellowship in stroke, neuroimaging, neurointensive care, interventional neurology, or neurophysiology would be very appropriate for someone interested in inpatient medicine. Other than the neurohospitalist route, these fellowships also provide for additional research, academic, patient care, and procedural opportunities. These credentials and skills make neurologists more appealing to patients and practices. They also provide for more income opportunities down the line. We should work on diversifying our credentials, not pigeon-holing ourselves into one career path.

Certainly there is a need to be an expert at whatever type of neurology we practice. We should all work to provide excellent care to our inpatients and to work with the health care team to constantly improve outcomes. However, it should be our assertion that as board-certified neurologists we already hold the needed expertise to appropriately manage inpatient neurologic care. For a year or more of a neurohospitalist fellowship to be a rational step for neurology residents, we must be concluding that our current residency programs are not adequately training our members to care for hospitalized neurologic patients. That is unlikely to be the case. Instead such fellowships will serve to only further place time, financial, and eventual practice barriers on our members for no objective reason.

By increasing the ranks of hospital-employed physicians we are as a group additionally losing our negotiating power with hospital administrations. There is a national trend across all specialties toward hospital employment of physicians. This works well for the hospitals that can easily “manage” these physicians—dictating call schedules, vacations, and where testing is performed. The hospital can often pay physicians more than a private practice, although it is unclear how long those salaries will last. It is often less expensive for the hospital to hire a few neurologists on salary than to give fair call pay to multiple neurologists. Where does this leave physicians in 5+ years when most physicians are employed? We may be able to jump from hospital-to-hospital but as a group will have lost significant empowerment and control over our lives and benefits, and salaries will as a whole be at the discretion of the hospitals. A better route overall for our specialty would be to negotiate fair call pay and physician extender assistance for inpatient care while maintaining our autonomy and bargaining power.

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