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Abstract

Background and Purpose: Neurohospitalist neurology is a fast-growing subspecialty with a variety of practice settings featuring neurohospitalist models of care. Since inception, the subspecialty has responded to new challenges in resident training, hospital reimbursement, practice, and burnout. **Methods:** To characterize neurohospitalists' current practice and perspectives, we surveyed the neurohospitalists and trainees affiliated with the Neurohospitalist Society using an electronic survey distributed through the society listserv. **Results:** Of 501 individuals surveyed by e-mail, 119 began the survey (23.8% response rate), with 88.2% self-identifying as neurohospitalists. Most neurohospitalists (63%) are 10 years or less out of training, devoting 70% of their professional time to inpatient clinical activities while also performing administrative or teaching activities. Only 38% are employed by an academic department. Call schedules are common, with 75% of neurohospitalists participating in a hospital or emergency call schedule, while 55% provide telemedicine services. The majority (97%) of neurohospitalists primarily care for adults, most commonly treating patients with cerebrovascular disease, seizures, and delirium/encephalopathy. The majority (87%) are overall pleased with their work, but 36% report having experienced burnout. **Conclusions:** Neurohospitalists are a diverse group of neurologists primarily practicing in the inpatient setting while performing a variety of additional activities. They provide a wide array of clinical expertise for acute neurological diseases and neurological emergencies that require hospitalization, including stroke, seizure, and encephalopathy. Neurohospitalists in general are very pleased with their work, while burnout, as in neurology and other areas of medicine, remains a concern.

Keywords

neurohospitalist, clinical specialty, practice, burnout

Introduction

Neurohospitalist neurology is a fast-growing subspecialty that initially arose in response to the demand for timely, cost-effective, and high-quality inpatient neurological care.¹ Neurohospitalists are inpatient neurology specialists, caring for patients of increasing complexity in an environment of mounting financial and regulatory pressures. They help meet increasing hospital and community needs for rapid evaluation and management of neurologic emergencies.¹ Neurohospitalists practice in academic and nonacademic settings, with varied training experiences, practice characteristics, and compensation models.^{2,3}

The initial surveys to define neurohospitalists and their practice were conducted at a time when the field was emerging.^{2,3} The subspecialty has since grown with a dedicated academic journal and several neurohospitalist training programs. In addition, the Neurohospitalist Society (NHS) was

created in 2012. During this period of growth, new challenges have arisen which impact neurohospitalist practice.⁴ Hospital quality and safety metrics are now often reported publically

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and tied to reimbursement, and renewed interest in care transitions and readmission reduction has blurred the lines between outpatient- and inpatient-focused practice.⁴⁻⁶ Resident duty-hour restrictions broadly impacted the subspecialty, including the hiring of neurohospitalists by academic programs in response to these restrictions, teaching and service requirements for inpatient attendings, and interest in neurohospitalist fellowship training and certification.^{4,7,8} Given the rapid and evolving nature of their practice, physician burnout is a particular concern for neurohospitalists.⁹ Finally, telemedicine has arisen as a modality of neurological patient care, and neurohospitalist expertise would seem to be a natural fit for such arrangements as a means to provide inpatient neurological care where neurologists are otherwise unavailable.^{10,11}

In light of these trends, the NHS undertook its first membership survey to characterize current neurohospitalist practice and understand views regarding practice, including in relation to burnout.

Methods

Study Population

The study population was a convenience sample of the NHS e-mail listserv which includes neurohospitalist and trainee members as well as individuals who attended prior society conferences or otherwise signed up for the society e-mail listserv.

Standard Protocol Approvals, Registrations, and Patient Consents

Survey completion was implied consent to study participation. Survey completion was voluntary, and respondents were allowed to skip questions and defer responses. As no link was made between respondent and responses, data were anonymized at collection through Qualtrics (<https://www.qualtrics.com>; Provo, Utah and Seattle, Washington). A record was kept of members who completed the survey for purposes of confirming response rate and ensuring survey results could be shared with participating members. The study was reviewed and granted exempt status for purposes of data analysis by the institutional review board of Johns Hopkins University.

Study Measures

Members of the NHS Executive Committee and Research Subcommittee drafted the survey. The survey (Supplement 1) consisted of 60 questions covering personal and professional characteristics as well as perspectives of practice, including some survey questions used previously elsewhere.^{2,3,9}

An introduction to the survey with an invitation link to the Qualtrics web site for survey completion was sent to the sample in August 2016. Reminder e-mails were sent weekly for 2 months to those e-mails in the sample where a response was not completed or begun. Members were also reminded of the survey at the NHS annual meeting. The survey data collection

was closed in November 2016. All communications and data collection were sent and collected through Qualtrics.

Statistical Analysis

The Mann-Whitney *U* test was applied for analysis of continuous variables, and the χ^2 test or Fisher exact test was applied for analysis of categorical variables, as appropriate, for comparison of responses between those community, nonacademic respondents who classified their employment model as private practice, hospital employee, locum tenens, or other and those who responded academic. For 2-sided tests, $P < .05$ was considered statistically significant. Free response data related to compensation and productivity were transcribed into numeric values and analyzed as continuous data. When a range rather than a discrete value was provided in free response text for a continuous variable, the mean of the provided range was transcribed and included in the analyses.

Logistic regression analysis was performed for outcomes of respondent-reported burnout with variables determined *a priori* including age <40 years, gender, practice type, serving as primary provider for <25% of patients, participating in hospital/emergency department call schedule, providing telemedicine, practice use of Nurse Practitioners/Physician Assistants-Advanced Practice Providers (NP/PA-APPs) and/or residents in the inpatient setting, and reported average of days off per month relative to median for sample. Additionally, responses to question 53 related to perceptions of practice (excluding responses to the statement, "I fear I am at risk for burnout") were included *a priori* along with other significant associations with burnout per univariate analyses.

Results

Respondents

A total of 546 individual e-mail addresses were available to be surveyed, with 5 persons opting out for any communication or solicitation by the society and 40 being nonactive e-mail addresses, leaving 501 individuals surveyed by e-mail. In all, 143 individuals opened and 119 took the survey (23.8% response rate), and 105 (88.2%) identified themselves as neurohospitalists (Supplement 1).

Of the 105 neurohospitalists surveyed, 102 (97.1%) were physicians (Table 1); 51 (49%) of 105 were <40 years of age, and 44 (42%) of 104 were female. The most common geographic area of practice was in the western United States (25/104, 24%) followed by the Southeast (18, 17%), Northwest (17, 16%), Midwest (13, 13%), and Northeast (11, 11%). The majority (64/102, 63%) reported being 10 years or less out of training. Of 97, 37 (38%) classified their employment model as academic, with others reporting nonacademic, community practice employment models, including hospital employee (42, 43%), private practice (10, 10%), locum tenens (4, 4%), and other (4, 4%).

Table 1. Neurohospitalist Survey Respondent Characteristics.

	All, N = 105	Academic Practice, N = 37	Community Practice, N = 60	P Value Comparison, Academic Practice to Community Practice
Type of practitioner				.52
MD	97 (92.4%)	36 (97.3%)	54 (90%)	
DO	5 (4.8%)	1 (2.7%)	3 (5.0%)	
PA	1 (1.0%)	0 (0.0%)	1 (1.7%)	
NP	2 (1.9%)	0 (0.0%)	2 (3.3%)	
Missing, N (%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Age				.08
30-39	51 (49.0%)	22 (59.5%)	24 (40.0%)	
40-49	26 (25.0%)	11 (29.7%)	14 (23.3%)	
50-59	11 (10.6%)	2 (5.4%)	9 (15.0%)	
60-69	13 (12.5%)	2 (5.4%)	10 (16.7%)	
70-79	3 (2.9%)	0 (0.0%)	3 (5.0%)	
Missing, N (%)	1 (0.9%)	0 (0.0%)	0 (0.0%)	
Gender				1.00
Male	60 (57.7%)	22 (59.5%)	36 (60.0%)	
Female	44 (42.3%)	15 (40.5%)	24 (40.0%)	
Missing, N (%)	1 (0.9%)	0 (0.0%)	0 (0.0%)	
Geographic region				.05
Northeast	11 (10.6%)	6 (16.2%)	4 (6.7%)	
Mid-Atlantic	8 (7.7%)	5 (13.5%)	2 (3.3%)	
Southeast	18 (17.3%)	4 (10.8%)	14 (23.3%)	
South Central	5 (4.8%)	0 (0.0%)	5 (8.3%)	
Midwest	13 (12.5%)	6 (16.2%)	6 (10.0%)	
Northwest	17 (16.3%)	5 (13.5%)	10 (16.7%)	
Southwest	4 (3.8%)	0 (0.0%)	3 (5.0%)	
West	25 (24.0%)	9 (24.3%)	15 (25.0%)	
International	2 (1.9%)	2 (5.4%)	0 (0.0%)	
Other	1 (0.9%)	0 (0.0%)	1 (1.7%)	
Missing, N (%)	1 (0.9%)	0 (0.0%)	0 (0.0%)	
Years out of residency/training				.12
0-2	15 (14.7%)	7 (18.9%)	5 (8.3%)	
3-5	20 (19.5%)	9 (24.3%)	11 (18.3%)	
6-10	29 (28.4%)	13 (35.1%)	16 (26.7%)	
11-15	10 (9.8%)	3 (8.1%)	7 (11.7%)	
>15	28 (27.5%)	5 (13.5%)	21 (35.0%)	
Missing, N (%)	3 (2.9%)	0 (0.0%)	0 (0.0%)	
Fellowship training				
Vascular neurology (ABPN)	42 (40.0%)	15 (40.5%)	27 (45.0%)	.68
Neurohospitalist	14 (13.3%)	10 (27.0%)	4 (6.7%)	.008
Clinical neurophysiology (ABPN)	13 (12.4%)	3 (8.1%)	10 (16.7%)	.36
Neurocritical care (UCNS)	13 (12.4%)	6 (16.2%)	6 (10.0%)	.53
Child neurology (ABPN)	5 (4.8%)	2 (5.4%)	3 (5.0%)	1.00
Internal medicine (ABIM)	5 (4.8%)	0 (0.0%)	5 (8.3%)	.15
Epilepsy (ABPN)	3 (2.9%)	2 (5.4%)	1 (1.7%)	.56
Neuromuscular medicine (ABPN)	3 (2.9%)	2 (5.4%)	1 (1.7%)	.56
Behavioral neurology and neuropsychiatry (UCNS)	2 (2.2%)	1 (2.7%)	1 (1.7%)	1.00
Neuroimaging (UCNS)	2 (1.9%)	1 (2.7%)	1 (1.7%)	1.00
Neuro-oncology (UCNS)	2 (1.9%)	0 (0.0%)	2 (3.3%)	.52
Clinical neuromuscular pathology (UCNS)	1 (1.0%)	1 (2.7%)	0 (0.0%)	.38
Pain medicine (ABPN)	1 (1.0%)	0 (0.0%)	1 (1.7%)	1.00
Sleep medicine (ABPN)	1 (1.0%)	0 (0.0%)	1 (1.7%)	1.00
Other	8 (7.6%)	4 (10.8%)	4 (6.7%)	.48
None	12 (11.4%)	3 (8.1%)	9 (15.0%)	.36
Missing, N (%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	

Abbreviations: MD: Doctor of Medicine; DO: Doctor of Osteopathic Medicine; PA: Physician Assistant; NP: Nurse Practitioner; ABPN: American Board of Psychiatry and Neurology; UCNS: United Council of Neurologic Subspecialties; ABIM: American Board of Internal Medicine.

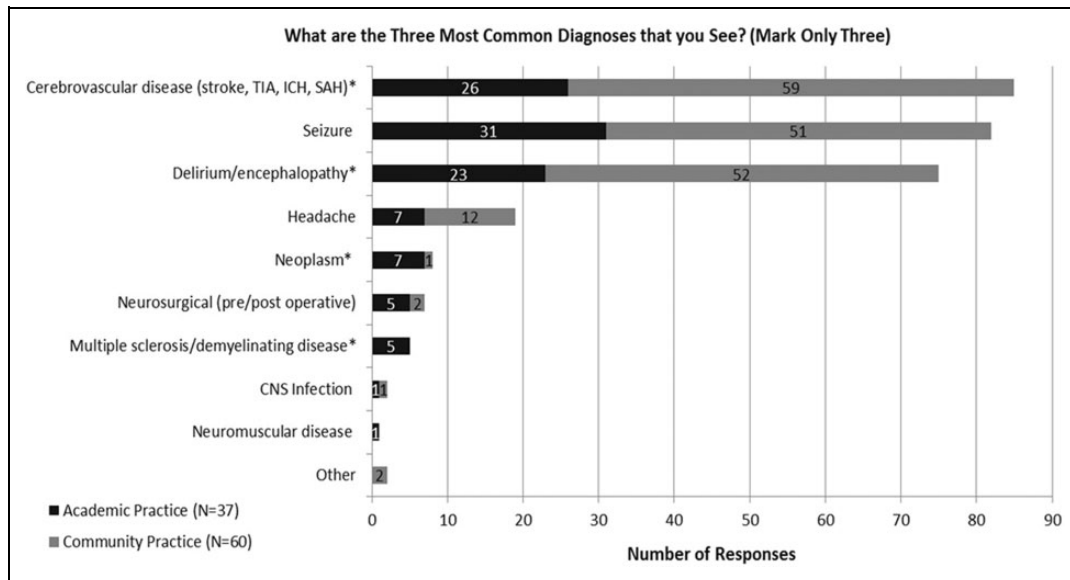


Figure 1. Variations in common diagnoses cared for by neurohospitalists in academic and community practice.

Neurohospitalist Training

The majority (93/105, 89%) of neurohospitalists reported being fellowship trained, most commonly in vascular neurology (42/105, 40%; Table 1). A minority reported completing a neurohospitalist fellowship (13%), more commonly among those in academic (10/37, 27%) than in community practice (4/60, 7%; $P = .008$).

Neurohospitalist Practice Characteristics

Neurohospitalists devote on average about 70% of their professional time to inpatient clinical activities ($N = 105$), with the majority also performing departmental administrative (58%) and/or teaching (55%) activities. The estimated percentage of professional time devoted to inpatient clinical practice was greater for community ($N = 60$, median: 85.0%, interquartile range [IQR]: 23.8%) than for academic providers ($N = 37$, 55.0%, IQR: 37.5%; $P < .0005$), while the time devoted to teaching and research was greater for academic ($N = 34$, 10.0%, IQR: 10.0%; $N = 29$, 10.0%, 10.0%) than for community neurohospitalists ($N = 28$, 5.0%, 6.5%, $P < .001$; $N = 24$, 5.0%, 6.1%, $P < .05$).

Academic and community neurohospitalist daily clinical service models differ. Academic neurohospitalists see more inpatients newly admitted to their primary services ($N = 34$, median: 3.0, IQR: 3.1) and in daily follow-up ($N = 31$, median: 8.0, IQR: 6.0) than those who practice in the community ($N = 33$, median: 0.0, IQR: 4.5, $P < .05$; $N = 30$, median: 3.0, IQR: 8.5, $P = .002$). Community neurohospitalists see a greater number of new ($N = 54$, median: 5.3, IQR: 1.8) and follow-up ($N = 57$, median 7.0, IQR 5.0) consultation patients each day than academic neurohospitalists ($N = 33$, median:

4.0, IQR: 4.0, $P = .002$; $N = 32$, median: 6.0, IQR: 4.0, $P < .05$).

The majority (72/97, 74%) of neurohospitalists report working with advanced practice providers and/or residents. Most (73/97, 75%) neurohospitalists participate in a hospital or emergency department call schedule, most commonly with other neurohospitalists and other neurologists (26/72, 36%) or with only other neurohospitalists (30.1%). Residents most commonly cover overnight call in academic practice (14/34, 52%), with the remainder utilizing neurohospitalists alone or along with other neurologists.

The majority (94/97, 97%) of neurohospitalists primarily care for adults. The most common diagnoses seen by neurohospitalists are cerebrovascular disease (e.g., transient ischemic attack and stroke, 88%, $N = 105$), seizure (85%), and delirium/encephalopathy (77%; Figure 1). Patterns of diagnoses varied between academic and community practice. For example, cerebrovascular disease was more commonly reported by community (59/60, 98.3%) than academic neurohospitalists (26/37, 70%, $P < .0005$; Figure 1).

Neurohospitalist Compensation and Productivity

Among respondents ($N = 52$), 1 full-time equivalent was defined as a median of 14.0 (IQR: 2.8) day shifts per month, with no difference between academic and community neurohospitalists. Some (29/98, 30%) neurohospitalists receive a straight salary for their work; however, other models were commonly reported including salary with performance or quality bonus (28, 29%) and salary with production bonus (25, 26%). Median total compensation for 91 respondents was \$260 000 (IQR: \$122,500; in United States of America dollars), with differences between academic ($N = 33$,

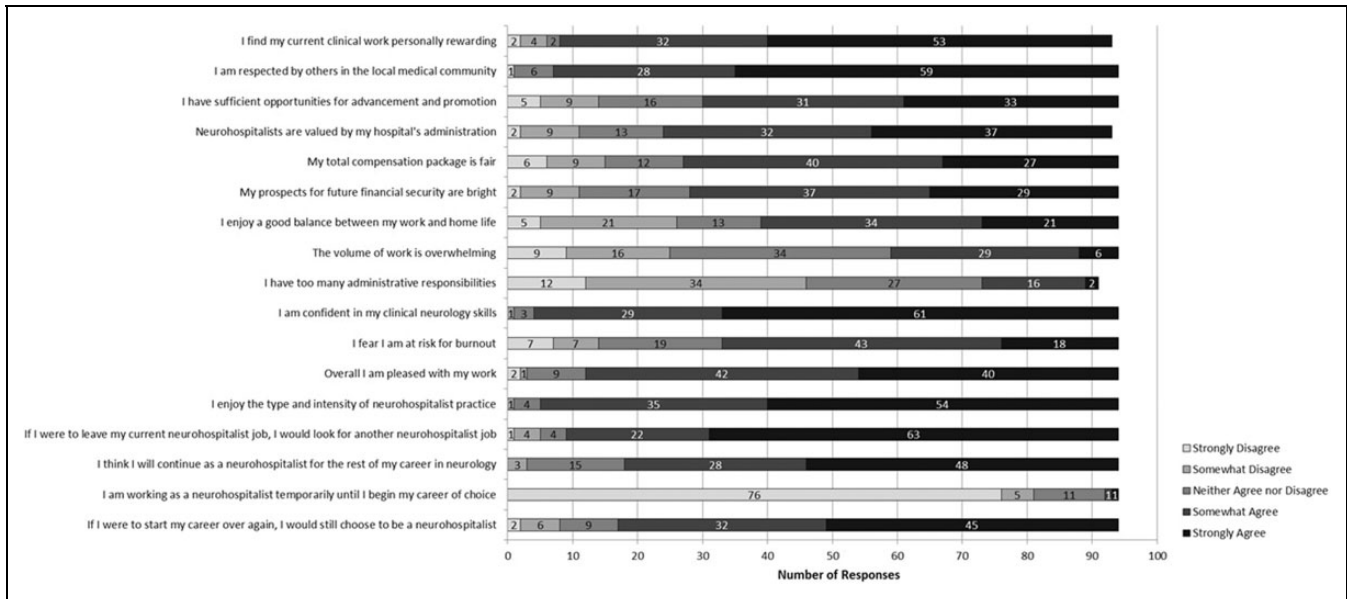


Figure 2. Neurohospitalist perceptions of their careers and risks for burnout.

\$200 000, IQR: \$55 500) and community neurohospitalists (N = 57, \$286 000, \$104 000, $P < .0005$) and no difference across regions ($P = 0.23$). A significant minority (26/73, 36%) receive separate reimbursement for taking call.

Telemedicine

The majority of neurohospitalists (53/97, 55%) reported providing telemedicine service, with the majority (36/52, 69%) liking this aspect of their practice. They perform a median of 2.0 (IQR: 2.0, N = 46) consults per day while covering a median of 6.0 hospitals (IQR: 14.3, N = 50). The majority (30/53, 57%) provide telemedicine services only for stroke indications.

Perceptions of Neurohospitalist Practice

Overall, neurohospitalists strongly agree that they have a positive impact on the care of hospitalized neurology patients at their respective institutions (80/94, 85%). The majority strongly agree that they improve continuity of care (60/94, 64%), quality of patient care (81/94, 86%), safety of patient care (76/93, 82%), communication with patients and families (74/94, 79%), coordination of patient care (70/94, 74%), and provide medical leadership to other neurologists and allied health providers (56/94, 60%).

Professional Satisfaction and Burnout

Regarding their perceptions of their careers, 82 (87%) of 94 neurohospitalists are overall pleased with their work and 76 (81%) of 94 agree that they will continue in the field for the rest of their career (Figure 2). The majority (77/94, 82%) of neurohospitalists agree that they would again choose to be a

neurohospitalist if they were to start their careers over. While 89 (95%) of 94 enjoy the type and intensity of neurohospitalist practice, 35 (37%) of 94 agree that the volume of work can be overwhelming, and 18 (19%) of 94 perceive they have too many administrative responsibilities. Of 94 neurohospitalists, 34 (36%) self-report having experienced burnout and 41 (44%) are concerned for burnout but have not yet experienced it. The most commonly identified contributing factor to burnout was work schedule (63/97, 65%).

As regards independent factors associated with report of having experienced burnout, those who agreed with the statement “I enjoy a good balance between my work and home life” were over 8 times less likely to report burnout (odds ratio [OR]: 0.12, 95% confidence interval [CI]: 0.02-0.65, $P = 0.01$; Table 2). Those who agreed with the statement “If I were to start my career over again, I would still choose to be a neurohospitalist” were over 50 times less likely to report burnout (OR: 0.02, CI: 0.00-0.45, $P = 0.01$). Those who agreed with the statement “I have too many administrative responsibilities” were over 8 times more likely to report burnout (OR: 8.08, CI: 1.27-51.63, $P = 0.03$), although univariate analyses initially failed to demonstrate an association ($P = 0.06$).

Discussion

Although relatively young both as a subspecialty and in terms of demographics, neurohospitalists practice in academic and community settings across the United States. Neurohospitalists find their work rewarding. In addition to their clinical roles, they serve as leaders and teachers in their department and practices. The nature of inpatient neurological practice has raised concerns that they are at particular risk of burnout; however, neurohospitalists

Table 2. Factors and Perspectives Associated With Burnout Among Neurohospitalists.

Predictor	χ^2 Value	P Value	OR	95% CI		P Value
				Lower	Upper	
Age less than 40 years (0 = no, 1 = yes)	0.05	0.83	0.62	0.11	3.44	0.58
Gender (0 = male, 1 = female)	0.11	0.83	1.78	0.37	8.61	0.48
Practice type (0 = academic, 1 = community)	0.00	1.00	1.60	0.24	10.70	0.63
Serve as primary provider for <25% of patients (0 = no, 1 = yes)	0.73	0.52	0.36	0.06	2.38	0.29
Participate in hospital/emergency department call schedule (0 = no, 1 = yes)	2.13	0.21	0.12	0.01	1.05	0.06
Provide telemedicine (0 = no, 1 = yes)	0.20	0.67	2.42	0.48	12.18	0.29
Does your practice use NP/PA-APPs and/or residents in inpatient setting (0 = no, 1 = yes)	2.05	0.22	2.07	0.34	12.55	0.43
On average, how many days off do you have per month? (0 = less than median 8 days, 1 = \geq median 8 days)	0.27	0.67	1.78	0.40	7.96	0.45
I find my current clinical work personally rewarding (0 = disagree/neutral, 1 = agree)	5.71	0.02	0.74	0.01	56.20	0.89
I am respected by others in the local medical community (0 = disagree/neutral, 1 = agree)	0.16	0.70	0.50	0.01	19.49	0.71
I have sufficient opportunities for advancement and promotion (0 = disagree/neutral, 1 = agree)	0.00	1.00	10.95	0.63	190.30	0.10
Neurohospitalists are valued by my hospital's administration (0 = disagree/neutral, 1 = agree)	0.22	0.64	2.99	0.26	34.68	0.38
My total compensation package is fair (0 = disagree/neutral, 1 = agree)	3.49	0.10	0.45	0.06	3.18	0.42
My prospects for future financial security are bright (0 = disagree/neutral, 1 = agree)	0.08	0.82	0.62	0.08	5.14	0.66
I enjoy a good balance between work and home life (0 = disagree/neutral, 1 = agree)	15.48	<0.0005	0.12	0.02	0.65	0.01
The volume of work is overwhelming (0 = disagree/neutral, 1 = agree)	11.00	0.00	1.73	0.32	9.48	0.53
I have too many administrative responsibilities (0 = disagree/neutral, 1 = agree)	3.78	0.06	8.08	1.27	51.63	0.03
I am confident in my clinical neurology skills (0 = disagree/neutral, 1 = agree)	0.37	0.62	0.96	0.00	523.03	0.99
I fear I am at risk for burnout (0 = disagree/neutral, 1 = agree)	19.45	<0.0005				
Overall, I am pleased with my work (0 = disagree/neutral, 1 = agree)	5.70	0.02	0.09	0.00	1.97	0.13
I enjoy the type and intensity of neurohospitalist practice (0 = disagree/neutral, 1 = agree)	1.35	0.35	34.51	0.76	1575.00	0.07
If I were to leave my current neurohospitalist job, I would look for another neurohospitalist job (0 = disagree/neutral, 1 = agree)	0.32	0.72	6.87	0.21	222.23	0.28
I will continue as a neurohospitalist for the rest of my career in neurology (0 = disagree/neutral, 1 = agree)	3.78	0.06	0.12	0.01	1.22	0.07
I am working as a neurohospitalist temporarily until I begin my career of choice (0 = disagree/neutral, 1 = agree)	0.18	1.00	1.34	0.00	665.04	0.93
If I were to start my career over again, I would choose to be a neurohospitalist (0 = disagree/neutral, 1 = agree)	7.53	0.01	0.02	0.00	0.45	0.01

Abbreviations: CI, confidence interval; OR, odds ratio.

^aCommunity = private practice, hospital employee, locum tenens, other. Univariate results presented are from Fisher exact test for variables identified a priori. No additional variables with significant association were identified. Responses to "I fear I am at risk for burnout" not included in logistic regression analysis of predictors for respondent report of burnout. The full model containing all predictors was statistically significant, χ^2 (24, N = 91) = 48.3, $P = .002$, explaining between 41.2% and 56.2% of the variance in burnout report, correctly classifying 85.7% of cases.

endorse higher rates of career satisfaction as well as lower rates of burnout than previously reported among neurologists in general as well as internal medicine hospitalists.^{9,12} Both career satisfaction and work-life balance are protective against burnout among neurohospitalists.

Neurohospitalist practice is multifaceted, with multiple avenues to improve the care for neurological inpatients. While they devote approximately 70% their clinical activity to inpatient neurology,^{2,3} neurohospitalists also provide expertise in other arenas including telemedicine and outpatient postdischarge clinic. Whether in academic or community practice settings, neurohospitalists are clinical, administrative, education, and research leaders. As frontline neurological providers, neurohospitalists are uniquely positioned to lead patient safety and

quality improvement institutionally and nationally, from evaluation and treatment through care transition to the outpatient setting.^{5,6,13,14} In academia, neurohospitalists play a central role in resident training and medical student education on the inpatient wards, with an expectation for teaching effectiveness.⁸

The breadth of neurohospitalist practice suggests essential subspecialty training elements to complement current models of general neurology resident and postresidency training. Neurohospitalists are inpatient specialists as well as teachers and administrators, activities that are beyond the standard training of neurology residency. Academic departments anticipate neurohospitalists to be prepared to fill their clinical roles and serve a variety of institutional roles,⁸ while community practice carries similar demands. Many residency graduates are

attracted to neurohospitalist practice, although a majority feel they would benefit from a neurohospitalist fellowship or additional transitional training to hone their inpatient skills.⁴ Furthermore, the observations herein underline the recent Accreditation Council for Graduate Medical Education (ACGME) emphasis on resident training in patient safety and care quality, an emphasis that continues through the course of maintenance of neurology certification.^{15,16} Such training can occur both in residency and postresidency and early career stages, whether through neurohospitalist or care quality fellowships.^{17,18} Fundamentally, neurohospitalist practice entails an understanding of not only neurological diseases, their diagnosis, and treatment but also on how to realize care of the highest quality through collaborations across and within the inpatient setting. This demand helps to define training elements to ensure that neurohospitalists are experts in the treatment of inpatients with or at risk of neurological disease, from both the medical and system perspectives. It also serves a point of distinct from extant neurology board certifications.

Similar to prior reports, the most common diagnoses treated by neurohospitalists are cerebrovascular disease, seizure, and encephalopathy.^{2,3} The distribution, however, varies between academic and community practice. Compared to community neurohospitalists, academic neurohospitalists more commonly care for patients with neoplasms and demyelinating diseases. It is unclear whether this is due to subspecialty expertise at academic centers, the patterns of disease seen in community and academic settings, or the existence of cerebrovascular-specific services staffed by cerebrovascular fellowship-trained faculty at academic centers. Although many neurohospitalists have completed cerebrovascular fellowships, they care for patients with a variety of nonstroke neurological syndromes, further emphasizing the broad clinical skillset necessary for neurohospitalist practice.

The breadth of neurohospitalist clinical and nonclinical activities underscores concern for burnout within the subspecialty. In a recent survey of burnout and career satisfaction among neurologists, 60% of respondents reported one symptom of burnout (*i.e.*, emotional exhaustion, depersonalization, and/or low personal accomplishment), with differences in contributing factors between academic and community practice respondents.⁹ Given the nature of neurohospitalist practice, with high intensity of practice and call responsibilities, there have been concerns that neurohospitalists are at particular risk of burnout⁹; however, this may not be the case. Here, 36% of neurohospitalists self-reported having experienced burnout. This is less than the proportion of neurologists (60%) and internal medicine hospitalists (52%) and US physicians in general (54%) who report at least one symptom of burnout; however, it is comparable to US physicians intending to reduce their clinical hours (24%) or intending to leave current practice in 2 years (32%).^{9,12,19,20} Of note, this survey includes a younger subspecialty sample than prior surveys,^{2,3} and age of 40 years or less was not associated with burnout. The factors most commonly reported as contributing to self-

report of having experienced or concern for burnout include clinical schedule and patient census, echoing observations within neurology in general.⁹ Although suggested here, it remains to be explored how previously identified protective factors among neurologists, such as greater job autonomy and administrative support, affect neurohospitalist burnout and career satisfaction.

Among neurohospitalists, having a sense of work–life balance and career satisfaction appears protective from burnout. Over 80% of neurohospitalists surveyed are pleased with their work, will continue their careers as a neurohospitalist, and would choose to be a neurohospitalist if they were to start their career over. This degree of career satisfaction is greater than that reported by neurologists in general as well as across other specialties.^{9,12,19} They argue for the importance of clinical and personal support of neurohospitalists within their respective institutions as well as within the subspecialty.

This survey has a number of limitations. The sample was of neurohospitalists who are members of, or affiliated with, the NHS. Although drawn from the society membership, not all neurohospitalists in practice are members of the society and thus were not sampled. However, the sample here is robust relative to prior general neurology and neurohospitalist surveys.^{2,3,9} In addition, the response rate here is in line with other physician, neurology, and hospitalist surveys utilizing similar methodologies and of similar length.^{9,19,21} Finally, in this study, burnout was assessed by neurohospitalist self-report. As 36% of neurohospitalists report having experienced burnout and 44% are concerned for burnout, future studies using validated instruments of burnout symptoms are needed.

Neurohospitalists specialize in the acute management of neurological inpatients and are overall very satisfied with their choice of specialty. In addition to their clinical responsibilities, they perform a variety of additional activities that put them at risk of burnout and provide opportunities for intervention and practice refinement. As the neurohospitalist subspecialty continues to mature, further studies of the impact of neurohospitalists on inpatient care are warranted.

Authors' Note

Drs. Probasco, Josephson, and Likosky contributed to design and conceptualization of study, analysis and interpretation of data, and drafting and revising the manuscript. Drs. Greene, Harrison, Jensen, Khot, Klein, Simpson, and Wold contributed to design and conceptualization of study and revision of the manuscript.

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Supplemental Material

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