Editors' Note: In reference to "Supply and demand analysis of the current and future US neurology workforce," Drs. Racette and Holtzman comment that the neurology workforce estimates contained in the article may be overly optimistic, given that not all neurologists, especially in academic medical centers, are available for full-time patient care. Authors Dall and Drogan explain the methodology behind their supply estimates. Braley et al. and authors Lerdal and Gay discuss what role sleep disorders, such as obstructive sleep apnea, may have in the association between acute phase fatigue and poorer physical health seen after stroke.

—Megan Alcauskas, MD, and Robert C. Griggs, MD

SUPPLY AND DEMAND ANALYSIS OF THE CURRENT AND FUTURE US NEUROLOGY WORKFORCE

Brad A. Racette, David M. Holtzman, St. Louis:

While Dall et al.¹ understand US neurology workforce needs, we contend that the estimates of the current neurology workforce may be overly optimistic due to the research, education, and administrative commitments of neurology faculty in academic medical centers. For example, the authors estimated that Missouri has 365.9 neurologist providers and an estimated need of 379.6 neurologist providers. Washington University School of Medicine has 122 of the neurology providers in Missouri. However, these 122 faculty represent only 34.7 clinical neurology full-time employee (FTE) providers. These revised figures, likely an underestimate, demonstrate that Missouri actually has 26% fewer neurology provider FTEs than are needed to meet the estimated current demand. Adjusting for actual neurology provider FTEs across the United States, particularly in academic medical centers, would demonstrate a more desperate picture of the state of the US neurology clinical workforce in 2013. Our empirical observations are that wait times and demands to be seen by a neurologist support the numbers we provide. More importantly, the estimates of the workforce needs for 2025 likely indicate a severe future shortage of neurologists that we are already experiencing in Missouri.

Author Response: Timothy M. Dall, Washington, DC; Oksana Drogan, Atlanta: We thank Drs. Racette and Holtzman for their comments. We produced national- and state-level projections of supply and demand for neurologists through 2025. National estimates of supply reflect that some neurologists are engaged in nonpatient activities such as teaching, research, and administration.¹ As we noted, a 2010 Practice Profile Survey by the American Academy of Neurology reported that 73% of professional time goes to patient care and the rest is spent on administrative responsibilities (10%), research (9%), teaching (3%), and other activities (3%). The national average was 42.3 hours per week engaged in patient care (in addition to time spent for other professional activities), and we defined 1 clinical FTE as 42.3 hours of professional time.

When projecting state-level supply and demand, we made the simple assumption that the proportion of professional time spent in nonpatient activities is constant across states. To the extent that neurologists in a particular state average more (less) than the national average time spent in non-patient care activities, our supply estimates will overstate (understate) total supply in that state.

The projections also consider that demands on neurologist professional time include non-patient care activities. State-level demand projections are driven by FTE clinical demand projections that account for the characteristics of the population and by applying national patterns of case use and delivery. So that demand and supply are in the same metric for comparison, the simplifying assumption is made that state-level demand for non-patient care activities is a constant proportion of total demand for neurologist time. Therefore, the state-level supply estimates and projections reflect active supply (not clinical FTEs) and the demand projections reflect total professional time for patient care and non-patient care activities.

While our estimates of supply and demand for each state are best estimates given the data available from national sources, the comments by Drs. Racette and Holtzman highlight that workforce analysts and neurologists in a particular state or community are best positioned to have a clear

understanding of the workforce situation in the state or community in which they work.

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FATIGUE IN THE ACUTE PHASE AFTER FIRST STROKE PREDICTS POORER PHYSICAL HEALTH 18 MONTHS LATER

Tiffany J. Braley, Devin L. Brown, Ronald D. Chervin, Ann Arbor, MI: Lerdal and Gay¹ examined

a key relationship between acute poststroke fatigue and long-term functional outcomes. We wonder though whether sleep disorders, and obstructive sleep apnea (OSA) in particular, could help to explain the reported observations.

Given the high prevalence of OSA in acute stroke,² we were surprised that data on OSA or OSA symptoms were not presented. Previous studies have shown that OSA is a risk factor for poor post-stroke outcomes.³ Sleep disturbances, including OSA, impair health-related quality of life measures such as the Short Form–36.⁴

Furthermore, despite traditional emphasis on sleepiness as a consequence of sleep apnea, many patients with OSA report that problems with fatigue, tiredness, or lack of energy supersede their problems with sleepiness.⁵

Taken together, these findings raise the possibility that poorer physical outcomes in this cohort could be explained or exacerbated by an underlying sleep disorder and that acute poststroke fatigue may represent a consequence of poor sleep. Next steps in the important research that Lerdal et al. have initiated should consider OSA as a potential causal link between post-stroke fatigue and 18-month physical functioning.

Author Response: Annars Lerdal, Oslo; Caryl L. Gay, San Francisco: Braley et al. asked whether sleep disorders, particularly OSA, might explain the association between acute phase fatigue and poorer physical health 18 months after stroke. Although OSA was not specifically assessed in our study, we previously reported that fatigue during the acute phase was not associated with either the Pittsburgh Sleep Quality Index⁶ or actigraph estimates of nighttime sleep disturbance.⁷ Thus, it seems unlikely that the fatigue patients experienced during the acute phase was solely attributable to sleep disturbance. Nonetheless, given the prevalence of OSA in acute stroke, we agree that this possible mechanism warrants further investigation using specific OSA assessments.

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