

Feeding tube placement in stroke patients

Urgent need for health services and outcomes research

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Up to 70% of acute stroke patients demonstrate dysphagia. Approximately half of these patients recover sufficient swallowing ability to meet their caloric needs, while the other half will have long-term swallowing dysfunction.^{1,2} Surgical feeding tubes can provide nutritional support in patients with severe dysphagia, but the decision of if and when to place a feeding tube poses a substantial challenge because of an inability to predict long-term recovery accurately. In this issue of *Neurology*®, George et al.³ examined feeding tube placement in the United States in adults with acute ischemic stroke. The authors used the National Inpatient Sample, the largest all-payer administrative claims database in the United States, to evaluate trends in feeding tube insertion rates from 2004 to 2011 and identify patient and hospital characteristics associated with feeding tube insertion.

Although the overall rate of feeding tube placement remained constant over the 8-year observation period, the authors found several patient-level characteristics that predicted feeding tube placement after stroke. Feeding tube placement increased steadily with age, with individuals ≥ 85 years of age almost twice as likely to receive a feeding tube as patients < 55 years at the time of stroke (odds ratio [OR] 1.81 [95% confidence interval 1.62–2.02]). Patients with a high medical comorbidity score were also more likely to receive a feeding tube (vs no comorbidity adjusted odds ratio, 1.26 [1.17–1.36]), as were patients with atrial fibrillation (OR 1.51 [1.44–1.60]). Individuals from minority populations had uniformly higher odds of feeding tube use—Asian patients (OR 1.44 [1.30–1.59]) had the highest odds compared to white patients, followed by Hispanic patients (OR 1.39 [1.27–1.53]) and black patients (OR 1.34 [1.25–1.43]).

Perhaps the most striking finding presented by George et al. was the large variation in the rate of feeding tube placement across hospitals. The proportion of acute stroke patients receiving a feeding tube varied from 0% to 26% and this variation persisted after adjustment for measured patient-level characteristics.

A higher adjusted odds of feeding tube use occurred in hospitals with high stroke volume (highest vs lowest quartile of stroke volume, AOR 1.28 [1.10–1.49]), high stroke patient intubation rates (highest vs lowest quartile of intubation AOR 1.66 [1.47–1.87]), or a higher proportion of African American/Hispanic stroke patients (highest vs lowest quartile AOR 1.66 [1.47–1.87]). Feeding tube placement was less likely in a teaching hospital (AOR 0.90 [0.82–0.98]) and more likely in for-profit hospitals (vs not-for-profit, AOR 1.13 [1.01–1.25]). These findings are similar to those reported in nonstroke populations.⁴

The authors postulate that hospital-level variation in feeding tube placement may indicate a disconnect between patient preferences and provider actions and may result from forces other than evidence of need or effectiveness. However, the administrative claims database used in this study does not contain patient-level data on stroke severity, objective measures of swallowing function, or patient preferences. These factors may explain a portion of the observed variation, even at the hospital level. For example, the observed association between atrial fibrillation and feeding tube placement may be a surrogate for increased stroke severity. High-volume hospitals may have more severely injured patients than lower-volume hospitals and may be more likely located in urban areas with higher populations of minority residents. There may also be differences across hospitals in ancillary speech diagnostic and therapy services, or the ability to place feeding tubes safely in appropriate candidates. The authors attempted to reduce differences in case mix by limiting their analyses to those who survived more than 4 days, but there may still be residual confounding. To better understand why variation in feeding tube use exists and to determine if this variability can or should be reduced, future studies will need to investigate more deeply the processes of care and the content of provider–patient communications surrounding feeding tube placement in the acute stroke patient and the associated long-term outcomes.

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George et al. have successfully identified an important area for future research and, perhaps more important, highlighted the urgent need for patient-centered outcomes and health services research in neurology. Neurologic outcomes research (patient-centered or health system–focused) is not a stated area of interest in any NIH institute, nor is it included in recent large funding opportunities such as Brain Research through Advancing Innovative Neurotechnologies. Neurologic funding agencies traditionally focus on basic science, early translational science, and clinical trials. Although these areas of research are critical, the development of new therapies and evidence-based interventions for neurologically injured patients will only increase the need for high-quality research on dissemination, practice variation, implementation, communication, and both patient-centered and population health outcomes.

What we as neurologists do for patients, how we care for patients (from providing initial diagnosis and treatment to end-of-life care), how we demonstrate the value of our subspecialty training (to payors, policymakers, colleagues, our community, our patients), and how we structure neurologic health care systems is largely unstudied and therefore unknown in detail. This is in stark contrast to the other medical specialties that manage chronic conditions, such as oncology, cardiology, and endocrinology. These specialties have helped to define patient-centered outcomes and health services research, and have used data to (1) close the gaps among medical structure, process, and outcomes

and (2) transform care for their patient populations. With an ever-increasing focus on the cost and quality of health care, it is time for neurologists to place a greater emphasis on how we provide care for people with neurologic diseases and on the resulting outcomes that matter to patients and families.

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Allison W. Willis: drafting/revising the manuscript, study concept or design, analysis or interpretation of data. Linda Williams: drafting/revising the manuscript. Michael T. Mullen: drafting/revising the manuscript.

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