Disputes & Debates: Editors' Choice

Steven Galetta, MD, FAAN, Section Editor

Editors' note: Readmission to a different hospital following acute stroke is associated with worse outcomes

Using the 2013 Nationwide Readmissions Database, which contains patient-level data for nearly half of Americans who were hospitalized for medical illness during that year, Drs. Stein and colleagues examined the length of stay and other outcomes among patients who were readmitted within 30 days of an index stroke event. Although the reported reasons for readmission to a different hospital vs the initial hospital were similar, patients readmitted to a different hospital were more likely to have longer hospitalizations, to incur higher hospitalization costs, and to be more likely to die during readmission. Drs. Chen and colleagues highlighted how social factors—such as dissatisfaction with care at the initial hospital—and index stroke severity or care could have influenced these outcome measures. Although stroke severity and subjective patient satisfaction are data elements that were not specifically captured in this national readmissions database, the authors adjusted for clinical severity using All Patient Refined Diagnosis Related Groups' severity of illness, and they adjusted for each patient's risk of mortality using a standardized score in their final multivariable model. Furthermore, patients were excluded from the analysis if they had been transferred from the index institution to a higher level of care to reduce confounding by unsatisfactory treatment. The effect of prolonged hospitalization with higher costs and a higher mortality rate persists in patients who are readmitted after an acute stroke. Factors that predict readmission need to be carefully considered before initial discharge.

James E. Siegler III, MD, and Steven Galetta, MD
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Reader response: Readmission to a different hospital following acute stroke is associated with worse outcomes

Zhiguo Chen (Suzhou, China), Yi Yang (Suzhou, China), Haifeng Lu (Suzhou, China), Xia Yuan (Suzhou, China), and Xingshun Xu (Suzhou, China)
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Stein et al.[1] examined the effects of readmission to a different hospital vs the discharging hospital within 30 days in patients with acute stroke and found that readmission to a different hospital is associated with worse outcomes.

However, the authors did not realize that readmission to a different hospital may be related to a higher severity of stroke and unsatisfactory treatment at the first hospital (nonteaching hospital or nonmetropolitan hospital), thereby compromising their conclusion. We assume that readmission to a different hospital is associated with severity of stroke or length of hospital stay at the first admitting hospital. Previous studies showed that different factors such as discharge from nonteaching hospitals, stroke subtype, age, and length of hospital stay are associated with readmission within 1 month in stroke patients.[2–4] Therefore, to comprehensively evaluate and compare the outcomes after readmission to the same hospital vs a different hospital, the authors should provide data about the severity of stroke, length of hospital stay, and total charges of the hospitalization during the first admission.

Author disclosures are available upon request (journal@neurology.org).

1. Stein LK, Agarwal P, Thaler A, Kwon CS, Jette N, Dhamoon MS. Readmission to a different hospital following acute stroke is associated with worse outcomes. Neurology 2019;93:e1844–e1851.
2. Bambhroliya AB, Donnelly JP, Thomas EJ, et al. Estimates and temporal trend for US nationwide 30-day hospital readmission among patients with ischemic and hemorrhagic stroke. JAMA Netw Open 2018;1:e181190.
3. Bjerkreim AT, Khanevski AN, Selvik HA, et al. The impact of ischaemic stroke subtype on 30-day hospital readmissions. Stroke Res Treat 2018;2018:7195369.
4. Wen T, Liu B, Wan X, et al. Risk factors associated with 31-day unplanned readmission in 50,912 discharged patients after stroke in China. BMC Neurol 2018;18:218.

Author response: Readmission to a different hospital following acute stroke is associated with worse outcomes

Laura K. Stein (New York City), Mandip S. Dhamoon (New York City), and Nathalie Jette (New York City)
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We would like to thank Chen et al.[1] for their interest in our study. We agree that it is important to consider stroke severity and the possibility that quality of care was suboptimal during the index admission. Indeed, we specifically designed our analyses to minimize the likelihood that readmissions were related to higher stroke severity or to unsatisfactory treatment at the first hospital. Although the Nationwide Readmissions Database does not include data on stroke severity, we used the All Patient Refined Diagnosis Related Groups (APRDRG) severity of illness and risk of mortality measures as a measure of overall illness severity. Our fully adjusted models account for both APRDRG severity and mortality. To minimize the likelihood that unsatisfactory treatment at the first hospital contributed to readmission, we excluded patients transferred to a higher level of care during index hospitalization. Finally, Table 2 reports the length of hospital stay and total charges of hospitalization during the index admission. In addition to demographics, vascular risk factors, insurance, discharge disposition, and APRDRG severity or mortality, our fully adjusted model also included adjustment for hospital characteristics, length of stay, and total charges during the index hospitalization.

1. Stein LK, Agarwal P, Thaler A, Kwon CS, Jette N, Dhamoon MS. Readmission to a different hospital following acute stroke is associated with worse outcomes. Neurology 2019;93:e1844–e1851.

Editors' note: Migraine progression in subgroups of migraine based on comorbidities: Results of the CaMEO Study

In their longitudinal survey of more than 8,000 patients with episodic migraine and selected comorbidities, Drs. Lipton et al. reported the results of the CaMEO Study. The investigators used 3 unique mathematical models to estimate the effect of various comorbidities on the progression of episodic migraine to chronic migraine. All comorbidity classes independently contributed to disease progression, and the effect was cumulative—with more comorbidities conferring a greater risk than fewer comorbidities. Dr. Gupta expresses concerns regarding the usefulness of classifying migraine subtypes, as there is presently unclear biologic heterogeneity of various migraine phenotypes. In response, the authors emphasize the importance of distinguishing unique migraine syndromes, as they may signify distinct biomarkers of disease or demonstrate a differential responsiveness to certain therapeutics. The authors acknowledge that the results of this study are one of several steps, which may lead to the improved care of patients with migraine.

James E. Siegler III, MD, and Steven Galetta, MD
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Reader response: Migraine progression in subgroups of migraine based on comorbidities: Results of the CaMEO Study

Vinod K. Gupta (New Delhi, India)
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I read the article by Lipton et al.[1] The sociodemographic model creating subdivisions of migraine into statistically valid subgroups based on comorbidity classes to predict progression from episodic migraine (EM) to chronic migraine (CM)[1] does not have any biologic or pathophysiologic basis. The distinction between EM and CM is based on a unique, purely arbitrary symptom-based nosologic template. After the widely split primary headache classification,[2]—itself absolutely without any biologic or pathophysiologic substance—this statistical subdivision of migraine through comorbidities[1] ensures continuous generation of data sans any overarching matrix, thereby indefinitely adding to the extant confusion.

The first subgrouping of migraine was between migraine with aura (MwA) and migraine without aura (MwoA) groups, which, when split, has no biologic/pathophysiologic basis and has not yet been rationalized. Therapeutically, no difference prevails between MwA-related and MwoA-related headache. Similarly, the split between EM and CM has no clinical value. Besides the simplistic "splitting" vs "lumping" debate, the single biggest factor that impedes the creation of an overarching hypothesis for the primary headache group of "entities" is the generation of distinct subgroups without a clinically valid matrix to promote the relevant basic sciences.[3-5]

1. Lipton RB, Fanning KM, Buse DC, et al. Migraine progression in subgroups of migraine based on comorbidities: results of the CaMEO Study. Neurology 2019;93:e2224–e2236.
2. Headache Classification Committee of the International Headache Society (IHS). The International Classification of Headache Disorders, 3rd edition (beta version). Cephalalgia 2013;33:629–808.
3. Gupta VK, editor. Adaptive Mechanisms in Migraine. A Comprehensive Synthesis in Evolution. Breaking the Migraine Code. New York: Nova Science Publishers, Inc., 2009;1–126.
4. Gupta VK. Patent foramen ovale closure and migraine: science and sensibility. Expert Rev Neurother 2010;10:1409–1422.
5. Gupta VK. Pathophysiology of migraine: an increasingly complex narrative to 2020. Future Neurol 2019;14:1–6.

Author response: Migraine progression in subgroups of migraine based on comorbidities: Results of the CaMEO Study

Richard B. Lipton (Bronx), Kristina M. Fanning (Wilmington, NC), Dawn C. Buse (New York City), Vincent T. Martin (Cincinnati), Lee B. Hohaia (North Wales, PA), Aubrey Manack Adams (Irvine, CA), Michael L. Reed (Chapel Hill, NC), and Peter J. Goadsby (Los Angeles)
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In our article,[1] we used latent class analysis (LCA) to identify clinically homogeneous migraine subgroups. Progress in the characterization of familial hemiplegic migraine (FHM) was possible because a specific migraine phenotype was identified, facilitating the discovery of multiple causal genetic variations and biological mechanisms.[2] Our approach builds on the FHM model by using LCA to identify specific migraine phenotypes based on comorbidity profiles.[3] To show that these subgroups are meaningful, we sought to examine characteristics not included in LCA as external validators; these can include biological markers, treatment response, or clinical course.

Using clinical course, we showed substantial differences in rates of progression to chronic migraine.[1] Having identified the groups and confirmed prognostic differences, we must now seek biological explanations for differences in subgroups.

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As a long-term goal for the field, we want to map clinical phenotypes onto biology and treatment response. When that happens for all of migraine, as it has for FHM, this work will have delivered on its long-term promise. Like Dr. Gupta, we are eager to make these strides but content ourselves with small steps.

1. Lipton RB, Fanning KM, Buse DC, et al. Migraine progression in subgroups of migraine based on comorbidities: results of the CaMEO Study. Neurology 2019;93:e2224–e2236.
2. Tolner EA, Houben T, Terwindt GM, et al. From migraine genes to mechanisms. Pain 2015;156(suppl 1):S64–S74.
3. Lipton RB, Fanning KM, Buse DC, et al. Identifying natural subgroups of migraine based on comorbidity and concomitant condition profiles: results of the Chronic Migraine Epidemiology and Outcomes (CaMEO) Study. Headache 2018;58:933–947.

CORRECTIONS

The epileptology of alternating hemiplegia of childhood

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In the article "The epileptology of alternating hemiplegia of childhood" by Uchitel et al.,[1] a data point and a portion of the legend within table 2 are incorrect. In the column "Number with Epilepsy/Total," the first data point beside "E815K" should read "3/7 (43%)." Further, the first sentence of the legend for this table should read "Other less frequent mutations seen included G89D, G775C, Y768H, A320T, P323S, Q851R, G947R, D923Y, C596Y, L326R, R756H, L839P, V589F." The authors regret the errors.

Reference

1. Uchitel J, Helseth A, Prange L, et al. The epileptology of alternating hemiplegia of childhood. Neurology 2019;93:e1248–e1259.

Risks and benefits of unapproved disease-modifying treatments for neurodegenerative disease

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In the article "Risks and benefits of unapproved disease-modifying treatments for neurodegenerative disease" by Feustel et al.,[1] first published online December 2, 2019, the first label under the "Parkinson disease" heading in figure 4 should read "e-Ref #36" and the second label should read "e-Ref #37." The labels appear correctly in the January 7, 2020, issue. The publisher regrets the errors.

Reference

1. Feustel AC, MacPherson A, Fergusson DA, Kieburtz K, Kimmelman J. Risks and benefits of unapproved disease-modifying treatments for neurodegenerative disease. Neurology 2020;94:e1–e14.

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