Delirium Admissions in Dementia

Gross and colleagues wrote an interesting article on hospital admissions in patients with Alzheimer disease 65 years or older who visited the Massachusetts Alzheimer Disease Research Center (ADRC) at least 3 times. The key to their article is the accuracy of discharge coding for delirium in hospital medical charts.

The diagnosis of delirium is fraught with problems. In many hospitals clinicians label any elderly patient with acute confusion as delirious even if they do not meet criteria such as Confusion Assessment Method (used by physicians) or Diagnostic and Statistical Manual of Mental Disorders (Fourth Edition) (used by psychiatrists). I decided to conduct a retrospective analysis in the Wyong Hospital Memory Clinic to replicate the Massachusetts ADRC study by Gross et al. Wyong Hospital has 370 beds and is located 100 km north of Sydney, Australia. Among the 473 patients in the Wyong Hospital Memory Clinic database, I selected 193 with dementia or mild cognitive impairment who had at least 1 hospital admission (Gross et al sampled only patients with dementia and not MCI). Total follow-up at Wyong Hospital was 340.3 patient-years; the median follow-up was 699 days, or 1.91 years, compared with the median follow-up of 3.2 years in Massachussets.

Twenty of the 193 Wyong Hospital patients with mild cognitive impairment or dementia (10.4%) were readmitted for delirium (I prospectively verified at least 50% at the time of readmission) compared with 148 of 263 (56.3%) in Massachussets (χ² test, P < .001). I repeated this analysis for 115 Wyong Hospital Memory Clinic patients with dementia who had at least 1 readmission during a median follow-up or 652 days (1.8 years). Twelve of 115 Wyong Hospital patients with dementia (10.4%) were readmitted for delirium compared with 148 of 263 (56.3%) in Massachussets (χ² test, P < .001).

The best explanations for the 46% absolute discrepancy in delirium readmissions between Massachusetts and Australian patients with dementia are the following 4 factors: (1) diagnosis related group inducements to mention delirium are more powerful in America than in Australia; (2) the 263 American patients with dementia had more severe dementia than the 114 Australian patients with dementia; (3) the Wyong Hospital Memory Clinic linked to a community Dementia Support Service offers more care support than the Massachusetts ADRC; and (4) the retrospective medical chart review in Massachusetts was less sensitive to identifying delirium compared with the present analysis, wherein I personally assessed more than 50% of readmissions from the Wyong Hospital Memory Clinic.

Paul J. Regal, MD, FRACP, FRCP(London)

Author Affiliation: The University of Newcastle, Newcastle, and Wyong Hospital, Lake Haven, New South Wales, Australia.

Correspondence: Dr Regal, Wyong Hospital, PO Box 4200, Lake Haven, NSW 2260, Australia (pregal@nscachs.health.nsw.gov.au).

Conflict of Interest Disclosures: None reported.

The Meaning of Delirium

We read with interest the Invited Commentary by Vasilevskis and Ely entitled “The Danger of Delirium” on the article by Gross and colleagues evaluating delirium and long-term cognitive trajectories in patients with dementia. We agree...
The letter by Regal offers an interesting comparison to our study. We applaud the author’s motivation. Although the study by Regal raises interesting findings, the prevalence estimate for delirium at admission to the Wyong Hospital Memory Clinic is not directly comparable to our study’s reported number of new cases during hospitalization for 3 important reasons: differences in time frame of ascertainment, patient populations, and method of delirium ascertainment. Most importantly, with respect to time frame of delirium, the 10.4% figure reported by Regal is an estimate of delirium prevalence at hospital admission. Our 56.3% is a proportion of new delirium cases during hospitalization. With respect to the patient population, our sample was composed exclusively of patients with diagnoses of definite, possible, or probable Alzheimer disease, whereas 40% of Regal’s sample included patients with mild cognitive impairment. Patients with dementia are nearly 3 times more vulnerable to delirium than patients with less impairment. Although the risk of delirium is lower among nondemented patients, we believe, based on previous studies from our group and others, that the deleterious association of delirium we report is similar in other populations. We further wish to clarify that Massachusetts Alzheimer Disease Research Center clinic visits are not hospitalizations, so our sample is not restricted to readmitted patients as is Regal’s sample.

With respect to delirium ascertainment, we did not use hospital delirium diagnoses as Regal did. Rather, delirium was rigorously identified using a validated medical chart review method, which is 24 times more sensitive than diagnosis made by International Classification of Diseases, Ninth Revision diagnosis codes.

We are grateful for the review by Bellelli and colleagues. We strongly agree with the authors that studies elucidating the pathophysiological basis for the negative long-term outcomes of delirium are greatly needed. However, we do not agree that the 2 pathways proposed by Bellelli and colleagues are mutually exclusive. We believe that delirium may serve both as a sign of severe illness or noxious insults and as a contributor to poor outcomes. Epidemiologic evidence suggests that delirium may lead to permanent cognitive impairment. In addition, previous studies suggest that delirium may trigger amyloid deposition. We agree with Bellelli and colleagues that this should be a priority for future research, since the clinical implications are far reaching.

We strongly concur with the points made by Dr Bell. Unfortunately, we were unable to examine the important contribution of medications to cognitive trajectory in our study. We completely agree this is a vital area for future research.

Alden L. Gross, PhD, MHS
Richard N. Jones, ScD
Sharon K. Inouye, MD, MPH

Author Affiliations: Aging Brain Center, Institute for Aging Research, Hebrew SeniorLife (Drs Gross, Jones, and Inouye), Department of Medicine (Drs Gross, Jones, and Inouye), Beth Israel Deaconess Medical Center, and Department of Neurology, Massachusetts General Hospital (Dr Inouye), Harvard Medical School, Boston.

Conflict of Interest Disclosures: None reported.

Correspondence: Dr Gross, Institute for Aging Research, Harvard Medical School, 1200 Centre St, Boston, MA 02131 (aldengross@hsl.harvard.edu).

Conflict of Interest Disclosures: None reported.


Correction

Errors in Text. In the Invited Commentary titled “Measuring Diagnostic Errors in Primary Care: The First Step on a Path Forward” by Newman-Toker and Makary, published online February 25, 2013, and in the March 25 issue of JAMA Internal Medicine (2013;173[6]:425-426), errors occurred in the text. In the third paragraph on page 425, the fourth sentence through the end of the paragraph should have read, “Nevertheless, with more than half a billion primary care visits annually in the United States, if these data from Singh et al are generalizable, at least 500,000 missed diagnostic opportunities occur each year at US primary care visits, most resulting in considerable harm. If error rates at the half-billion non–primary care visits are similar, the total could be more than 1 million. If even 10% of these (100,000) are easily prevented, and combining this figure with autopsy-based estimates of preventable US hospital deaths from diagnostic errors (40,000/y to 80,000/y), more than 150,000 patients per year in the United States might have undergone preventable misdiagnosis-related harm.”