Arrhythmias

USING INTERNATIONAL CLASSIFICATION OF DISEASES NINTH REVISION CODES OVERESTIMATES THE FREQUENCY OF TRUE STROKE

Poster Contributions
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Background: Querying ICD-9 codes is a widely used method for case-finding in large administrative databases. To determine the accuracy of ICD-9 based case-finding for stroke events we compared two approaches for stroke-case identification: ICD-9 codes vs. ICD-9 code followed by chart review, at the institutions participating in the Effect of Statins and Modifiable Risk Factors on Stroke Outcome in Atrial Fibrillation study, being conducted at Boston Medical Center, Geisinger Health system and the University of Alabama at Birmingham.

Methods: Patients were identified using ICD-9 codes for ischemic stroke (ISC; 433-434, 436) or intracranial hemorrhage (ICH; 430-432) on admission over a 5-year period (2006-2010). Strokes associated with trauma and prosthetic heart valves were excluded. All cases identified by ICD-9 codes (independent of position - primary, secondary or other) were further vetted with a detailed medical record review by one or more physicians.

Results: The ICD-9 based case finding method identified 1,610 (1,204 ISC and 406 ICH) unique strokes. The detailed chart review identified that only 94.8% (1,527) were true and valid strokes. The validation rates were similar regardless of event type, ISC (94.9%) and ICH (94.6%). The bulk of the discordance was explained by temporary relation to hospitalization cases where the stroke related ICD-9 codes were not the primary diagnoses. Events with a stroke related code in the secondary or other position were more likely to be a not valid stroke than events assigned a stroke related ICD-9 code in the primary position (OR 8.0, p<0.0001). The use of non-stroke ICD-9 codes (433.00, 433.10, 433.20, 433.30, 434.00, 434.10, and 434.90) identified an additional 458 events with 34 (7.4%) of them being valid stroke after manual review.

Conclusion: Identifying strokes with ICD-9 codes alone overestimates the frequency of qualifying strokes by 5.2%. Additionally, including non-stroke coded events increased the number of valid strokes while decreasing the accuracy of ICD-9 based stroke case-validation. These findings highlight the need for more rigorous methods to identify strokes when studying strokes using large administrative databases.