

CAN ADMINISTRATIVE DATA BE USED TO MEASURE SURGICAL ADVERSE EVENTS? VALIDATING THE ICD-9-CM BASED PATIENT SAFETY INDICATORS

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Background: The Agency for Healthcare Research and Quality (AHRQ) recently designed a set of patient safety indicators (PSIs) to screen for potential inpatient adverse events such as postoperative pulmonary embolus or deep vein thrombosis (PE/DVT). This latter ICD-9-CM based indicator is currently endorsed by the National Quality Forum. We sought to evaluate the criterion validity of the PSI “postoperative PE/DVT” in a sample of hospitals within the Veterans Health Administration (VA).

Methods: The AHRQ PSI software (v.3.1a) was applied to 2003-2007 inpatient administrative data from 28 VA hospitals to identify (flag) cases suspected of having a postoperative PE/DVT. To determine rates of true and false positives, trained nurses and clinicians conducted a retrospective chart review of 112 flagged cases using standardized chart abstraction tools and guidelines. Inter-rater reliability testing and determination of the reasons for false positives were performed.

Results: Out of 112 cases, 49 were true events of postoperative PE/DVT, yielding a positive predictive value of 43.8% (95% CI, 34.4-53.4%). Out of a total of 63 false positive cases, 16 (25.4%) had a PE/DVT diagnosis already present on admission (diagnosed < 6 months before admission), 10 cases (15.9%) represented a remote history of PE/DVT (diagnosed > 6 months before admission), and 13 cases (20.6%) were diagnosed after admission but before the index procedure. Coding-related inaccuracies accounted for the remainder of the 24 false positives (38.1%). These included cases of arterial-not venous- thrombosis, superficial- not deep- vein thrombosis or thrombophlebitis, and cases where a postoperative PE/DVT workup was negative or the etiology for patient postoperative mortality was uncertain (rule out PE). Inter-rater reliability was 94%.

Conclusions: Postoperative PE/DVT PSI does not accurately detect cases where a PE or DVT has occurred. Addressing the causes of false positives on both the coding- and algorithm-design levels will significantly improve its predictive value.