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Can Administrative Data be used to Analyze Complications following Total Joint Arthroplasty?

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Introduction: Theoretically, administrative database data may be used to analyze medical and surgical complications and lead to better understanding of re-operations, revisions, and re-admissions. We hypothesized that the Center for Medicare and Medicaid Services Limited Data Set (CMS-LDS) could be used to validate the complications and adverse events endorsed by the Hip Society and Knee Society.

Methods: The 2009 CMS-LDS was analyzed using SPSS statistical software to assess the incidence of 15 complications following total knee arthroplasty (TKA) and 16 complications following total hip arthroplasty (THA) which were developed by the Knee Society and Hip Society. Using ICD-9 procedure codes, cases were extracted from the first three quarters of 2009 to allow capture of all complications within 90 days for the year 2009. Using ICD-9 diagnosis codes, complications were identified and stratified to outpatient and inpatient diagnoses.

Results: The complications with the highest incidence among the 207,749 TKA were stiffness (15.98%; outpatient 15.8%; inpatient 0.2%), thromboembolic disease (4.54%; outpatient 4.15%, inpatient 0.39%), deep infection (2.54%; outpatient 1.44%, inpatient 1.33%), and bleeding (1.02%; outpatient 0.21%, inpatient 0.82%). The complications among the 91,569 THA with the highest incidence were thromboembolic disease (4.86%; outpatient 4.38%, inpatient 0.48%), dislocation/instability (3.86%; outpatient 1.70%, inpatient 2.16%), deep infection (3.15%; outpatient 1.59%, inpatient 1.56%), bleeding (1.35%; outpatient 0.23%, inpatient 1.12%), and leg length discrepancy (1.15%; outpatient 0.43%, inpatient 0.75%). All other complications had an incidence of < 1% and several had a 0% incidence including vascular and MCL injury.

Conclusion: We were unable to validate the Hip and Knee Society complications using this administrative data set as we could not connect readmissions or outpatient visits to index admissions. Additionally, well-known complications were not detected, raising concern about coding accuracy. Furthermore, the stratification of outpatient and inpatient codes allows for duplication of complications and may falsely elevate the reported incidence.