

Medical Needs after Pediatric Traumatic Brain Injury: Probabilistic Linkage of State Claims Data with Trauma Center Data

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Introduction

Traumatic brain injury (TBI) causes enormous morbidity and mortality in both adults and children. Children who survive TBI may have significant disability. It is not known if patterns of outpatient claim use among TBI survivors can be used to estimate patient functional status.

Conclusion/Implications

We will leverage the linked registry, EMR, and claims data by using unsupervised machine learning to identify patterns of outpatient care that can serve as proxies for functional status in children who survive TBI. Analyses are ongoing and will be completed by September 2018.

Objectives and Approach

The objectives of this study are to 1) link regional data sources to create a dataset containing information about the entire continuum of care for children with TBI and 2) identify patterns of outpatient medical needs that can serve as proxies for functional status. We probabilistically linked trauma registry and electronic medical record (EMR) data for children hospitalized after acute TBI at the two pediatric trauma centers in Colorado, Children's Hospital Colorado (CHCO) and Denver Health (DH), with claims data from the Colorado All Payer Claims Database (APCD) (2009-2014). Probabilistic linkage was performed using LinkSolv (Strategic Matching, Inc., Morristown, NY).

Results

Of 737 hospitalized children, 387 (53%) linked to records in the APCD. Among the children in the linked cohort (213 at CHCO and 174 at DH), the median age was 5 years (interquartile range [IQR] 2 to 13) and 264 (68%) were male. Most had either mild (Glasgow Coma Scale [GCS] 13-15, 51%) or severe (GCS \leq 8, 36%) TBI. The 1-year hospital readmission rate among the 355 (92%) survivors was 52/355 (15%). Among the 248/355 (70%) who had a medication claim and the 316/355 (89%) who had an outpatient claim in the first year, respectively, the median number of medication claims was 6 (IQR 2 to 14) and the median number of outpatient claims was 5 (IQR 3 to 11).

