ICD-9-CM

The ICD-9-CM discharge codes are not designated by surgeons, but rather are assigned by trained hospital medical coders.

Administrative billing data may facilitate large-scale assessments of treatment outcomes for pediatric Chiari malformation Type 1 (CM-I). Validated International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) code algorithms for identifying CM-I surgery are critical prerequisites for such studies but are currently only available for adults. The objective of a study was to validate two ICD-9-CM code algorithms using hospital billing data to identify pediatric patients undergoing CM-I decompression surgery.

Ladner et al retrospectively analyzed the validity of two ICD-9-CM code algorithms for identifying pediatric CM-I decompression surgery performed at 3 academic medical centers between 2001 and 2013. Algorithm 1 included any discharge diagnosis code of 348.4 (CM-I), as well as a procedure code of 01.24 (cranial decompression) or 03.09 (spinal decompression or laminectomy). Algorithm 2 restricted this group to the subset of patients with a primary discharge diagnosis of 348.4. The positive predictive value (PPV) and sensitivity of each algorithm were calculated.

Among 625 first-time admissions identified by Algorithm 1, the overall PPV for CM-I decompression was 92%. Among the 581 admissions identified by Algorithm 2, the PPV was 97%. The PPV for Algorithm 1 was lower in one center (84%) compared with the other centers (93%-94%), whereas the PPV of Algorithm 2 remained high (96%-98%) across all subgroups. The sensitivity of Algorithms 1 (91%) and 2 (89%) was very good and remained so across subgroups (82%-97%).

An ICD-9-CM algorithm requiring a primary diagnosis of CM-I has excellent PPV and very good sensitivity for identifying CM-I decompression surgery in pediatric patients. These results establish a basis for utilizing administrative billing data to assess pediatric CM-I treatment outcomes [1].

Lumbar fusion surgeries specifically have been scrutinized for rising rates coupled with ill-defined indications for fusion such as stenosis and spondylosis. Administrative databases classify cases with the International Classification of Diseases, Ninth Revision, Clinical Modification ICD-9-CM.

It is unclear how accurately they capture the surgeon's indication for fusion.

Researchers, policymakers, payers, and physicians should note these limitations when reviewing studies in which hospital claims data are used. Advanced domain-specific coder training, increased attention to detail and utilization of ICD-9-CM diagnoses by the surgeon, and improved direction from the surgeon to the coder may augment data fidelity and minimize coding errors. By understanding sources of error, users of these large databases can evaluate their limitations and make more useful decisions based on them [2].

1)

Ladner TR, Greenberg JK, Guerrero N, Olsen MA, Shannon CN, Yarbrough CK, Piccirillo JF, Anderson RC, Feldstein NA, Wellons JC 3rd, Smyth MD, Park TS, Limbrick DD Jr. Chiari malformation Type I surgery in pediatric patients. Part 1: validation of an ICD-9-CM code search algorithm. J Neurosurg Pediatr. 2016 May;17(5):519-24. doi: 10.3171/2015.10.PEDS15370. Epub 2016 Jan 22. PubMed PMID: 26799412.

2)
Gologorsky Y, Knightly JJ, Lu Y, Chi JH, Groff MW. Improving discharge data fidelity for use in large administrative databases. Neurosurg Focus. 2014 Jun;36(6):E2. doi: 10.3171/2014.3.FOCUS1459. PubMed PMID: 24881634.