Research - R189

Oral Presentation

Abstract Title:

Inter-Rater Reliability of ICD-9 and AIS Trauma Coding: A Reality Check

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Background & Purpose:

Trauma registries provide an important analysis tool to evaluate trauma care, injury epidemiology and benchmark outcomes. ICD-9 and AIS are standardized coding classifications used by trauma registries worldwide to code traumatic injuries and calculate injury severity. Characterization of ISS plays an important role in trauma research. The NTDB is the largest aggregation of trauma registry data used for research. The information provided by a trauma registry is only as valid as the data entered. Accuracy and validation are essential. The aim of this quality pilot study was to determine the level of percent agreement and consistency of ICD-9, AIS and ISS coding among trauma registrars.

Study/Project Design:

The study design was a prospective analysis of trauma registrar's coding.

Setting:

The setting is a Level I adult and pediatric trauma/burn center and academic teaching facility.

Sample:

The sample was 5 trauma registrars' that abstracted coding data from the medical record of the same trauma patients.

Procedures:

In July 2012, two patients with multiple trauma were selected by the lead registrar and ICD-9 and AIS data was abstracted and coded. This was labeled as the gold standard. The lead registrar has 11.5 years of experience and holds CSTR and CPC certifications. Five trauma registrars were set up in a test system and asked to code the ICD-9 and AIS from the same patients. The 5 coders have varying lengths of expereince in coding ranging from 9 months to 9 years. Certifications varied among the registrars and included 1 CSTR, 1 CPC-a, 1 CPC/RHIT, and 2 with no certifications. All registrar had AIS training. The data elements evaluated for inter-rater reliability (IRR) included ICD-9, AIS and ISS. Following the completion of coding, a statistician analyzed the data to the gold standard codes evaluating for level of percent agreement, missing codes and incorrect codes. After testing and analysis, results were shared with the registrars.

Findings/Results:

An IRR analysis was performed to assess the degree that trauma registrars consistently assigned accurate ICD-9 and AIS. Each diagnosis was categorized as missing, correct or incorrect. Kappa was calculated for each rater pair and averaged. This analysis produced a single index of IRR for the respective ICD-9 scores, and AIS scores for the 2 patients. The resulting kappa for ICD-9 rater agreement indicated moderate agreement for patient 1, k =.378 and substantial agreement for patient 2, k =.659. The kappa for AIS rater agreement indicated fair agreement for both patients 1 and 2, k =.3 and k=.364 respectively. Although these scores produced some agreement it is proposed that conclusions of kappa less than 0.67 be discounted. In addition, each registrar was compared to the gold standard. On average the registrars accurately coded the ICD-9 65.2% correctly for patient 1 and 72.8% for patient 2. AIS injuries were coded 61.2% correctly for patient 1 and 67.8% for patient 2. The ISS of each registrar was compared to the gold standard (ISS 29). Two registrars accurately coded ISS of 29 and the other 3 coded the ISS at 24. For patient 2, none of the registrars accurately coded the ISS.

Discussion/Conclusions/Implications:

Limitations of this study include inconsistent or lack of detailed documentation in the patients medical record, inconsistent registrar training, certification and experience, complex software listing of ICD-9 codes and sample size.

The trauma coding descriptive statistics and IRR analysis of this pilot study encourages future research on the consistency and accuracy of trauma registry coding because the reality check is that injury data is being used by trauma stakeholders and researchers to change clinical care.