

Investigation of Abbreviated Injury Scale (AIS) Use Throughout the World

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INTRODUCTION:

The Abbreviated Injury Scale (AIS) is rapidly becoming the global standard for field injury coding and injury severity quantification (Wang and Gennarelli, 2009). *The goal of this study was to investigate the fields and locations in which AIS is currently being used, as well as the versions that are being utilized.*

METHODOLOGY:

A literature review was conducted in which we queried PubMed and the electronic reference index maintained by the Center for Applied Biomechanics at the University of Virginia for papers published between 2005 and 2010 (inclusive), in all languages. For both databases, a full-text search was performed for the term "abbreviated injury scale." There were no other exclusion criteria.

A target of 250 papers was randomly selected for review. Three reviewers analyzed the papers and gathered data on the following variables: general information (authors, title, publication year, citation); language of publication; country of origin; AIS version (including how many generations old); data source (general and specific); topic of concern (e.g.,: automotive injury, non-automotive injury); whether AIS was cited or not (if so, then citation was recorded); primary institution affiliation; contact information; and general notes. In addition, articles were examined to determine if the AIS codes (AIS ranges from 1 to 6) were coded directly from medical records or if they were mapped from another classification scheme (e.g., ICD). Inter-rater reliability was examined and found to be appropriate.

STATA was employed for analysis. *See Figure 1 below*



Figure 1: Country of origin and number of papers from that country

RESULTS:

The literature search yielded 518 unduplicated citations of which 48.3% were randomly selected to identify the 250 that would be included for review. The majority of the papers identified for the review did not indicate which AIS version was used in their research (62 %). For those that did indicate the AIS version, the most widely used was AIS 1990 (16.8%), followed closely by AIS 1990 update 1998 (15.6%). **Table 1 lists all the versions of AIS identified in the review.**

The vast majority of the papers (88.4 %) did not specify how the AIS codes were determined. Of those that did, 58.61% were coded manual; the rest were either mapped from other coding schemes (e.g.: ICDMAP-90 algorithm) or used both. In regards to the data sources for the papers reviewed, the bulk came from either hospital data or trauma registries (73.6%).

Table 1: AIS Versions Identified of Papers Reviewed

AIS Version	Number of Articles	Percentage	95% CI
AIS-1985	2	0.8%	-0.3, 1.9
AIS -1990	42	16.8%	12.2, 21.4
AIS-1990 update 1998	39	15.6%	11.1, 20.1
AIS-2005	2	0.8%	-0.3, 1.9
AIS-2005 update 2008	1	0.4%	-0.4, 1.2
Multiple Versions	8	3.2%	1.0, 5.4
N/A	1	0.4%	-0.4, 1.2
Unknown	155	62.0%	56.0, 68.0

CONCLUSIONS:

These results show that the AIS is currently being used all over the globe and for purposes related to general trauma. The scale is currently employed in North and South America, Europe, Asia, and Australia. Notably missing from our review are studies from Africa. Further research is warranted to investigate if AIS is currently being employed in Africa and what, if any, issues may be hindering such usage. Furthermore, with the AIS being used on such a global scale, there may be a need for more AAAM-approved translated AIS manuals to streamline consistency. This need is emphasized by a few of the papers reviewed in which AIS scores stated were grossly erroneous. One paper from Austria gave an AIS score of 20 (Sabeti-Aschraf et al., 2009), while another from Turkey gave AIS scores of 12.1 and 14.23 (Onat et al., 2010).

REFERENCES:

*There are 250 references as they are the manuscripts which were chosen to be evaluated for the study. These references will be provided upon request.