Implementation and Validation of a Tool for the Automatic Calculation of DRG

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Abstract

Standards application for coding the medical information stored in Information Systems offers a series of advantages at the time of making management analysis. DRG (diagnosis related groups) code for calculation of the DRG code for each admission episode makes it possible to estimate costs as well as the consumption of hospital resources. With the purpose of running management processes to the information generated during admission episodes, the discharge summary was structured in several fields so that it could be then coded with ICD 9 CM and assigned a DRG code. The objective of this study is to compare an automatic coding tool for the discharge summary with DRG against a web tool (IRP). As the assignment of a DRG code was a manual process, the institution decided to develop a tool which would make those calculations automatically. Comparing the result from the newly developed tool to a web tool in 6566 clinical records were tested later the concordance of the system. Concordance was 98.43%, with a standard deviation of 98.1-98.7%.

Keywords:

Systematized Nomenclature of Medicine, Terminology, Information systems, Electronic health record.

Methods

We performed a cross section study. By using Terminology Services it is possible to automatically assign an ICD9CM code to each field in the Discharge Summary. With the purpose of obtaining a tool for the administration of DRG tables, the Terminology Area at the Department of Health Informatics at Hospital Italiano of Buenos Aires (HIBA) developed an AMD system (Add, Modify, and Delete) for keeping the tables updated as soon as new versions are released, in order to adjust the precision of the system. All the data in the tables are taken from the DRG Expert book. In order to assign the DRG code to a Discharge Summary, the system performs six processes. For the system to assign a DRG code to the discharge summary, the following fields need to be complete: age, sex, discharge destination, principal diagnosis. Each DRG has one or more groups of ICD9CM codes, which are specific for the assignment. Each table has a code specifically assigned by HIBA. Each DRG can be selected based on the score which results from adding one or more ICD9CM groups as long as the score is 10 or more points. Once list of probable DRG codes has been generated, the system reviews age, complications, comorbidities and discharge destination. For the assignment of the DRG code, those diseases that imply a higher level of seriousness will always be predominant over less serious diseases. The system applies a priority criterion, taking into account the level in which the preselected DRG codes are. After developing the tool, we compared the accuracy of the system against an application, considered as the gold standard, provided by Innovative Resources for Payors (IRP) at http://www.irp.com/. Discharge Summaries created through 2007 with all fields coded with ICD9CM were analyzed. They were sorted by DRG up to a maximum of 100 clinical records per group. Each Discharge Summary is manually reviewed by an experienced coder to verify the correct encoding with ICD9CM and their codes were admitted to the IRP for calculating DRG. In turn, this same encoder ran the application developed by HIBA and placed both codes in a table, identifying those where there was no coincidence.

Results

A total of 9891 Clinical Records were analyzed, from those, the first 15 of each grouper were selected. For the most populated groupers, 20 Clinical Records were considered. Following to this selection, 6604 Clinical Records were available. Finally were analyzed 6566 clinical Records. The concordance between both systems was 6463 (98.43%). A statistical analysis was made to estimate the confidence interval, using the Stata software. The result of this analysis was a confidence interval between 98.1% and 98.7% for this sample.

Conclusion

The incorporation of this tool to the Health Information System will automate the process for coding Admission Clinical Records, reducing the time needed to make the information finally available for any management analysis. The development of the AMD system will make it easy and quickly to update the tables in the application upon the release of new versions. The incorporation of this tool helped us spot mistakes in transcription due to a poor interpretation of diagnoses or procedures and in the coding process due to the wrong selection of the ICD9CM code.