Improving coding for DRG assignment in a Brazilian tertiary care hospital

Authors: André A. Osmo, Marcia M. Sá, Deborah P. Castilho, Fábio H. Gregory, Carolina G. Pereira, Osmeire A. Sanzovo, Flavia Vendramini, Marina F. Noronha, Marc Berlinguet

Introduction
The DRG Classification System ("Diagnosis Related Groups") is a worldwide methodology that allows comparison between standardized hospital inpatients stays with equivalent consumption of resources. It is used as powerful benchmarking tool between different hospitals. It is not currently used in Brazilian hospitals but there are some academic studies about the system. This paper describes the implementation of DRGs coding for the first time in a Brazilian hospital. Hospital Sirio Libanês (HSL), a nonprofit hospital in São Paulo, is a 470 beds general hospital (122 ICU beds) with 19 operating rooms performing 24,000 surgeries/year. HSL is a Joint Commission International accredited hospital mainly focused on oncologic and cardiologic patients.

Methods
APR-DRG 3M system introduction was performed in three steps:
Step 1: All 36,258 discharges on a 17 month period (January 2013 to May 2014) were coded and analyzed by application of APR DRG Version 32 Grouper.
The main diagnoses were classified by the International Classification of Diseases ICD 10. For the procedures, we used SIGTAP, a coding table of Brazilian Ministry of Health utilized for epidemiological and reimbursement purposes. This data were map to ICD-9 CM in order to generate the DRGs.
Step 2: From results of step 1, we select 1208 clinical records from the first sample. This number refers to all encounters grouped into MDC 05 and 06 cardiology and digestive systems records.
The clinical records were intensively reviewed and comorbidities, secondary diagnoses and all procedures were included to generate a new round of DRGs.

Results
In step 1 patients were initially distributed into 730 APR DRGs of the 1258 possible codes. The ALOS was 5.7 days with 1.05 secondary diagnosis and 1.0 procedure per discharge on average. Ninety seven percent of patients were grouped into specific DRG. Severity of illness were lower when compared with the US Norm.
After including comorbidities/complications and a more complete identification of procedures performed from step 2, there are significant changes in the results.
6.5% (79/1208) inpatient encounters are reclassified in different DRGs, most of these changes happen within same MDC and some cases land in different ones (MDC 16 and 23). Including the cases that changed DRGs, 13.6% a significant number (164[MB1]/1208 have their severity of illness modified; 72.6% (119/164) of these have their risk of mortality increased.
In step 2 the resulted mean number of diagnosis increased to 5 and the number of procedures coded raised to 3.

Discussion: The public health system in Brazil uses ICD-10 diagnostic and a specific procedures list (SIGTAP) respectively for epidemiological information and provider reimbursement. Only the principal diagnosis and the main procedure are mandatory. Using the APR DRG we had to review the records to include the largest possible number of diagnoses, comorbidities as well as other important procedures performed during hospitalization.

The documented percentage of changes of SOI would be reduced if we excluded the cases that change DRGs.

Conclusions
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Recoding allowed a better definition of the severity of illness and risk of mortality and translated also into more specificity in the DRG assignment. Approximately 30% of cases experience changes in their grouping results. These results gave HSL a better understanding of modifications in the coding process that have to be done to implement DRG and obtain more accurate clinical information. This study helped to deploy the DRG classification system for the Sírio Libanã's Hospital (HSL), becoming the first hospital in Brazil to put into routine this system to evaluate the morbidity and other hospital epidemiological information.

Since January 2015 all discharges from HSL are coded targeting optimization of the APR-DRG grouping.

Changes in MDC after recoding

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1 - Minor  
2 - Moderate  
3 - Major  
4 - Extreme

1. Epidemiology, Hospital Sírio Libanã’s, São Paulo, São Paulo, Brazil.  
2. Health Information Systems, 3M, Salt Lake, UT, United States.  
3. Fundação Oswaldo Cruz, Rio de Janeiro, Brazil.