Malaysian Diagnosis Related Group (MY-DRG): Development of Cost And Service Weights For Radiological Procedures At Universiti Kebangsaan Malaysia Medical Centre (UKMMC)

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**Introduction**

There is a paucity of literature on the use of cost and service weights for radiology procedures. It is important to estimate costs per DRG in many developing countries using casemix as provider payment tool. Most studies estimating costs for radiology procedures usually concentrate on the cost of consumables and equipment and using the step-down costing method. Very few studies employed activity-based costing methods to estimate the costs for radiology procedures. The specialized impact of manpower hours involved in producing the results of the radiology procedures as well as the costs for maintaining the relevant equipment over the years must be included in the costing. The Universiti Kebangsaan Malaysia Medical Center (UKMMC) has been using the Malaysian Diagnosis Related Group (MY-DRG) since 2002, as a patient classification system that stratifies disease severity and used to estimate costs per episode of care. The long term objective is to use the casemix as a tool to enhance quality and improve efficiency of healthcare services. The MY-DRG casemix system is based on UNU-CBG grouper with a maximum of 1,250 DRG groups. In 2011, a total of 121,221 radiology procedures was done in the Department of Radiology. However, the actual costs of providing these radiology procedures were not imputed. We embarked on a study to determine the costs of radiology services for each MY-DRG based on the severity of illnesses. This information can be used to guide healthcare providers or specialists to make informed decisions regarding the use of appropriate investigations in order to reduce wastages of resources and support efforts of UKMMC to enhance service efficiency.

**Methods**

A cross sectional study was conducted from January to December 2013 in all units in the Department of Radiology in UKMMC. Activity-Based Costing was used to impute the cost of radiology services provided by all units in the department. All non-surgical cases discharged from UKMMC in 2011 were grouped into MY-DRG and included in this study. The radiology cost for each MY-DRG group was then imputed. The costing data were trimmed using L3H3 method and radiology service weights were then calculated. The top ten common cases in the MY-DRG list was selected for analysis, using a patient database of 16,173 patients from the non-surgical category admitted to UKMMC in 2011. The radiology procedures cost for each MY-DRG groups were then imputed and the mean total cost per episode of care was estimated.

**Results**

Out of 25,754 discharges in 2011, 16,173 (62.8%) cases were non-surgical cases. These cases were selected for this study. After the trimming process, twenty MY-DRGs with the highest radiology service weights are presented. Six out of twenty MY-DRGs with highest radiology service weights were from Central Nervous System Groups. The highest is MY-DRG G-4-26-I (Other Nervous System Disorders-Mild) with the radiology service weight of 0.1899. This is followed by MY-DRG N-4-10-I (Renal, Urinary Tract Neoplasm & Kidney Failure-Mild; 0.1642), MY-DRG G-4-25-I (Concussion-Mild; 0.1497), B-4-11-II (Hepatobiliary & Pancreas Neoplasms-Moderate; 0.1482) and U-4-15-I (Other Ear, Nose, Mouth & Throat Disorders-Mild; 0.1366).

**Conclusions**

In order for the UKMMC to improve its level of efficiency, medical specialists should be informed of these findings so that they can take appropriate steps to reduce unnecessary use of radiology procedures in managing their patients. Radiology services are significant components in each MY-DRG group of non-surgical cases managed at UKMMC, ranging from 8.1% to 19.0% of the total cost per episode of inpatient care. Therefore, it is suggested that the same study should it can be applied to other discipline such as...
pediatric, surgical and O&G, which will provide more accurate data compared to the conventional casemix costing.

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