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The impact factors on the hospital high length of stay outliers

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Abstract

The growing financial problems of healthcare institutions contribute to the search for methods of properly distributing and clearly justifying resources. One of these is detecting the length of stay outliers (LOS) accounting for an important share of hospital costs. The purpose of this study is to analyze the factors facilitating identification of hospital LOS outliers. A total of 4570 patients were analyzed. To select the outliers, I used the inter-quartile method, using the median and the inter-quartile distance. The LOS outliers comprised 5,4% of the study sample and accounted for almost 15% of total hospital costs and 25% of total inpatient days. The median and range of the total costs for LOS outliers were (€ 3145,26 (1930,54-4670,88). The status of an LOS outlier was associated with age and type of admission. Eighty three percent of the LOS were admitted to the hospital in an acute way. Most of the LOS outliers (56% of all LOS outliers) were younger than the mean for the study population. There was no significant correlation between the reason for discharge, the type of department or the gender and being an LOS outlier. It is concluded that identifying the LOS outliers can contribute to better knowledge of hospital costs and help the management of these institutions control those costs.

1. Introduction

Concern over the rising resources consumed by health care costs has become widespread in many countries in recent years. The growing year to year financial problems of health care sector entities have contributed to the

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intensive search for the causes of this situation and the solutions that could change it (Russell-Weisz et al., 2004; Freitas et al., 2012; Russell-Weisz et al., 2000).

One of the ways to do this is to improve the system of managing the costs in hospitals. To do this, hospitals have attempted to develop a systematic approach for identifying the exceptional episodes connected with extreme lengths of stay. Moreover, the length of stay is an important measure of resource utilization. For this reason, analyzing the LOS outliers is fundamental for the management and financing of hospitals. Many hospitals have used or still use length of stay for managing the efficiency of resource utilization

Prospective payment schemes in health care often include special funding for cost outliers. In order to share the risk of an extremely long stay of a patient in hospital, in many health care financial systems high LOS outliers receive additional payments for each day above the high outlier threshold (Antioch et al., 2007; Russell-Weisz et al., 2004).The separate reimbursement of outliers is important for protecting both patients and managers (Freitas et al., 2012). For example, in Australia funding for an admitted patient is based on standard prices for central scaled episodes and, where applicable, separate payments for additional costs are incurred with respect to exceptional episodes (Russell-Weisz et al., 2000). Furthermore, since the introduction in 2008 of diagnosis-related groups (DRGs), Polish hospitals are paid for patients with respect to the length of stay (LOS) by DRG.

Therefore, the purpose of this study is to analyze the factors facilitating the identification of hospital LOS outliers using available administrative data.

2. Material and methods

The main source of data for this analysis were the administrative databases of the hospital in Olsztyn. The hospital in Olsztyn deals with diagnostics, therapy, care, specialist advice, education, prevention and health promotion. Between January and June 2013 there were 5367 patients admitted to Departments of Cardiology, Laryngology, Ophtalmology, Nephrology and ICU, Gastroenterology, Orthopaedics, Surgery, Neursurgery, Gynaecology, Endocrinology and Diabetology, Haematology.

We reviewed all of the patients that were admitted to the hospital departments between January and June 2013, expect newborns (N=462). Some of the patient were excluded from the analysis because of the missing data (n=335). Finally in this study we have analyzed 4570 patients. Cost analysis were done retrospectively using accountancy data from the hospital and statistical data from the hospital reports to National Health Fund. The linkage between two databases was carried out using Access Microsoft. Patient costs were tracked in three categories. Direct costs (DC), like drugs, medical procedures and diagnostic tests that were identified directly with the care of individual patients. Indirect costs (IC) were administration costs and costs assigned to the specific hospital department but not with particular patient. The indirect costs were aggregated and assigned to individual patients on a LOS basis. The sum of DC and IC constituted total costs (TC) .

To select the outliers we used inter-quartile method, using the median and the inter-quartile distance. To select high outliers the 75th percentile + 1,5*inter-quartile range was used. To identify the low outliers we used the 25th percentile – 1,5* inter-quartile range. Because the rule 25th percentile – 1,5* inter-quartile range detected a negative trim-point in further analysis we considered only high LOS outliers.

To evaluate the factors that influence the patient being LOS outlier we considered: age, gender, type of admission, reason of discharging, type of department. Statistical analyses were carried out using StatSoft, Inc. (2011). STATISTICA, version 10. The analysis of contingency tables was executed with Pearson's χ^2-test and with the Mann-Whitney test on continuous variables (age). Univariate analysis and multivariable logistic regression were used in the study.

3. Results

3.1. Description of the sample

On the studied population, the mean patient age was 56,54 years; men comprised 43% of the study sample. The mean and standard deviation of LOS were 5,39 days and 6,65 days, respectively.