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Review

Cost accounting models used for price-setting of health services: An international review

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ABSTRACT

The aim of the article was to present and compare cost accounting models which are used in the area of healthcare for pricing purposes in different countries. Cost information generated by hospitals is further used by regulatory bodies for setting or updating prices of public health services. The article presents a set of examples from different countries of the European Union, Australia and the United States and concentrates on DRG-based payment systems as they primarily use cost information for pricing.

Differences between countries concern the methodology used, as well as the data collection process and the scope of the regulations on cost accounting. The article indicates that the accuracy of the calculation is only one of the factors that determine the choice of the cost accounting methodology. Important aspects are also the selection of the reference hospitals, precise and detailed regulations and the existence of complex healthcare information systems in hospitals.

1. Introduction

Pricing policy in most industries is part of internal management decisions and, ultimately, the price is formed on the basis of supply and demand. Characteristics of healthcare reported widely in the literature – mainly its social value and the occurrence of market failures (e.g. [1,2]) – cause that the process of determining the price of health services is regulated. The regulations include the following aspects:

- how the products subject to funding are defined,
- what the rules for price calculation are,
- how the rules for updating the prices are defined.

Increasing expenditure on healthcare around the world [3] caused that the economic aspects, including the costs of health services, play an increasingly important role in each of these stages of pricing of health services [4]. The accurate estimation of the costs of specific health services is critical to prevent undesired consequences affecting the quality of healthcare [5,6]. The importance of cost information increased particularly in those areas where pricing is based on diagnosis related groups (DRGs), as the effective operation of this concept depends largely on the proper cost accounting system, which ensures the cost homogeneity of individual groups [7].

Comparative research on DRG costing standards started in 2006 [8,9] and has been continued in different countries around the world [10,11]. The subject of cost accounting comparability is particularly important within the European Union (EU). Increasing patient mobility transforms into the need for the uniform definition of health services. Information on how much these services cost and what their price is forms the basis for setting health policy goals,

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making decisions as well as searching for the 'best practice' examples from other countries. However, there is still a lack of consensus on how to measure health costs and collect this information for the price-setting process.

The article presents a set of examples from different countries of the European Union, Australia and the United States. The analysis covered those European countries that took part in at least one of two projects that compared costing and pricing regulations – HealthBasket or EuroDRG – and use cost information collected from providers as the basis of price-setting purpose. Additionally, the US solutions implemented in Medicare program as well as Australian solutions were included into the review.

The article provides an in-depth review of cost accounting methods used in different countries with respect to price-setting. It is based on a thorough analysis of costing and pricing practices described in costing instructions published in several countries as well as country reports provided within HealthBasket (directed by the European Health Management Association) and EuroDRG (directed by the European Observatory on Health Systems and Policies) projects.

The limitation of this study is that it relies deeply on secondary sources. In the case of six countries (Australia, Austria, England, Germany, Sweden and the United States) the analysis based on both primary as well as secondary sources. In case of seven other countries (Denmark, Estonia, Finland, France, Hungary, Italy, Netherlands) the analysis was limited to secondary sources only. Due to the fact that reports used have been prepared within research projects held by recognizes institutions, the secondary data are seen to be sufficient to describe the role of cost data in the price-setting process in individual countries. Future research in this area would add to the discussion on how cost accounting should be organized to best serve the process of price-setting.

Practical experience indicates significant differences in the following areas of cost accounting:

- The process of collecting and verifying information about the costs.
- The scope and nature of the regulations relating to cost accounting system.
- Costing methodology used.

All countries are briefly presented and their costing systems are analysed in the light of the above three points. In case of the first two criteria descriptive analysis has been provided to point out the differences between the countries. The last criterion – the costing methodology – has been assessed using point evaluation. Points have been allocated for each country depending on the costing method used for: allocation of support cost centres, calculation of intermediate products and calculation of final products. The more accurate costing method the more points have been allocated. On this step only accuracy of costing aspects was considered. Other factors, e.g. time and cost effectiveness, were consciously neglected.

The purpose of this article is to identify the differences and evaluate each model of collecting and calculating cost information. From these experiences, the article concludes with appropriate lessons for other countries and areas.

2. Meaning of cost information in different hospital payment systems

Cost information is used for the purpose of price-setting and reimbursing healthcare providers. In case of services which are subject to regulations it means that the prices of health services are defined by an external regulatory institution using cost information either collected from the service providers operating in that country or obtained from other sources (e.g. abroad). Nowadays the basic unit used for pricing purposes are diagnosis-related groups (DRGs). Patient episodes are grouped into DRGs according to the diagnosis, the course of the treatment or patient's characteristics.

In general, cost information may be used in the payment system for two main reasons – to set prices of individual DRGs (case-based payment) or to set budget of an individual hospital (budget allocation). The first solution means that the hospital's revenue depends directly on services that are provided. In second case the budget is set on the basis of hospital's activity in previous period. Sometimes those two solutions are combined – the revenues are allocated on the basis of hospital activities but cannot exceed the limit set by the budget. Table 1 shows a summary of the type and coverage of DRG-based payments in the analysed countries.

Most countries use the case-based payment system which sometimes is supplemented with a global budget. Out of analysed countries only Austria reimburses hospitals using solely budget allocation method. The necessity of accurate cost allocation occurs in both systems, however, in case of case-based payment cost information is more directly translated into prices of services provided by the hospital.

Revenues allocated based on the cost information represent approximately 80% of all revenues, although it is worth noting that between countries there are differences. Generally the more hospital's revenue depends on cost-based prices, the more important it is to set prices accurately, based on precisely calculated costs of hospital services.

3. Overview of cost accounting in individual countries

A brief description of the cost accounting models used for pricing of health services is presented below. The solutions differ in many ways, what is clear from their initial analysis. A more detailed comparison is provided later.

3.1. Australia

The use of cost data has been initiated in the nineties, when the comprehensive research on the costs of individual DRGs was conducted in hospitals across the country and the cost weights were estimated afterwards. Currently, costing of each DRG is based on cost data on a representative number of patient episodes. The first steps in this direction were taken in the state of Victoria [17] and since