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Review

Hospital financing: Calculating inpatient capital costs in Germany with a comparative view on operating costs and the English costing scheme

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ABSTRACT

Objectives: The paper analyzes the German inpatient capital costing scheme by assessing its cost module calculation. The costing scheme represents the first separated national calculation of performance-oriented capital cost lump sums per DRG.
Methods: The three steps in the costing scheme are reviewed and assessed: (1) accrual of capital costs; (2) cost-center and cost category accounting; (3) data processing for capital cost modules. The assessment of each step is based on its level of transparency and efficiency. A comparative view on operating costing and the English costing scheme is given.
Results: Advantages of the scheme are low participation hurdles, low calculation effort for G-DRG calculation participants, highly differentiated cost-center/cost category separation, and advanced patient-based resource allocation. The exclusion of relevant capital costs, nontransparent resource allocation, and unclear capital cost modules, limit the managerial relevance and transparency of the capital costing scheme.
Conclusions: The scheme generates the technical premises for a change from dual financing by insurances (operating costs) and state (capital costs) to a single financing source. The new capital costing scheme will intensify the discussion on how to solve the current investment backlog in Germany and can assist regulators in other countries with the introduction of accurate capital costing.

1. Introduction

German hospitals are funded by a dual financing scheme, regulated by a federal act in 1972 [1,2]. Operating costs are financed by statutory and private health insurance premiums. Capital costs are financed by the 16 German states and federal grants through tax revenues. There is a consensus that the actual level of financing of capital costs is falling below infrastructural needs [3] and leads to inefficient investment [4]. While the general economic rate of investment in Germany dropped from 23.6% to 19.0% from 1992 to 2008, the hospital rate of investment dropped from 10.0% to 4.6% [5]. In recent years, overall hospital capital cost reimbursement in Germany has been about €2.8 billion per year. However, experts calculated a target corridor of €4.7 billion to €5.7 billion, when compared with rates of investments in other service sectors [5]. Estimates of the investment backlog produced between €12 billion and €50 billion are dependent on the

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calculation and are discussed controversial because of the dire financial situation of many hospitals [6]. There are no exact, patient-based calculations confirming this hypothesis and quantifying actual capital costs. Hospital planning is still based on the Hill-Burton formula (bed-to-population ratios) [7] and several expert reports, combining hospital planning with the financing of hospital capital. Planning concerning the number of beds, specialties, and the hospital's care level is controlled by the state government and a consortium of stakeholders, such as the hospital associations, the health insurance associations, and the physicians associations [8]. To quantify actual patient-based capital costs, the legislative authority authorized the hospital and health insurance associations to reform the financing of inpatient capital costs with a new costing scheme widely introduced in 2013. Thus, the Institute for the Hospital Remuneration System (InEK) – also responsible for the advancement of operating cost calculation within the G-DRG system – developed a scheme to calculate capital cost lump sums for capital cost modules [9] to add a capital cost case weight to the operating cost case weight in the case-based lump sum G-DRG reimbursement catalog [9,10].

Although the case-based lump sums for capital costs have the potential to substitute the dual financing scheme for monistic financing, capital costs are intended to be reimbursed by the states through tax revenues in the near future [1]. The states can decide whether they use the new case-based lump sum mode, the old system, or a mixture of both. However, lump sums for cases are the first step to either monistic financing (operating *and* capital costs are financed by sickness funds) as in other European countries and/or more accurate financing based on actual resource use. Comparative research on DRG operating costing standards started in 2006 [11,12] and has been developed recently in Europe and the U.S. [13,14]. Capital costing, as a discrete costing scheme, is linked up with operating costing and has to follow this discussion. Although recent papers show that costing schemes for capital costs and operating costs should be separated [15], most countries use a single system for operating and capital costs, following the costing needs of operating costing, and are thus not accounting for the different prerequisites of a costing scheme that deals with capital costing data. Current systems are unable to differentiate capital costs from operating costs, limiting reasonable reimbursement and asset accounting. German inpatient costing is the first to explicitly introduce a detailed capital costing scheme besides the standard operating costing scheme. In contrast to the G-DRG system, which was based on the Australian Refined DRG system (AR-DRG), the system for calculating capital costs did not have a comparable international role model [16]. Recent publications have analyzed the G-DRG system comprehensively only in relation to operating costs in a general manner [3,17], focusing on the transparency and efficiency of operating costs [18]. Analyses of the cutting-edge G-DRG capital costing scheme – an innovation in calculating hospital capital costs separately and at patient level – are still missing. Capital expenditures account for about 8% of total hospital costs in Germany, England, and the U.S. [2,19,20], with high variance concerning state or trust. This 8% of total hospital costs is still a black box in hospital accounting, as calculation methods are imprecise, are not comparable, have low managerial relevance, and in many countries are simply adapted from operating costing. Thus, the capital costing scheme might serve as a comparative standard for future capital costing schemes in other countries.

Its analysis, and especially its impact on efficiency and transparency is important as the scheme is the first of its kind worldwide and might serve as the reference case for other countries, just as the U.S. and Australian DRGs system served as a reference for the German grouping process. As capital costs were dealt with similar to operating costs, existing literature only refers to overall costing schemes of countries that include capital costs in the general costing process [13,21,22]. Literature recommends to introduce activity-based costing also for capital costs, just as established in this new costing scheme [13,23]. This is the first work that discusses the special requirements of a capital costing data in such a process. Thus, the aims of the paper were to give an executive summary on the German capital costing process and to assess the efficiency and transparency of its calculation steps to improve the system and give advice for adaptors. To understand requirements of the system a comparison to operating costing and the English costing scheme as a standard that combines operating and capital costing is elaborated. In the international setting, both the English (PLICS – Patient-level Information and Costing System) and the German operating costing system use a patient-level costing approach [21], with the difference being that English capital costing is part of the operating costing scheme. Thus, costing in the English health care resource group (HRG) system [24] is an ideal comparative partner for the G-DRG costing scheme [25]. A comparison to the established operating costing schemes is essential, as capital costs – so far excluded or calculated with operating costing methodology – require a separate calculation due to the special nature of capital costing data that is subject of depreciation and must therefore be allocated to cases over several years. By a comparison of operating costing and capital costing, similarities and differences can be elaborated that need to be taken into account by other counties when integrating elements of the scheme in their current system.

2. Conceptual framework and method

The paper reviews and assesses the three steps in capital cost resource allocation at hospital level: (1) the accrual of capital costs; (2) cost-center and cost category accounting; and (3) data processing for capital cost modules (Fig. 1). The three steps are assessed with reference to the two main goals of DRG introduction: improving efficiency and improving transparency [3]. While transparency is strongly related to accuracy in the costing context, efficiency is strongly related to the managerial relevance of the capital costing scheme [21]. However, there is no clear causality between transparency, accuracy, efficiency and managerial relevance. Both goals are interrelated: transparency and accuracy also affect managerial relevance, and managerial relevance usually improves accuracy; e.g., the exclusion of costs of land and building makes the calculation less