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Pricing hospital care: Global budgets and marginal pricing strategies



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ABSTRACT

Objective: The Canadian province of British Columbia (BC) is adding financial incentives to increase the volume of surgeries provided by hospitals using a marginal pricing approach. The objective of this study is to calculate marginal costs of surgeries based on assumptions regarding hospitals' availability of labor and equipment.

Data: This study is based on observational clinical, administrative and financial data generated by hospitals. Hospital inpatient and outpatient discharge summaries from the province are linked with detailed activity-based costing information, stratified by assigned case mix categorizations.

Study design: To reflect a range of operating constraints governing hospitals' ability to increase their volume of surgeries, a number of scenarios are proposed. Under these scenarios, estimated marginal costs are calculated and compared to prices being offered as incentives to hospitals.

Principal findings: Existing data can be used to support alternative strategies for pricing hospital care. Prices for inpatient surgeries do not generate positive margins under a range of operating scenarios. Hip and knee surgeries generate surpluses for hospitals even under the most costly labor conditions and are expected to generate additional volume.

Conclusions: In health systems that wish to fine-tune financial incentives, setting prices that create incentives for additional volume should reflect knowledge of hospitals' underlying cost structures. Possible implications of mis-pricing include no response to the incentives or uneven increases in supply.

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1. Introduction

This study describes an approach to deriving estimates of the marginal costs of surgical care. The study is motivated by a payer's need to understand the marginal costs of hospital-based surgical care in order to design payment strategies to incentivize hospitals to increase volumes of elective surgeries. Little work has been done to date around

estimating the marginal cost of hospitalizations [1–3] and, based on an example from Canada, the findings are directly relevant to healthcare systems contemplating alternative strategies for pricing hospital care. The results provide insight into differences between the estimated marginal cost and prices and conclude with a discussion of the policy implications regarding financial incentives for increasing the volume of surgical care.

The methods used to fund hospitals have been a contentious policy issue across Canada for many years. Hospitals across Canada have been funded with global budgets, or a single annual lump sum payment, for decades

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[4] and have often been associated with delays in access to elective care [5,6]. In spite of significant increases in Canadian hospital spending over the past decade, international comparisons document the delays that Canadians experience in accessing care, including some of the longest wait times for access to specialist and hospital care [7] with hospital occupancy rates routinely exceeding 97% [8].

In 2010, the government of British Columbia (BC), Canada's westernmost province with a population of approximately 4.5 million residents, implemented a series of reforms aimed at achieving several policy objectives, including limiting hospitals' ability to cut services to meet budgets, improving technical efficiency and increasing the volume of surgical care. BC's government created a new body called the Health Services Purchasing Organization (HSPO) [9]. Endowed with \$250 million Canadian dollars and a three-year mandate, the HSPO was tasked with executing the government's objectives. The umbrella term for the funding policy reforms enacted by the HSPO is patient-focused funding (PFF). One important element of PFF is the Procedural Care Program (PCP). Under the PCP, the HSPO purchases incremental volumes of hospital-based surgeries beyond an existing threshold, remunerated on a fee-for-case basis.

Healthcare is regionalized in BC, which means that health services are organized, delivered and funded within five geographically defined regional Health Authorities (HAs). A notable exception is that most surgeons are remunerated on a fee-for-service basis directly from the BC government, bypassing the HAs, hospitals and HSPO. Under the PCP initiative, the HSPO contracts with individual HAs for additional volumes of surgeries. The PCP provides a new opportunity for hospitals to increase their revenues beyond their global budgets by increasing the volume of surgeries they perform. Not all surgeries are eligible for PCP funding; the list includes only elective, or planned, surgeries, and excludes all emergency surgeries and cancer-related surgeries. The HSPO determined which surgeries were to be targeted with financial incentives, discussed in more detail below, though the process for arriving at its list has not been published. Surgeries not targeted by the PCP program are not eligible for the HSPO's PCP funding.

The price that the HSPO pays for additional surgeries is important; HAs are not obligated to enter into contracts to increase their volume of surgical care. In many other countries which fund hospitals prospectively using Diagnosis Related Group (DRG)-like systems, payers set the price of hospital cases as the expected (average) cost of patients of the same case mix group. The expected cost is intended to cover the direct costs of labor inputs, supplies and equipment, but also some portion of hospital's indirect costs, or overhead, including equipment depreciation and amortization. The concept of paying the total expected cost for additional surgical activity is problematic in BC because hospitals' existing global budgets are already expected to include all of the aforementioned costs, creating the possibility of double payment by the government for the same activity.

The HSPO has chosen to deal with this issue by setting prices for reimbursed procedures that are less than the full expected cost of the procedures, stating that the funding

policy will support hospitals in making better use of their marginal capacity [10]. These prices—currently derived at \$1520 and \$3040 for each case mix-adjusted weighted case performed on an inpatient and day surgery basis, respectively—appear to be considerably lower than Canadian hospitals' overall national average cost per weighted case [11]. However, since hospital's cost functions are unobservable by the HSPO, it is unclear how these prices relate to hospitals' marginal costs or hospitals' potential for improving cost efficiency.

Applying the concept of marginal cost to pricing is attractive from the government's perspective of increasing volume: in theory, the government pays a price that compensates hospitals for the incremental costs of the additional procedures without paying twice for the same indirect and overhead expenses. In setting the price, striking the appropriate balance becomes important: if the price is set too low, hospitals will not cover their marginal costs and will either not respond to the incentives, see their margins deteriorate if they do take on new procedures, or see hospitals avoid high cost patients [12]. On the other hand, if the price is set too high, hospitals would be expected to respond to the incentives and surgical volumes will increase. This outcome will meet the HSPO's objective; however, the increases in volume may be unevenly focused among a subset of hospitals whose marginal costs are less than the marginal price and inadvertently exacerbate geographic inequities in access.

Such policy decisions have major impacts on patients' access to hospital care and on health system costs, and should be informed by evidence. The findings from this study are important for supporting healthcare payers in making pricing policy decisions; consequentially, they are also of value for hospital administrators seeking to make program and service planning decisions in response to payers' pricing strategies, conditional on their own operating circumstances.

2. Data

The analytic objective of this study is to estimate marginal costs of hospital-based surgical care using detailed retrospective observational data drawn from a number of sources, including labor contracts which specify normal and overtime labor rates, hospital discharge summaries, charts of accounts, and hospital patient-level cost data. Two fiscal years of data, from April 1, 2008 through March 31, 2010, are used for the analysis. The use of anonymous secondary data was approved by the Behavioral Research Ethics Board (BREB) at the University of British Columbia, Canada.

2.1. Financial data and chart of accounts

BC hospitals report detailed financial and statistical data assigned to standardized, and highly discriminate, departmental categories known as Functional Centres (FC) [13]. Each FC is an operational subdivision within a hospital, such as a clinical department, where revenue and expenses associated with the FC activity are collected and reported. Direct departments are those that provide patient-focused

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