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Recto Verso

Impact of Quality-Based Procedures on Orthopedic Care Quantity and Quality in Ontario Hospitals

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In an attempt to improve the quality of care at reasonable cost and minimal unintended consequences, many countries have adopted activity-based funding (ABF) and pay-for-performance (P4P) mechanisms in their healthcare systems. The objective of this Recto-Verso is to comprehensively describe the impact of a funding reform introduced in Ontario aiming to replace global budget funding with a new and more efficient system for hip and knee joint replacement surgeries. Two of its components - Quality-Based Procedures (QBPs) and Health-Based Allocation Model (HBAM) - were phased in from 2012 to incorporate both ABF and P4P incentives into Ontario inpatient care. A specific feature of the QBPs implementation was that the initial plans to introduce the P4P component ended up being gradually retracted.

Introduction

Outcomes and implications, both expected and unintended, of reforms that comprise both ABF and P4P components have so far been poorly understood in the economics literature. Regarding ABF, it has been argued that such systems can generate a number of positive outcomes since they encourage care providers to favor cost-effective treatments by limiting, for example, hospital length of stay (thereby addressing waiting time and care accessibility issues) and prescribing medications and interventions with a proven clinical benefit to patients (Busse et al.[i], 2011). At the same time, empirical studies tend to find moderate to no effects of ABF on care quality.

As for P4P hospital incentives, systematic literature reviews by Emmert et al[ii]. (2011) and Van Herck et al[iii]. (2010) report overall modest, albeit highly variable, improvements in care quality, along with a perceived scarcity of high-quality and conclusive evidence on this matter.

Reform setting

At the inception, the first component of the reform - QBPs - was supposed to encourage adoption of better clinical practices by affecting financial stimuli at the hospital level. Hospital costs were planned to be reimbursed on the basis of prices negotiated by expert panels and fixed for all care facilities, with final payments being adjusted with respect to a list of quality indicators. However, due to a presumed lack of coordination between the designers of the reform, the substance of QBPs changed toward a risk-adjusted volume by price funding for every eligible procedure performed. The latter were supplemented with an array of clinical guidelines to which hospital practitioners were expected to adhere.

The second component of the reform, HBAM, is a mechanism designed to distribute a fixed provincial envelope between hospitals, based on expected spending of each hospital. It applies to procedures that were not covered by QBPs. This relies on forecasting future hospital budgets, based on a volume by unit cost approach, modulated with respect to hospital-specific and sociodemographic/epidemiological characteristics of the served population.

At the beginning of the implementation stage only primary unilateral hip/knee replacements were reimbursed to hospitals through QBPs. In 2014 bilateral hip/knee also joined the list of QBP procedures.

Data and methods

The purpose of this Recto Verso is to describe how the incentives resulting from QBPs and HBAM implemented in Ontario in 2012 affected the main orthopedic care outcomes. First, we analyze the impact of this reform on the quality of knee and hip replacement surgeries and their share within hospital output. Second, we investigate if the stimuli that arose in unilateral and bilateral hip and knee replacement surgeries affected quality, process outcomes and appropriateness of other types of

closely-related joint replacement surgeries.

The Discharge Abstract Database (DAD) constitutes the main source of data in our study. The sample available to us contained a rich set of patient-level characteristics of each hospital stay in the Canadian provinces of Ontario, Alberta and British Columbia for around 730,000 hospital stays.

Since the policy change concerned only Ontario and left unaffected the other two provinces included in the sample, we rely on the standard difference-in-difference (DiD) estimation approach. Thus, in our specifications, Ontario patients are considered as the 'treated' groups, while patient in Alberta and British Columbia are control populations. To show robustness of the results, we also evaluate models featuring matching techniques.

Main results

After controlling for patient, hospital and regional characteristics, we found a significant decrease in acute length of stay associated with QBPs (by 0.27 and 0.33 days on average for unilateral and knee replacements, respectively), as well as a marked shift towards patients being discharged home with/without post-operative support services. However, evidence for quality improvement across all joint replacement types was weak, inconsistent and at best short-lived. At the same time, the composition of services, reflected by the share of unilateral and bilateral replacements in overall joint replacement output, did not experience a significant change as a result of QBPs/HBAM.

However, a modest, if any, short-term improvement was found in care quality of targeted procedures, following the introduction of QBPs/HBAM.

Conclusions

There are several results presented in this Recto Verso that have policy implications. First, this study provides an insight with regards to the impact of ABF, potentially supplemented with weak or lapsed P4P incentives. Our results indicate that such reforms can lead to a reduction in hospital stay, likely in an attempt to minimize financial loss and/or maximize hospital operational revenue. In addition, we find evidence that non-monetary and soft mechanisms aimed at improving care, in and of themselves, are unlikely to translate into meaningful, let alone long-lasting, clinical changes with regards to virtually any quality dimension of care. Moreover, the gradual inclusion of unilateral and, afterwards, bilateral joint replacements in QBPs allows us to conclude that the QBP, and not HBAM, component was the primary driver of the observed changes.

The results presented in this Recto Verso can - with due diligence- be generalized to most Canadian jurisdictions and to countries having a similar institutional setting. To name a few points, these systems should feature universal health coverage for elective joint replacements, generate little to no out-of-pocket expenses for the patient, and would be expected to have a comparable level of per capita healthcare expenditures (comparable examples: France, Germany, the Netherlands). The empirical set-up also bears a considerable degree of similarity with the US. In particular, the QBP component of the reform resembles US Medicare and Medicaid plans, in which, thanks to their large enrollee pool, the government has enough power to set prices to providers.

[i] Diagnosis-related Groups in Europe: Moving Towards Transparency, Efficiency and Quality in Hospitals, 2011. (edited by Busse R. et al.)

[ii] Emmert M., Eijkenaar F., Kemter H., Esslinger A., Schöffski O., Economic evaluation of pay-for-performance in health care: A systematic review. *The European journal of health economics*. Vol. 13., (2011).

[iii] Herck P., De Smedt D., Annemans, L., Remmen, R., Rosenthal, M., Sermeus, W. Systematic Review: Effects, Design Choices, and Context of Pay-For-Performance in Health Care. *BMC health services research*, Vol.10, 2010.