

Recto Verso

Impact of Tariff Refinement on the Choice Between Scheduled Cesarean Section and Normal Delivery: Recent Evidence from Franceⁱ

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The topic of how financial stimuli can affect composition of healthcare services has stirred much debate. Substantial anecdotal and scientific evidence has been pointing to the fact that health care providers may take into consideration factors other than clinical aspects or patients' preferences when prescribing a medical treatment. This Recto Verso aims to shed additional light on the degree of healthcare providers' responsiveness to changes in hospital-level financial stimuli. The analyzed change stemmed from the 2012 refinement in French Diagnosis related groups (DRG), leading to an increase in the number of tariffs for child deliveries through adding new criteria and diagnoses to pricing formulae. We demonstrate that there was no significant connection between these hospital-level changes in financial incentives and the rate of scheduled C-sections performed by obstetricians in France between 2010 and 2013.

Introduction

C-sections are considered to be among the most commonly researched medical procedures, possibly due to their growing popularity worldwide, with the average C-section rates in OECD countries rising from 20% in 2000 to 28% in 2017 (*OECD, 2019*)ⁱⁱ. Medically justified C-section rates have been a subject of scientific and political debates for decades. The World Health Organization statement on C-section rates issued in 2015 argued that “C-section rates higher than 10% were not associated with reductions in maternal and newborn mortality rates”. In this respect, the relatively stable rate of around 20% observed in France since the late 2000s follows the pattern of other industrialized and economically advanced countries.

The risk that financial incentives may lead healthcare providers to change their medical practice has been investigated both theoretically and empirically. The *Ellis*ⁱⁱⁱ (1998) model, formulated in a perfect information

setting, predicts that high-severity patients will get a socially sub-optimal amount of treatment (“skimping”), while the opposite should occur to low-severity patients (“cream-skimming”). However, contrary to many similar theoretical predictions, empirical findings show that the effects of DRG tariff refinements on health care provision are relatively small or insignificant. A recent example of such a study is *Janulevicuite et al.*^{iv} (2015), who found that a 10% rise in DRG reimbursement rates leads to 0.8-1.3% increase in the number of patients treated per medical DRGs in Norway. However, no such effect was found for surgical DRGs.

Part of the explanation for the substantial observed variation in C-section rates, both between countries and within countries' smaller “local markets”, has also been offered by the demand inducement hypothesis. Recently, *Allin et al.*^v (2015) studied a sample of Canadian women who gave birth between 2006 and 2011 and

concluded that increasing the fee differential between C-section and normal delivery provides an incentive for physicians to favor C-sections over vaginal labor, although the magnitude of the effect is relatively small. Doubling the fee differential will on average increase the probability of a C-section only by 5.6%.

To shed more light on these controversial issues, in this study we aimed at estimating the impact of the 2012 DRG refinement and subsequent tariff changes on the choice between scheduled C-section and normal delivery.

Reform description

In France obstetrical procedures are fully covered by the national health insurance fund or only require minor out-of-pocket payments.

The 2012 revision in obstetrical DRG resulted in a significant increase in the number of diagnosis groups, differentiated to fit more narrowly defined groups of patients. In

particular, normal deliveries were differentiated into single/multiple and primi-para/multi-para mothers. The number of severity levels also grew substantially within each DRG group. In addition, a considerable number of new diagnoses was introduced into pricing formulas, creating an additional variation in tariffs. Lastly, DRG tariffs started to be adjusted by the mother's gestational age such that pre-term and post-term pregnancies were reimbursed to hospitals at a higher rate. Changes in the DRG classification and introduction of new, more refined, tariffs occurred simultaneously. On average, the reform was nearly budget-neutral. In public and private non-profit hospitals, it resulted in a small decrease of tariffs of around 65 euros, and the average tariff increase by 35 euros in the private-for-profit sector.

Data and methods

The primary source of data for this study, containing information on patients' hospitalization and diagnoses in France, is the *Programme de Médicalisation des Systèmes d'Information (PMSI)* dataset. In this dataset we are able to observe diagnoses, comorbidities and in-hospital services registered during childbirth, both before (i.e. ante-partum) and after (i.e. post-partum) labor begins. To control for medical obstetric care availability, we use a gynecologist availability index

constructed by IRDES and calculated for the year 2011 at the municipal level.

In our analysis, we rely on difference-in-difference estimation, wherein patients are divided into treated and control groups, based on whether C-sections became more/less profitable compared to normal child deliveries (i.e. two treated groups), or remained relatively unchanged (control group). To construct this measure of change in profitability, we calculate expected differences in tariffs that a hospital would receive before and after the 2012 reform. We thus estimate probabilities of each delivery outcome (scheduled, urgent, unscheduled C-sections, and normal delivery), its severity, and the resulting expected tariffs.

Main results

Obtained results provide evidence in favor of the conclusion that 2012 DRG incentives did not significantly affect the probability of scheduled C-sections in either private non-profit or private for-profit clinics. The results also suggest that a higher concentration of gynecologists was associated with a lower probability of scheduled C-sections. This may be explained by the fact that scheduled C-sections, in contrast to unscheduled ones, leave patients a considerable time window to seek consultation with another specialist. As a result, it serves as credible deterrence against unjustified C-section decisions made

in particular by obstetricians and gynecologists.

Conclusions

The evidence presented in this Recto-Verso suggests that the main objective of the DRG reform - decreasing financial risk for obstetric healthcare providers - was plausibly met without significant impact on associated obstetric practices. Thus, it can be considered as a valid policy tool for decreasing revenue uncertainties, causing no effects on clinical practice.

We hypothesize that this result can be explained by three main channels. Firstly, the transmission of hospital-level financial stimuli to individual care providers seems limited. This likely stems from the fact that individual providers enjoy a considerable degree of autonomy and legal guarantees. Secondly, the transaction costs associated with understanding changes in DRG tariff stimuli can be relatively high for hospital administrators.

Lastly, larger obstetric care institutions benefited from increased tariffs, due to recalibration of tariffs for the most severely coded obstetric patients targeted by the reform. As a result of an improved financial position, they faced less pressure to raise profits through seeking changes in medical practice.

ⁱ Based on: Proshin et al. Impact of Diagnosis Related Group Refinement on the Choice Between Scheduled Caesarean Section and Normal Delivery: Recent Evidence from France. *HAL Working paper*, 2020

ⁱⁱ OECD. Health at a Glance 2019: OECD Indicators. Caesarean sections (2019).

ⁱⁱⁱ Ellis R. (1998) Creaming, skimping and dumping: provider competition on the intensive and extensive margins, *Journal of Health Economics*, Vol. 17, pp. 537–555.

^{iv} Janulevicuite J., Askildsen J., Kaarboe O., Siciliani L. (2016) How Do Hospitals Respond to Price Changes? Evidence from Norway. *Health Economics*, 25, pp. 620–636

^v Allin, S., Baker, M., Isabelle, M., Stabile, M. (2015). Physician Incentives and the Rise in C-sections: Evidence from Canada. *National Bureau of Economic Research*.