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Firm responses to targeted consumer incentives: Evidence from reference pricing for surgical services☆

Christopher M. Whaley[a,b,*], Timothy T. Brown[b]

[a] RAND Corporation, United States
[b] School of Public Health, University of California, Berkeley, United States

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ABSTRACT

This paper examines how health care providers respond to a reference pricing insurance program that increases consumer cost sharing when consumers choose high-priced surgical providers. We use geographic variation in the population covered by the program to estimate supply-side responses. We find limited evidence of market segmentation and price reductions for providers with baseline prices above the reference price. Finally, approximately 75% of the reduction in provider prices is in the form of a positive externality that benefits a population not subject to the program.

1. Introduction

As a means of restraining health care spending, many employers and insurers have introduced substantial changes to their insurance benefit designs. Many recent benefit designs use patient cost sharing or reduce the number of covered providers to incentivize patients to receive care from less expensive providers. While several studies document consumer responses to these benefit design changes (Parente et al., 2004; Beeuwkes Buntin et al., 2011; Buntin et al., 2006; Sood et al., 2013; Haviland et al., 2015; Gruber and McKnight, 2016; Brot-Goldberg et al., 2017), the supply-side responses are not well understood. This paper measures how firms, in this case outpatient surgery providers, respond to a particular insurance policy implemented by one of the largest purchasers of health insurance coverage in the United States, the California Public Employees' Retirement System (CalPERS).

In January 2012, CalPERS implemented a reference pricing program for three common outpatient surgical services – cataract surgery, colonoscopy, and joint arthroscopy. The program uses a non-linear cost-sharing schedule to incentivize consumers to receive care from less expensive providers. Under the program, which was implemented for one of CalPERS three insurance options, patients who receive care at freestanding Ambulatory Surgical Centers (ASCs), which tend to have lower prices, face no change in cost sharing. However, patients who receive care at Hospital Outpatient Departments (HOPDs), which typically have higher prices, are responsible for the entire marginal cost of care above a pre-specified price threshold. Previous work shows that for each of the three surgical services, the program leads to large shifts in patient demand from expensive to less expensive providers (Robinson et al., 2015a,b,c). This paper tests whether providers respond to these changes in consumer demand by lowering prices.

To test provider responses to the program, we use detailed medical claims data covering 2009–2013 from a large insurer,

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* Corresponding author.
E-mail addresses: cwhaley@rand.org (C.M. Whaley), timothy.brown@berkeley.edu (T.T. Brown).

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Anthem Blue Cross, that provides benefits to both CalPERS and non-CalPERS consumers. Key to our identification strategy is the fact that although networks and negotiated prices at a given provider are the same for both populations, only CalPERS members are subject to the reference pricing program.[1] Thus, the non-CalPERS Anthem population serves as a natural control group for the CalPERS population. In addition, due to the structure of CalPERS, there is substantial variation in the concentration of CalPERS enrollees across California. A given provider's exposure to the reference pricing program depends on the concentration of CalPERS enrollees who are enrolled in the Anthem PPO option in that market. Our identification strategy relies on the much greater exposure that providers in high-exposure regions to the program have than providers in low-exposure regions.

Somewhat counterintuitively, we find modest price reductions for ASC providers, which is consistent with the reference pricing program increasing price competition among ASCs. We estimate that a 10% increase in exposure to the CalPERS program leads to approximately 0.6% and 0.4% reductions in ASC prices for cataract surgeries and colonoscopies, respectively. For HOPDs, we do not find a mean reduction in prices. However, we do find that a 10% increase in exposure to the program leads to a 1.7% reduction in colonoscopy prices for HOPDs with baseline prices above the reference price. Because prices are set at the insurer-level rather than the employer level, approximately 75% of the reduction in provider prices benefits the non-CalPERS population that is not subject to the program.

One concern with the reference pricing program is the potential for unintended provider responses. For example, providers that lower prices for the three surgical services of interest may correspondingly increase prices in other areas. We examine several forms of cost-shifting and alternative provider responses. We do not find evidence that providers price discriminate between the CalPERS and non-CalPERS populations, cost-shift by raising prices for other services, or change prices for other insurers. We also do not find evidence of changes in clinical quality.

This paper fits into a broader literature on how health care firms respond to changes in insurance coverage for consumers. To our knowledge, this paper is the first to demonstrate that health care providers change their negotiated prices in response to increases in consumer cost sharing. Much of the existing literature focuses on firm responses along non-price dimensions. For example, Finkelstein (2007) finds that the expansion of insurance coverage through the introduction of Medicare increased hospital entry and adaptation of new medical technologies. Likewise, Blume-Kohout and Sood (2013) find that due to low reimbursement rates, the introduction of Medicare Part D increased investments in medications for the elderly, while Freedman et al. (2015) find that the expansion of Medicaid in the 1980s and 1990s reduced neonatal care technology adoption. Similarly, both Dafny (2005) and Clemens and Gottlieb (2014) show that hospitals and physicians strategically responded to Medicare payment changes by increasing volume for services that have higher reimbursement rates. On the other hand, Duggan and Morton (2010) finds that the expansion in prescription drug coverage through Medicare Part D allowed insurers to negotiate lower prices by using tiered benefit designs. Similar to the Part D experience, the setting we study uses differential cost sharing to shift consumer demand to less-expensive providers.

The most similar paper to this study examines the effect of the CalPERS' reference pricing program for knee and hip replacements on the two components that make up the total price-consumer and insurer payments (Brown and Robinson, 2016). Following the program's implementation, insurer payments to both high and low-price hospitals decreased. This paper follows a similar approach but focuses on how the variation in provider exposure to the CalPERS program influences provider responses. Also, unlike Brown and Robinson (2016), this paper focuses specifically on how reference pricing changes the negotiated prices between providers and insurers rather than how the total price is distributed between consumers and insurers.

We start by providing a description of the CalPERS reference pricing program and the institutional setting. Section 3 describes the data. Section 4 examines changes in provider prices in response to the program. Section 5 considers alternative explanations for the provider price changes and Section 6 concludes.

2. Institutional background

CalPERS provides health insurance coverage to 1.4 million California state, municipal, and county employees and their dependents, making it the third largest purchaser of health services in the United States. Nearly all State of California employees and their dependents receive health insurance through CalPERS. In addition, California counties and municipalities throughout the state can choose to provide coverage to their employees and their dependents through CalPERS or to provide their own coverage. CalPERS health insurance enrollment is largely split between three plans; a Kaiser Permanente fully integrated plan, a health maintenance organization (HMO) administered by Blue Shield of California, and a preferred provider organization (PPO) plan administered by Anthem Blue Cross.

CalPERS added reference pricing to its Anthem PPO insurance plan in 2011 for knee and hip replacement surgery and expanded it to colonoscopy, cataract surgery, and joint arthroscopy in 2012.[2] Reference pricing was not implemented for the Kaiser or Blue Shield HMO plans. The decision to implement reference pricing was motivated by the substantial variation in provider prices that was not accompanied by discernible differences in procedural quality. Moreover, these services are "shoppable," non-emergent services and are the among the most routine outpatient surgical services. Patients typically have several weeks or months to make care decisions and have many provider options. Compared to other surgical services, there is a much lower quality component and risks of surgical complications are low (Robinson et al., 2015a,b; Naseri et al., 2016).

The price variation that motivated the implementation of the reference pricing program is shown in Fig. 1, which plots the distribution of provider prices among the CalPERS population for hospital outpatient departments (HOPDs) and ambulatory surgical centers (ASCs) in 2011, the year before implementation. For colonoscopies, the 25th percentile price for HOPD providers is $1666 while the 75th percentile price is $3110. The range is much narrower for ASCs, from $638 to $1457, respectively. The corresponding arthroscopy 25th and 75th price percentiles range between $2270 to $4935 for ASCs and $4081 to $9039 for HOPDs. For cataract surgery, the respective price ranges are $1102 and $2191 for ASCs and $5605 and $8261 for HOPDs.

Unlike HOPDs, ASCs are freestanding facilities that do not deliver emergency care or accept uninsured patients. As a result, they typically have lower fixed costs than HOPDs. The lower cost-structures are reflected in lower reimbursement rates from Medicare and most commercial insurers. ASCs also typically specialize in a few surgical procedures and can thereby operate more efficiently

[1] We empirically test and confirm this assumption in Section 5.1.

[2] In this paper, we do not examine knee and hip replacement surgery due to insufficient sample sizes.