Journal of Health Economics 39 (2015) 259–272

Contents lists available at ScienceDirect

Journal of Health Economics

journal homepage: www.elsevier.com/locate/econbase

Does seeing the doctor more often keep you out of the hospital?

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ARTICLE INFO

Article history:
Received 21 August 2013
Received in revised form 4 August 2014
Accepted 6 August 2014
Available online 15 August 2014

JEL classification:
I13

Keywords:
High deductible health insurance
Consumer-driven health insurance
Inpatient care
Outpatient care
Health reimbursement arrangement
Health insurance plan design

ABSTRACT

By exploiting a unique health insurance benefit design, we provide novel evidence on the causal association between outpatient and inpatient care. Our results indicate that greater outpatient spending was associated with more hospital admissions: a $100 increase in outpatient spending was associated with a 1.9% increase in the probability of having an inpatient event and a 4.6% increase in inpatient spending among enrollees in our sample. Moreover, we present evidence that the increase in hospital admissions associated with greater outpatient spending was for conditions in which it is plausible to argue that the physician and patient could exercise discretion.

1. Introduction

There are plausible scenarios in which a trip to the doctor's office leads to the detection and successful treatment of a condition that, if left untreated, would result in illness and hospitalization. For example, hyperlipidemia, if untreated, is significantly associated with coronary artery disease, but appropriate diagnosis and treatment with statins substantially reduces future illness and hospitalization. However, there are equally plausible scenarios in which a visit to the doctor leads to a referral to a specialist for additional evaluation and potential invasive treatment for a condition that, if left untreated, would resolve itself in time (or is best left untreated). For example, a PSA (prostate-specific antigen) exam for prostate cancer that is abnormally high may lead to a referral to a urologist, a biopsy and surgery.

These two treatments for common illnesses are illustrative examples of primary care, one effective and cost reducing and the other ineffective and cost increasing, that are central to the current health care reform debate. The Patient Protection and Affordable Care Act (ACA) includes several provisions that bolster the supply of primary care physicians and subsidize receipt of primary care. Underlying this policy is the belief that primary care is preventive and cost reducing (see, for example, Starfield et al., 2005; Rittenhouse and Shortell, 2009). In addition, the expansion of health insurance coverage, which is also a prominent part of the ACA, is often justified with references to the cost-effectiveness of primary care, which is known to increase among newly insured persons. On the other hand, many observers agree that there is significant overuse in the US health care system. Important evidence supporting the overuse argument comes from the Dartmouth Atlas of Health Care (e.g., Wennberg et al., 2005; Fisher et al., 2009). The Dartmouth view is that much spending on medical care is due to "supply-sensitive" care, which is care that is intensive (e.g., many visits to specialist), expensive (e.g., invasive procedures), and driven by provider preferences (e.g., no clearly defined evidence-based guidelines). Much of this "supply sensitive" care has little proven health benefits. If the Dartmouth view is correct, then greater insurance coverage and greater use of primary care will result in more hospitalizations because visits to the doctor often result in aggressive treatment that involves hospitalization and arguably little health benefit (Fisher et al., 2003).

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http://dx.doi.org/10.1016/j.jhealeco.2014.08.003
0167-6296/

Empirical evidence on the association between primary (outpatient) care and inpatient care is sparse, particularly evidence that may be interpreted as causal, despite the importance of this relationship to health economics and health policy. Research that comes closest to providing such evidence are studies that examine the association between health insurance status and hospitalizations because of the known increase in primary care that comes with insurance coverage. However, health insurance changes the price of both inpatient and outpatient care and studies of the association between health insurance and hospitalization do not directly provide evidence on the association between primary care and hospitalization.

Three recent studies provide mixed evidence as to the relationship between health insurance coverage and hospitalization using quasi-experimental methods. Using a regression discontinuity design, Anderson et al. (2012) found that young adults who lost family health insurance coverage had significantly lower rates of emergency department use and hospital admissions than those who did not lose family health insurance coverage. Kolstad and Kowalski (2012) examined the Massachusetts health care reform and found that gaining insurance was associated with a decrease in hospital admissions through emergency department, an increase in hospital admissions through other channels, and no change in total hospitalizations. Miller (2011), who also studied the Massachusetts reform, found that reform was associated with a decrease in outpatient emergency room visits, particularly those that are preventable with primary care.

Experimental findings from the RAND Health Insurance Experiment (HIE) showed that health insurance coverage (i.e., more generous coverage) was associated with an increase in use of emergency room services and hospitalization (Newhouse, 1993). Specifically, emergency department use was 30% to 35% lower for those with the least generous insurance (95% coinsurance) than for those with the insurance plan that paid all costs (i.e., free plan), and any use of inpatient services was 25% lower for those with the least generous insurance (95% coinsurance) than for those with the insurance plan that paid all costs. The RAND findings led the researchers to conclude that inpatient and outpatient services were complements. Similarly, evidence from the Oregon Medicaid experiment also shows that obtaining health insurance, in this case, Medicaid, is positively associated with hospitalization (Finkelstein et al., 2012).

Another line of research related to the question of whether outpatient and inpatient care are substitutes or complements are studies examining the association between changes in prescription drug use (or prices), which is a distinct type of outpatient care, and use of inpatient services. There have been several studies and the evidence from these studies is mixed.[1] For example, Chandra et al. (2010) reported that increases in copayments for office visits and prescription drugs among employees in the California Public Employees Retirement System were associated with a decrease in the use of prescription drugs and an increase in the probability of hospitalization. However, Kaestner and Khan (2012) found that gaining prescription drug insurance through Medicare Part D was associated with a 28% increase in prescription drug use, a 45% increase in spending on prescription drugs, and no change in inpatient spending among a sample of Medicare recipients drawn from the Medicare Current Beneficiary Survey. Results from other studies offer similarly mixed evidence. More importantly, the evidence from these studies is limited by the focus on prescription drugs, which is an important, but small part of outpatient care.

In sum, there is little recent evidence, particularly evidence that can be interpreted as causal, as to whether outpatient and inpatient care are substitutes or complements. This is an important gap in knowledge because of the importance of this question to understanding how the health care market operates. Evidence as to whether outpatient and inpatient care are substitutes or complements is central to both health economics and health policy.

In this paper, we obtain estimates of the relationship between outpatient and inpatient care. Importantly, the research design underlying our empirical analysis supports the case for interpreting our estimates as causal. Our research takes advantage of changes in insurance plan features that affect only outpatient care with the most important feature being a unique benefit design in which funds contained in a savings account (more precisely a health reimbursement arrangement or HRA) can be used only to pay for outpatient and pharmacy services, and *not* inpatient care and outpatient surgery services. We also exploit variation in outpatient care due to changes in an outpatient-specific deductible. The inability to use HRA dollars for inpatient care, in contrast to the better known Health Savings Account (HSA) products, is the key to our research design because it provides an exogenous change in the price of outpatient care without affecting the price of inpatient care. Capitalizing on the exogenous change in insurance plan design specific to outpatient services contrasts to other studies that, for example, focus on the association between health insurance and inpatient care, because the changes typically alter the price of both outpatient and inpatient care. The design was a feature marketed by the insurer intended to prevent a costly hospitalization from depleting the account balance. The insurance product was designed and sold by a health insurer offering exclusively high-deductible health plans on a full replacement basis in the small group market.

Results of our analysis indicate that a $100 (4%) increase in outpatient spending resulted in an $89 (4.6%) increase in inpatient spending among employees in the employer-sponsored insurance plans in our sample. Moreover, the increase in hospital admissions associated with greater outpatient spending was concentrated among conditions in which there is significant geographical variation in admission rates and for which physicians exercise considerable discretion—care consistent with "supply sensitive" treatment that has been shown to be without clinical evidence of its effectiveness. In contrast, there was no relationship between outpatient spending and admissions for low-discretion (variation) procedures such as major cardiovascular care or for births. Our findings are likely relevant for the relatively healthy subset of "marginal" patients induced into consuming additional care.

2. Conceptual framework

Our primary research question is whether outpatient care and inpatient care are substitutes or complements, and it is motivated by a basic model of health production such as that in Grossman (1972). In these models, consumers produce health by investing their own time in health augmenting activities and by purchasing market inputs such as outpatient and inpatient medical services. The quantity and types of health investments depends on the technology of the production function and the prices of the production inputs. Intuitively, we may expect outpatient care that is preventive to be a substitute for inpatient care. Prescription drugs, to the extent that they prevent (or offset) inpatient care is an example (Chandra et al., 2010). Conversely, outpatient diagnosis and subsequent inpatient treatment is an example of a complementary relationship.

[1] Studies in this area include: Soumerai et al. (1991); Johnson et al. (1997); Briesacher et al. (2005); Hsu et al. (2006); Chandra et al. (2010); Afendulis et al. (2011); McWilliams et al. (2011); and Kaestner and Khan (2012).