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ESSAYS ON TRENDS, INNOVATIVE IDEAS AND CUTTING-EDGE RESEARCH IN HEALTH CARE

Expect the Unexpected? Physicians' Responses to Payment Changes

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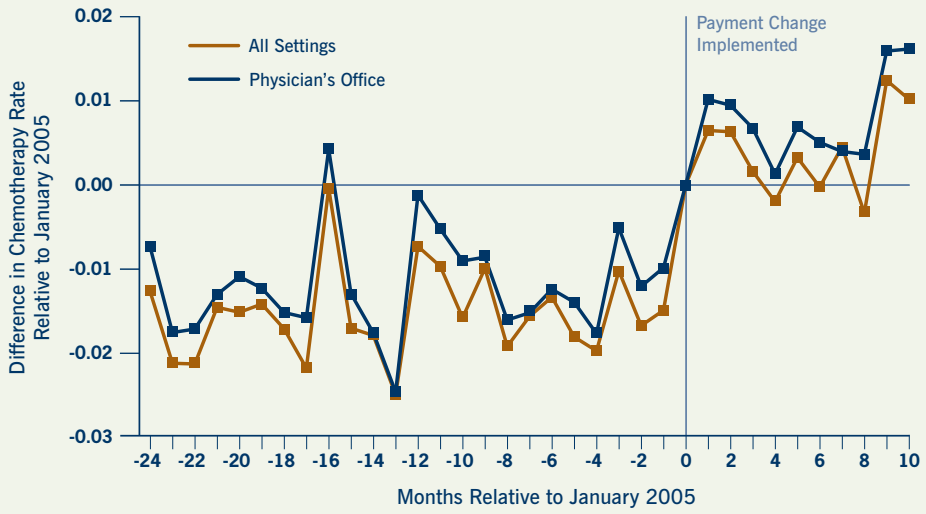
In the struggle to control health care spending, policymakers in the United States and abroad may opt to reduce payment rates for medical services. But spending is the product of price and utilization. If physicians increase utilization sufficiently in response to declining fees, total spending can increase. In fact, a large body of evidence suggests that cutting fees leads to higher utilization when the targeted services account for a large share of physician income. If the services involved do not account for a large share of income, however, physicians reduce their output of the services whose fees were cut.[1]

In this essay, we describe results of our recent research on the impact of reductions in Medicare payments to physicians for chemotherapy drugs.[2] Put simply, our findings back up the conclusions from many earlier studies: fee cuts can generate behavioral responses that reduce the savings one hopes to achieve through the payment reductions.

Figure 1. Change in the Share of Lung Cancer Patients Given Chemotherapy, by Month of Diagnosis Relative to January 2005 Payment Change



Source: Jacobson M, Earle CC, Price M, Newhouse JP. "How Medicare's Payments Cuts for Cancer Chemotherapy Drugs Changed Patterns of Treatment." Health Affairs, 29(7): 1394-1402, 2010.

The Payment Change

Most chemotherapy treatment in the United States occurs in physician offices or community clinics.[3] Physicians purchase chemotherapy drugs, administer them to patients in their offices and are reimbursed directly for the drugs by Medicare and other payers. Because these services are provided in the outpatient setting, Medicare payments are made under Part B of the program. Historically, Medicare and most private payers set reimbursement for Part B drugs at a percentage of the average wholesale price (AWP).[4]

In the late 1990s several high-level Federal investigations confirmed that Medicare payments for many Part B drugs were much higher than the prices physicians paid to buy them.[5] Many chemotherapy drugs were widely available to physicians for 13 to 34 percent less than the AWP, and some agents were priced as much as 65 to 85 percent lower.[6] At that time, however, Medicare was reimbursing physicians at 95 percent of the AWP (reduced to 85 percent in 2004).

To eliminate overpayments, the Medicare Prescription Drug, Improvement, and Modernization Act instituted a new reimbursement system for Part B drugs in January 2005. The new average sales price (ASP) payment system ties reimbursement more closely to acquisition costs by setting payments at the national average of manufacturers' sales prices over the two previous quarters (lagged one quarter), plus a 6 percent margin.

By setting the ratio of drug payments to costs at 1.06, this new system had the effect of reducing profit margins substantially for many chemotherapy drugs. In particular, the change represented a marked decline from the weighted average payment-to-cost ratio of 1.22 for all drugs billed to Medicare by oncologists in 2004 and likely an even larger decline relative to earlier years.[6]

Impact of the Payment Change

The reduction in margins for oncology drugs raised concerns that Medicare beneficiaries would have less access to chemotherapy treatment overall and that community-based oncologists would refer patients to hospital outpatient settings instead of providing care themselves, possibly causing unnecessary treatment delays. Research conducted prior to our study found no evidence of treatment delays for those who suc-

ceeded in receiving chemotherapy after implementation of the ASP payment system.[3,7] We extended this research by assessing whether the payment change affected the likelihood of receiving chemotherapy in the first place, the site of care (physician office vs. hospital outpatient department), or the specific drugs administered to those who did receive treatment.

Our study used Medicare claims data from the 24 months before and the 10 months after the payment change to look for changes in chemotherapy treatment for the more than 222,000 Medicare patients who were newly diagnosed with lung cancer during that period. We focused on lung cancer because it is the leading cause of cancer death in the United States, patients are relatively homogenous clinically, and chemotherapy is a standard treatment option, particularly for those with advanced disease. Moreover, the payment rates for Paclitaxel and Carboplatin – two drugs that are commonly used to treat lung cancer – changed sharply after the introduction of the ASP payment system.[6] Among Medicare beneficiaries diagnosed with lung cancer in 2004 and treated with chemotherapy within 30 days, about 30 percent received a regimen that included Paclitaxel and 55 percent received a regimen that included Carboplatin. Thus, the payment cuts had the potential to affect treatment decisions for a large number of patients, and to materially affect the income of their oncologists.

Likelihood of Treatment and Site of Care. We found striking evidence of a sharp discontinuity in treatment patterns for lung cancer patients diagnosed just before vs. just after the change to ASP reimbursement. This change is clearly illustrated in Figure 1, which shows regression-adjusted mean changes in the likelihood that patients received chemotherapy (in any location and specifically in a physician's office), by month of diagnosis relative to January 2005. Prior to the ASP implementation, 16.5 percent of patients received chemotherapy within 1 month of diagnosis. After January 2005, chemotherapy treatment within one month increased 2.4 percentage points (P<0.001) to 18.9 percent.† This increase came almost entirely through treatment in the physician's office. While 13.0 percent of patients received chemotherapy in a physician's office within one month of diagnosis prior to January 2005, treatment in that setting increased to 15.3 percent after ASP implementation. The timing of the increase in the probability of chemotherapy treatment, both overall and in a physician's office, strongly suggests that the switch to the ASP reimbursement system drove the treatment changes.

Because Medicare beneficiaries face 20 percent coinsurance for Part B services, it is possible that utilization increased because lung cancer patients increasingly accepted chemotherapy treatment as their drug costs fell. However, anecdotal evidence indicates that physicians were less likely to collect copayments when reimbursements were based on the AWP, so the decline in reimbursements for chemotherapy drugs may have actually increased out-of-pocket spending for many beneficiaries.[4,8] Any such increase would have dampened the change in use we observe.

Use of Specific Chemotherapy Agents. Our analysis also revealed that the type of drugs used in chemotherapy changed in ways that are consistent with a physician response to shifting reimbursement incentives. Most notably, the share of chemotherapy patients who received either Carboplatin or Paclitaxel – the two commonly-used drugs that lost substantial profit margin – declined considerably after the payment change went into effect. In contrast, the probability of receiving Docetaxel, a relatively expensive agent implicitly favored by the 6 percent margin on all Part B drugs, increased modestly among patients receiving chemotherapy treatment. These changes preceded the switch to ASP-based reimbursement by about a month, suggesting that physicians were rearranging the stock of chemotherapy agents on hand in anticipation of the new payment system. Failure to do so by the time the ASP system took effect could have meant a considerable loss of income.

Discussion

Economic theory tells us that the effect of fee cuts on physician effort depends on the share of income accounted for by the services whose fees are cut. On the one hand, a fee cut for one service can make other services or even leisure time more attractive to physicians, leading them to spend more of their time on these other activities and less on the activity whose fee was cut. Economists term this response a substitution effect. On the other hand, a fee cut for services that account for a large share of a physician's practice can generate the opposite response: physicians may provide more of the service(s) to make up for some of the lost income. Economists call this response an income effect.

How physicians respond to payment cuts depends critically on the balance between the substitution and income effects. In the study described here, we found that the fee reductions generated an increase in use overall. Because income from Medicare chemotherapy services is so important to most oncologists' practices, the income effect was larger than the substitution effect. Income derived from any specific agent, however, accounts for a smaller share of practice income, so the substitution effect may dominate for specific agents as physicians adjust their behavior to the changing relative profit margins of treatment alternatives. Indeed we found that the precipitous drops in reimbursement for Paclitaxel and Carboplatin were associated with a decline in the use of these agents. We also observed a shift to Docetaxel, the most expensive agent, which provided the largest profit in absolute terms thanks to the fixed 6 percent margin paid above the ASP.

Clearly the interplay of possible responses determines whether a payment cut will succeed in trimming medical spending or not. Our recent work, along with a large body of prior research, demonstrates that fee cuts cannot reliably or predictably control spending. Policymakers need to be alert to behavioral responses that can undermine their ability to achieve savings through fee changes.

† Carboplatin went off patent the quarter before ASP implementation, so its margin likely remained above 6 percent for some months after January 2005. This higher relative margin could have driven some of the increase in chemotherapy use. However, nearly two-thirds of the observed increase in chemotherapy use (1.5 percentage points) was among patients receiving regimens without Carboplatin.

1 See the literature review in McGuire TG. "Physician Agency" in Culyer AJ, Newhouse JP, eds. *Handbook of Health Economics*, vol 1A. Amsterdam: Elsevier 2000.

2 Jacobson M, Earle CC, Price M, Newhouse JP. "How Medicare's Payments Cuts for Cancer Chemotherapy Drugs Changed Patterns of Treatment." *Health Affairs*, 29(7): 1394-1402, 2010.

3 Shea AM, Curtis LH, Hammill BG et al. "Association Between the Medicare Modernization Act of 2003 and Patient Wait Times and Travel Distance for Chemotherapy, *Journal of the American Medical Association*, 300(2):189-96, 2008.

4 For a history of the AWP see Berndt ER and Newhouse JP, "Pricing and Reimbursment in U.S. Pharmaceutical Markets," National Bureau of Economic Research Working Paper 16297, August 2010; and Mullen P. "The Arrival of Average Sales Price," *Biotechnology Healthcare*, 48-53, June 2007.

5 U.S. Department of Health and Human Services, Excessive *Medicare Payment for Prescription Drugs*, Pub. No. OEI-03-97-00290 (Washington: U.S. Government Printing Office, December 1997); and DHHS, *Medicare Reimbursement of Prescription Drugs*, Pub. No. OEI-03-00-00310 (Washington: GPO, January 2001).

6 U.S. Government Accountability Office, *Medicare Chemotherapy Payments: New Drug and Administration Fees are Closer to Providers' Costs*, GAO-05-142R (Washington: US GAO, 2005).

7 Friedman JY, Curtis LH, Hammill BG, et al. "The Medicare Modernization Act and Reimbursement for Outpatient Chemotherapy: Do Patients Perceive Changes in Access to Care?" *Cancer*, 110(10):2304-12, 2007.

8 Siegel J. "Impact of the Medicare Prescription Drug Improvement and Modernization Act on the Management of Colorectal Cancer." *American Journal of Health System Pharmacy*, 63(suppl. 2):S18-S21, 2006.