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Executive Summary

Proposed legislation seeks to impose price transparency in the health care industry as a remedy for increasing medical device prices. This paper analyzes previous attempts to mandate similar price-disclosure rules in a variety of industries. We identify the economic conditions under which mandatory price disclosure is likely to generate substantial benefits and costs. Applying these conditions, we conclude that mandatory price disclosure for implantable devices is unlikely to pass a benefit-cost test.

PERSPECTIVE

The Need For Greater Price Transparency In The Medical Device Industry: An Economic Analysis

Mandatory price disclosure for implantable devices is unlikely to pass a benefit-cost test and could increase consumers' cost of care.

by Robert W. Hahn, Keith B. Klovers, and Hal J. Singer

ABSTRACT: Proposed legislation seeks to impose price transparency in the heath care industry as a remedy for increasing medical device prices. This paper analyzes previous attempts to mandate similar price-disclosure rules in a variety of industries. We identify the economic conditions under which mandatory price disclosure is likely to generate substantial benefits and costs. Applying these conditions, we conclude that mandatory price disclosure for implantable devices is unlikely to pass a benefit-cost test. [*Health Affairs* 27, no. 6 (2008): 1554–1559; 10.1377/hlthaff.27.6.1554]

A NUMBER OF health care policy analysts have advocated greater price transparency as a way to empower patients and reduce health costs.[1] According to these analysts, providing more information about the cost of a product or procedure to the public would allow patients to make more informed and cost-effective decisions for medical care.[2] Other scholars, such as Mark Pauly and Lawton Burns, argue that price information should flow freely between hospital purchasing agents and doctors.[3] We agree. The issue we address in this essay is whether the government should compel medical device makers to share their pricing information with the public. Here we examine the advantages and disadvantages of mandatory price disclosure for device makers.

We restrict our analysis to one family of products—implantable medical devices—that have received recent attention. Implantable medical devices, such as implantable cardioverter defibrillators (ICDs) and coronary stents, are typically provided to patients through surgical procedures performed in hospitals. Setting aside the role of purchasers, the initial purchaser of the product is the hospital rather than the patient, although the patient and the insurance company ultimately pay for the device and any related procedures from the hospital.

Many advocates argue that mandatory price disclosure in this industry would benefit consumers. Yet there has been no analysis of whether the alleged benefits are likely to exceed the costs. To our knowledge, we are the first to provide a rigorous economic framework for analyzing the likely benefits and costs associated with proposed legislation on disclosure being considered by Congress.[4]

The Current Proposal

Legislation has been introduced in the U.S. Senate that seeks to help hospitals lower their

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costs by requiring disclosure of sales price information for implantable medical devices. The Transparency in Medical Device Pricing Act of 2007 would require medical device makers to report the mean and median quarterly sales prices for each applicable device model to the secretary of health and human services (HHS). Price information would then be posted on the Centers for Medicare and Medicaid Services (CMS) Web site. To encourage compliance, the bill would levy fines for noncompliance or for providing false or misleading pricing information.

Although the bill is designed to assist the ultimate purchasers of medical devices (patients), it might not have that affect. The benefits and costs of mandatory price disclosure depend on the specific market conditions in the medical device and hospital industries.

"Mandatory disclosure rules have been found to generate unexpected consequences in several other industries."

The Economics Of Price Transparency

To determine the benefits and costs of mandatory price disclosure, we draw on other industries' experience with similar mandates. Specifically, we examined the effect of mandatory price disclosure on consumer prices. We considered similar disclosure rules for hospital services, groceries, cement, barge transportation, long-distance telephone service, and railroads. From this analysis, we identified conditions under which the benefits of disclosure are likely to be large. We also identified conditions under which the costs of mandatory disclosure are likely to be large.

A Mixed Record Of Success

Recent analyses have shown that mandatory price disclosure in other segments of the medical industry can adversely affect consumers. For example, hospital price transparency regulation has recently been introduced at the state level. Certain states—including Ohio and South Dakota—now require hospitals to disclose their charges for certain procedures or for their most common services or procedures.[5] Preliminary research questions whether these arrangements may increase, rather than decrease, consumer prices. Specifically, some scholars believe that because the hospital industry is highly concentrated in some markets, price disclosure may improve hospitals' ability to coordinate their pricing decisions.[6] Similarly, the U.S. Federal Trade Commission (FTC) has found that disclosure in the pharmaceutical industry may increase consumer prices.[7] This analysis was specifically cited by California's Gov. Arnold Schwarzenegger when he vetoed draft legislation that would have imposed mandatory drug price disclosure in California.[8]

Mandatory disclosure rules have been found to generate unexpected consequences in several other industries. We are aware of four studies of particular interest. First, Paul MacAvoy has found that tariff filing requirements provided price signals that telephone firms used to coordinate long-distance telephone tariffs.[9] As a result, the Federal Communications Commission (FCC) embarked on a process of deregulation that ended all tariff filings (mandatory or voluntary) by 1996.[10] Second, a review by Danish competition authorities found that cement prices rose sharply after the authorities made cement price data publicly available.[11]

Third, Stephen Fuller and colleagues found that U.S. rail shipping rates declined by as much as one-third in the 1980s, when railroads were authorized to keep shipping contracts confidential. They concluded that contract disclosure and posted tariffs led to "rate coordination by the oligopolistic railroad industry" and thus higher shipping rates.[12] Fourth, a study by James Hong and Charles Plott found that proposals to publish barge shipping rates in the United States would induce higher prices, lower volume, and decreased efficiency.[13] In each of these studies, mandatory disclosure rules were found to reduce effi-

ciency and increase consumer prices.

Yet there is also evidence that mandatory price disclosure may deliver net benefits to consumers. Specifically, a government-sponsored research project in Canada in 1974 suggests that the weekly publication of grocery price information substantially reduced grocery prices in the study market (Ottawa).[14] There are two caveats to the success of the food price information program. First, consumer benefits were dependent on continuously updated information. Once the information program ended, Ottawa prices rose to levels comparable with those in the control market (Winnipeg). Upon reviewing these data, Dennis Carlton and Jeffrey Perloff concluded that "to maintain low prices, information must be continuously supplied."[15] Devine and Marion also pointed out that the short-run benefits of price information disclosure may be different from the long-run benefits. In particular, they noted that "in highly concentrated markets, ...the program might be used as an instrument of collusion."[16] That is, the program may be used to help industry members coordinate to set a price higher than they could charge if they operated competitively.

The Net Benefits Of Mandatory Disclosure

We define the *net benefits of mandatory disclosure* as the difference between (1) the benefits to purchasers (in the form of lower prices) from the receipt of added price information and (2) the costs (in the form of higher prices) that occur from both the provision of this information to sellers and the compliance costs associated with additional regulation. For net benefits to be positive, the benefits from improving purchasers' bargaining position (the primary benefit) must exceed the costs of arming sellers with information they could use to collude with one another (the primary cost) as well as the compliance costs imposed on businesses (the secondary cost).

■ **The conditions likely to generate large benefits.** In the absence of increased opportunities for price coordination, mandatory price disclosure is likely to generate important benefits for final consumers (patients) in the medical device industry if four conditions hold: (1) search costs are large and may be reduced by disclosure; (2) disclosure provides current price information; (3) competitive forces would cause intermediaries (such as hospitals) to pass cost savings on to their patients; and (4) there is a large variation in the prices paid by hospitals for reasons unrelated to volume discounts.

■ **The conditions likely to generate large costs.** The costs of mandatory disclosure are likely to be large if such disclosure results in price coordination. As recognized by the U.S. Department of Justice (DOJ), the conditions under which collusion between firms is likely to be either achieved or maintained are as follows: (1) production is concentrated among only a small number of firms; (2) there are few other products that can be easily substituted for the product in question; (3) there is a large degree of repeated interaction between firms in the industry; (4) there is a large degree of product standardization across firms in the industry; and (5) firms do not already know their rivals' prices.[17] Although mandatory price disclosure may still generate costs when one or more of these conditions do not hold, those costs will tend to be larger when all of the conditions are met.

Will Price Transparency Lower The Cost Of Care For Consumers?

The extent to which mandatory price disclosure will deliver benefits in excess of its costs depends on the structure of the medical device industry. Here we examine how that structure shapes the relative benefits and costs of a mandatory price-disclosure policy. Our examination focuses on three implantable medical devices purchased by hospitals: ICDs, coronary (both bare-metal and drug-eluting) stents, and implantable orthopedics. Each type of device generated more than $1 billion in sales in 2006.[18] These three devices would be subjected to the mandatory price-disclosure rules under consideration in Congress.

■ **Economics suggest that lower prices are unlikely.** The structure of the medical de-

vice industry implies that mandatory price disclosure would not provide benefits to consumers. First, search costs are mitigated because hospital agents, called group purchasing organizations (GPOs), aggregate price information across multiple device makers. GPOs are widely used: approximately 97 percent of U.S. hospitals report using GPOs, and GPO-brokered purchases account for 72–80 percent of all U.S. acute health care purchases.[19]

Second, mandatory price disclosure is also unlikely to generate large social benefits because, according to the legislative language, the prices disclosed would represent prices for the past quarter rather than current prices.

"In contrast to the benefits, the costs of mandatory disclosure are likely to be large."

Third, market forces cannot be counted on to ensure that hospitals would recognize cost savings and then pass them on to patients. Patients face a concentrated hospital market in many locales.[20] These hospitals will have little incentive to share cost savings with patients.

Fourth, setting aside the role of loyalty and bundled rebates, it is unclear whether medical device prices vary for reasons unrelated to volume. The U.S. Government Accountability Office (GAO) has demonstrated that there is variance in medical device pricing. However, the GAO noted that price differences varied by the size of the hospital involved, which suggests that price may stem directly from the volume purchased.[21]

■ **The costs may be significant.** In contrast to the benefits, the costs of mandatory disclosure are likely to be large. Specifically, the structure of the medical device industry is conducive to tacit price coordination because the five conditions under which coordination is likely are met. First, most segments of the medical device industry are characterized by a large degree of seller concentration. Most drug-eluting stents are produced by one firm; three firms produce ICDs; and five firms control 90 percent of the orthopedic joint replacement market.[22] The complexity of these devices also discourages new firms from entering the marketplace.[23]

Second, for both safety and technological reasons, substitution of related products is severely limited in the medical device industry. For example, despite the fact that ICD leads (which conduct signals from the ICD to the heart) are reasonably standardized, surgeons tend not to mix ICDs and leads from different makers.[24] In other cases, substitute products are made by the same firms.[25]

Third, medical device manufacturers repeatedly interact. For example, GPO contracts tend to be rebid every three to five years.[26] Repeated interaction can facilitate price coordination because it provides the opportunity to successfully punish firms that deviate from an agreed-upon strategy.

Fourth, many types of implantable medical devices are specialized.[27] For example, new (and oft-preferred) drug-eluting stents are differentiated by the type of drug used and by the ease of implantation.

Fifth, it appears that firms do not already know each others' prices.[28] Specifically, GPO transaction prices are not publicized and tend to vary by contract.[29] Contract pricing is a closely guarded secret, as evidenced by ICD maker Guidant's successful lawsuit against a hospital consultant who compiled confidential sales contract information.[30]

Accordingly, mandatory price disclosure would likely provide firms with incremental information that would allow better opportunities for coordinated pricing. The benefits of mandatory price disclosure probably pale by comparison.

Recent Optimism Is Misplaced

Scholars such as Burns and Pauly have argued that price information should flow freely between hospitals' purchasing agents and doctors. They point out that this internal flow of price information may help align hospitals' and doctors' interests and produce cost savings for hospitals. To the extent that such exchanges help doctors make more efficient pur-

chasing decisions and do not inform rival manufacturers of each other's prices, this proposal may be beneficial. Because it does not deal with the external flow of information between a device maker and the public, however, it would not address the current public policy debate.

Congress is considering a much different form of price disclosure. The external flow of price information contemplated in this proposed legislation would make price information freely available to rival medical device manufacturers. Accordingly, this proposal is likely to provide medical device makers with price information that is conducive to price coordination or collusion.

In sum, the best economic evidence indicates that it would be poor public policy to mandate price disclosure for medical device makers. Experience in several industries—including the medical industry—suggests that mandatory price disclosure for implantable devices is unlikely to pass a benefit-cost test and could increase the consumer's cost of care.

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NOTES

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17. Regarding product standardization, see U.S. Department of Justice, *Price Fixing, Bid Rigging, and Market Allocation Schemes: What They Are and What to*

Look For (Washington: U.S. DOJ, 2005), 5.

18. B. Meier, "As Their Use Soars, Heart Implants Raise Questions," *New York Times*, 2 August 2005. See also Frost and Sullivan, *U.S. Coronary Stents Market*, Report no. N148-54 (New York: Frost and Sullivan, 2007), 2-6; and Frost and Sullivan, *U.S. Orthopedic Joint Replacement Markets*, Report no. N149-54 (New York: Frost and Sullivan, 2007), 2-9, 2-10.
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23. Frost and Sullivan, *U.S. Coronary Stents Market*, 2-1.
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25. By the end of 2008, bare metal stents will be made by the same four firms that make drug-eluting stents. See Frost and Sullivan, *U.S. Coronary Stents Market*, 4-5; and Feder, "Advisory Panel Backs New Drug-Coated Stent."
26. GAO, *Group Purchasing Organizations*, 14.
27. Ibid.
28. We note that rivals cannot learn prices through GPO contracts. In a fashion similar to hospital contracts with manufacturers, GPO contracts with member hospitals typically require members to keep all price information strictly confidential. For example, the University HealthSystem Consortium requires its members to keep GPO price schedules strictly confidential. See University HealthSystem Consortium, "Medical Research Participant Agreement," http://www.uhc.edu/Web/downloads/MedicalResearchApplication.DOC (accessed 15 August 2008).
29. See GAO, *Group Purchasing Organizations*, 5–6.
30. See *Cardiac Pacemakers, Inc. v. Aspen II Holding Co., Inc.*, 413 F.Supp.2d. 1016 (D. Minn. 2006); and Meier, "Heart Implants Raise Questions."