

# Health Affairs

At the Intersection of Health, Health Care and Policy

Cite this article as:  
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Prescription Drug Prices: Why Do Some Pay More Than  
Others Do?  
*Health Affairs*, 20, no.2 (2001):115-128  
doi: 10.1377/hlthaff.20.2.115

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payments for prescription drugs in the United States; in 1999 they accounted for an estimated 69.8 percent.<sup>9</sup> These figures reflect an expansion not only in the share of the population with insurance coverage for prescription drugs but also in the level of coverage.

Over the past fifteen years insured persons have poured into managed care plans. In 1985 approximately 25 percent of the insured population was enrolled in a managed care plan; today that share exceeds 75 percent.<sup>10</sup> The corresponding figure for the population under age sixty-five was 91 percent in 1998. Prescription drug spending has grown at rates in excess of 15 percent in recent years. This has meant that the impulse to control drug costs has been even more pronounced and has resulted in the application of managed care techniques to prescription drugs even when they have been associated with a fee-for-service (FFS) indemnity health plan (via prescription drug carve-out programs). Pharmacy benefit managers (PBMs), private firms that specialize in insuring and managing prescription drug use and spending, have become increasingly important forces. They contract directly with employers or enter into subcontracts with health plans. Some HMOs own their own PBM companies. It has been estimated that in 1999, 70 percent of private health plan prescriptions were managed by a PBM.<sup>11</sup>

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PBMs and health plans that administer their own drug benefit use formularies to steer prescribing toward cost-effective products. Formularies (lists of drugs that identify preferred drugs for treatment of specific illnesses) often contain summaries of scientific information about specific drugs that inform clinicians about their use. About three-fourths of employers report contracting with health plans and PBMs that use formularies.<sup>12</sup> Formularies are typically tied to a set of administrative processes and financial incentives aimed at encouraging adherence to the formulary by clinicians. Formularies have long been part of the management of care in hospitals but are relatively new features of health insurance.

The most direct method for encouraging use of formulary drugs is to “close” the formulary, which means that use of drugs not listed will not be covered unless prior approval is obtained from the health plan or PBM. It is estimated that about 10 percent of all health plans and 27 percent of HMOs use closed formularies.<sup>13</sup> However, payers are often reluctant to use closed formularies, and, as a result, a number of other mechanisms are used to steer patients toward formulary drugs. Copayments are increasingly being used to encourage adherence to a formulary. One popular approach is to create three tiers of copayments. In the first tier generic drugs carry a copayment of say, \$5. A second tier might consist of “on-formulary” brand-name drugs with a copayment of \$15. The third tier is for “off-formulary”

*“Price differentials represent unequal bargaining power across different classes of purchasers.”*

drugs with a \$30 copayment.

Therapeutic substitution programs involve utilization review and physician contacts to increase and maintain use of formulary products. About half of health plans use such methods.<sup>14</sup> Physician education programs (sometimes known as academic detailing) represent another method of encouraging use of formulary drugs. Finally, designing physician payment systems that have physicians bear some risk for prescription drug costs serves to encourage use of lower-price, on-formulary products.

■ **Market segments and price response.** As noted above, congressional investigators long ago recognized the role of institutional structure, buying power, and market forces in explaining the price structure for prescription drugs. Formularies enhance a buyer’s bargaining power, enabling a purchaser such as a health plan or PBM to be more aggressive in negotiating prices with manufacturers. By being able to redirect the flow of drug sales within a therapeutic category such as proton pump inhibitors or selective serotonin reuptake inhibitor (SSRI) antidepressants, a buyer presents a seller—in this case, drug manufacturers—with more price-elastic demand. In drug classes with multiple products that are therapeutically equivalent for most patients, a buyer can use the threat of redirecting sales to a competing product to stimulate price competition. Manufacturers wish to have their products be a preferred drug listed on the formulary. As a result, buyers can negotiate a lower price. The implication is that buyers that can present profit-maximizing manufacturers with the greatest price-sensitivity in sales through strong management and high adherence to their formulary will realize the largest price concessions. Thus, the price concessions are responses by profit-maximizing manufacturers to demands by price-sensitive buyers. Hence, price differentials are not related to recouping losses by shifting costs. Rather, they represent unequal bargaining power across different classes of purchasers reflected by their ability to shift purchases in response to price.

The recent implementation of a national formulary by the VA illustrates the buying power of formularies. Under the national formulary, several drug classes were closed. In each closed class, only a subset of available drugs were considered to be eligible for reimbursement without resorting to an exceptions process. Using off-formulary drugs obtained at a higher price would exert extra pres-

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sure on fixed VA health care budgets at the national and local levels. As a result of closing those classes, the VA could convincingly “move market share” from one manufacturer’s product to another. The ability to redirect sales in exchange for lower prices led to price concessions of 16–41 percent below the federal price that already was among the lowest in the nation.<sup>15</sup>

All of this implies that buyers that can make a credible threat to drug manufacturers that they will shift their purchases to another drug in a therapeutic class will be able to command the largest price concessions. Organizations such as HMOs and mail-order pharmacies that can exert managerial control and create financial incentives to affect prescribing decisions are most likely to realize price concessions. In contrast, individuals buying drugs through a retail pharmacy that must deal with hundreds of physicians and dozens of health plans cannot steer prescriptions to specific brand-name products enough to create meaningful bargaining power. Cash payers buying through retail drug stores therefore cannot claim large price reductions. For this reason, cash payers buying retail face the highest prices for brand-name prescription drugs.

This point has recently been made clearly in connection with national antitrust litigation concerning the pricing of brand-name prescription drugs. Judge Richard Posner stated that

the least elastic demanders are pharmacies because they must stock a full range of drugs to be able to fill prescriptions. They can therefore be expected to be charged the highest prices. In contrast, a hospital, nursing home, or HMO or other managed care enterprise has a more elastic demand because it can influence...the physician's choice of which brand...to prescribe. A slight increase in the price of one brand to such a purchaser might cause the manufacturer's sales to plummet. That manufacturers of brand name prescription drugs grant discounts to the enterprises we have listed but refuse discounts to pharmacies is thus consistent with unilateral profit maximizing behavior by the manufacturers.<sup>16</sup>

### Arbitrage And The Delivery Of Price Concessions

A variety of institutions in prescription drug markets affect the possibility for different buyers to engage in arbitrage. These include federal statutes governing the resale of prescription drugs, the mechanisms by which prices are implemented, and the nature of contractual relations that have evolved in the industry. Here I describe the main factors affecting arbitrage in the market for brand-name prescription drugs.

All purchasers of prescription drugs that enjoy discounted prices (such as HMOs and hospitals) have an incentive to resell those drugs to buyers facing higher price offers (independent and chain drug stores). Yet very little reselling occurs, and, as a consequence, differential pricing is a stable feature of the market. One important constraint on many purchasers’ ability to engage in arbitrage is a