MarketWatch

Generic Dispensing And Substitution In Mail And Retail Pharmacies

An in-depth look at some of the market dynamics of pharmacy benefit managers.

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ABSTRACT: Mail-order pharmacies have lower aggregate generic-dispensing rates than their retail counterparts. This fact has been used as evidence of self-dealing that could arise when a pharmacy benefit manager (PBM) is both a plan administrator and a pharmacy owner. Using the aggregate generic-dispensing rate, however, is problematic because it confounds variation in performance with differences in demand. Controlling for therapeutic mix alone explains 87 percent of the apparent difference in aggregate dispensing rates. An alternative measure—one that fully controls for differences in price and indications across molecules within a category—eliminates the discrepancy in dispensing rates.

In 2003 the growth of mail-order pharmacy outpaced total prescription growth by a factor of three. These types of mail operations, typically owned and operated by pharmacy benefit managers (PBMs), are becoming formidable competitors to retail pharmacies, with 5.5 percent of all prescriptions filled and a much higher share of therapy days.[1] In addition to the competition for prescription revenue, retail pharmacies also face a loss of revenue from items that customers might buy on the way to the prescription counter. Retail pharmacies have responded to these new pressures in various ways, including mergers and consolidations, providing the ninety-day fill quantities commonly used by mail-order pharmacies, and introducing their own mail-order operations.

In this context, use of generic drugs became a sticking point between mail and retail pharmacies because of the differences in their aggregate generic-dispensing rates. This rate represents the percentage of claims for all drugs—whether or not they have generic equivalents—that are dispensed as generics. In aggregate, mail pharmacies owned by PBMs have a lower generic-dispensing rate than retail pharmacies.[2] Some have viewed this difference as a reflection on pharmacy performance. In testimony before a committee of the New Jersey State Assembly, John Davis of the National Community Pharmacists Association noted, "One reason for the underperformance by PBMs may be that they receive significant rebates for not substituting equivalent cost saving generics for higher priced brand name drugs."[3] The generic-dispensing issue has surfaced in state legislatures, and it became particularly salient in the debate over the role PBMs should play in the Medicare drug program. The argument remains unresolved, but federal legislators have asked the Federal

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Trade Commission (FTC) to look into the matter.[4]

Background

The combination of roles played by PBMs is the backbone of the conflict-of-interest argument that certain observers have used to explain the discrepancy in the generic-dispensing rate between retail and mail pharmacies. On the one hand, PBMs manage their client's prescription benefits and receive fees for services such as formulary management, adjudication of coverage eligibility, payment, and formulary compliance. In addition, PBMs sometimes retain a percentage of rebates and discounts that a pharmaceutical manufacturer may pay for listing a brand-name drug on the client's formulary managed by the PBM or for increasing the market share of that drug relative to those not listed on the client's formulary. (Manufacturers generally do not pay rebates on drugs for which there are generic substitutes, because in most cases there will be automatic generic substitution.) On the other hand, PBMs operate mail-order pharmacies available to contracting parties—almost exclusively members of administered health plans. They also negotiate discounts from retail pharmacies that join their networks. Unlike retail pharmacies, however, PBMs negotiate the prices paid by patients for prescriptions dispensed by mail. The combination of these roles is the source of tension between mail and retail pharmacies.

Mail and retail pharmacies differ on several dimensions, many of which could be labeled as "convenience." Some of the most prevalent characteristics include the number of days supplied, unit cost, delivery, and initial use obstacles. Specifically, retail pharmacies commonly dispense thirty-day supplies, while mail pharmacies dispense ninety-day supplies. In addition, mail copayment is commonly twice the retail copayment even though the number of days supplied is three times that of retail. Mail pharmacy prescriptions are sent to the patient, which leads to differing "fill-to-receive times" between the two channels. Finally, patients may not know how to fill an initial prescription through the mail channel. For example, the health plan may send the patient a form that must be submitted with the first prescription. Such hassles, coupled with time delays, may prove too burdensome for some patients.

The conflict-of-interest argument builds on the mail delivery feature: With several days to fill a mail-order prescription, mail pharmacies could use that time to obtain the necessary physician permission to switch medications.[5] This so-called therapeutic substitution is commonly used for formulary implementation. For example, a pharmacist might inform the physician that the prescribed drug has a high copayment because it is not listed on the patient's formulary. The pharmacist may then suggest formulary alternatives with lower copayments for that patient. Physicians, who treat patients from multiple health plans and thus multiple formularies, often are not aware of an individual patient's benefit structure and, therefore, may change the prescription as result of this new benefit information. On the generic side, many of the calling programs are aimed at getting physicians to reconsider their "dispense as written" prescriptions. In states with generic substitution laws, the "dispense as written" indication prevents the pharmacist from dispensing the generic version of a brand-name product without obtaining permission from the prescribing doctor.

Study Data And Methods

Five large PBMs provided data for this project: AdvancePCS, Caremark, Express Scripts, Medco, and Prescription Solutions. The data set is based on the universe of claims for integrated programs—that is, where the PBM manages both the mail-service and the retail pharmacy benefit. As a result, the cohort of enrollees is thus the same when retail and mail-service claims are compared. The data exclude Medicaid and unfunded business. Unlike the private sector, state Medicaid programs often impose mandatory generic substitution policies. Further, few states use mail service in their fee-for-service Medicaid programs. Similarly, PBM-owned mail phar-

macies do not participate in the cash market, with the exception of discount-card programs.

In the first six months of 2003, the five PBMs processed nearly 670 million integrated program claims. The data used for this study are not individual claims but rather the count of mail and retail claims for each state and drug subclass during this period. Each PBM provided the number of prescription claims for each of three types of drugs: generic, multiple-source brand-name (for which generic alternatives exist), and single-source brand-name (for which no generic alternative exists and which are usually covered by patents). The six-digit Generic Product Identifier (GPI) classes we use are defined on a finer level than therapeutic category. For example, the data are presented for statins rather than all cholesterol-lowering drugs and for nonsedating antihistamines rather than all antihistamines.

The therapeutic mix of drugs is more concentrated in the mail channel, with the top ten categories accounting for more than 40 percent of all prescriptions (Exhibit 1). Eight categories appear on both lists (mail and retail channels)—all for maintenance or episodic conditions (Exhibits 2 and 3). The generic-dispensing rate is higher in retail in most categories, while the generic-substitution rate—the number of generic claims divided by the total number of claims for generic and multisource drugs—is higher for mail in most of these categories.[6]

We began our analysis by comparing the aggregate generic-dispensing rates for the mail and retail channels. This rate is the number of generic claims as a percentage of all filled claims: generic, single-source, and multiple-source. Arguments about self-dealing by mail pharmacies have been based on comparisons using this measure.[7]

The aggregate generic-dispensing rate, however, does not provide an accurate comparison of dispensing rates across channels. Because mail and retail pharmacies differ in their characteristics, they attract patients with different needs and preferences. If these preferences consistently map patients or situations to specific drug characteristics, a much different therapeutic mix across the two pharmacy channels will result. For example, because of greater days supplied, patients may be more likely to choose the mail pharmacy for conditions that require long-term treatment. Similarly, they will likely use the retail pharmacy for acute conditions—the acuity of an infection will greatly dampen willingness to wait for mail delivery of a prescribed drug.

EXHIBIT 1
Descriptive Statistics For Mail And Retail Distribution Of Prescription Drugs, 2003

	Mail	Retail
Number of claims	66,740,398	600,534,305
Number of days supplied	5,615,430,890	15,395,412,747
Average days per prescription	84	26
Number of disease groups	689	917
Share of claims for 10 largest categories	40.89%	28.34%
Share of claims for		
Acute categories	16.7%	38.8%
Maintenance categories	83.3%	61.2%
Share of claims for largest disease group in channel	8.1%	3.8%
Share of claims by drug type		
Generic (aggregate generic-dispensing rate)	38.8%	48.5%
Single-source brand	58.3%	47.7%
Multisource brand	2.9%	3.8%

SOURCE: Authors' calculations based on integrated program claims (January–June 2003) for AdvancePCS, Caremark, Express Scripts, Medco, and Prescription Solutions.

Even a patient who uses the mail pharmacy to obtain medications for hypertension may choose the retail pharmacy to fill a prescription for a seven-day antibiotic treatment. In the latter situation, the higher number of days supplied by mail (and thus a decreased frequency of refill) is of little value to the patient.

We first controlled for differences across therapeutic classes. Given the mix of therapeutic categories dispensed by mail pharmacies, we aimed to determine whether the propensity to dispense generics is similar between the two channels. Therefore, we applied the same therapeutic mix to both mail and retail pharmacies to create normalized generic-dispensing rates. We calculated the normalized generic-dispensing rate by weighting the generic-dispensing rate for each GPI in the retail channel by the share of the mail channel attributable to that GPI. The difference between the normalized rates is no longer influenced by the fact that the mail and retail channels dispense a different mix of therapeutic categories. Instead, the normalized generic-dispensing rate reflects differences in dispensing rates that occur within individual GPIs, weighted by the volumes that mail pharmacies dispense for each GPI.

This normalization only controls for differences across therapeutic categories; however, drugs within a category may vary in their characteristics leading to differing usage of individual molecules. Because of the perceived or real obstacles in initial use of the mail channel, patients may use the retail channel for less costly drugs and the mail channel for more costly therapies. This would apply even for drugs within the same GPI. Other researchers have found that cost savings are an important driver of channel choice. Jeffrey Johnson and colleagues found that 88 percent of survey respondents chose the mail-service pharmacy because of cost savings.[8] In addition, drugs within the same category may vary in their indications. For example, the single-source Serevent is used solely as a maintenance drug, while Albuterol and its generic counterparts can be used for both acute and maintenance conditions. As a result, patients use the two channels differently for that category.

To resolve the problem of within-group variation, one could further disaggregate the six-digit GPI codes. The next level of disaggregation is the eight-digit GPI, which is defined at the molecule level. This level of disaggregation fully controls for intermolecule differences in price, acuity, and length of treatment. Nonetheless, it eliminates the possibility of therapeutic substitution—at this level, molecules with single-source brands would, by definition, have a generic-dispensing rate equal to zero. In this sense, it provides an upper bound for the impact of demand effects on dispensing measures. For multisource molecules, the generic-dispensing rate becomes equivalent to the generic-substitution rate, which is defined as the number of generic claims divided by the total number of claims for generic and multisource drugs.

Study Results

Exhibits 2 and 3 use data from the most-prescribed categories for mail and retail, respectively, to illustrate the limitations associated with using the aggregate generic-dispensing rate. The difference between aggregate dispensing rates for the most-prescribed categories (29.29 percent in mail versus 39.65 percent in retail) is higher than the gap for any individual category. This discrepancy between the aggregate and category-specific rates is driven by the fact that, for example, the generic dispensing rate for statins gets more than double the weight in the mail channel (8.13 percent) versus the retail channel (3.78 percent). The difference in dispensing rates for statins is thus magnified in the comparison of the aggregate rates.

Although we have noted the limitations of the aggregate generic-dispensing rate above, we used it as the starting point for our comparison of the mail and retail channels. We found that when we considered all therapeutic categories, the aggregate generic-dispensing rate for mail was 38.79 percent. The aggregate generic-dispensing rate for retail is 48.51 percent—a difference of 9.72 percentage points. (See Exhibit 4 for summary of this and other

EXHIBIT 2
Top Ten Therapeutic Categories In Mail Pharmacies, In Rank Order As Percentage Of Mail Prescriptions, 2003

Category	Share of mail prescriptions (%)	Generic-dispensing rate (%)	Generic-substitution rate (%)
Statins	8.13	2.64	97.04
Angiotensin-converting enzyme (ACE) inhibitors	5.22	55.88	96.68
Beta-blockers cardio-selective	4.36	67.01	98.24
Proton pump inhibitors	4.31	22.85	99.83
Calcium-channel blockers	4.29	46.17	95.73
Thyroid hormones	3.97	36.02	73.48
Selective serotonin reuptake inhibitors (SSRIs)	3.26	20.76	92.80
Estrogens	2.67	22.72	79.67
COX-2 inhibitors	2.48	0.00	–[a]
Nonsedating antihistamines	2.20	0.01	2.05

SOURCE: Authors' calculations based on integrated program claims (January–June 2003) for AdvancePCS, Caremark, Express Scripts, Medco, and Prescription Solutions.

NOTES: Aggregate generic-dispensing rate and generic-substitution rate were calculated based on the twelve categories that appear in either the top ten for mail or top ten for retail. In this case, ampicillins (ranked number 151 in mail order) and narcotic combinations (ranked number 64 in mail order), which appear in the top ten for retail, are also included in mail calculations. Together the top ten mail prescriptions accounted for 40.89 percent of all prescriptions. The aggregate top ten generic-dispensing rate was 29.29 percent; the aggregate top ten generic-substitution rate was 92.37 percent.

[a] There are no generics in this category.

empirical results.)

Using the normalized generic-dispensing rates, we found that controlling for differences in the mix of indications within the two channels greatly reduced the gap in generic-dispensing rates to 1.26 percentage points. This result suggests that 87 percent of the difference in the aggregate generic-dispensing rates (more than 8.4 percentage points) can be explained by differences in therapeutic mix across channels.

Finally, we considered the generic-substitution rate, which controls for the possibility that a given drug category may contain a different mix of molecules in the mail and retail channels. The generic-substitution rate excludes the possibility for therapeutic substitution, but it provides an upper bound for the demand effects that drive differential usage of mail and retail pharmacies. The generic-substitution rate tends to be very high (on the order of 90 percent) because most states have generic-substitution laws that require a pharmacist to dispense the generic version of a prescribed multisource drug unless the physician specifies otherwise. If the state does not require automatic generic substitution, then the pharmacist has the option to intervene and ask for the physician's permission to dispense a generic. The additional fill-to-receive time in the mail channel presumably makes this type of intervention more likely.

We found that the aggregate mail generic-substitution rate of 92.99 percent was higher than the retail generic-substitution rate by 0.19 percentage points. Once we normalized the generic-substitution rate for the retail channel using the mix of the mail channel, this difference increased slightly to 0.97 percentage points.

Discussion

Many therapeutic categories for chronic conditions are relatively new and, as a result, do not face generic competition. At the same time, many acute conditions are treated with older drugs that solely because of their age

EXHIBIT 3
Top Ten Therapeutic Categories In Retail Pharmacies, In Rank Order As Percentage Of Retail Prescriptions, 2003

Category	Share of retail prescriptions (%)	Generic-dispensing rate (%)	Generic-substitution rate (%)
Statins	3.78	4.07	97.04
Selective serotonin reuptake inhibitors (SSRIs)	3.60	19.92	92.47
Angiotensin-converting enzyme (ACE) inhibitors	3.31	58.27	95.26
Beta-blockers cardio-selective	2.90	71.05	98.04
Proton pump inhibitors	2.79	15.78	99.86
Thyroid hormones	2.72	44.92	67.04
Narcotic combinations	2.53	94.16	96.53
Calcium-channel blockers	2.51	47.60	92.70
Ampicillins	2.11	92.96	97.89
Nonsedating antihistamines	2.09	0.25	36.47

SOURCE: Authors' calculations based on integrated program claims (January–June 2003) for AdvancePCS, Caremark, Express Scripts, Medco, and Prescription Solutions.

NOTES: Aggregate generic-dispensing rate and generic-substitution rate were calculated based on the twelve categories that appear in either the top ten for mail or top ten for retail. In this case, COX-2 inhibitors (ranked number 17 in retail order) and estrogens (ranked number 14 in retail), which appear in the top ten for mail order, are also included in retail calculations. Together the top ten mail prescriptions accounted for 28.34 percent of all prescriptions. The aggregate top ten generic-dispensing rate was 39.65 percent; the aggregate top ten generic-substitution rate was 91.30 percent.

have more generic competitors and, in turn, higher generic-dispensing rates. This phenomenon is responsible for 87 percent of the difference in aggregate generic-dispensing rates.

Our earlier discussion suggests that there could be demand-side explanations for the differences in within-category generic-dispensing rates. As result, the 1.26-percentage-point difference in generic-dispensing rates cannot be attributed to therapeutic substitution alone. The results from generic-substitution rates and the consequences of price incentives faced by patients provide compelling, although not conclusive, evidence that the difference is driven by demand.

Generic-substitution rates are higher in the mail channel (Exhibit 4). The higher rates may be driven by therapeutic substitution, but in the opposite direction than that suggested by the conflict-of-interest argument. In states with no generic-substitution laws, the pharmacist may contact the physician to ask for

EXHIBIT 4
Summary Of Empirical Results (All Drug Categories)

Measure	Mail (%)	Retail (%)	Percentage-point difference
Aggregate generic-dispensing rate	38.79	48.51	−9.72
Normalized generic-dispensing rate	38.79	40.05	−1.26
Aggregate generic-substitution rate	92.99	92.80	0.19
Normalized generic-substitution rate	92.99	92.02	0.97

SOURCE: Authors' calculations based on integrated program claims (January–June 2003) for AdvancePCS, Caremark, Express Scripts, Medco, and Prescription Solutions.

permission to dispense a generic drug—a price-based intervention that is a standard part of a pharmacist's interaction with a physician. Alternatively, the pharmacist may call the physician to reconsider prescriptions marked "dispense as written." Given that mail pharmacies have several days to fill a mail-order prescription, such intervention is more likely to take place in the mail channel, thereby yielding higher generic-substitution rates. Unless mail pharmacies have two conflicting therapeutic substitution policies—one that encourages greater use of generics and the other that encourages greater use of single-source drugs—our empirical results suggest that therapeutic substitution away from generic drugs does not explain the discrepancy in generic-dispensing rates.

"The difference in aggregate generic-dispensing rates between mail and retail pharmacies confounds variation in performance with differences in demand."

While the generic-substitution measure provides an upper bound for the demand effects that drive differential use of mail and retail pharmacies, the isolated impact of prices on differential use of mail and retail pharmacies warrants further discussion. Consider the following example. Suppose John's pharmacy benefits follow the 10-25-45 copayment structure: He pays $10 for generics, $25 for brand-name drugs listed on the formulary (second tier), and $45 for unlisted brand-name drugs (third tier), all if he obtains a maximum thirty-day supply from a retail pharmacy. If John uses the mail pharmacy, he can obtain a ninety-day supply for twice the price (that is, his mail benefit structure is 20-50-90).

Now suppose John's physician prescribes a generic drug. If John fills the prescription through a mail pharmacy, he can save $40 per year (twelve fills at $10 each, versus four fills at $20 each). If, however, his doctor prescribes a brand that is on the formulary for his plan, John would save $100 (twelve fills at $25 each, versus four fills at $50 each). Finally, suppose John's doctor prescribes a brand-name product that is not listed on the formulary. Then John has a much greater incentive to use the mail pharmacy. His yearly savings come out to $180 (twelve fills at $45 each versus four fills at $90 each). We note, however, that if the benefit structure for the mail channel had a greater penalty for using nonformulary brands, the incentive to use the mail channel for nonformulary brands would be reduced.[9]

Although the benefit structure will differ across patients, the tiered structure of copayments will necessarily result in greater financial savings for more expensive drugs. Because patients taking such drugs have greater financial incentives to choose mail over retail, they will be more willing to take the time and effort to learn how to use the mail pharmacy. As a result, mail pharmacies are likely to have a disproportionate share of single-source (brand-name) drugs for a given therapeutic category or even subcategory, such as statins.

To test the impact of price incentives on demand for mail order, one would need to estimate the probability of channel choice as a function of price differentials. One may argue, however, that these price differentials would not be fully exogenous because the PBM has more influence over the mail pharmacy copayment than an individual retail pharmacy does over the retail copayment. Unfortunately, finding proper instruments to adjust for this could be difficult.

Conclusion

The fact that mail pharmacies have lower generic-dispensing rates than their retail counterparts has been used as evidence of self-dealing that could arise when a PBM is both a plan administrator and a pharmacy owner. Our analysis found that the difference in aggregate generic-dispensing rates between mail and retail pharmacies confounds variation in performance with differences in demand.

Using the universe of claims for third-party clients of five large PBMs, we found that 87 percent of the difference in the aggregate generic-dispensing rate is driven by differences in therapeutic mix.

Although our data do not allow us to fully control for all potential demand-side factors, such as differences in price, acuity, and length of treatment, we provide evidence that even category-specific generic-dispensing rates are influenced by these differences. In particular, the generic-substitution rate, which fully controls for intermolecule differences, eliminates the discrepancy in dispensing rates. These results underscore the fact that it is impossible to make definitive judgments about pharmacy performance based on the generic-dispensing measure. As a result, addressing the proposed conflict of interest ultimately requires direct analysis of whether the monetary benefits from rebates outweigh the cost of interventions for therapeutic substitution and the obligations PBMs have to their clients.

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NOTES

1. IMS Health. The discrepancy between the two percentages is driven by the fact that prescriptions filled through mail pharmacies typically dispense ninety-day supplies of medication, while retail pharmacies typically dispense thirty-day supplies.
2. J. Langenfeld and R. Maness, "The Cost of PBM 'Self-Dealing' under a Medicare Prescription Drug Benefit," 9 September 2003, www.ncpanet.org/assets/Federal_Bills_Pending_Legislation/asset_upload_file222_2891.pdf (2 March 2004).
3. "Public Hearing before Assembly Health and Human Services Committee: Assembly Bill No. 2337," 8 August 2002, www.njleg.state.nj.us/legislativepub/pubhear/080802rs.pdf, p. 45 (2 March 2004).
4. *The Medicare Prescription Drug, Improvement, and Modernization Act of 2003*, P.L. 108-173, Section 110.
5. Langenfeld and Maness, "The Cost of PBM 'Self-Dealing'."
6. It should be noted that there were no generics in the nonsedating antihistamine categories until November 2003, when Claritin lost its patent. The generic-dispensing and -substitution rates reflect dispensing of over-the-counter (OTC) medications such as Tavist, which are covered by select plans.
7. Langenfeld and Maness, "The Cost of PBM 'Self-Dealing' "; and "Public Hearing before Assembly Health and Human Services Committee."
8. J. Johnson at al., "A Comparison of Satisfaction with Mail versus Traditional Pharmacy Services," *Journal of Managed Care Pharmacy* 3, no. 3 (1997): 327–337.
9. For example, suppose that John's benefit structure for the mail channel moved from 20-50-90 to 20-50-135. That is, he pays twice the retail copayment for generics and listed brands and three times the retail copayment for unlisted brands. He now saves no money by using mail for unlisted brands (twelve fills at $45 each for retail, versus four fills at $135 each for mail).