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# Commentary on Current Trends in Rising Drug Costs and Reimbursement Below Cost

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## ABSTRACT

**Purpose:** To quantify prescription drug price increases over a span of 3 years (2012–2015), as well as extrapolate current reimbursement rates expected by independent retail pharmacies. In addition, we investigate potential reasons for these increasing drug costs.

**Design:** Descriptive analysis.

**Methodology:** National average drug acquisition costs (NADAC) data published by the Centers for Medicare & Medicaid Services were examined. Specifically, December 2012, 2013, and 2014, and July 2015 NADAC files were analyzed to identify generic and branded products with the highest percentage price increases. Percentage price differences were also calculated for 17 first-in-class drugs and their "me-too" competitors. The margin and margin percentage were calculated for claims adjudicated through four major payers.

**Results:** The top 50 generic drug price increases ranged from 474% to over 18,000% from December 2012 to July 2015. The top 50 branded drug price increases ranged from 63% to 391% during the same time period. The percentage price difference for the first-in-class drugs versus their me-too analogues ranged from –2.3% to 61,259%. The margin for generic drug claims adjudicated ranged from –$237.11 to –$1,105.96. The margin for branded drug claims adjudicated ranged from $272.42 to $360.17.

**Conclusion:** Several potential reasons for the surge in prescription drug prices include manufacturer competition, industry consolidation, and capitalization on me-too drugs. This increase has compelled PBMs, health plan sponsors, and retail pharmacies to find novel ways to turn a profit, often at the expense of the consumer. Although there are no immediate solutions, legislation regulating PBM functions and the use of therapeutic interchange programs may offer health plans some assistance in managing drug costs.

## INTRODUCTION

Over the past 4 years, the United States health care system has seen dramatic increases in the prices of prescription drugs. Recently, high prices have caught the attention of Congress and prompted investigations of companies that have greatly increased the price of certain drugs. To investigate this issue, we examined national average drug acquisition costs (NADAC) data published by the Centers for Medicare & Medicaid Services (CMS). The NADAC registry is available to the public and, in some cases, is used by CMS to determine reimbursement rates for prescription and over-the-counter products filled in retail community pharmacies. This registry is created by surveying, on a monthly basis, the prices that retail community pharmacies pay to acquire medicines (CMS 2013). We analyzed NADAC files from December 2012, 2013, and 2014, and from July 2015 to identify generic and branded products with the largest price increases. Generic products with multiple NDCs and dosage strengths were excluded from the analysis. The top 50 generic drug price increases ranged from 474% to over 18,000% (Table 1). Table 2 shows the top 50 price increases of branded drugs, demonstrating a 63% to 391% price hike during the same time period. The branded drugs reported were products that did not have a generic equivalent throughout the entire time period analyzed. Although the NADAC does not show the net acquisition costs of drugs for specific pharmacies, it gives us an idea regarding the trend in drug price increases over the past several years. Despite these increases in price, retail pharmacies are being reimbursed below cost, making it increasingly difficult to remain financially viable. The aim of this article is to investigate the various reasons behind these rising drug costs and declining reimbursement rates.

### Reimbursement below costs

In addition to the hike in drug prices, reimbursement rates for drugs are shrinking, making it harder for pharmacies to turn a profit. To investigate the reimbursement rates, an independent dispensing pharmacy in South Florida made its claims data available. The claims data adjudicated 73 generic drugs and 34 branded drugs through four payers: Optum (UnitedHealthcare), CVS Caremark, Medco, and Humana. This particular independent dispensing pharmacy was used to process the claims because the investigators had access to the pharmacy and resided near its location. Although the costs listed were obtained via one community pharmacy, these results shed light onto the current situation that many independent pharmacy retailers across the nation experience.

In our analysis, if a medication was successfully adjudicated, the reimbursement payment for the medication was recorded. A medication is successfully adjudicated when a third-party payer approves coverage for a patient and reimbursement is made to the pharmacy filling the prescription. Drugs that required prior authorization were not analyzed. The gross margin (payer reimbursement minus drug cost) and the gross margin percentage (gross margin multiplied by 100) were recorded for each of the four payers. By looking at these values, it is possible to determine which drugs were profitable for an independent dispensing pharmacy in South Florida.

**Generic-drug adjudicated claims**

To conduct our analysis of four payers, we sampled one adjudication for each drug. Seventy of the 73 generic drugs included in our analysis were successfully adjudicated through Optum. The combined acquisition cost of the drugs adjudicated was $8,063.00 and the total amount that Optum reimbursed for the drugs was $6,957.05. The drugs that resulted in a positive margin yielded a total of $369.50 in profits. The drugs that resulted in a negative margin represented a loss of $1,502.46. Overall, the pharmacy's margin totaled –$1,105.95 and a margin percentage of –15.9% was recorded.

Sixty-three generic drugs were adjudicated successfully through CVS/Caremark. The total cost of the drugs adjudicated was $4,899.66. The total amount that CVS/Caremark paid for the drugs was $4,649.40. The drugs that resulted in a positive margin yielded a total of $399.20 in profits. The drugs that resulted in a negative margin represented a loss of $649.54. Overall, the pharmacy's margin totaled –$250.26 and a margin percentage of –5.4% was recorded.

Sixty-seven generic drugs were successfully adjudicated through Medco. Their total cost was $7,912.89. Medco paid $7,675.78 for the adjudicated amount. Forty-five drugs produced a margin of $485.83. The drugs that resulted in a negative margin represented a loss of $922.94. Overall, the margin totaled –$237.11 and a margin percentage of –3.1% was recorded.

Sixty-seven generic drugs were successfully adjudicated through Humana with a total cost of $5,024.71. Humana paid $4,601.67 for the adjudicated amount. The drugs that resulted in a positive margin yielded a total of $405.63 in profits. The drugs that resulted in a negative margin represented a loss of $828.67. Overall, the margin was –$423.04 and the gross margin percentage was –9.2%.

**Branded-drug adjudicated claims**

We used the same process for analyzing branded drugs that we used for analyzing generic drugs, i.e., we sampled one adjudication for each drug. Twenty of the 34 branded drugs were successfully adjudicated through Optum. The cost of the adjudicated drugs was $4,153.78, and Optum paid $4,426.20 for them. The drugs that resulted in a positive margin yielded a total of $359.50 in profits. The drugs that resulted in a negative margin represented a loss of $87.18. Overall, the gross margin for Optum was $272.42 and the gross margin percentage was 6.2%.

Seventeen of the 34 branded drugs were successfully adjudicated through CVS/Caremark. The costs of the drugs were $4,214.39, and CVS/Caremark paid $4,574.56 for these drugs. All the branded drugs adjudicated through CVS/Caremark resulted in positive margins. The gross margin for CVS/Caremark was $360.17 and the gross margin percentage was 7.9%.

Twenty-three of the 34 branded drugs were successfully adjudicated through Medco. These drugs cost a total of $7,108.89, and Medco paid $7,389.50 for them. The drugs that resulted in a positive margin yielded a total of $615.92 in profits. The drugs that resulted in a negative margin represented a loss of $335.31. Overall, the gross margin for Medco was $280.61 and the gross margin percentage was 3.8%.

Twenty drugs were successfully adjudicated through Humana with a total cost of $5,928.46. Humana paid a total of $6,280.33 for these drugs. The drugs that resulted in a positive margin yielded a total of $409.25 in profits. The drugs that resulted in a negative margin represented a loss of $57.38. Overall, the gross margin for Humana was $351.87 and the gross margin percentage was 5.6%.

One limitation of this analysis was that all payers required a prior authorization for a large percentage of the branded drugs. This reduced the amount of data that could be analyzed. Nonetheless, taking into account the gross margins for both generic and branded drugs combined, it is evident that reimbursements from the four payers resulted in a cumulative negative gross margin.

**Potential reasons for rising costs**

Drug manufacturers are not limited by price controls and can set prices on their products, depending on potential use and competition, to recover costs (Danzon 2014b). As the patent for a brand-name drug reaches expiration, the drug's price increases progressively. Within 6 months of being introduced into the market, a generic drug is priced 20%–30% below brand (Morton 2012).

Once several manufacturers produce generic versions of brand-name drugs, two important things happen simultaneously. First, the price for generic drugs erodes dramatically, and second, there is a shift toward the use of these now less-expensive generic drugs, diminishing the use of branded drugs. However, over the past several

**TABLE 1**
**Price trend of generic drugs, December 2012–July 2015**

| Drug name | Price per unit ($) | | | | Percentage (%) price increase 2012–2015 |
|---|---|---|---|---|---|
| | 2012 | 2013 | 2014 | 2015 | |
| Tetracycline 500 mg capsule | 0.04 | 0.05 | 8.50 | 8.40 | 18,808 |
| Niacin ER 1,000 mg tablet | 0.10 | 4.80 | 4.80 | 4.20 | 7,673 |
| Captopril 50 mg tablet | 0.00 | 0.80 | 1.80 | 1.60 | 6,863 |
| Clomipramine 25 mg capsule | 0.20 | 8.30 | 8.30 | 8.30 | 3,600 |
| Albuterol sulfate 2 mg tablet | 0.10 | 3.80 | 3.80 | 4.00 | 3,516 |
| Doxycycline hyclate 100 mg tablet | 0.10 | 3.50 | 2.30 | 1.90 | 3,139 |
| Hydroxychloroquine 200 mg tablet | 0.10 | 0.10 | 0.50 | 2.60 | 2,476 |
| Amitriptyline HCl 100 mg tablet | 0.00 | 0.00 | 1.10 | 1.10 | 2,442 |
| Methylergonovine maleate 0.2 mg tablet | 1.10 | 12.70 | 20.50 | 21.60 | 1,887 |
| Enalapril maleate 20 mg tablet | 0.00 | 0.20 | 0.40 | 0.50 | 1,649 |
| Carbamazepine 200 mg tablet | 0.00 | 0.00 | 0.80 | 0.70 | 1,459 |
| Ursodiol 300 mg capsule | 0.30 | 0.30 | 4.50 | 4.20 | 1,318 |
| Fluoxetine HCl 10 mg tablet | 0.10 | 0.10 | 0.60 | 1.00 | 1,309 |
| Captopril/hydrochlorothiazide 50/15 mg tablet | 0.10 | 0.40 | 1.50 | 1.50 | 1,145 |
| Phenazopyridine 200 mg tablet | 0.10 | 0.10 | 0.80 | 1.80 | 1,138 |
| Butalbital/acetaminophen/caffeine 50/325/40 tablet | 0.10 | 0.10 | 0.60 | 0.60 | 1,060 |
| Fluconazole 100 mg tablet | 0.10 | 1.50 | 1.40 | 1.40 | 1,044 |
| Clobetasol 0.05% ointment | 0.30 | 0.20 | 5.00 | 3.90 | 1,026 |
| Econazole nitrate 1% cream | 0.30 | 0.10 | 2.10 | 3.60 | 976 |
| Nadolol 80 mg tablet | 0.30 | 3.90 | 3.60 | 3.60 | 967 |
| Propranolol 40 mg tablet | 0.00 | 0.00 | 0.00 | 0.30 | 888 |
| Sodium bicarbonate 8.4% vial | 0.00 | 0.00 | 0.20 | 0.20 | 857 |
| Hydroquinone 4% cream | 0.30 | 2.70 | 3.00 | 2.60 | 817 |
| Duexis 800/26.6 mg tablet | 1.70 | 7.30 | 11.00 | 15.00 | 765 |
| Mirtazapine 7.5 mg tablet | 0.10 | 0.10 | 1.10 | 1.20 | 765 |
| Indapamide 1.25 mg tablet | 0.00 | 0.10 | 0.30 | 0.30 | 749 |
| Promethazine 25 mg suppository | 1.00 | 8.30 | 8.30 | 8.80 | 743 |
| Methylphenidate ER 20 mg tablet | 0.60 | 1.60 | 1.60 | 5.00 | 727 |
| Digoxin 250 mcg tablet | 0.10 | 0.10 | 1.00 | 1.00 | 712 |
| Fentanyl 0.05 mg/ml ampule | 0.10 | 0.50 | 0.40 | 0.50 | 696 |
| Doxazosin mesylate 2 mg tablet | 0.10 | 0.60 | 0.50 | 0.50 | 695 |
| Triazolam 0.25 mg tablet | 0.10 | 0.60 | 0.80 | 1.00 | 654 |
| Prednisone 5 mg tablet | 0.00 | 0.10 | 0.10 | 0.10 | 643 |
| Ketoconazole 200 mg tablet | 0.20 | 0.20 | 1.40 | 1.60 | 631 |
| Fluocinonide-e 0.05% cream | 0.20 | 0.40 | 1.80 | 1.60 | 627 |
| Fluorometholone 0.1% drops | 1.70 | 1.10 | 8.70 | 12.40 | 622 |
| Sulfamethoxazole/trimethoprim suspension | 0.00 | 0.10 | 0.30 | 0.30 | 619 |
| Bumetanide 2 mg tablet | 0.10 | 0.10 | 1.10 | 1.00 | 605 |

*table continues*

**TABLE 1**
**Price trend of generic drugs, December 2012–July 2015** *(continued)*

| Drug name | Price per unit ($) | | | | Percentage (%) price increase 2012–2015 |
|---|---|---|---|---|---|
| | 2012 | 2013 | 2014 | 2015 | |
| Fluocinolone oil 0.01% ear drop | 1.20 | 8.30 | 8.30 | 8.50 | 589 |
| Erythromycin 2% gel | 0.40 | 0.70 | 0.70 | 2.70 | 578 |
| Cimetidine 400 mg tablet | 0.10 | 0.30 | 0.30 | 0.40 | 577 |
| Mesalamine 4 g/60 ml kit | 18.90 | 103.90 | 102.90 | 123.30 | 552 |
| Flurazepam 15 mg capsule | 0.10 | 0.10 | 0.20 | 0.30 | 518 |
| Haloperidol 5 mg tablet | 0.10 | 0.40 | 0.80 | 0.70 | 516 |
| Ofloxacin 0.3% ear drops | 0.90 | 1.70 | 2.10 | 5.60 | 503 |
| B-complex 100 injection | 1.00 | 1.10 | 1.40 | 6.10 | 500 |
| Spironolactone/hydrochlorothiazide 25/25 tablet | 0.20 | 0.70 | 1.10 | 1.10 | 493 |
| Isosorbide dinitrate 30 mg tablet | 0.10 | 0.60 | 0.70 | 0.70 | 481 |
| Allopurinol 300 mg tablet | 0.10 | 0.10 | 0.30 | 0.30 | 474 |
| Terbutaline sulfate 2.5 mg tablet | 0.30 | 0.30 | 1.00 | 1.40 | 448 |
| Clindamycin phosphate 1% solution | 0.20 | 0.90 | 0.90 | 0.80 | 422.3 |

Information for this analysis was obtained July 10, 2015, from the National Average Drug Acquisition Costs (NADAC) data published by the Centers for Medicare & Medicaid Services. Nearly every drug listed showed a significant jump in price during the years analyzed. ER=extended release, HCl=hydrochloride.

years, price trends during the drug life cycle have gone awry. Considering the growth of health care costs in the United States, this disparate rise in generic drug prices is a matter of substantial concern. Here, we discuss potential triggers for these exponential increases in drug prices.

*Industry consolidation*

The merger of two companies that produce generic drugs can eliminate competition among similar products on the market. This reduced competition can result in price manipulation. One high-profile announcement in the mergers and acquisitions of pharmaceutical companies was the $40.5 billion deal that Teva Pharmaceuticals reached to purchase Allergan (Logan 2015). There have been plenty of other high-profile takeovers in past years. For example, Pfizer reportedly has spent more than $219 billion since 1994 in mergers with and acquisitions of rival pharmaceutical companies like Wyeth and Warner-Lambert (Lo 2015). This is one way by which pharmaceutical companies position themselves within the market to sell products for the highest possible margin (Miglierini 2014). An article in *Forbes* reported that in recent years, fewer and fewer applications have been made to the FDA to gain approval for generic drugs, with industry consolidation cited as a major factor (Why 2015). The resulting dampened competition has allowed prices of drugs to increase for both the payer and consumer (Why 2015).

*"Me-too" drugs*

The development of "me-too" or "follow-on" drugs has had a significant impact on payers and consumers in the United States. A me-too drug is defined as a drug whose chemical structure or mechanism of action is similar to that of a drug already on the market (Eaglstein 2013). Generic drugs are different from me-too drugs in that they are chemically identical to branded drugs (FDA 2015). Generic drugs must also demonstrate equivalency, in terms of pharmacokinetic and safety profiles, to their branded counterparts (FDA 2015). Many arguments have been made regarding the benefits, detriments, and worth of me-too drugs in the marketplace.

There is some evidence to show that certain patients may respond differently to me-too drugs and, thus, having a surplus of parallel drug choices can aid therapeutic decisions (Eaglstein 2013). Conversely, me-too drugs are thought to lack innovation because they are very similar in structure and function to drugs already on the market (Gagne 2011). Many argue that research-and-development investments would be better served if allocated to disease states that have limited or no treatment options (Gagne 2011). Furthermore, the safety profiles of me-too drugs are often limited (DiMasi 2004). To gain market entry, these drugs must demonstrate "noninferiority" to the cur-

**TABLE 2**
**Price trend of branded drugs, December 2012–July 2015**

| Drug name | Price per unit ($) | | | | Percentage (%) price increase 2012–2015 |
|---|---|---|---|---|---|
| | 2012 | 2013 | 2014 | 2015 | |
| Edecrin 25 mg tablet | 3.90 | 5.20 | 13.00 | 18.90 | 391 |
| Eurax 10% cream | 1.40 | 1.50 | 2.30 | 7.00 | 385 |
| Neupro 1 mg/24 hr patch | 4.10 | 4.90 | 15.90 | 17.10 | 315 |
| Exelderm 1% solution | 2.70 | 3.00 | 4.40 | 8.80 | 225 |
| Ulesfia 5% lotion | 0.20 | 0.30 | 0.60 | 0.70 | 217 |
| Fanapt 10 mg tablet | 10.20 | 11.20 | 12.40 | 26.80 | 161 |
| Ertaczo 2% cream | 3.90 | 4.90 | 6.50 | 10.10 | 157 |
| Halog 0.1% cream | 3.20 | 2.30 | 3.00 | 8.10 | 153 |
| Relistor 12 mg/0.6 ml syringe | 47.70 | 95.90 | 106.30 | 116.90 | 145 |
| Horizant ER 600 mg tablet | 3.40 | 4.80 | 6.80 | 8.20 | 144 |
| Leukeran 2 mg tablet | 4.50 | 9.00 | 10.30 | 10.30 | 130 |
| Zyflo CR 600 mg tablet | 11.10 | 17.50 | 17.40 | 23.80 | 115 |
| Apidra Solostar 100 units/ml | 13.40 | 17.40 | 23.10 | 27.80 | 107 |
| Vagifem 10 mcg vaginal tablet | 8.00 | 9.50 | 13.60 | 16.40 | 104 |
| Denavir 1% cream | 64.30 | 71.80 | 116.80 | 130.80 | 104 |
| Santyl ointment 250 units/gram | 2.90 | 5.70 | 5.70 | 5.90 | 103 |
| Dipentum 250 mg capsule | 5.30 | 5.60 | | 10.70 | 102 |
| Urogesic Blue tablet | 1.50 | 1.50 | 1.50 | 2.90 | 100 |
| Alinia 100 mg/5 ml suspension | 1.40 | 1.50 | 2.50 | 2.80 | 99 |
| Patanol 0.1% eye drops | 24.00 | 26.00 | 36.60 | 45.90 | 91 |
| Welchol 3.75 g packet | 8.10 | 10.60 | 13.60 | 15.10 | 88 |
| Lantus 100 units/ml vial | 12.90 | 16.20 | 24.10 | 24.20 | 87 |
| Vusion ointment 0.25%/15% miconazole with zinc oxide | 5.00 | 5.60 | 7.20 | 9.40 | 87 |
| Cialis 5 mg tablet | 3.70 | 4.40 | 5.70 | 6.90 | 87 |
| Edarbi 80 mg tablet | 2.60 | 3.00 | 4.40 | 4.80 | 86 |
| Levemir 100 units/ml vial | 13.20 | 16.30 | 24.10 | 24.10 | 82 |
| Estrace 0.01% cream | 3.00 | 3.20 | 3.90 | 5.40 | 81 |
| Frova 2.5 mg tablet | 29.80 | 32.80 | 42.80 | 53.60 | 80 |
| Humalog mix 50/50 vial | 12.70 | 15.00 | 20.50 | 22.50 | 78 |
| Oxistat 1% cream | 4.20 | 4.70 | 5.40 | 7.40 | 77 |
| Nucynta 100 mg tablet | 3.40 | 3.60 | 4.20 | 6.00 | 77 |
| Azopt 1% eye drops | 11.00 | 12.70 | 15.40 | 19.30 | 75 |
| Multaq 400 mg tablet | 4.30 | 5.60 | 6.80 | 7.40 | 74 |
| Lyrica 100 mg capsule | 3.00 | 3.60 | 4.30 | 5.10 | 71 |
| Humulin N 100 units/ml pen | 14.60 | 17.10 | 22.80 | 25.10 | 72 |
| Novolog mix 70/30 vial | 13.00 | 15.60 | 20.80 | 22.30 | 72 |
| Nasonex 50 mcg nasal spray | 7.10 | 8.20 | 9.90 | 12.20 | 72 |
| Vexol 1% eye drops | 8.40 | 9.10 | 13.20 | 14.30 | 71 |

*table continues*

**TABLE 2**
**Price trend of branded drugs, December 2012–July 2015** *(continued)*

| Drug name | Price per unit ($) | | | | Percentage (%) price increase 2012–2015 |
|---|---|---|---|---|---|
| | 2012 | 2013 | 2014 | 2015 | |
| Onfi 10 mg tablet | 6.00 | 7.10 | 7.80 | 10.30 | 70 |
| Humulin R 500 units/ml vial | 34.40 | 40.30 | 53.30 | 58.60 | 70 |
| Adcirca 20 mg tablet | 23.50 | 28.20 | 33.10 | 40.00 | 70 |
| Edarbyclor 40/25 mg tablet | 2.70 | 3.10 | 4.10 | 4.50 | 70 |
| Forteo 600 mcg/2.4 ml pen injection | 484.50 | 526.20 | 621.30 | 812.60 | 68 |
| Viagra 25 mg tablet | 21.80 | 25.70 | 30.50 | 36.50 | 68 |
| Premarin vaginal cream-applicator | 5.20 | 6.20 | 7.20 | 8.60 | 67 |
| Premphase 0.625/5 mg tablet | 2.80 | 3.40 | 3.90 | 4.70 | 66 |
| Alocril 2% eye drops | 19.10 | 24.60 | 26.30 | 31.70 | 66 |
| Nevanac 0.1% droptainer | 43.60 | 46.70 | 58.80 | 72.30 | 66 |
| Zetia 10 mg tablet | 4.60 | 5.30 | 6.30 | 7.60 | 64 |
| Latuda 20 mg tablet | 15.10 | 19.90 | 22.50 | 24.70 | 63 |

Information for this analysis was obtained July 10, 2015, from the National Average Drug Acquisition Costs (NADAC) data published by the Centers for Medicare & Medicaid Services. Nearly every drug listed showed a significant jump in price during the years analyzed. CR=controlled release, ER=extended release.

rent standard-of-care product. Thus, their safety profiles are not as extensive as those of first-in-class drugs that have endured years of postmarketing surveillance and research (DiMasi 2004). Finally, the addition of me-too drugs is believed to increase market competition and that competition is supposed reduce prices, yet this is not always the case.

Table 3 shows the cost of several me-too drugs currently marketed in the United States compared with the price of the analogous original drug. The me-too drugs have slight changes in formulation, yet often come with a large increase in price (up to several thousand percent) in comparison with the original marketed drug. Only one of the listed me-too drugs is cheaper than the original product.

Some me-too drugs are formulated as a combination of two products in one tablet or capsule. This two-in-one formulation can yield up to a 5,000% price increase compared with the added price of each separate drug, as shown in Table 3.

## High-risk drugs

Finally, we analyze the pricing impact of labeling drugs as "high-risk." In 2012, CMS published a list of drugs that were identified, through evidence-based criteria, as carrying the potential to cause adverse effects in those age 65 or older (CMS 2012). This potential is due to either pharmacologic properties of the drug or inherent physiologic alterations in the elderly (AGS 2012). CMS has mandated restrictions on the use of high-risk drugs in the elderly. These restrictions are the basis for a performance measure, Use of High-Risk Medications in the Elderly, in the National Committee for Quality Assurance's Healthcare Effectiveness Data and Information Set (HEDIS). This measure is currently being redrafted to reflect the 2015 American Geriatrics Society Beers Criteria and is defined as the percentage of patients older than 65 years of age who are prescribed one high-risk medication and who have received two fills of said high-risk medication (NCQA 2016).

As a result of these performance measures, high-risk drugs are less prescribed by providers, resulting in a decrease in the utilization of these drugs. This decline in utilization has created a downward spiral by reducing drug production (supply) and has driven an increase in the cost of these drugs. Because fewer manufacturers are producing various high-risk drugs, these manufacturers are capitalizing on the continued demand, creating an oligopoly, which has contributed to a rise in drug costs.

Amitriptyline provides an example of this pattern. Because of restrictions on prescribing, fewer companies are making amitriptyline, so the remaining suppliers have more market power and ability to control prices. Considered a high-risk drug in the elderly due to its anticholinergic side effects, amitriptyline increased in price by 2,442% from December 2012 to July 2015 (Table 1). Various approved indications for which this drug proves useful include depression, chronic pain, interstitial cystitis, and migraine prophylaxis. This creates an issue for patients who have been using this

**TABLE 3**
**Price comparison between first-in-class and "me-too" drugs**

| First-in-class | Quantity | WAC[a] ($) | WAC/ dose | Me-too | Quantity | WAC[a] ($) | WAC/ dose | % price difference |
|---|---|---|---|---|---|---|---|---|
| Fluorouracil 5% cream | 40 g | 189.00 | 189.00 | Carac 0.5% | 30 g | 22497.70 | 2497.70 | 1,221 |
| Zolpidem 10 mg | 1000 | 90.00 | 0.10 | Intermezzo | 30 | 249.40 | 8.30 | 9,137 |
| Zolpidem 10 mg | 1000 | 90.00 | 0.10 | Edluar | 30 | 318.10 | 10.60 | 11,680 |
| Risedronate 35 mg | 4 | 198.30 | 49.60 | Atelvia 35 mg | 4 | 193.70 | 48.40 | –2.3 |
| Bupropion ER 150 mg | 250 | 112.50 | 0.50 | Aplenzin 174 mg | 30 | 666.80 | 22.20 | 4,839 |
| Paroxetine 10 mg | 500 | 114.20 | 0.20 | Pexeva 10 mg | 30 | 274.80 | 9.20 | 3,911 |
| Metformin ER 500 mg | 500 | 42.00 | 0.10 | Glumetza 500 mg | 100 | 5148.00 | 51.50 | 61,259 |
| Fluticasone propionate | 120 | 22.00 | 0.20 | Veramyst 27.5 mcg | 120 | 164.00 | 1.40 | 646 |
| Brimonidine 0.2% 5 ml | 5 ml | 14.50 | 2.90 | Alphagan P 0.1% | 5 ml | 110.90 | 22.20 | 665 |
| Cyclobenzaprine 10 mg | 500 | 12.79 | 0.02 | Amrix 30 mg | 60 | 1656.00 | 27.60 | 45,900 |
| Gabapentin 300 mg | 100 | 26.60 | 0.30 | Gralise 300 mg | 90 | 486.90 | 5.40 | 1,938 |
| Suboxone SL 8/2 mg generic | 30 | 168.78 | 4.22 | Suboxone SL Film 8/2 mg | 30 | 203.00 | 6.78 | 21 |
| Omnaris | 120 | 193.80 | 1.60 | Zetonna 37 mcg | 60 | 205.00 | 3.40 | 113 |
| Simvastatin 20 mg & niacin ER 500 mg | | | 3.50 | Simcor 20/500 | 90 | 407.00 | 4.50 | 28 |
| Esomeprazole 20 mg & naproxen 325 mg | | | 7.30 | Vimovo 20/375 | 60 | 1485.00 | 24.80 | 239 |
| Sumatriptin 100 mg & naproxen 500 mg | | | 1.90 | Treximet 85/500 mg | 9 | 625.50 | 69.50 | 3,609 |
| Ibuprofen 800 mg & famotidine 20 mg | | | 0.30 | Duexis 800/26.6 | 90 | 1485.00 | 16.50 | 5,138 |

[a] Wholesale acquisition cost (WAC) pricing and quantity taken from McKesson wholesaler on Sept. 19, 2015. The percentage price difference was reported to demonstrate the difference in price between first-in-class and me-too products. Drugs that do not have WAC and quantity reported are combination products. The price per unit of each combination product was calculated separately and the WAC per dose was reported, which was compared to the respective me-too drug. ER=extended release, SL=sublingual.

drug for several years without significant side effects, and who must now bear the burden of these increased costs. Similarly, digoxin, which has potential for increased toxicity in the elderly due to its narrow therapeutic index, has shown up to a 712% increase in cost over the past 2.5 years (Table 1, Priority 2016, Potentially harmful drugs 2012).

## Potential reasons for decreased reimbursement rates

Pharmacy benefit managers (PBMs) serve as middlemen among plan sponsors, drug manufacturers, and retail pharmacies. PBMs' functions include creating drug formularies, processing pharmacy claims, and negotiating rebates from drug manufacturers (Danzon 2014a). The contract between insurance plan sponsors and PBMs includes the amount the health plan sponsor will pay the PBM for a particular brand or generic drug. At the same time, PBMs negotiate prescription drug prices with retail pharmacies to set the reimbursement rates for each prescription (Florida Senate 2015). PBMs have stirred up a lot of controversy in the pharmaceutical industry because of their handling of manufacturer rebates and reimbursement rates. PBMs have been subject to litigation since 2004 under the Federal Trade Commission Act, which forbids "unfair or deceptive acts or practices in or affecting commerce" (Meador 2011). PBMs have been accused of withholding manufacturer rebates from health plan sponsors. Rebates are given to PBMs in exchange for the placement of certain drugs in a health plan's formulary. Manufacturer rebates play an important role in determining PBMs' profit streams, particularly if they are concealed from health plan sponsors. Without rebates being reflected in the final cost of a drug, PBMs can reimburse retail pharmacies at lower rates while charging higher prices to plan sponsors. This is known as spread pricing. The PBM spread is the difference between how much a PBM bills the employer for a drug's cost and the amount it reimburses a

pharmacy for that same drug (Garis 2004).

*Markups by PBMs and hospitals*

While PBMs and hospitals actively manage their internal costs, they also look to maximize profits. Thus, their internal cost savings are not always reflected in prices for goods or services charged to payers. PBMs, for example, place a markup on drugs dispensed for their clients, often in the range of $10 to $20 per prescription above the amount paid to the dispensing pharmacies. Similarly, hospitals often mark up the drugs dispensed to their patients.

Hospitals and manufacturing companies often make purchasing contracts that can affect consumers in the long run. To illustrate, a hospital may be able to buy branded rosuvastatin (Crestor; currently, no generic is available) for a lower price than it would pay for atorvastatin, a commonly prescribed generic cholesterol-lowering drug in the same class as Crestor. Thus, these patients' discharge instructions will include Crestor, which is more expensive when filled in the community than a generic alternative like atorvastatin.

*Florida legislation*

Until 2016, PBMs were not regulated in Florida. In January 2016, however, the new provisions of the Florida Pharmacy Act went into effect that allow monitoring and controlling of PBMs' activities and contracts (Florida Legislature 2015). The statute sets parameters that PBMs must follow in their contracts with pharmacies. Reimbursement for generic drugs, determined by a fixed maximum allowable cost (MAC), is often incongruent with the real-market prices at which pharmacies acquire these drugs. One of the major contributing factors leading to retail pharmacies being reimbursed below the true cost of drug acquisition was that the frequency of updates to MAC figures had not been regulated. As drug prices increased dramatically, pharmacies continued to be reimbursed based on outdated MAC lists. A new provision in the Florida law requires the update of MAC lists at least once every week, maintaining consistency between time-sensitive pricing information and the lists.

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## Managing drug costs

Historically, pharmacists in different settings have used a variety of tools to control costs. Chain pharmacies have developed automated systems to identify the lowest-cost (highest profit) manufacturing sources, particularly for generic drugs. Independent pharmacies generally have no tools to manage their costs other than to join a purchasing group. Self-insured employers also typically have no internal capability to manage drug costs and are completely at the mercy of their third-party administrator and PBM. In the hospital environment, formularies, drug budgets, and group-purchasing contracts are used to garner high discounts on pricing. PBMs also use formularies as well as prior authorization requirements and manufacturer rebates to keep costs low.

Another way health plans and PBMs manage drug costs is through the use of therapeutic interchange programs (TIPs).

## CONCLUSION

Within the past decade, the cost of prescription drugs has increased substantially. This increase has had a significant effect on reimbursements made by health plan sponsors, often resulting in retail pharmacies being reimbursed below the cost of medications. Potential reasons for this surge in prescription drug prices are manufacturer competition, industry consolidation, the identification of high-risk medications for the elderly by CMS, and industry capitalization on me-too drugs. This increase has compelled PBMs, health plan sponsors, and retail pharmacies to find novel ways to turn a profit, often at the expense of the consumer. Measures must be put in place to fix the dichotomy between escalating drug prices and payer reimbursement rates. These measures should create equitable reimbursements for medications as this will be beneficial for consumers in the long run and prevent more independent pharmacies from going out of business. Although there are no immediate solutions for rising prescription drug costs, legislation regulating PBM functions and the use of TIPs may offer some leeway in managing drug costs.

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