DEPARTMENT OF HEALTH & HUMAN SERVICES Office of Inspector General

Washington, D.C. 20201

October 18, 2011

TO: Donald M. Berwick, M.D.
Administrator
Centers for Medicare & Medicaid Services

FROM: /Daniel R. Levinson/
Inspector General

SUBJECT: Review of Drug Costs to Medicaid Pharmacies and Their Relation to Benchmark Prices (A-06-11-00002)

The attached final report provides the results of our review of drug costs to Medicaid pharmacies and their relation to benchmark prices.

Section 8L of the Inspector General Act, 5 U.S.C. App., requires that the Office of Inspector General (OIG) post its publicly available reports on the OIG Web site. Accordingly, this report will be posted at http://oig.hhs.gov.

If you have any questions or comments about this report, please do not hesitate to call me, or your staff may contact Brian P. Ritchie, Assistant Inspector General for the Centers for Medicare & Medicaid Audits, at (410) 786-7104 or through email at Brian.Ritchie@oig.hhs.gov. We look forward to receiving your final management decision within 6 months. Please refer to report number A-06-11-00002 in all correspondence.

Attachment

Department of Health and Human Services

OFFICE OF INSPECTOR GENERAL

REVIEW OF DRUG COSTS TO MEDICAID PHARMACIES AND THEIR RELATION TO BENCHMARK PRICES

Daniel R. Levinson
Inspector General

October 2011
A-06-11-00002

Office of Inspector General

http://oig.hhs.gov

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The designation of financial or management practices as questionable, a recommendation for the disallowance of costs incurred or claimed, and any other conclusions and recommendations in this report represent the findings and opinions of OAS. Authorized officials of the HHS operating divisions will make final determination on these matters.

EXECUTIVE SUMMARY

BACKGROUND

States historically have based reimbursement for the costs to acquire Medicaid prescription drug ingredients on the average wholesale price (AWP). Several entities publish AWPs, and according to one publisher, AWPs are intended to represent the wholesalers' catalog, or list, prices to their customers. Numerous Office of Inspector General reports have found that AWPs do not represent pharmacies' actual cost to acquire drug ingredients, and, as a result, States often have overreimbursed pharmacies for those costs. A primary publisher of AWPs announced that it would discontinue publishing them by September 26, 2011. As a result, States will have to obtain AWPs from another source or consider using another readily available price (benchmark price). We performed this review to provide information that States can use as they consider changes to their reimbursement methodologies.

Federal regulations (42 CFR part 447) set forth the requirements for States' reimbursement of Medicaid prescription drugs. For multiple-source drugs that meet certain criteria, reimbursement is limited, in the aggregate, to Federal upper limit (FUL) amounts established by the Centers for Medicare & Medicaid Services (CMS). Multiple-source drugs include brand-name and generic drugs. For single-source drugs (brand-name drugs without generic equivalents) and multiple-source drugs without FULs, reimbursement is limited, in the aggregate, to the lower of (1) the estimated acquisition cost plus a reasonable dispensing fee or (2) the provider's usual and customary charge to the public for the drugs. In broad terms, "estimated acquisition cost" refers to the State's best estimate of the price providers generally and currently pay for a drug.

As of the first quarter of calendar year 2011, 45 States used reimbursement methodologies based either solely on the AWP or on the AWP in combination with another benchmark price (e.g., the wholesale acquisition cost (WAC)).

As part of the Medicaid drug rebate program, manufacturers report the average manufacturer price (AMP) of drug ingredients based on actual sales transactions. The AMP is a recognized benchmark in the Medicaid program used in determining Medicaid prescription drug rebates.

OBJECTIVE

Our objective was to evaluate the relationships between three recognized benchmarks—the AWP, WAC, and AMP—and pharmacy invoice prices for Medicaid-reimbursed drugs.

SUMMARY OF FINDINGS

The AWP, WAC, and AMP had consistent relationships with invoice prices for single-source drugs, but none of the benchmarks had consistent relationships with invoice prices for multiple-source drugs without FULs. Although based on actual sales transactions, the AMP was the least consistent benchmark. Further analysis of multiple-source drugs without FULs indicated that the relationship between the benchmarks and invoice prices varied depending on whether the drugs were brand-name or generic. When the relationship between a benchmark and

an invoice price is consistent, the benchmark is a more reliable basis for determining reimbursement. States may be able to better approximate the invoice prices of drugs by developing different reimbursement methodologies for single-source drugs, brand-name multiple-source drugs, and generic multiple-source drugs.

RECOMMENDATION

We recommend that CMS share the results of this review with States for their use when they consider changes to their pharmacy reimbursement methodologies, including those for single-source drugs, brand-name multiple-source drugs, and generic multiple-source drugs.

CENTERS FOR MEDICARE & MEDICAID SERVICES COMMENTS

We discussed the results of our audit with CMS officials, and they said that they appreciated the information we have provided.

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INTRODUCTION

BACKGROUND

States historically have based reimbursement for the ingredient cost of Medicaid prescription drugs on the average wholesale price (AWP). Several entities publish AWPs, and according to one publisher, AWPs are intended to represent the wholesalers' catalog, or list, prices to their customers. Numerous Office of Inspector General (OIG) reports have found that AWPs do not represent pharmacies' actual cost to acquire drug ingredients, and, as a result, States often have overreimbursed pharmacies for those costs. A primary publisher of AWPs announced that it would discontinue publishing them by September 26, 2011. As a result, States will have to obtain AWPs from another source or consider using another readily available price (benchmark price). We performed this review to provide information that States can use as they consider changes to their reimbursement methodologies.

Medicaid Program

Pursuant to Title XIX of the Social Security Act (the Act), the Medicaid program provides medical assistance to low-income individuals and individuals with disabilities. The Federal and State Governments jointly fund and administer the Medicaid program. At the Federal level, the Centers for Medicare & Medicaid Services (CMS) administers the program. Each State administers its Medicaid program in accordance with a CMS-approved State plan. Although the State has considerable flexibility in designing and operating its Medicaid program, it must comply with applicable Federal requirements. All 50 States and the District of Columbia (hereinafter referred to as "States") provide coverage for prescription drugs under the Medicaid program.

Federal Regulations

Federal regulations (42 CFR part 447) set forth the requirements for States' reimbursement of Medicaid prescription drugs. For multiple-source drugs that meet certain criteria, reimbursement is limited, in the aggregate, to Federal upper limit (FUL) amounts established by CMS. Multiple-source drugs include brand-name and generic drugs. For single-source drugs (brand-name drugs without generic equivalents) and multiple-source drugs without FULs, reimbursement is limited, in the aggregate, to the lower of (1) the estimated acquisition cost plus a reasonable dispensing fee or (2) the provider's usual and customary charge to the public for the drugs (42 CFR § 447.512). In broad terms, "estimated acquisition cost" refers to the State's best estimate of the price providers generally and currently pay for a drug (42 CFR § 447.502). CMS allows States flexibility in defining estimated acquisition cost.

States' Reimbursement Methodologies

States generally have based estimated acquisition costs on benchmark prices, such as the AWP. As of the first quarter of calendar year 2011, 45 States used reimbursement methodologies based either solely on the AWP or on the AWP in combination with another benchmark price, such as the wholesale acquisition cost (WAC). Of the six States that did not use AWPs as a basis for

reimbursement, four used WACs and two used actual acquisition costs. State reimbursement is typically the benchmark plus or minus a percentage of the benchmark. Eleven States used a different percentage of the benchmark depending on whether the drug was a brand-name or generic.[1]

Two States recently revised their reimbursement methodologies to use actual acquisition costs, rather than AWPs or WACs. Both States had a contractor periodically survey pharmacies to determine the actual acquisition cost of drugs. Reimbursement was based on the surveyed prices.

Average Wholesale Price Availability

First DataBank is a company that publishes drug product and pricing information, including a monthly compendium of AWPs. Most States have used First DataBank's pricing compendium as their source for AWPs. Because of a lawsuit regarding its reporting of AWPs, First DataBank announced, in a March 31, 2009, communication to its customers, that it would discontinue publishing AWPs by September 26, 2011.[2] However, sources such as Gold Standard, Medi-Span, and Red Book will continue to publish AWPs.[3]

Alternative Benchmark Prices

Some States currently use WACs in their reimbursement methodologies. According to First DataBank, WACs represent manufacturers' published catalog price for a drug product to wholesalers. The prices are not actual transaction prices and do not include prompt-pay discounts or other discounts, rebates, or reductions in price. First DataBank will continue to publish WACs, which are also published by Gold Standard, Medi-Span, and Red Book.

As part of the Medicaid drug rebate program, manufacturers report the average manufacturer price (AMP) of the drug ingredients based on actual sales transactions. The AMP is a recognized benchmark in the Medicaid program used in determining Medicaid prescription drug rebates. The AMP is generally defined in section 1927(k)(1) of the Act as the average price wholesalers (and certain pharmacies that purchase drugs directly from the manufacturer) pay to manufacturers for drugs distributed to retail community pharmacies, with certain exclusions.

[1] "Medicaid Prescription Reimbursement Information by State—Quarter Ending March 2011." Accessed at http://www.cms.gov/Reimbursement/20_StateMedicaidRxReimb.asp#TopOfPage on May 11, 2011.

[2] First DataBank. Available online at http://www.firstdatabank.com/Support/awp-communications.aspx. Accessed May 12, 2011.

[3] Gold Standard. Available online at http://www.goldstandard.com/productSubmissionForms/PricingPolicies.pdf. Accessed June 28, 2011. Medi-Span. Available online at http://www.medispan.com/Pricing-Policy-Update.aspx. Accessed June 30, 2011. Red Book. Available online at http://www.redbook.com/redbook/awp/. Accessed June 28, 2011.

Previous Office of Inspector General Work

OIG has issued several reports on the relationship between pharmacy acquisition costs and the AWP. One report,[4] which was based on calendar year 1999 data and issued in 2002, found that pharmacies purchased single-source drugs at an estimated 82.81 percent of the AWP, multiple-source drugs without FULs at an estimated 55.77 percent of the AWP, and multiple-source drugs with FULs at an estimated 27.87 percent of the AWP. States appeared to be paying substantially higher reimbursement rates for drugs than necessary, and we recommended that CMS encourage States to consider adopting a four-tiered payment system to bring pharmacy reimbursement closer to the actual acquisition cost of drugs. A four-tiered system would have separate reimbursement percentages for single-source drugs, multiple-source brand-name drugs without FULs, multiple-source generic drugs without FULs, and all drugs with FULs.

OIG recently issued a report[5] that focused on (1) how States will set reimbursement for Medicaid prescription drugs after First DataBank stops publishing the AWP in September 2011 and (2) the role that States would prefer CMS to play in developing Medicaid reimbursement methodologies for prescription drugs. The report found that of the 45 States with an AWP-based reimbursement methodology:

- 20 States had not developed definitive reimbursement plans;
- 15 States had relatively well-developed plans to discontinue using the AWP; and
- 10 States will continue using the AWP to set reimbursement, at least in the short term.[6]

The report also found that 44 of 51 States would prefer that CMS develop a single national benchmark to use in setting Medicaid reimbursement rates.

OBJECTIVE, SCOPE, AND METHODOLOGY

Objective

Our objective was to evaluate the relationships between three recognized benchmarks—the AWP, WAC, and AMP—and pharmacy invoice prices for Medicaid-reimbursed drugs.

[4] *Medicaid Pharmacy—Additional Analyses of the Actual Acquisition Cost of Prescription Drug Products* (A-06-02-00041), September 2002.

[5] *Replacing Average Wholesale Price: Medicaid Drug Payment Policy* (OEI-03-11-00060), July 2011.

[6] Six of the States that will continue using the AWP were already obtaining it from a source other than First DataBank; the four remaining States plan to obtain AWP data from another source.

Scope

We reviewed November 2010 invoice prices from a stratified random sample of pharmacies.[7] We used the National Council for Prescription Drug Programs (NCPDP*)* dataQ Pharmacy Database File to identify our population of 58,545 pharmacies. We included only pharmacies that the NCPDP dataQ Pharmacy Database File classified with a dispenser class code of "independent," "chain," or "franchise pharmacy" and a dispenser class type of "community/retail pharmacy."

We limited our review to the pharmacies' cost of acquiring the drugs and did not address any costs associated with dispensing the drugs. We did not independently verify any information obtained from third-party sources. Additionally, we did not attempt to identify any discounts, rebates, or other price incentives not reflected in the invoice prices. Our objective did not require that we identify or review any internal control systems.

Methodology

To accomplish our objective, we:

- reviewed applicable Federal regulations;
- discussed our review with CMS officials;
- reviewed States' reimbursement methodologies;
- identified our population of pharmacies from the NCPDP dataQ Pharmacy Database File and classified each pharmacy as "independent" or "chain"[8] based on information in the NCPDP file;
- classified each pharmacy as "rural" or "urban" based on the pharmacy's location in metropolitan statistical areas;
- selected, as detailed in Appendix A, a random sample of 30 pharmacies each from 4 strata: rural-chain, urban-chain, rural-independent, and urban-independent;[9]
- requested from each of the 120 selected pharmacies the November 2010 invoice with the most line items from 4 different sources: wholesalers, chain warehouse distribution centers, generic distributors, and manufacturers;

[7] An invoice price is the price for each drug listed on the invoices provided by the sampled pharmacies.

[8] We classified franchise pharmacies as "independents" unless we identified four or more franchises with common ownership; we classified these as "chain pharmacies." NCPDP defines a chain as four or more pharmacies with common ownership.

[9] We provide more detailed analysis of these strata in Appendix B.

- reviewed the invoices and eliminated over-the-counter products based on First DataBank's National Drug Data File (NDDF) Plus classifications;

- categorized the remaining drugs as single-source or multiple-source and further categorized the multiple-source drugs as brand-name or generic based on NDDF classifications;

- identified the multiple-source drugs with FULs using the pricing file within the NDDF;

- identified the AWP in effect as of the invoice date for each drug from the NDDF and excluded the drug from our review if the AWP was not available;

- identified the WAC in effect as of the invoice data for each drug from the NDDF;

- obtained the AMP for each drug for the quarter ended December 31, 2010 from CMS;[10]

- compared the invoice prices to AWPs, WACs, and AMPs by calculating the invoice price as a percentage of each benchmark price; and

- estimated, as shown in Appendix B, the average invoice price as a percentage of each benchmark price.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

FINDINGS AND RECOMMENDATION

The AWP, WAC, and AMP had consistent relationships with invoice prices for single-source drugs, but none of the benchmarks had consistent relationships with invoice prices for multiple-source drugs without FULs. Although based on actual sales transactions, the AMP was the least consistent benchmark. Our further analysis of multiple-source drugs without FULs indicated that the relationship between the benchmarks and invoice prices varied depending on whether the drugs were brand-name or generic. When the relationship between a benchmark and an invoice price is consistent, the benchmark is a more reliable basis for determining reimbursement. States may be able to better approximate the invoice prices of drugs by developing different reimbursement methodologies for single-source drugs, brand-name multiple-source drugs, and generic multiple-source drugs.

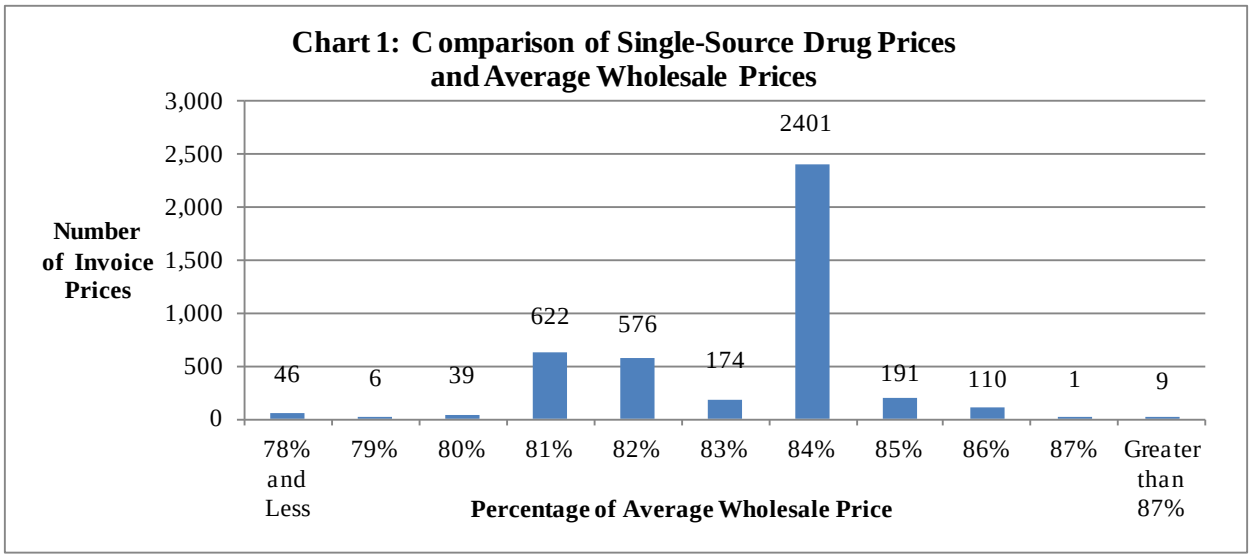
[10] The WAC and AMP were not available for every drug in our review.

AVERAGE WHOLESALE PRICE

Single-Source Drugs

The relationship between invoice prices and AWPs for single-source drugs was consistent and was also comparable with our previous review of 1999 data. Invoice prices ranged from 71.54 percent to 91.84 percent of AWPs. (See Chart 1 for a distribution of the percentages.) We estimated that invoice prices for single-source drugs averaged 82.80 percent of the related AWPs, with a standard error of 0.18 percent.[11] We based this estimate on a comparison of AWPs and 4,175 invoice prices.

In our previous review of 1999 data, we estimated that invoice prices for single-source drugs averaged 82.81 percent of the related AWPs, with a standard error of 0.25 percent. The sample results are shown in Appendix B and the frequency distributions in Appendix C.



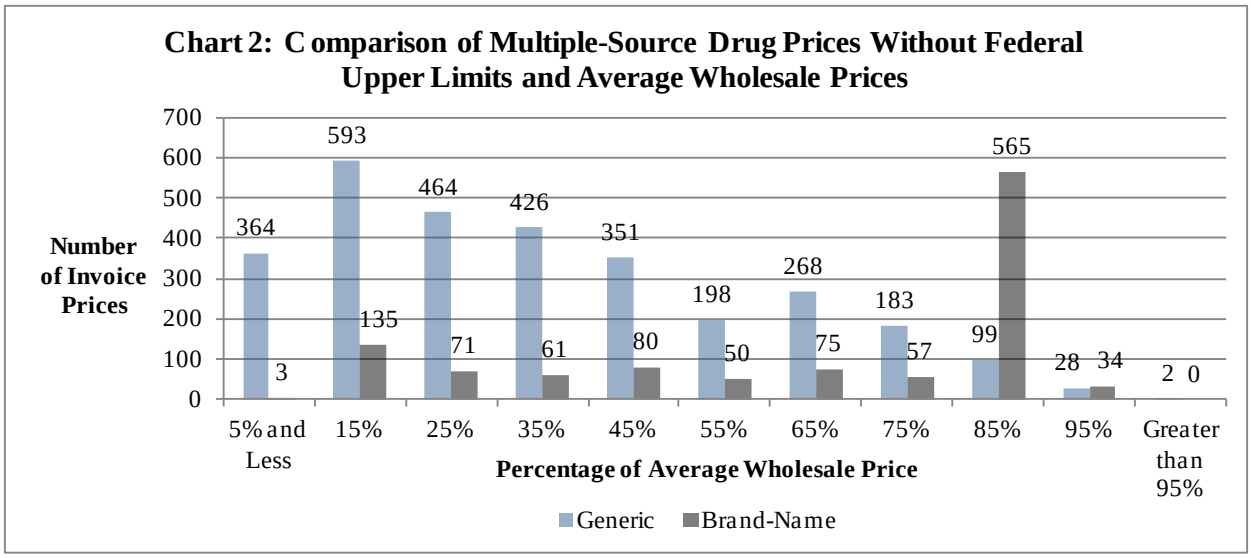
Multiple-Source Drugs Without Federal Upper Limits

The relationship between invoice prices and AWPs for multiple-source drugs without FULs varied and had changed since 1999. For multiple-source drugs without FULs, invoice prices ranged from 0.31 percent to 109.66 percent of the AWPs. (See Chart 2 for a distribution of the percentages.) We estimated that invoice prices for multiple source drugs without FULs averaged 42.93 percent of the related AWPs, with a standard error of 1.22 percent. We based this estimate on a comparison of AWPs and 4,107 invoice prices. In our previous review of 1999 data, we estimated that the invoice prices for these drugs averaged 55.77 percent of the related AWPs.

The estimate of invoice prices as a percentage of the AWP was substantially different for generic drugs than for brand-name drugs. We estimated that invoice prices for generic multiple-source drugs without FULs averaged 34.39 percent of the related AWPs, with a standard error of

[11] The standard error indicates the precision of the estimate. The closer the standard error is to zero, the more precise the estimate is.

1.31 percent, based on a comparison of AWPs and 2,976 invoice prices. For brand-name drugs, we estimated that invoice prices averaged 61.60 percent of the related AWPs, with a standard error of 1.22 percent, based on a comparison of AWPs and 1,131 invoice prices. The sample results are shown in Appendix B and the frequency distributions in Appendix D.[12]

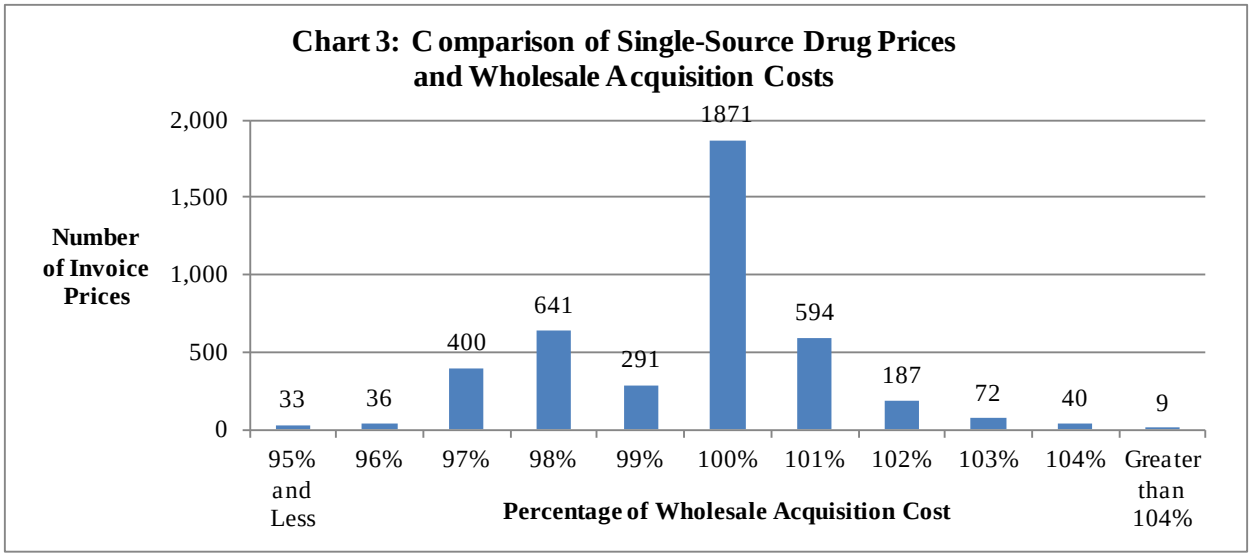


WHOLESALE ACQUISITION COST

Single-Source Drugs

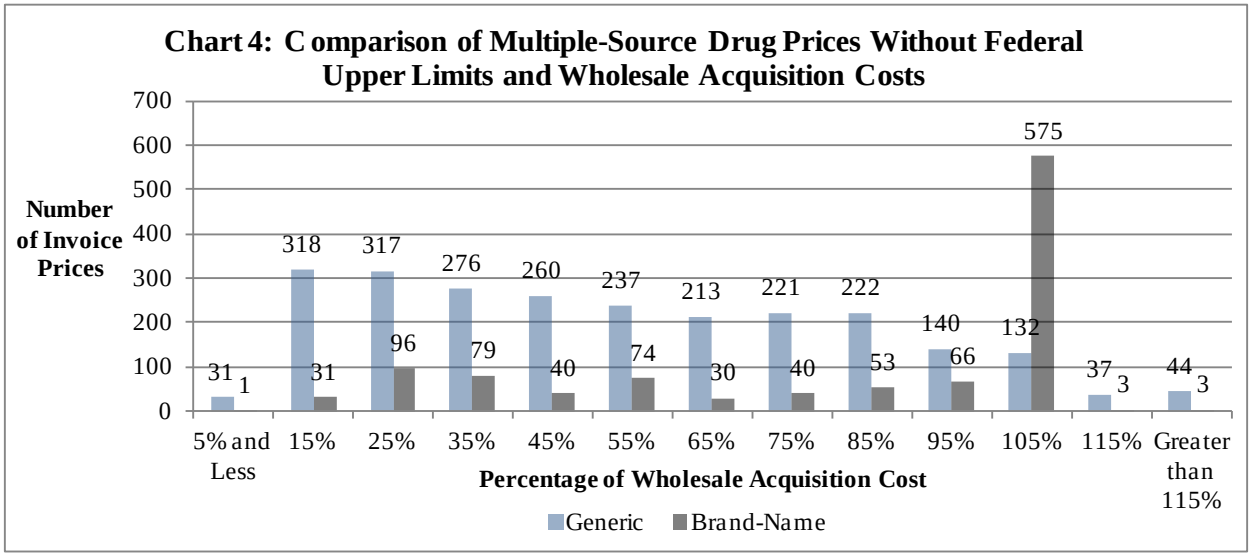
The relationship between invoice prices and WACs was similar to the relationship between invoice prices and AWPs. For single-source drugs, the relationship was consistent; invoice prices ranged from 86.96 percent of the WACs to 110.20 percent of the WACs. (See Chart 3 for a distribution of the percentages.) We estimated that invoice prices for single-source drugs averaged 99.46 percent of the related WACs, with a standard error of 0.23 percent. We based this estimate on a comparison of 4,174 invoice prices and the related WACs. The sample results are shown in Appendix B and the frequency distributions in Appendix C.

[12] Although reimbursement for multiple-source drugs with FULs is limited to the FUL amounts, we compared invoice prices for multiple-source drugs with FULs to all three benchmarks. (See Appendixes B and E.)



Multiple-Source Drugs Without Federal Upper Limits

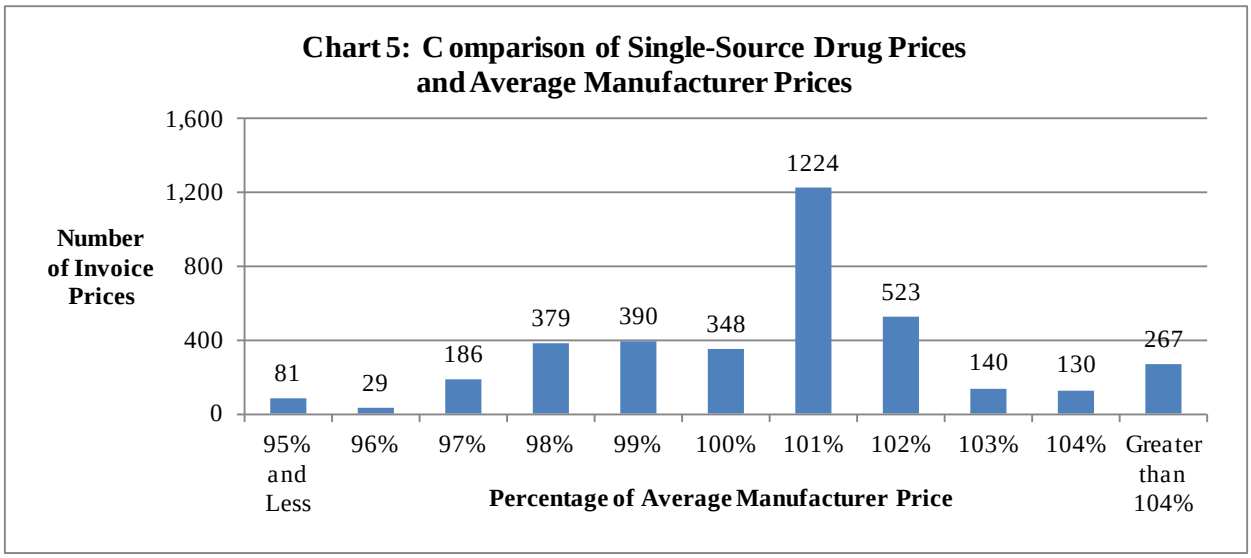
For multiple-source drugs without FULs, the relationship between generic drugs and brand-name drugs varied considerably; invoice prices ranged from 1.00 percent of the related WACs to 984.97 percent of the related WACs. (See Chart 4 for a distribution of the percentages.) We estimated that invoice prices for multiple-source drugs without FULs averaged 66.68 percent of the related WACs, with a standard error of 3.24 percent. We based this estimate on a comparison of 3,539 invoice prices and the related WACs. We estimated that the invoice prices for generic multiple-source drugs without FULs averaged 59.44 percent of the related WACs, with a standard error of 3.84 percent, based on a comparison of WACs and 2,448 invoice prices. For brand-name drugs, we estimated that the invoice prices averaged 76.94 percent of the related WACs, with a standard error of 1.44 percent, based on a comparison of WACs and 1,091 invoice prices. The sample results are shown in Appendix B and the frequency distributions in Appendix D.



AVERAGE MANUFACTURER PRICE

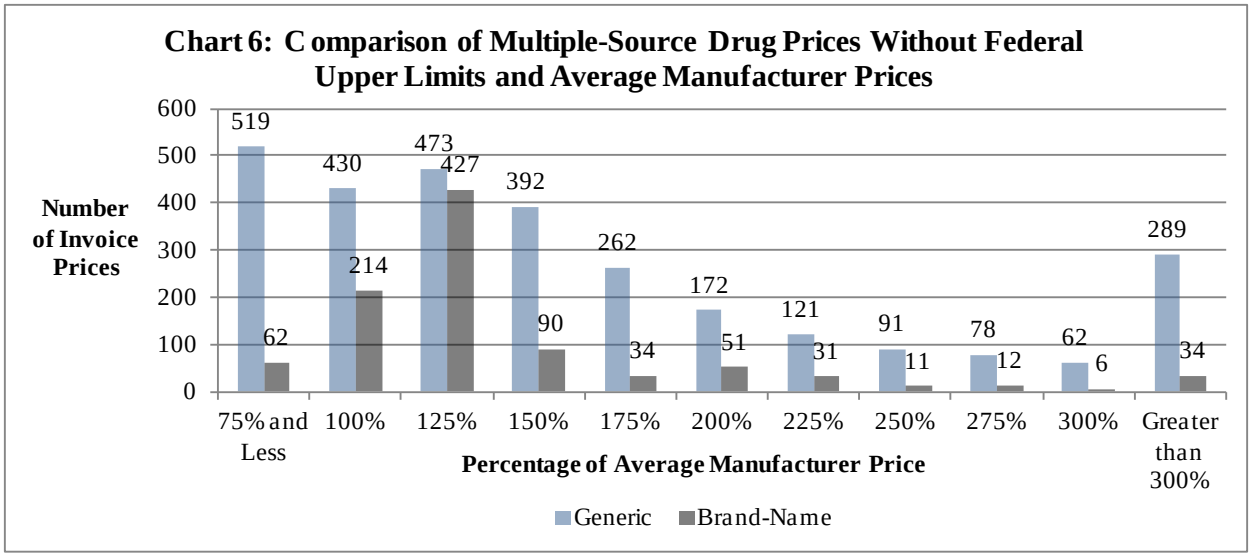
Single-Source Drugs

Although AMPs are based on actual sales transactions, their relationship to invoice prices was not as consistent as the relationship between invoice prices and AWPs and WACs. For single-source drugs, the relationship between invoice prices and AMPs varied from 80.54 percent of the related AMPs to 413.86 percent of the related AMPs. (See Chart 5 for a distribution of the percentages.) We estimated that invoice prices for single-source drugs averaged 101.23 percent of the related AMPs, with a standard error of 0.42 percent. We based this estimate on a comparison of 3,697 invoice prices and the related AMPs. The sample results are shown in Appendix B and the frequency distributions in Appendix C.



Multiple-Source Drugs Without Federal Upper Limits

The relationship between invoice prices and AMPs for multiple-source drugs without FULs varied substantially. Invoice prices ranged from 4.99 percent of the related AMPs to 8,350.03 percent of the related AMPs. (See Chart 6 for a distribution of the percentages.) We estimated that invoice prices for multiple-source drugs without FULs averaged 182.20 percent of the related AMPs, with a standard error of 11.80 percent. We based this estimate on a comparison of 3,861 invoice prices and the related AMPs. We estimated that invoice prices for generic multiple-source drugs without FULs averaged 204.14 percent of the related AMPs, with a standard error of 19.91 percent, based on a comparison of AMPs and 2,889 invoice prices. For brand-name drugs, we estimated that invoice prices averaged 139.29 percent of the related AMPs, with a standard error of 10.91 percent, based on a comparison of AMPs and 972 invoice prices. The sample results are shown in Appendix B and the frequency distributions in Appendix D.



RECOMMENDATION

We recommend that CMS share the results of this review with States for their use when they consider changes to their pharmacy reimbursement methodologies, including those for single-source drugs, brand-name multiple-source drugs, and generic multiple-source drugs.

CENTERS FOR MEDICARE & MEDICAID SERVICES COMMENTS

We discussed the results of our audit with CMS officials, and they said that they appreciated the information we have provided.

APPENDIXES

APPENDIX A: SAMPLE DESIGN AND METHODOLOGY

POPULATION

The sampling population consisted of all traditional retail pharmacies in the 49 States and the District of Columbia (Arizona was not included) that were in business as of November 10, 2010, and that were listed in the National Council for Prescription Drug Programs (NCPDP) dataQ Pharmacy Database File.[1]

SAMPLING FRAME

To create our sampling frame, we used the NCPDP dataQ Pharmacy Database File. We eliminated pharmacies located in Arizona, Puerto Rico, Guam, the Mariana Islands, and the U.S. Virgin Islands. We excluded pharmacies that we identified as Government or managed care pharmacies based on the dispenser class code and dispenser type code. We also excluded all pharmacies identified as nontraditional pharmacies and pharmacies that we identified as closed before November 10, 2010. Our sampling frame totaled 58,545 pharmacies.[2]

SAMPLE UNIT

We defined our sample unit as a pharmacy based on its unique NCPDP identification (ID). We requested the invoice with the most line items that each pharmacy had from each supply source for November 2010. Supply sources included wholesalers, chain warehouse distribution centers, generic distributors, and manufacturers.

SAMPLE DESIGN

We selected a stratified sample with four strata.

Strata	Description	Frame Size
1	Urban-independent	17,362
2	Urban-chain	36,452
3	Rural-independent	2,798
4	Rural-chain	1,933

SAMPLE SIZE

We selected 30 pharmacies from each stratum for a total of 120 pharmacies.

[1] Arizona is unique because it has a managed care system for providing Medicaid covered drugs. After discussions with CMS, we chose to omit Arizona from this review.

[2] We removed two pharmacies from our sampling frame because one pharmacy did not participate in Medicaid and one pharmacy was misclassified in the NCPDP dataQ Pharmacy Database File. This reduced the sampling frame from 58,547 to 58,545.

SOURCE OF RANDOM NUMBERS

We generated the random numbers using Office of Inspector General, Office of Audit Services, statistical software.

METHOD OF SELECTING SAMPLE ITEMS

We sorted each stratum by the NCPDP ID and consecutively numbered the pharmacies in each stratum of the sampling frame from 1 to the total number of pharmacies in the stratum. After generating 120 random numbers, 30 for each stratum, we selected the corresponding frame items.

APPENDIX B: SAMPLE RESULTS AND ESTIMATES

SAMPLE RESULTS

Average Wholesale Price

Single-Source Drugs

Pharmacy Type	Universe of Pharmacies	Sample Pharmacies	Drug Prices Reviewed	Invoice Price as a Percentage of Benchmark
Urban-independent	17,362	27	661	81.97%
Urban-chain	36,452	30	1,655	83.19%
Rural-independent	2,798	29	769	82.17%
Rural-chain	1,933	29	1,090	83.71%
Overall	58,545	115	4,175	82.80%

Multiple-Source Drugs Without Federal Upper Limits

Pharmacy Type	Universe of Pharmacies	Sample Pharmacies	Drug Prices Reviewed	Invoice Price as a Percentage of Benchmark
Urban-independent	17,362	27	499	55.44%
Urban-chain	36,452	30	1,772	36.53%
Rural-independent	2,798	29	572	51.91%
Rural-chain	1,933	30	1,264	38.20%
Overall	58,545	116	4,107	42.93%

Multiple-Source Brand-Name Drugs Without Federal Upper Limits

Pharmacy Type	Universe of Pharmacies	Sample Pharmacies	Drug Prices Reviewed	Invoice Price as a Percentage of Benchmark
Urban-independent	17,362	27	183	72.31%
Urban-chain	36,452	30	460	56.19%
Rural-independent	2,798	29	207	68.47%
Rural-chain	1,933	30	281	57.72%
Overall	58,545	116	1,131	61.60%

Multiple-Source Generic Drugs Without Federal Upper Limits

Pharmacy Type	Universe of Pharmacies	Sample Pharmacies	Drug Prices Reviewed	Invoice Price as a Percentage of Benchmark
Urban-independent	17,362	27	316	44.80%
Urban-chain	36,452	30	1,312	28.94%
Rural-independent	2,798	29	365	42.61%
Rural-chain	1,933	30	983	31.83%
Overall	58,545	116	2,976	34.39%

Multiple-Source Drugs With Federal Upper Limits

Pharmacy Type	Universe of Pharmacies	Sample Pharmacies	Drug Prices Reviewed	Invoice Price as a Percentage of Benchmark
Urban-independent	17,362	28	693	18.70%
Urban-chain	36,452	30	3,053	10.42%
Rural-independent	2,798	29	871	17.73%
Rural-chain	1,933	30	2,535	12.84%
Overall	58,545	117	7,152	13.31%

Wholesale Acquisition Cost

Single-Source Drugs

Pharmacy Type	Universe of Pharmacies	Sample Pharmacies	Drug Prices Reviewed	Invoice Price as a Percentage of Benchmark
Urban-independent	17,362	27	661	98.39%
Urban-chain	36,452	30	1,654	99.98%
Rural-independent	2,798	29	769	98.62%
Rural-chain	1,933	29	1,090	100.47%
Overall	58,545	115	4,174	99.46%

Multiple-Source Drugs Without Federal Upper Limits

Pharmacy Type	Universe of Pharmacies	Sample Pharmacies	Drug Prices Reviewed	Invoice Price as a Percentage of Benchmark
Urban-independent	17,362	27	415	79.38%
Urban-chain	36,452	30	1,558	59.97%
Rural-independent	2,798	29	483	75.81%
Rural-chain	1,933	30	1,083	66.10%
Overall	58,545	116	3,539	66.68%

Multiple-Source Brand-Name Drugs Without Federal Upper Limits

Pharmacy Type	Universe of Pharmacies	Sample Pharmacies	Drug Prices Reviewed	Invoice Price as a Percentage of Benchmark
Urban-independent	17,362	27	172	89.96%
Urban-chain	36,452	30	446	70.18%
Rural-independent	2,798	29	204	87.22%
Rural-chain	1,933	30	269	72.51%
Overall	58,545	116	1,091	76.94%

Multiple-Source Generic Drugs Without Federal Upper Limits

Pharmacy Type	Universe of Pharmacies	Sample Pharmacies	Drug Prices Reviewed	Invoice Price as a Percentage of Benchmark
Urban-independent	17,362	25	243	71.23%
Urban-chain	36,452	30	1,112	53.11%
Rural-independent	2,798	29	279	67.10%
Rural-chain	1,933	30	814	61.87%
Overall	58,545	114	2,448	59.44%

Multiple-Source Drugs With Federal Upper Limits

Pharmacy Type	Universe of Pharmacies	Sample Pharmacies	Drug Prices Reviewed	Invoice Price as a Percentage of Benchmark
Urban-independent	17,362	28	555	51.87%
Urban-chain	36,452	30	2,576	34.12%
Rural-independent	2,798	29	681	51.61%
Rural-chain	1,933	30	2,080	40.13%
Overall	58,545	117	5,892	40.42%

Average Manufacturer Price

Single-Source Drugs

Pharmacy Type	Universe of Pharmacies	Sample Pharmacies	Drug Prices Reviewed	Invoice Price as a Percentage of Benchmark
Urban-independent	17,362	27	602	99.77%
Urban-chain	36,452	30	1,459	102.01%
Rural-independent	2,798	29	673	99.76%
Rural-chain	1,933	29	963	101.86%
Overall	58,545	115	3,697	101.23%

Multiple-Source Drugs Without Federal Upper Limits

Pharmacy Type	Universe of Pharmacies	Sample Pharmacies	Drug Prices Reviewed	Invoice Price as a Percentage of Benchmark
Urban-independent	17,362	27	462	177.95%
Urban-chain	36,452	30	1,660	182.50%
Rural-independent	2,798	29	536	199.45%
Rural-chain	1,933	30	1,203	189.92%
Overall	58,545	116	3,861	182.20%

Multiple-Source Brand-Name Drugs Without Federal Upper Limits

Pharmacy Type	Universe of Pharmacies	Sample Pharmacies	Drug Prices Reviewed	Invoice Price as a Percentage of Benchmark
Urban-independent	17,362	26	166	139.57%
Urban-chain	36,452	30	380	138.13%
Rural-independent	2,798	28	186	155.06%
Rural-chain	1,933	30	240	135.71%
Overall	58,545	114	972	139.29%

Multiple-Source Generic Drugs Without Federal Upper Limits

Pharmacy Type	Universe of Pharmacies	Sample Pharmacies	Drug Prices Reviewed	Invoice Price as a Percentage of Benchmark
Urban-independent	17,362	27	296	203.08%
Urban-chain	36,452	30	1,280	203.63%
Rural-independent	2,798	29	350	220.96%
Rural-chain	1,933	30	963	198.97%
Overall	58,545	116	2,889	204.14%

Multiple-Source Drugs With Federal Upper Limits

Pharmacy Type	Universe of Pharmacies	Sample Pharmacies	Drug Prices Reviewed	Invoice Price as a Percentage of Benchmark
Urban-independent	17,362	28	642	240.71%
Urban-chain	36,452	30	2,928	170.68%
Rural-independent	2,798	29	821	249.03%
Rural-chain	1,933	30	2,450	218.61%
Overall	58,545	117	6,841	196.78%

ESTIMATES

Average Wholesale Price

Single-Source Drugs

Pharmacy Type	Estimated Mean	90% Confidence Interval—Lower Limit	90% Confidence Interval—Upper Limit
Urban-independent	81.97%	81.48%	82.46%
Urban-chain	83.19%	82.77%	83.61%
Rural-independent	82.17%	81.49%	82.85%
Rural-chain	83.71%	83.11%	84.31%
Overall	82.80%	82.50%	83.10%

Multiple-Source Drugs Without Federal Upper Limits

Pharmacy Type	Estimated Mean	90% Confidence Interval—Lower Limit	90% Confidence Interval—Upper Limit
Urban-independent	55.44%	52.47%	58.41%
Urban-chain	36.53%	33.51%	39.55%
Rural-independent	51.91%	49.73%	54.09%
Rural-chain	38.20%	35.89%	40.51%
Overall	42.93%	40.92%	44.94%

Multiple-Source Brand-Name Drugs Without Federal Upper Limits

Pharmacy Type	Estimated Mean	90% Confidence Interval—Lower Limit	90% Confidence Interval—Upper Limit
Urban-independent	72.31%	69.07%	75.55%
Urban-chain	56.19%	53.25%	59.13%
Rural-independent	68.47%	65.68%	71.26%
Rural-chain	57.72%	54.46%	60.98%
Overall	61.60%	59.59%	63.61%

Multiple-Source Generic Drugs Without Federal Upper Limits

Pharmacy Type	Estimated Mean	90% Confidence Interval—Lower Limit	90% Confidence Interval—Upper Limit
Urban-independent	44.80%	40.83%	48.77%
Urban-chain	28.94%	25.92%	31.96%
Rural-independent	42.61%	39.87%	45.35%
Rural-chain	31.83%	29.08%	34.58%
Overall	34.39%	32.24%	36.54%

Multiple-Source Drugs With Federal Upper Limits

Pharmacy Type	Estimated Mean	90% Confidence Interval—Lower Limit	90% Confidence Interval—Upper Limit
Urban-independent	18.70%	16.08%	21.32%
Urban-chain	10.42%	8.99%	11.85%
Rural-independent	17.73%	16.11%	19.35%
Rural-chain	12.84%	11.41%	14.27%
Overall	13.31%	12.18%	14.44%

Wholesale Acquisition Cost

Single-Source Drugs

Pharmacy Type	Estimated Mean	90% Confidence Interval—Lower Limit	90% Confidence Interval—Upper Limit
Urban-independent	98.39%	97.81%	98.97%
Urban-chain	99.98%	99.44%	100.52%
Rural-independent	98.62%	97.80%	99.44%
Rural-chain	100.47%	99.77%	101.17%
Overall	99.46%	99.08%	99.84%

Multiple-Source Drugs Without Federal Upper Limits

Pharmacy Type	Estimated Mean	90% Confidence Interval—Lower Limit	90% Confidence Interval—Upper Limit
Urban-independent	79.38%	76.19%	82.57%
Urban-chain	59.97%	51.27%	68.67%
Rural-independent	75.81%	73.28%	78.34%
Rural-chain	66.10%	58.95%	73.25%
Overall	66.68%	61.35%	72.01%

Multiple-Source Brand-Name Drugs Without Federal Upper Limits

Pharmacy Type	Estimated Mean	90% Confidence Interval—Lower Limit	90% Confidence Interval—Upper Limit
Urban-independent	89.96%	86.84%	93.08%
Urban-chain	70.18%	66.56%	73.80%
Rural-independent	87.22%	84.14%	90.30%
Rural-chain	72.51%	68.62%	76.40%
Overall	76.94%	74.57%	79.31%

Multiple-Source Generic Drugs Without Federal Upper Limits

Pharmacy Type	Estimated Mean	90% Confidence Interval—Lower Limit	90% Confidence Interval—Upper Limit
Urban-independent	71.23%	65.22%	77.24%
Urban-chain	53.11%	43.03%	63.19%
Rural-independent	67.10%	63.00%	71.20%
Rural-chain	61.87%	53.09%	70.65%
Overall	59.44%	53.12%	65.76%

Multiple-Source Drugs With Federal Upper Limits

Pharmacy Type	Estimated Mean	90% Confidence Interval—Lower Limit	90% Confidence Interval—Upper Limit
Urban-independent	51.87%	48.74%	55.00%
Urban-chain	34.12%	30.18%	38.06%
Rural-independent	51.61%	47.73%	55.49%
Rural-chain	40.13%	36.02%	44.24%
Overall	40.42%	37.87%	42.97%

Average Manufacturer Price

Single-Source Drugs

Pharmacy Type	Estimated Mean	90% Confidence Interval—Lower Limit	90% Confidence Interval—Upper Limit
Urban-independent	99.77%	98.90%	100.64%
Urban-chain	102.01%	100.96%	103.06%
Rural-independent	99.76%	98.98%	100.54%
Rural-chain	101.86%	100.99%	102.73%
Overall	101.23%	100.54%	101.92%

Multiple-Source Drugs Without Federal Upper Limits

Pharmacy Type	Estimated Mean	90% Confidence Interval—Lower Limit	90% Confidence Interval—Upper Limit
Urban-independent	177.95%	165.75%	190.15%
Urban-chain	182.50%	150.88%	214.12%
Rural-independent	199.45%	180.11%	218.79%
Rural-chain	189.92%	168.29%	211.55%
Overall	182.20%	162.79%	201.61%

Multiple-Source Brand-Name Drugs Without Federal Upper Limits

Pharmacy Type	Estimated Mean	90% Confidence Interval—Lower Limit	90% Confidence Interval—Upper Limit
Urban-independent	139.57%	124.30%	154.84%
Urban-chain	138.13%	109.28%	166.98%
Rural-independent	155.06%	136.36%	173.76%
Rural-chain	135.71%	123.90%	147.52%
Overall	139.29%	121.34%	157.24%

Multiple-Source Generic Drugs Without Federal Upper Limits

Pharmacy Type	Estimated Mean	90% Confidence Interval—Lower Limit	90% Confidence Interval—Upper Limit
Urban-independent	203.08%	189.90%	216.26%
Urban-chain	203.63%	149.72%	257.54%
Rural-independent	220.96%	194.01%	247.91%
Rural-chain	198.97%	174.76%	223.18%
Overall	204.14%	171.39%	236.89%

Multiple-Source Drugs With Federal Upper Limits

Pharmacy Type	Estimated Mean	90% Confidence Interval—Lower Limit	90% Confidence Interval—Upper Limit
Urban-independent	240.71%	207.90%	273.52%
Urban-chain	170.68%	149.56%	191.80%
Rural-independent	249.03%	225.03%	273.03%
Rural-chain	218.61%	190.69%	246.53%
Overall	196.78%	180.89%	212.67%

APPENDIX C: FREQUENCY DISTRIBUTION OF SINGLE-SOURCE DRUGS

Greater Than	Less Than or Equal to	Average Wholesale Price	Wholesale Acquisition Cost	Average Manufacturer Price
0%	70%	0	0	0
70%	71%	0	0	0
71%	72%	1	0	0
72%	73%	1	0	0
73%	74%	0	0	0
74%	75%	3	0	0
75%	76%	4	0	0
76%	77%	15	0	0
77%	78%	22	0	0
78%	79%	6	0	0
79%	80%	39	0	0
80%	81%	622	0	1
81%	82%	576	0	0
82%	83%	174	0	0
83%	84%	2,401	0	0
84%	85%	191	0	2
85%	86%	110	0	3
86%	87%	1	1	0
87%	88%	0	0	0
88%	89%	0	0	5
89%	90%	0	1	2
90%	91%	0	1	3
91%	92%	9	8	1
92%	93%	0	19	20
93%	94%	0	0	17
94%	95%	0	3	27
95%	96%	0	36	29
96%	97%	0	400	186
97%	98%	0	641	379
98%	99%	0	291	390
99%	100%	0	1,871	348
100%	101%	0	594	1,224
101%	102%	0	187	523
102%	103%	0	72	140
103%	104%	0	40	130
104%	105%	0	0	65
105%	106%	0	0	41
106%	107%	0	0	43
107%	108%	0	0	24
108%	109%	0	0	17
109%	110%	0	0	8
110%		0	9	69

APPENDIX D: FREQUENCY DISTRIBUTION OF MULTIPLE-SOURCE DRUGS WITHOUT FEDERAL UPPER LIMITS

Greater Than	Less Than or Equal to	Brand-Name Average Wholesale Price	Brand-Name Wholesale Acquisition Cost	Brand-Name Average Manufacturer Price	Generic Average Wholesale Price	Generic Wholesale Acquisition Cost	Generic Average Manufacturer Price
0%	5%	3	1	0	364	31	1
5%	10%	49	12	3	320	163	3
10%	15%	86	19	0	273	155	2
15%	20%	36	69	0	238	169	2
20%	25%	35	27	0	226	148	13
25%	30%	37	39	1	209	153	15
30%	35%	24	40	2	217	123	20
35%	40%	55	13	0	157	155	25
40%	45%	25	27	0	194	105	45
45%	50%	32	42	1	114	146	57
50%	55%	18	32	5	84	91	37
55%	60%	33	19	4	134	114	58
60%	65%	42	11	17	134	99	57
65%	70%	33	17	24	98	81	85
70%	75%	24	23	5	85	140	99
75%	80%	54	33	17	68	104	70
80%	85%	511	20	10	31	118	55
85%	90%	33	16	11	20	86	93
90%	95%	1	50	31	8	54	85
95%	100%	0	449	145	0	104	127
100%	105%	0	126	227	0	28	140
105%	110%	0	3	60	2	29	107
110%	115%	0	0	59	0	8	76
115%	120%	0	3	37	0	4	99
120%	125%	0	0	44	0	1	51
125%	130%	0	0	33	0	0	74
130%	135%	0	0	33	0	5	95
135%	140%	0	0	8	0	3	103
140%	145%	0	0	8	0	0	71
145%	150%	0	0	8	0	0	49
150%	155%	0	0	9	0	0	47
155%	160%	0	0	4	0	0	68
160%	165%	0	0	8	0	1	56
165%	170%	0	0	5	0	0	48
170%	175%	0	0	8	0	0	43
175%	180%	0	0	12	0	2	69
180%	185%	0	0	6	0	2	31
185%	190%	0	0	6	0	0	28
190%	195%	0	0	10	0	0	20
195%		0	0	111	0	26	665

APPENDIX E: FREQUENCY DISTRIBUTION OF MULTIPLE-SOURCE DRUGS WITH FEDERAL UPPER LIMITS

Greater Than	Less Than or Equal to	Average Wholesale Price	Wholesale Acquisition Cost	Average Manufacturer Price
0%	5%	3,102	120	0
5%	10%	1,493	477	0
10%	15%	829	729	4
15%	20%	478	542	9
20%	25%	315	499	15
25%	30%	220	542	16
30%	35%	147	455	24
35%	40%	113	398	20
40%	45%	74	295	36
45%	50%	62	245	81
50%	55%	59	285	89
55%	60%	25	236	91
60%	65%	27	201	125
65%	70%	19	136	135
70%	75%	20	115	168
75%	80%	11	98	206
80%	85%	143	91	244
85%	90%	2	64	226
90%	95%	8	52	296
95%	100%	4	173	307
100%	105%	0	73	326
105%	110%	0	25	236
110%	115%	0	6	239
115%	120%	0	11	265
120%	125%	0	3	193
125%	130%	0	0	174
130%	135%	1	0	178
135%	140%	0	0	143
140%	145%	0	0	119
145%	150%	0	0	101
150%	155%	0	5	125
155%	160%	0	1	128
160%	165%	0	3	109
165%	170%	0	1	112
170%	175%	0	0	101
175%	180%	0	6	84
180%	185%	0	0	112
185%	190%	0	0	85
190%	195%	0	0	81
195%		0	5	1,838