MILLIMAN WHITE PAPER

Estimating the Impact of Pharmacy Costs on Total Health Plan Costs

Based on an analysis of 2018 commercial and Medicare estimated plan costs, before and after estimated pharmacy rebates

Commissioned by Merck, Inc.

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The prescription drug, or "pharmacy", value chain is complex and involves many parties. Manufacturer rebates are one particular complexity and rebates must be accounted for to understand payers' true cost of prescription drugs. While studies often estimate pharmacy costs as a portion of a payer's total costs, rebates are often not reflected because rebates are not reported in the claims data on which these studies are based. Rebates are contracted in a confidential nature, and vary significantly among therapeutic classes, making it difficult to estimate a market "average". However, failing to account for rebates overstates the net impact of pharmacy costs to a payer's total costs.

Impact of Net Pharmacy Costs to a Payer's Total Costs

To quantify the impact of net pharmacy costs on a payer's total costs, we first estimated the various components contributing to a plan's premium calculation. We begin with the total gross cost of claims, followed by the plan's claim liability (e.g., net of member cost sharing) and other expenses and margin, where the total of these costs forms the basis of total premium. We also estimated the costs associated with pharmacy claims (regardless of whether they were dispensed at a pharmacy or by a medical provider) net of manufacturer and pharmacy rebates. This analysis is based on Milliman's 2018 *Health Cost Guidelines (HCG)*, as well as public and proprietary sources summarizing market-level rebates.

ANALYSIS OF A COMMERCIAL PAYER'S COSTS

FIGURE 1: ESTIMATED 2018 COMMERCIAL PAYER COST DISTRIBUTION, PER MEMBER PER MONTH (PMPM)

	NET PLAN COST (I.E., CLAIMS AND EXPENSES AFTER MEMBER COST-SHARE)			
	BEFORE REBATES		AFTER REBATES	
MEDICAL				
INPATIENT FACILITY	$100	16.7%	$100	17.3%
OUTPATIENT FACILITY	$151	25.4%	$151	26.3%
PHYSICIAN OFFICE VISITS	$126	21.1%	$126	21.9%
OTHER	$8	1.4%	$8	1.5%
TOTAL MEDICAL	**$386**	**64.6%**	**$386**	**67.1%**
PHARMACY				
BRAND HOP / PHYSICIAN OFFICE	$21	3.5%	$21	3.6%
BRAND NON-SPECIALTY RETAIL / MAIL-ORDER	$35	5.9%	$22	3.9%
BRAND SPECIALTY RETAIL / MAIL-ORDER	$36	6.1%	$27	4.7%
UNIDENTIFIABLE HOP / PHYSICIAN OFFICE	$10	1.6%	$10	1.7%
GENERIC NON-SPECIALTY RETAIL / MAIL-ORDER	$21	3.6%	$21	3.7%
GENERIC SPECIALTY RETAIL / MAIL-ORDER	$2	0.3%	$2	0.3%
TOTAL PHARMACY	**$125**	**20.9%**	**$103**	**17.9%**
ADMINISTRATIVE EXPENSES / MARGIN	**$86**	**14.4%**	**$86**	**15.0%**
TOTAL COSTS	$597		$575	

Note: Numbers may not add up precisely due to rounding. Estimates based on Milliman's 2018 Commercial HCGs. PMPM = per member per month. HOP = Hospital Outpatient.

Accounting for pharmacy rebates reduces the pharmacy component of net plan costs to a commercial payer by approximately $22 per member per month. Total payer costs are reduced 3.7% (from $597 PMPM to $575 PMPM).

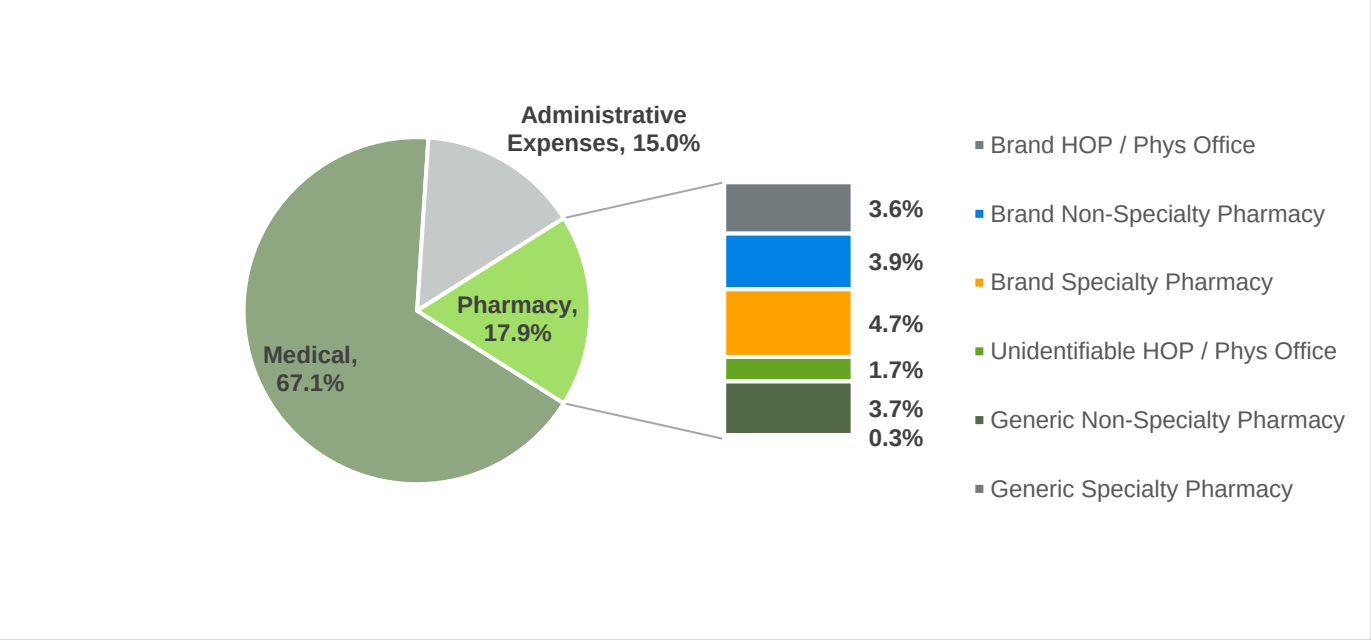
Figure 1 assumes the following:

- Rebates of 1% of gross medical benefit pharmacy costs (i.e., pharmacy costs at an outpatient facility or physician office).
  - Minimal rebates are paid for these products due to the less common use of formulary and lower ability to direct utilization to preferred products than products managed under the pharmacy benefit (whereas pharmacy benefit rebates are typically paid based on preferred formulary status or utilization management metrics). Additionally, medical benefit rebates may reduce the pricing benchmark (Average Sales Price, or ASP) used to reimburse physicians for those products.
  - Medical pharmacy rebates amount to $1 to $4 per member per year, or $0.08 to $0.33 per member per month. In Figure 1, we estimated medical pharmacy rebates within this range at 1% of gross medical pharmacy costs, or about $0.32 PMPM.
- Rebates of 19.1% of gross pharmacy benefit costs (i.e., pharmacy costs at retail, mail, or specialty pharmacies).
  - Payers receive average brand and specialty manufacturer rebates of about 30% and 20% of gross claim cost (i.e., before member cost-share), respectively.
- Member cost-sharing is assumed to be 17% of total gross claim costs, based on the 2018 Milliman Medical Index, which estimates the distribution of costs for large employer plans[1].
- Pharmacy costs under the medical benefit are assumed to be 68% for brand products and 32% for products we are unable to identify as brand or generic (e.g., claims associated with non-Single Source Brand HCPCS, classified as “unidentifiable” in the remainder of this report), based on our study of medical pharmacy claims. This is the lower bound of our estimate for brands, as this represents the proportion of medical pharmacy claims spend which is identifiable as single-source brand (SSB) through a product’s HCPCS (Healthcare Procedure Code System, a medication’s identifier in medical claims). There is likely additional brand spend under the medical pharmacy benefit, however there are limitations in analyzing these claims. Using this estimate, brand medical pharmacy claims may fall between:
  - 3.6% of total net commercial payer costs, assuming the lower bound estimate for brands at 68% of medical pharmacy claims
  - 5.3% of total net commercial payer costs, assuming the upper bound estimate for brands at 100% of medical pharmacy claims

Figure 2 summarizes the cost distribution of commercial plan costs among total plan costs after accounting for rebates.

[1] “2018 Milliman Medical Index.” Milliman, May 2018. http://www.milliman.com/uploadedFiles/insight/Periodicals/mmi/2018-milliman-medical-index.pdf

FIGURE 2: ESTIMATED 2018 COMMERCIAL PAYER COST DISTRIBUTION – NET PLAN COST AFTER REBATES



ANALYSIS OF A MEDICARE PAYER'S COSTS

We performed the same analysis on a Medicare-eligible population. We begin with the total gross cost of claims, followed by the plan's claim liability (e.g., net of member cost sharing) and other expenses and margin (e.g., administrative costs). We also estimated the costs associated with pharmacy claims (regardless of whether they were dispensed at a pharmacy or by a medical provider) net of manufacturer and pharmacy rebates.

FIGURE 3: ESTIMATED 2018 MEDICARE PAYER COST DISTRIBUTION, PER MEMBER PER MONTH (PMPM)

	NET PLAN COST (I.E., CLAIMS AND EXPENSES AFTER MEMBER COST-SHARE)			
	BEFORE REBATES		AFTER REBATES	
MEDICAL				
INPATIENT FACILITY	$376	34.9%	$376	36.8%
OUTPATIENT FACILITY	$167	15.5%	$167	16.4%
PROFESSIONAL / PHYSICIAN OFFICE VISITS	$209	19.4%	$209	20.5%
TOTAL MEDICAL	$752	69.8%	$752	73.7%
PHARMACY				
BRAND HOP / PHYSICIAN OFFICE	$45	4.2%	$42	4.2%
BRAND NON-SPECIALTY RETAIL / MAIL-ORDER	$44	4.1%	$13	1.3%
BRAND SPECIALTY RETAIL / MAIL-ORDER	$30	2.8%	$14	1.4%
UNIDENTIFIABLE HOP / PHYSICIAN OFFICE	$21	2.0%	$21	2.1%
GENERIC NON-SPECIALTY RETAIL / MAIL-ORDER	$28	2.6%	$23	2.2%
GENERIC SPECIALTY RETAIL / MAIL-ORDER	$2	0.2%	$2	0.2%
TOTAL PHARMACY	$171	15.9%	$116	11.3%
ADMINISTRATIVE EXPENSES / MARGIN	$153	14.2%	$153	15.0%
TOTAL COSTS	$1,076		$1,021	

Note: Numbers may not add up precisely due to rounding. Estimates based on Milliman's 2018 Ages 65 and Over HCGs.
PMPM = per member per month. HOP = Hospital Outpatient

Accounting for pharmacy rebates reduces the pharmacy component of net plan costs to a payer for a Medicare-eligible population by approximately $56 per member per month. Total payer costs are reduced 5.2%. Costs are shown net of reinsurance subsidies from the government and it is assumed rebates are shared with the federal government.

Figure 3 assumes the following:

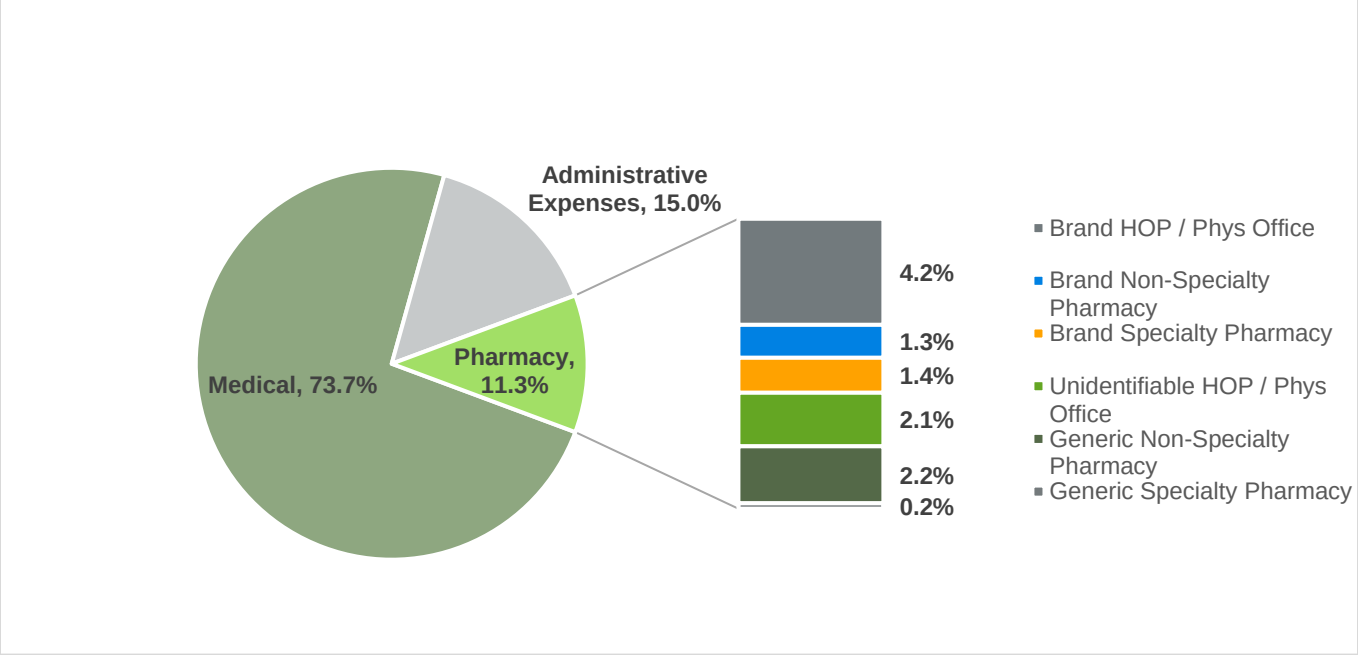
- Manufacturer rebates of 4% of a payer's gross medical benefit pharmacy costs (i.e., pharmacy costs at an outpatient facility or physician office). Internal research suggests medical rebates for Medicare Advantage plans are higher than rebates for commercial payers. Consistent with the commercial results, we assumed 68% of medical pharmacy costs are attributed to brand medicines and only brand medicines are assumed to be rebated.
- Manufacturer rebates of 22.5% of gross pharmacy benefit costs (i.e., pharmacy costs at retail, mail, or specialty pharmacies).
  - Payers receive average brand and specialty manufacturer rebates of about 35% and 25% of gross claim costs (e.g., before member cost-share), respectively.
  - Rebates in Medicare Part D are generally higher than in the commercial market due to the additional utilization management that is typically in place, among other factors[2].
- Rebates paid by retail or specialty pharmacies to plan sponsors (or PBMs), also referred to as Direct and Indirect Remuneration (DIR), of 3.0% of gross pharmacy benefit costs, or $6 PMPM (after sharing between the plan and the government). DIR contracts are typically structured as a fixed dollar amount per script or percentage of cost. In Figure 3, we assumed DIR is a fixed dollar amount per script, allocated by utilization (i.e., script count) across the retail / mail order brand and generic categories. Our total DIR impact estimation includes specialty DIR as well, but we did not specifically break out specialty vs. non-specialty DIR, therefore, we did not allocate those dollars to the specialty channel in Figure 3.
- Gross costs are estimated for a "typical" Medicare population of non-institutionalized, non-Medicaid members. This assumes a combination of Medicare Advantage with Prescription Drug (MAPD) members and members with traditional Fee-for-Service (FFS) medical coverage and stand-alone prescription drug (PDP) coverage.

Member cost-sharing is assumed to be 17% of total gross claim costs, based on the Fee-for-Service benefit[3]. Net plan costs also exclude federal reinsurance payments.

Figure 4 summarizes the cost distribution of Medicare plan costs among total costs after accounting for rebates.

[2] Medicare Part D rebates are excluded from the calculation of Medicaid's "Best Price" rebate. Since Part D rebates are excluded, manufacturers may be willing to provide deeper discounts for these payers than commercial payers contracts, which could then re-set Best Price. Additionally, the financial mechanics of Part D cause rebates to have strong value in reducing premiums, such that plan sponsors may negotiate for more rebates or prefer products with the highest rebates.
[3] Part A and Part B cost sharing is based on the standard 2018 Fee-for-Service benefit. Part D cost sharing is based on the 2018 Defined Standard benefit. The Part D "cost sharing" includes any non-plan cost (e.g., low-income subsidies and the Coverage Gap Discount Program).

FIGURE 4: ESTIMATED 2018 MEDICARE PAYER COST DISTRIBUTION – NET PLAN COST AFTER REBATES



CONSIDERATIONS AND CONCLUSIONS

Quantifying the way pharmacy costs contribute to a payer's total costs can be difficult.

- Rebates are an important component of payer financials because they can either reduce the cost to the payer and to the member through reduced premiums, or they can be indirectly partially shared with the member at the point-of-sale through point-of-sale rebates. This analysis assumes traditional rebate dynamics where the payer receives the rebate after the point-of-sale. The terms of rebate arrangements between pharmaceutical manufacturers and payers are treated as confidential and may vary considerably by payer and by population mix, so it is difficult to estimate a market-level average. Using public and private sources to estimate reasonable rebate levels illustrates that rebates reduce a commercial payer's costs by about $22 PMPM or 3.7% of total costs, and reduce a payer's total Medicare costs by 5.2% or $56 PMPM, based on claims distributions from the 2018 *HCGs*.
- The cost reductions attributed to rebates in these figures emphasize the importance of reflecting rebates when summarizing payer financials in either a commercial or a Medicare setting. After accounting for rebates, pharmacy costs contribute 17.9% and 11.3% to total plan costs for commercial and Medicare populations, respectively.
- There are many complicating factors in Medicare Part D, such as payers sharing rebates with the federal government, the existence of risk corridors, and subsidies for low-income beneficiaries and reinsurance payments, to name a few.
- Manufacturer rebates are generally limited to utilization for brand medicines. While brand medicines contribute to 15.4% of commercial and 11.1% of Medicare payer costs before accounting for rebates, these estimates are reduced to 12.2% and 6.8% after rebates, respectively. Said another way, spending on brand pharmaceuticals accounts for 12.2 cents of the average premium dollar in the commercial market and 6.8 cents of the average premium dollar in the Medicare market (including both medical and pharmacy costs). Note, this assumes that 68% of medical pharmacy claims are brand medicines. Assuming 100% of medical pharmacy claims are brand medicines changes the estimates to 13.9% and 8.9% for commercial and Medicare, respectively.

METHODOLOGY

We relied on Milliman's 2018 *HCGs* for our estimate of claims costs and a number of sources further described below for our estimate of rebate levels. The *HCGs* are projected gross cost benchmarks based on a large set of nationwide data. Estimations based on or derived from the *HCGs* and supporting files are dependent upon values and options entered by the user. Actual results will vary from *HCG* estimates. For this analysis, we used the following assumptions:

- For the analysis of commercial claims, we applied an average discount to billed charges by service category to estimate allowed charges for medical services (i.e., inpatient, outpatient and professional services). The averages are based on an internal database of national and regional payers. For the analysis of claims for members aged 65 and over, we used Medicare allowed charges.
- We used a combination of well- and loosely- managed care cost assumptions to reflect an average payer's costs. A "well-managed" population will have more utilization and care management controls in place, typically resulting in lower costs. A "loosely-managed" population will have fewer controls in place, resulting in higher costs.
  - For the commercial analysis, we assumed the population was a 50-50 blend of well- and loosely managed care for those service categories that tend to be more highly managed and a 20-80 blend, respectively, for other services.
  - For the Medicare analysis, we assumed about 57% of the population was enrolled in Fee-for-Service Medicare with a standalone PDP and the remaining 43% was enrolled in a MAPD, based on 2017 enrollment figures. We assigned loosely-managed assumptions to the FFS population and the same blend of loosely-managed / well-managed assumptions to the MAPD population as assumed for the commercial population.

We used multiple publicly available reports and internal Milliman research summarizing rebate and other pharmacy discounts from the following sources:

- "The Impact of Prescription Drug Rebates on Health Plans and Consumers." Altarum Institute, April 2018.
- "Medicine Use and Spending in the U.S.: A Review of 2017 and Outlook to 2022." IQVIA Institute for Human Data Science, April 2018.
- Internal Milliman research summarizing rebate levels and pricing discounts for Part D payers from the 2018 bid year.
- "2019 Annual Report of the Boards of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds", The Boards of Trustees, Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds.
- Informal data gathered from 2019 MAPD bids and industry presentations summarizing medical rebates.

We calculated the distribution of costs to a payer, including non-claims costs (administrative costs, taxes, profit or margin). Non-claims costs were estimated at 15% of net payer costs, based on the following estimates:

- "Where does your health care dollar go?" American Health Insurance Plans, May 2018.
- "Private Health Insurance Premiums and Federal Policy." Congressional Budget Office, February 2016.
- Summary of Centers for Medicare & Medicaid Services; Medicare Trustees Reports, 2011 – 2016. Center for Economic Policy Research, February 2017.

These sources estimated administrative costs at 18.1%, 15.0% and 12.3%, respectively.

We estimated member cost sharing at 17% for commercial plans based on the 2018 Milliman Medical Index (http://www.milliman.com/uploadedFiles/insight/Periodicals/mmi/2018-milliman-medical-index.pdf) and 18% for a Medicare Advantage population, based on the Fee-for-Service Medicare design and Part D defined standard benefit. When estimating the net plan cost, we excluded estimated reinsurance payments from the federal government, low-income cost sharing subsidies, and manufacturer payments from the Coverage Gap Discount Program.

To analyze the medical pharmacy claims, we relied on our 2016 Commercial *Health Cost Guidelines* Source Database (CHSD). Using a HCPCS to NDC crosswalk file provided with the *HCGs*, we summarized all medical pharmacy claims by HCPCS. We relied on MediSpan's

NDC mapping of generic, SSB and multi-source brands (MSB) to determine whether each HCPCS mapped exclusively to generic, MSB or SSB NDCs. If the HCPCS mapped exclusively to SSB NDCs, it was considered SSB. If the HCPCS mapped to any two (MSB, SSB, or generic) categories, it was not considered SSB.

CAVEATS, LIMITATIONS, AND QUALIFICATIONS

This information was developed to estimate the proportion of pharmacy costs within a payer's total costs. This information may not be appropriate, and should not be used, for other purposes.

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In preparing our estimates, we relied upon Milliman's 2018 *HCGs*, 2016 CHSD, and publicly available reports, as noted in the methodology section. Actual results will certainly vary for specific health plans due to differences in trends, demographics, discount arrangements, formulary, utilization patterns, and rebate arrangements, among other factors. We are not attorneys and do not intend to provide any legal advice or expertise related to the topics discussed here. The opinions included here are ours alone and not necessarily those of Milliman.

Anna Bunger and Katie Holcomb are Consulting Actuaries for Milliman, members of the American Academy of Actuaries, and meet the Qualification Standards of the Academy to provide this information. To the best of their knowledge and belief, this information is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices.

This letter outlines the review and opinions of the authors of this letter and not necessarily that of Milliman. The terms of Milliman's Master Services Agreement with Merck, effective January 14, 2015, apply to this information and its use.

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