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# benefits

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A study finds that plan sponsors offering health care benefits that include a carved-in pharmacy benefit are likely to experience significant medical cost savings over carving out the pharmacy benefit.

## Effects of Pharmacy Benefit Carve-In on Utilization and Medical Costs: A Three-Year Study

by Aaron Smith-McLallen, Ph.D.

**N**early 85% of private health insurance spending goes toward medical costs, with an additional 15% going toward prescription medications.<sup>1</sup> Trends show that medical cost spending is increasing more rapidly than spending on prescription medication. For example, some studies show that from 2005 to 2010 spending on inpatient and outpatient services increased by 51% and 67%, respectively, while drug costs increased by 48%.<sup>2,3</sup> Given that medical costs represent the majority of health care spending, and the rate of cost increase is greater for medical costs than pharmacy costs, it would make sense that employers looking to reduce costs should focus on ways to control medical costs.

Most employers look to control costs by adjusting employee contributions and deductibles, by providing employees with more information about health care costs and quality, and by providing incentives to participate in healthy lifestyle programs.<sup>4</sup> Employers also consider which benefits

to offer and how they should be administered. One key benefits decision employers are faced with is whether to include a pharmacy benefit as part of the total health care package (the *carve-in approach*) or treat it as a separate benefit administered by an external pharmacy benefit manager (PBM) (the *carve-out approach*).<sup>5</sup> Potential savings through the carve-out model are generated by controlling drug costs, primarily through rebates PBMs can negotiate with drug manufacturers, but also through discounts on ingredient costs and dispensing fees. However, there is a growing body of evidence showing that the carve-in model can generate substantial medical cost savings through better care coordination and utilization management.<sup>6,7,8,9</sup>

### The Current Study

Independence Blue Cross (IBC) is a Philadelphia, Pennsylvania-based health insurance carrier serving approximately 3.1 million members nationally, including 2.2 million in the

Philadelphia region. IBC wanted to understand the impact of having a carved-in vs. a carved-out pharmacy benefit on medical costs, health care utilization and medication compliance.

Using administrative data from 2008, 2009 and 2010, IBC's informatics organization identified health plan participants with commercial products (both self-funded and fully insured) who had either integrated medical and pharmacy benefits through IBC or had medical benefits through IBC and had external pharmacy benefits within each of the three years. Health plan participants meeting the following criteria were included in each year's analysis:

- They belonged to an employer group that maintained either a pharmacy benefit carve-in or had an external PBM that provided pharmacy data to IBC for the entire year.
- They belonged to an employer group that had 100 or more contracts.
- The plan participant had less than \$150,000 in allowed medical costs for the year.

Analyses compared health plan participants with a combined pharmacy benefit through IBC to those with a combined pharmacy benefit managed by an external PBM on three key outcomes:

1. *Allowed medical costs.* Allowed medical costs refer to the maximum amount of the billed charge that is pay-

able by the plan for covered services or supplies provided by health care providers and health care facilities. Savings are described using the average difference in per member per month (PMPM) allowed amounts between health plan participants with a carved-in or a carved-out pharmacy benefit.

2. *Utilization.* Analyses of health care utilization focus on hospital admissions and emergency room (ER) visits. Some analyses examine the likelihood of having at least one admission or ER visit within each year (2008, 2009 and 2010). Other analyses examine the number of hospital admissions and ER visits per 1,000 plan participants within each 12-month period.
3. *Medication compliance.* Medication compliance is measured by the medication possession ratio (MPR). *MPR* represents the percentage of time that a plan participant has access to medication and is calculated as the total days' supply of medications that the plan participant possesses, divided by the number of calendar days for which he or she should be in possession of medication. For each plan participant, *MPR* could vary between 0.0 and 1.0. Health plan participants with an *MPR* of 0.8 or higher are considered adherent with their medication regimen.<sup>10</sup> Analyses compare the percentage of plan participants in the carve-in and carve-out groups with an *MPR* of 0.8 or higher.

Although this study focuses on the effects of pharmacy benefit arrangement on medical costs, utilization and medication compliance, there are other factors that contribute to these outcomes. Analyses controlled for several factors that are known or believed to influence cost, utilization and medication compliance independently of the effect of the prescription benefit arrangement. Specifically, analyses controlled for the independent effects of age, gender, presence vs. absence of a chronic condition, whether the plan participant was located in the Philadelphia region (in-area) or outside of that area (out-of-area), and diagnostic cost group (DCG) risk score. The *DCG risk score* is an estimate of a participant's financial risk based on the participant's medical claims during the current year. Table I shows the similarities and differences between plan participants with a pharmacy benefit carve-in and those with a pharmacy benefit carve-out who were included in each year's analysis.

## Finding the Savings

### Cost Savings

There were significant medical cost savings for plan participants with a carved-in pharmacy benefit compared

## FIGURE >>

### Adjusted Total Medical Cost Savings (PMPM) by Year

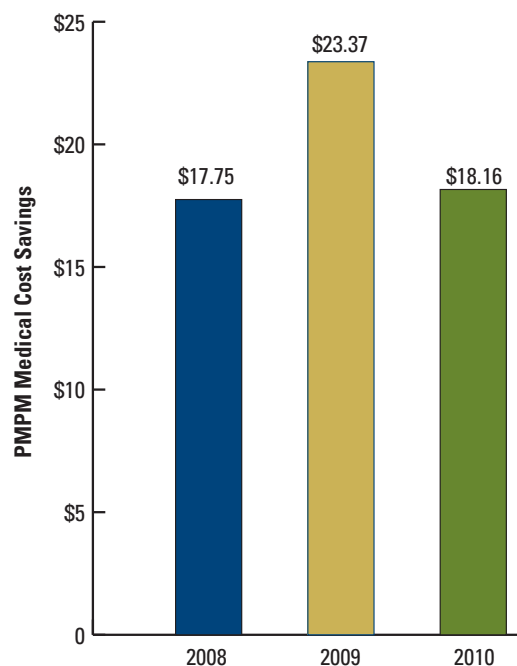


TABLE I &gt;&gt;

## Descriptive Characteristics of Health Plan Participants Included in Study

Group	Demographic Variable	Rx Carve-In		Rx Carve-Out		Significance Level
2008	<i>N</i>	359,835		178,756		—
	Percent Female	53.4%		54.4%		<.001
	Percent Out of Area	11.4%		35.6%		<.001
	Percent w/Chronic Condition	19.2%		22.4%		<.001
	Average ( <i>SD</i> ) Age	35.9 (19.1)		34.7 (18.2)		<.001
	Average ( <i>SD</i> ) Risk	1.64 (4.08)		1.85 (4.08)		<.001
2009	<i>N</i>	351,708		189,202		—
	Percent Female	53.7%		54.1%		<.02
	Percent Out of Area	10.1%		33.5%		<.001
	Percent w/Chronic Condition	20.1%		23.1%		<.001
	Average ( <i>SD</i> ) Age	37.1 (19.2)		36.3 (18.4)		<.001
	Average ( <i>SD</i> ) Risk	1.70 (4.22)		1.99 (4.38)		<.001
2010	<i>N</i>	281,601		199,745		—
	Percent Female	53.9%		53.8%		.551
	Percent Out of Area	8.2%		38.4%		<.001
	Percent w/Chronic Condition	14.5%		17.9%		<.001
	Average ( <i>SD</i> ) Age	35.7 (19.0)		36.5 (18.6)		<.001
	Average ( <i>SD</i> ) Risk	1.60 (3.92)		1.97 (4.33)		<.001
Three-year Chronics	<i>N</i>	18,057		11,369		—
	Percent Female	48.8%		47.0%		<.003
	Percent Out of Area	3.9%		25.3%		<.001
	Average ( <i>SD</i> ) Age	46.9 (18.8)		46.4 (17.6)		<.04
	Average ( <i>SD</i> ) Risk	3.79 (6.72)		3.97 (6.88)		<.03
	Chronic Conditions	<i>N</i>	Percent	<i>N</i>	Percent	
CHF	268	1.5%	179	1.6%	.538	
COPD	686	3.8%	534	4.7%	<.001	
CAD	2,610	14.5%	1,509	13.3%	<.005	
Diabetes	9,073	50.3%	5,959	52.4%	<.001	
Asthma	8,848	48.5%	4,769	42.0%	<.001	
More than one condition	2,980	16.5%	1,436	12.6%	<.001	

to those with a carved-out pharmacy benefit. On average, across all three years, having a carved-in pharmacy benefit was associated with medical cost savings of \$19.76 PMPM. For an employer with 1,000 employees, this could translate into medical cost savings of \$237,120 per year. As the figure shows, savings ranged from \$17.75 PMPM in 2008 to \$23.37 PMPM in 2009. Analysis by cost type showed that across all three years professional costs were 11.48% lower and outpatient costs (which include ER costs) were 9.29% lower for plan participants with a carved-in pharmacy benefit.

#### Health Care Utilization Differences

The cost savings seen in the figure were driven by differ-

ences in hospital admissions and ER visits. On average across all three years 5.8% of health plan participants with a pharmacy benefit carve-in had at least one hospital admission compared to 7.2% of those with a carved-out pharmacy benefit. Health plan participants with a pharmacy benefit carve-in were also less likely to have an ER visit than those with a pharmacy benefit carve-out (14.7% vs. 19.3%). After adjusting for demographic factors, the odds of having a hospital admission were 17% lower and the adjusted odds of having an ER visit were 33% lower for plan participants with a carved-in pharmacy benefit compared to those with a carved-out benefit. Analyses of utilization per 1,000 plan participants showed that the number of hospital admissions was 19.0% lower and the num-

ber of ER visits was 28.6% lower for plan participants with a carved-in pharmacy benefit.

### Medication Adherence and Compliance

Because PBM vendors focus exclusively on managing pharmacy benefits, it might be expected that health plan participants with a carved-out pharmacy benefit managed by an external vendor would have higher compliance rates. However, analyses showed that on average across all three years 71% of plan participants with a carved-in pharmacy benefit had an MPR at or above the 0.8 threshold to be considered compliant compared to 67% of health plan participants with a carved-out pharmacy benefit. Even after controlling for demographic characteristics, the odds of having an MPR of 0.8 or greater were 12% higher for plan participants with a pharmacy benefit carve-in compared to those with a pharmacy benefit carve-out.

### Carved-In Savings for Health Plan Participants With Chronic Conditions

The care of privately insured individuals with chronic conditions is estimated to account for 68% of private health insurance spending in the United States.<sup>11</sup> The value of a carved-in pharmacy benefit may be especially important for health plan participants with chronic conditions for whom proper management relies heavily on adherence to medication regimens.

To understand the impact of pharmacy benefit arrangement on medical costs and utilization for those with chronic conditions, IBC used medical claims data to identify plan participants with one of five chronic conditions for at least three consecutive years (2008-2010). The following hierarchy was used to classify plan participants with chronic conditions so that each chronic participant contributed to the utilization and cost analyses for only one condition: (1) diabetes; (2) congestive heart failure (CHF); (3) coronary artery disease (CAD); (4) asthma and; (5) chronic obstructive pulmonary disease (COPD). Additional analyses examined differences in utilization and cost for plan participants with two or more chronic conditions. Cost and utilization estimates adjust for age, gender, risk score and out-of-area.

**Diabetes:** Over a three-year period, there was a 3.3% medical cost savings for diabetic plan participants with a pharmacy benefit carve-in compared to those with a carved-out pharmacy benefit. A substantial portion of these savings resulted from fewer ER visits. From 2008 through 2010 diabetic participants with a pharmacy benefit carve-in averaged 12.3% fewer ER visits per 1,000 plan participants, and ER costs were 13.8% lower compared to those with a carved-out pharmacy benefit.

**CHF:** Medical costs were 19.3% lower for plan participants with CHF

who had a pharmacy benefit carve-in. The number of hospital admissions per 1,000 participants was 23.2% lower and associated inpatient costs were 31% lower for plan participants with a pharmacy benefit carve-in.

**CAD:** On average, plan participants with a carved-out pharmacy benefit showed slightly lower total costs (2.8%) and hospital admissions per 1,000 plan participants (0.3%) than those with a carved-in medical and pharmacy benefit.


**Asthma:** Although the number of hospital admissions and ER visits were lower for asthmatic plan participants with a pharmacy benefit carve-in (13.7% and 12.8%, respectively), total medical costs were 0.5% lower for those with a pharmacy benefit carve-out.

**COPD:** Total medical costs were 5.6% lower and hospital admissions per 1,000 plan participants were 27.2% lower for plan participants with COPD and a pharmacy benefit carve-in. Health plan participants with a pharmacy benefit carve-out had 1.2% fewer ER visits per 1,000 plan participants than plan participants with a pharmacy benefit carve-in.

**Two or more chronic conditions:** Among plan participants with two or more chronic conditions, those with a pharmacy benefit carve-in had fewer hospital admissions and ER visits per 1,000 plan participants (10.2% and 17.4% lower, respectively), and had 1.9% lower medical costs than those with a pharmacy benefit carve-out.

Table II shows the estimated annual impact of having a carved-in pharmacy benefit on medical costs for plan participants with chronic conditions. Based on the savings observed in this study for each chronic condition and IBC book-of-business disease prevalence rates, an employer with 1,000 employees could expect to save an average of \$35,528 per year in medical costs for

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TABLE II &gt;&gt;

## Average Savings by Chronic Condition per 1,000 Employees

Chronic Condition	Three-Year Average Savings (Loss)	Prevalence Rate	Average Annual Savings per 1,000 Employees
Diabetes	\$ 20.47	6.6%	\$ 16,212
CHF	\$ 286.68	0.7%	\$ 24,081
CAD	\$ (27.12)	3.0%	\$ (9,763)
Asthma	\$ (2.01)	9.7%	\$ (2,340)
COPD	\$ 43.68	1.4%	\$ 7,338
Estimated total annual medical savings for plan participants with chronic conditions per 1,000 employees.			\$ 35,528

health plan participants with chronic conditions by having a carved-in pharmacy benefit.


### Summary and Conclusion

This study showed that having a carved-in pharmacy benefit was associated with significant medical cost savings (\$19.76 PMPM) compared to having a pharmacy benefit carve-out. Savings were driven by 19.0% fewer hospital admissions and 28.6% fewer ER visits for plan participants with a pharmacy benefit carve-in. It also demonstrated that using an external PBM to administer pharmacy benefits did not increase the number of health plan participants who were adherent with their medication regimen. Overall, plan participants with chronic conditions and a pharmacy benefit carve-in had lower rates of hospital admissions and ER visits and lower medical costs than those with a pharmacy benefit carve-out. These findings are consistent with those described in other studies examining the effects of pharmacy benefit arrangement on medical costs from 2003 through 2010.

For example, Aetna reported medical cost savings of 2.7% in both 2005 and 2006 as a direct result of the integration of the pharmacy benefit, which translated to a savings of approximately \$6 PMPM.<sup>12</sup> Minnesota-based HealthPartners examined medical claims data from 2007 and 2008 and found that groups with a pharmacy benefit carve-in saved an average of \$9.15 PMPM, or 3.8% in total medical costs, and had 7% lower inpatient admissions per year.<sup>13</sup> Highmark Blue Cross Blue Shield reported average savings of \$11 PMPM for a fully insured population over the four-year period from 2005-2008. Highmark also found that a pharmacy benefit carve-in resulted in an annual average savings of 15.8% in outpatient expenses and 7.7% in ER expenses.<sup>14</sup> Finally, Cigna cited medical cost savings of between \$10 and \$11 PMPM for customers with a pharmacy benefit carve-in in 2010.<sup>15</sup>

The IBC study and studies conducted by other private

insurers use different methodologies and provide different estimates of savings. Still, it is clear that employers offering health care benefits that include a carved-in pharmacy benefit are likely to experience significant medical cost savings over carving out the pharmacy benefit. Although the amount of savings a particular employer group may experience through carving-in the pharmacy benefit will vary depending on the age, gender and illness burden of their employee population, employers are encouraged to consider the potential benefit of providing a combined medical and pharmacy benefit.

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