

# ACA-Mandated Elimination of Cost Sharing for Preventive Screening Has Had Limited Early Impact

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**T**he Affordable Care Act (ACA) of 2010 contains provisions for reducing financial barriers to receiving evidence-based preventive care. Specifically, it mandates that health insurance plans provide benefits for, and require no cost sharing for, services recommended with a rating of A or B by the US Preventive Services Task Force (USPSTF).<sup>1</sup>

Despite aggressive efforts to increase breast and colorectal cancer screening in the past decade, screening rates remain suboptimal.<sup>2</sup> Across the United States, the rates of colorectal and breast cancer screening are 59% and 72%, respectively.<sup>3,4</sup> The ACA policy attempts to increase these rates through first-dollar coverage of these screening tests.

Patient cost sharing has been shown in a variety of contexts to be an important driver of health service utilization,<sup>5</sup> and higher cost sharing has been shown to reduce utilization of services, though it also has the potential downside of reducing both desirable and less desirable healthcare utilization.<sup>6-10</sup> Concerns about the impact of higher cost sharing on cancer screening rates and preventive service utilization have been heightened by the proliferation of high-deductible insurance plans.<sup>11</sup>

Per ACA policy, all new private insurance plans were required to eliminate cost sharing for such services starting on September 23, 2010, with Medicare plans facing similar requirements starting January 1, 2011. Commercial plans were designated as grandfathered if they existed in March 2010 and did not make any coverage changes. In this study, we examined the impact of the elimination of cost sharing for preventive services on colon and breast cancer screening rates among beneficiaries of Humana, a large national private health insurance plan, using grandfathered plans as a control group. We hypothesized that there would not be a dramatic impact of the policy on preventive health utilization due to the lack of knowledge about cost sharing and additional patient barriers to screening.

## ABSTRACT

**Objectives:** The Affordable Care Act eliminated patient cost sharing for evidence-based preventive care, yet the impact of this policy on colonoscopy and mammography rates is unclear. We examined the elimination of cost sharing among small business beneficiaries of Humana, a large national insurer.

**Study Design:** This was a retrospective interrupted time series analysis of whether the change in cost-sharing policy was associated with a change in screening utilization, using grandfathered plans as a comparison group.

**Methods:** We compared beneficiaries in small business non-grandfathered plans that were required to eliminate cost sharing (intervention) with those in grandfathered plans that did not have to change cost sharing (control). There were 63,246 men and women aged 50 to 64 years eligible for colorectal cancer screening, and 30,802 women aged 50 to 64 years eligible for breast cancer screening. The primary outcome variables were rates of colonoscopy and mammography per person-month, with secondary analysis of colonoscopy rates coded as preventive only.

**Results:** There was no significant change in the level or slope of colonoscopy and mammography utilization for intervention plans relative to the control plans. There was also no significant relevant change among those colonoscopies coded as preventive.

**Conclusions:** The results suggest that the implementation of the policy is not having its intended effects, as cost sharing rates for colonoscopy and mammography did not change substantially, and utilization of colonoscopy and mammography changed little, following this new policy approach.

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### Take-Away Points

The Affordable Care Act eliminated patient cost sharing for evidence-based preventive care, yet the implementation of this policy in a large national insurer has not resulted in substantially higher utilization of colonoscopy and mammography.

- Only those colonoscopies coded as preventive were eligible for the policy change, so many patients were still subject to cost sharing.
- Many physicians and patients may have been unaware of cost sharing for this policy change prior to having the procedure done.
- Additional measures are needed to increase screening rates, including waiving cost sharing for all eligible colonoscopies and making financial incentives more salient for patients.

## METHODS

### Data Source and Study Population

We analyzed de-identified data from Humana for all beneficiaries aged 50 to 64 years who were enrolled in small business plans at any time between October 2008 and May 2012. Member eligibility files included beneficiary coverage and benefit design files describing different characteristics of each plan, including grandfathered status.

Patient-level data obtained from the beneficiary file included age, gender, and plan type, along with census tract data for income, race, and education. Using Healthcare Effectiveness Data and Information Set (HEDIS) coding (eAppendix 1, available at [www.ajmc.com](http://www.ajmc.com)),<sup>12</sup> claims data were obtained for colorectal cancer screening (ie, colonoscopy, fecal occult blood testing, and flexible sigmoidoscopy) and breast cancer screening (ie, mammography). Colonoscopies were defined as “preventive” if associated with the designated diagnosis code (V16.0, V18.51, V76.41, V76.51; these codes are from a small subset of HEDIS codes as defined by Humana for compliance with the ACA policy).

Patients eligible for colorectal cancer screening included men and women aged 50 to 64 years, and those eligible for breast cancer screening included women aged 50 to 64 years, as per the USPSTF recommendations.<sup>13</sup> Patients 65 years or older were not included, as they would be eligible for Medicare.

The primary outcome variables were rates of colonoscopy and mammography per person-month, and the secondary outcome was rate of colonoscopy coded as preventive per person-month. We did not exclusively measure procedures used only for cancer screening. Likewise, we did not measure the proportion of the population that was up-to-date with screening, as the turnover of the insurer’s population limited ability to look back and fully capture prior use of these screening tests. Rather, we looked at the overall utilization rates without a look-back period to examine differential rates in screening as a result of the policy. Colonoscopy is the primary modality for colorectal cancer screening in this country,<sup>3</sup> and

even when employed for the evaluation of symptoms, it serves as a diagnostic test for colorectal cancer. We also found predominant use of colonoscopy in our sample, with no increase in fecal occult blood tests over time and minimal flexible sigmoidoscopy use (data not shown).

Cost sharing refers to the out-of-pocket costs paid by the beneficiary, including copayment, deductible, and coinsurance for all the claims related to the procedure (physician and facility) billed on the same day. Given the nature of the policy reform, we examined the percentage of colonoscopies and mammograms with greater than zero cost sharing, but also looked at the mean cost sharing amount.

For the purposes of the analysis, time zero was the first renewal month for each plan after September 2010. Changes in benefit design for small business plans are typically made during the renewal month, which is plan-specific and is distributed throughout the year, so time zero ranged from October 2010 to September 2011 for the different plans (eAppendix 2). Small business plans were categorized as non-grandfathered or grandfathered, as denoted by the insurer, based on whether they were required by the policy to have no cost sharing for preventive procedures. Hereafter, we will refer to the non-grandfathered plans as the intervention group and the grandfathered plans as the control group.

We only included beneficiaries enrolled in plans that were in existence on March 2010, which was the time when grandfathered status was determined. To be included in the analysis, beneficiaries had to be continuously enrolled for 2 years prior to the change in the policy (time zero) and for a minimum of 9 months afterward. This allowed us to analyze the impact of policy change on a consistent cohort over time. Members from 23,028 unique small business coverage plans from 48 states were enrolled. The 5 states with the most enrollees were Texas (20.6%), Illinois (15.9%), Kentucky (9.8%), Florida (8.5%), and Wisconsin (6.8%).

### Statistical Methods

We assigned time zero to the renewal time during the policy change period to normalize the policy effect and assess overall trends for 24 months before and 9 months after time zero (ranging from month –24 to month 9). Thus, time zero and the months did not all occur at the same time for different plans. We first looked at the proportion of colonoscopy and mammography with greater than zero cost sharing and the degree to which this changed follow-

■ **Table 1.** Characteristics of Colonoscopy and Mammography Cohorts for Different Plan Types

	Colonoscopy		Mammography	
	Intervention	Control	Intervention	Control
Members (n)	25,926	37,320	12,603	18,199
Percent female	49%	49%	–	–
Mean age: years	55.2	55.3	55.2	55.3
Percent in census tract with >high school education	73%	74%	73%	74%
Percent residing in census tract with >80% white population	71%	72%	70%	72%
Median income in census tract	\$68,700	\$70,200	\$68,100	\$69,600

ing implementation of the new policy. We then assessed trends in procedure utilization for the eligible cohort of beneficiaries who were continuously enrolled, demonstrating this graphically.

We used an aggregate-level “differenced” interrupted time series to examine whether the change in cost sharing policy was associated with a change in screening utilization for the small business population, since this was the group for which we could directly compare rates in plans that had benefit design changes (intervention group) and those that were grandfathered (control group). Using this design, we compared each intervention and control group with itself, before and after the policy change.<sup>14,15</sup> This approach reduces potential biases from unmeasured variables and accounts for underlying changes in screening rates over time that are constant between both groups and might reflect general changes in clinical practice.<sup>16</sup> The intervention and control groups had similar characteristics (Table 1), and individual designation to those groups was at the plan level. Education, race, and income data were obtained from the census tract data for the area of residence of the beneficiary. We assigned small business plans to the intervention or the control group based on designation by the insurer.

For this interrupted time series analysis, the outcome of interest was the aggregate difference between the rate of colonoscopy or mammography for the intervention and the control group. This was determined at each monthly time point by calculating the difference between the rates (per 1000 beneficiaries) of the intervention and the control group, which resulted in 33 data points. We utilized a generalized linear regression model, which included variables for month, post policy, and month post policy. A secondary analysis was performed looking only at colonoscopies coded as preventive. The “post policy” coefficient provides the level change (absolute difference) in percent screened between the study groups in the month immediately after the policy, and the coefficient of “month post

policy” demonstrates any slope change after the policy. These 2 variables are the coefficients of interest, as they evaluate the changes in level and slope for colonoscopy and mammography rates, controlling for baseline trend. A positive coefficient represents a relative increase in the level or slope of monthly screening rate for members in the intervention plans compared with the control plans from pre- to post policy change.

All analyses were carried out using SAS software version 9.3 (SAS Institute, Cary, North Carolina). Approval for this study was obtained from the Institutional Review Board of the University of Pennsylvania. Humana was involved in the design and conduct of the study, in the collection and interpretation of the data, and in the review of the manuscript.

## RESULTS

### Demographics

For colonoscopy and mammography, the intervention and control groups had similar demographic characteristics including age, gender, education, race, and income (Table 1). There were 25,926 members in the intervention group and 37,320 members in the control group for colonoscopy; both groups were 49% female. In the colonoscopy intervention and control groups, respectively, mean ages were 55.2 years and 55.3 years; percentages with greater than high school education were 73% and 74%; percentages living in areas with greater than 80% white population were 71% and 72%; and median incomes for census tract were \$68,700 and \$70,200. There were 12,603 members in the intervention group and 18,199 members in the control group for mammography. In the mammography intervention and control groups, respectively, mean ages were 55.2 and 55.3 years; the percentage with greater than high school education were 73% and 74%; the percentage living in areas with greater than 80% white population was 70% and 72%; and median incomes for census tract were \$68,100 and \$69,600.

**Cost Sharing Changes**

Approximately 75% of small business plan colonoscopies required cost sharing, for an overall mean amount of about \$650, before the policy change for both intervention and control groups. After the change, the percentage of intervention group procedures with non-zero cost sharing dropped from 75% to 45%, while the control group rate of procedures with non-zero cost sharing remained at 75% (Figure 1a). Post policy, the mean cost sharing remained at \$650 for the control and dropped to about \$350 in the intervention group. Among colonoscopies that were coded as preventive, there was a larger reduction in the proportion of procedures with zero cost sharing (Figure 1b), with a drop in intervention group plans from 65% to approximately 15%. Before the policy, preventive coded colonoscopies had a mean cost sharing of about \$600 for intervention and control, which dropped to about \$100 for the intervention group post policy.

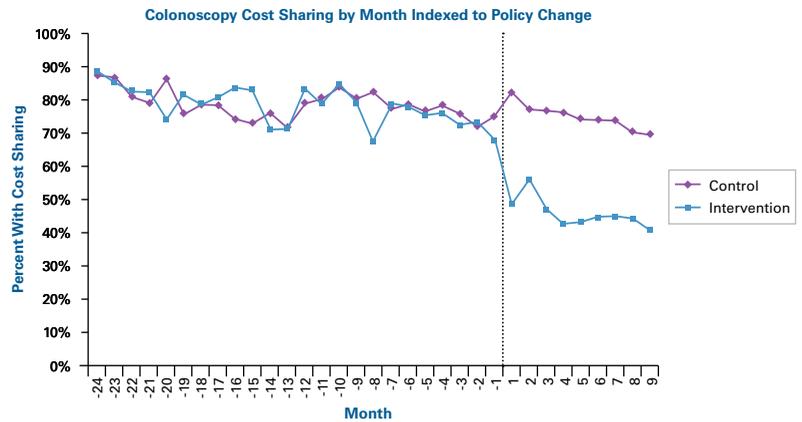
Many insurance plans had already made efforts to reduce cost sharing for mammograms prior to the policy change, so only about 10% of procedures in the intervention and control group had cost sharing before and after the policy change (Figure 1c).

**Interrupted Time Series Regression**

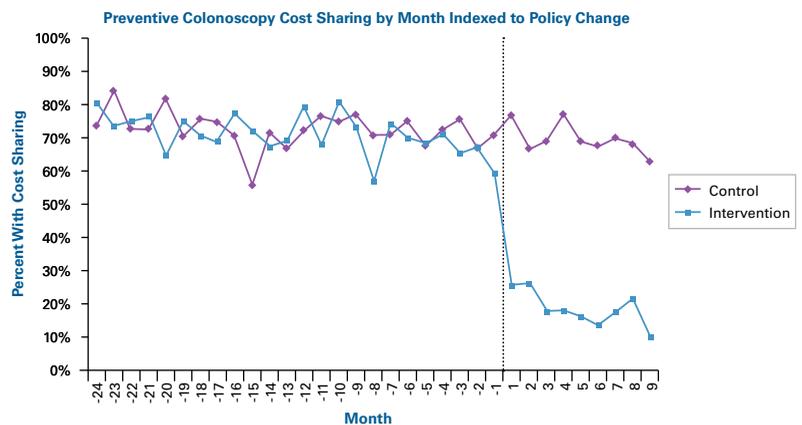
There was not a consistent increase in colonoscopy utilization following the reduction in patient cost sharing for colonoscopies in 2010 (Figures 2a and 2b). Interrupted time series regression analysis examining the aggregate difference in colonoscopy screening rates between the intervention and control groups showed no significant change in level immediately after the policy change (coefficient, 0.31;  $P = .68$ ) or in the slope change in utilization (coefficient, 0.054;  $P = .66$ ) (Table 2). We also performed an analysis of colonoscopies coded as preventive only and found no significant relative change in the absolute difference (coefficient, 0.16;  $P = .78$ ) or slope change in utilization (coefficient, 0.091;  $P = .32$ ) after the policy change (Table 2).

The annual utilization rate of mammography also changed little after the policy change (Figure 2c). For mam-

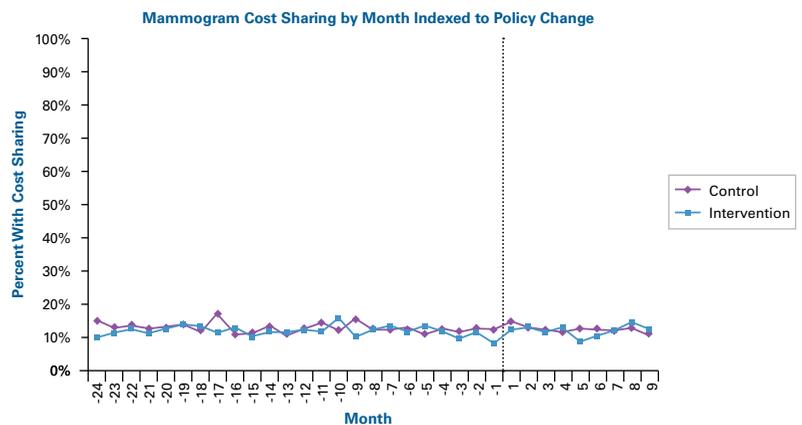
**Figure 1a.** Trends in Cost Sharing for Colonoscopy Before and After Policy Change



**Figure 1b.** Trends in Cost Sharing for Preventive Colonoscopy Before and After Policy Change



**Figure 1c.** Trends in Cost Sharing for Mammography Before and After Policy Change



mography, comparing the aggregate difference in small business cohort screening rates showed a nonsignificant change in the level immediately after the policy change (coefficient, 1.24;  $P = .65$ ) and in the slope change in utilization

(coefficient, 0.093;  $P = .83$ ) (Table 2). Thus, similar to the limited impact on colonoscopy, there was no significant increase in mammogram utilization after implementation of the policy change in this population.

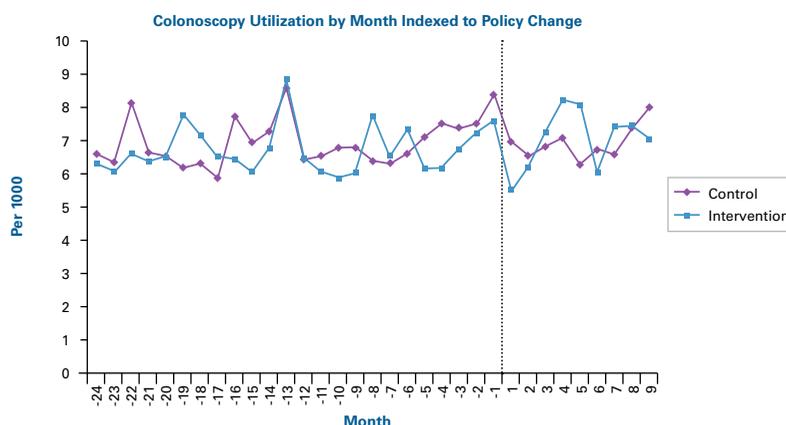
## DISCUSSION

This is the first study to examine the impact of the ACA cost sharing elimination policy on colonoscopy and mammography use in an insured population. Utilization of colonoscopy and mammography changed little following the implementation of this new policy. A potential, and perhaps unanticipated, reason for the limited effect is that only preventive-coded colonoscopies were subject to the policy. About 60% of eligible colonoscopies in small business plans were coded as preventive following the policy implementation. Nevertheless, there was a significant reduction in the proportion of colonoscopies with cost sharing for the intervention group, while the proportion of those with cost sharing in the control group remained the same. Furthermore, even among the subset of colonoscopies coded as preventive, for which the policy is specifically directed, we did not find a significant increase in colonoscopy utilization.

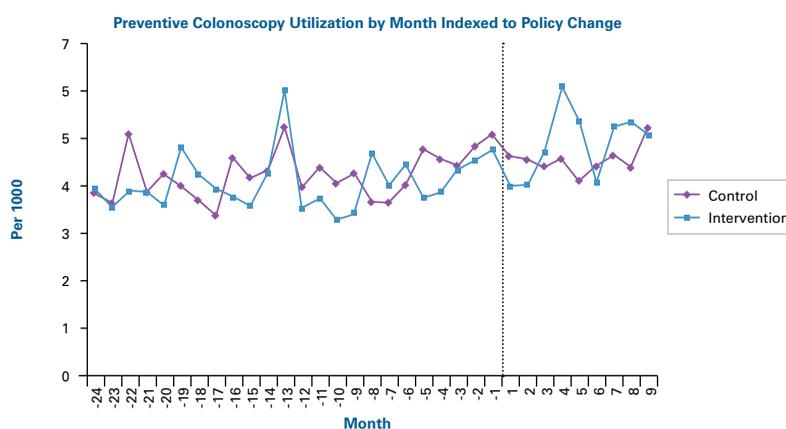
Mammography rates were also minimally affected, since few mammograms required cost sharing before the policy change, so only a small proportion of beneficiaries were impacted. Meanwhile, the percentage of mammograms with cost sharing did not drop to zero because some were coded as diagnostic as opposed to preventive. This reflects aggressive efforts to improve breast cancer screening rates that predated the ACA policy and limited the potential impact of this legislation on mammography screening rates. There was also the possibility that the ACA policy might draw attention to pre-existing policies that required no cost sharing for certain preventive services and drive an increase in behavior, yet we did not find evidence of this.

Another potential reason for the limited initial impact is that patients and their physicians were unaware of these co-payment reductions for a relatively infrequent

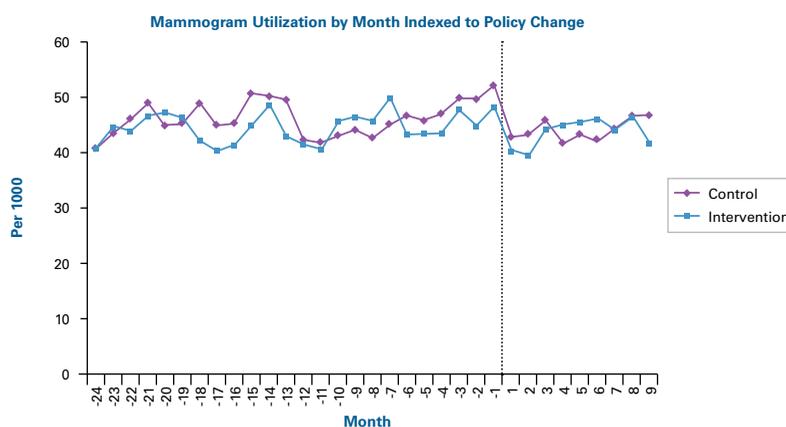
**Figure 2a.** Trends in Utilization of Colonoscopy Before and After Policy Change



**Figure 2b.** Trends in Utilization of Preventive Colonoscopy Before and After Policy Change



**Figure 2c.** Trends in Utilization of Mammography Before and After Policy Change



screening test.<sup>17</sup> Patients are given feedback of medication cost sharing every time they refill, while cancer screening is a relatively rare event—particularly in the case of routine screening colonoscopy every 10 years. This plan

**Table 2.** Aggregate Differences in Colonoscopy, Preventive Colonoscopy, and Mammography Utilization for Intervention Compared With Control

	Colonoscopy		Preventive Colonoscopy		Mammography	
	Coefficient (SE)	P	Coefficient (SE)	P	Coefficient (SE)	P
Month	-0.015 (0.03)	.58	-0.007 (0.02)	.73	-0.033 (0.10)	.73
Post policy	0.31 (0.76)	.68	0.16 (0.57)	.78	1.24 (2.7)	.65
Month post policy	0.054 (0.12)	.66	0.091 (0.09)	.32	0.093 (0.43)	.83

Outcome (not shown in table, as the coefficient describes if there is a difference after the policy change) is the monthly difference in utilization rates between the intervention group and the control group.  
 Post policy coefficient refers to the level change (absolute difference) in utilization between the study groups in the month immediately after the policy.  
 Month post policy coefficient describes any slope change in utilization after the policy. Includes 63,246 members (30,802 for mammography) aged 50-64 years with continuous coverage for 2 years before time zero and 9 months after time zero.

policy change was communicated during annual renewal, which supplemented existing efforts by Humana to remind beneficiaries about screening through automated phone calls, e-mail, and direct mail. However, insurance benefit design is typically complicated, and patients can have difficulty accurately estimating out-of-pocket health-care payments.<sup>18</sup> Additionally, if a polyp was removed or if a procedure is coded for any symptoms (eg, change in bowel habits, bleeding), such colonoscopies are typically billed as diagnostic rather than preventive, and are thereby subject to cost sharing. Even if patients were informed of the ACA policy change for preventive care, it would have been difficult for them to predict whether their procedure would be coded as preventive or diagnostic. After this study period, there was a clarification by the government in 2013 which stated that private insurers may not require cost sharing for colonoscopy with polyp removal performed as a screening procedure, but this does not apply to the Medicare population.<sup>19</sup>

A third reason for the limited initial impact may be an asymmetry in response to cost sharing changes. Value-based insurance designs that reduce cost sharing for high-value medications have resulted in small increases in adherence relative to the decrements that have been observed following co-payment increases.<sup>20-24</sup> We had expected that patients would respond less to changes in the degree of cost sharing for a colonoscopy than for other healthcare interventions, due to the invasive and unpleasant nature of the test. There also may be additional costs to colonoscopy, such as time off from work and the requirement for an escort, that could be calculated by the patient.<sup>25</sup>

### Limitations

The main limitation of this study is that it looked at the post policy time period for 9 months, and it may take longer for intended effects to manifest. However, we did apply the same analysis to the smaller cohort of benefi-

ciaries for whom we had 12 and 15 months of post policy data and still found the same nonsignificant results. Additionally, there was substantial room for improvement, as publicly reported Humana HEDIS rates in 2010 were 63.7% and 76.9% for colorectal cancer and breast cancer screening, respectively.<sup>26</sup> Another limitation is that there was no way to take into account the appropriateness of the test or prior screening utilization for both colonoscopy and mammography. Because of insurance company turnover, requiring an additional 1 year of prior enrollment included only 62%, and 2 years would have included only 39%, of the insured population. This is particularly challenging in assessing colorectal cancer screening rates, since screening prior colonoscopy may have occurred up to 10 years before. However, assessing utilization within different time windows should not be biased differentially by our approach, and an analysis of only colonoscopies coded as preventive showed similar results.

Another potential limitation is that there may have been changes in coding practice for these procedures, but it is likely to have been consistent for the 2 study groups. There also may have been additional changes in benefit design for the intervention group, such as reduction of cost sharing for primary care visits, but they would be likely to bias toward a significant finding. We also looked at whether there was a difference in distribution of plan renewal months for the intervention and control groups, and found a slight increase in intervention renewal in the later months (eAppendix 3). Assuming that it may take time for the policy to take hold, this difference would also bias toward a greater impact of the policy on the intervention group. Finally, we studied small business plans in 1 insurer, but with beneficiaries in 48 states, these results should be generalizable to other commercially insured populations. Additionally, this population offered the unique advantages of having a natural control group and relatively higher cost sharing than other plans before the policy change.

## CONCLUSIONS

While the waiver of cost sharing for preventive services was introduced with the goal of increasing cancer screening rates, the implementation of the policy to eliminate cost sharing has not increased rates of colonoscopy and mammography to a significant degree. Consideration should be given to waiving cost sharing for all colonoscopies and mammograms in the eligible population as opposed to just those that are coded as preventive, as many of these contribute to the screening and surveillance process. Additional communication and education about the policy alone may not be sufficient. Interventions need to be developed and studied that could lower the price of a colonoscopy below zero to offset the time and hassle costs of the procedure, make the process of obtaining screening easier, or address other patient barriers to screening.

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**Authorship Information:** Concept and design (SJM DP, JDL, JTK, GL, KGV); acquisition of data (SJM, KGV); analysis and interpretation of data (SJM, DP, JZ, JDL, KGV); drafting of the manuscript (SJM, KGV); critical revision of the manuscript for important intellectual content (SJM, DP, JZ, JDL, JTK, GL, KGV); statistical analysis (SJM, JZ, KGV); obtaining funding (SJM, GL, JTK, KGV); administrative, technical, or logistic support (SJM); and supervision (SJM, KGV).

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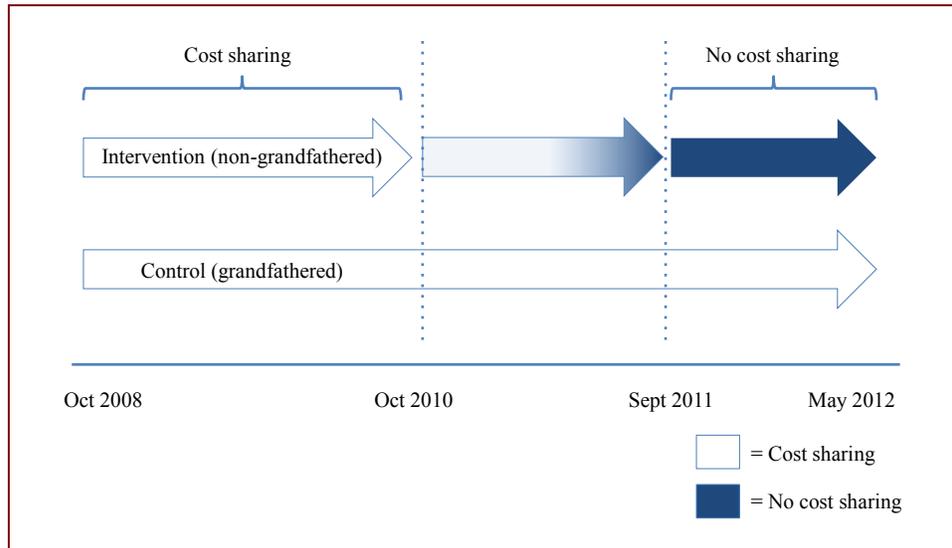
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**eAppendix 1. HEDIS Procedure Codes for Colorectal and Breast Cancer Screening**

<b>Colorectal Cancer Screening</b>	
Colonoscopy	CPT: 44388-44394, 44397, 45355, 45378-45387, 45391, 45392. HCPCS: G0105, G0121. <i>ICD-9-CM</i> : 45.22, 45.23, 45.25, 45.42, 45.43.
Fecal occult blood test	CPT: 82270, 82274. HCPCS: G0328.
Flexible sigmoidoscopy	CPT: 45330-45335, 45337-45342, 45345. HCPCS: G0104. <i>ICD-9-CM</i> : 45.24.
<b>Breast Cancer Screening</b>	
Mammography	CPT: 77055-77057. HCPCS: G0202, G0204, G0206. <i>ICD-9-CM</i> : 87.36, 87.37.

CPT indicates Current Procedural Terminology; HCPCS, Healthcare Common Procedure Coding System; *ICD-9-CM*, *International Classification of Diseases, Ninth Revision, Clinical Modification*.

## eAppendix 2. ACA Cost Sharing Policy for Humana Small-Business Plans



**eAppendix 3. Renewal Month for Study Beneficiaries After ACA Policy**

