

Changes in Ambulatory Utilization After Switching From Medicaid Fee-for-Service to Managed Care

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In an attempt to control healthcare costs, several states across the country (including California, Florida, New York, Ohio, and Texas) are transitioning many of their Medicaid fee-for-service (FFS) beneficiaries into managed care (MC) programs.¹⁻³ According to the president of Medicaid Health Plans of America, a trade organization that advocates on behalf of Medicaid health plans, “More states are moving away from the fragmented care of the antiquated fee-for-service model toward the capitated coordinated care model of managed care organizations.”³ However, there has been no evidence that MC actually provides less-fragmented care (that is, less-diffuse and more-concentrated care) than FFS. Indeed, the chairperson of the Medicaid and CHIP Payment and Access Commission, created by Congress to advise legislators on Medicaid policy, has said, “We all talk about managed care as a better way to deliver care than fee-for-service, and we know that from a payment perspective. But we really need to learn more about how these plans handle...chronic illness and the sicker and frailer populations.”²

We sought to determine how the pattern of ambulatory care visits and providers (including the extent of fragmentation) changes after a beneficiary switches from Medicaid FFS to Medicaid MC. We also sought to determine whether any change in ambulatory care varied with the number of chronic conditions. To address these aims, we analyzed statewide claims for Medicaid beneficiaries in New York from 2010 to 2013, a time period that coincided both with a New York initiative to transition more beneficiaries to MC and with Medicaid expansion under the Affordable Care Act.^{4,5}

METHODS

Overview

We conducted a longitudinal statewide study of adult Medicaid beneficiaries (≥ 18 years) in New York who were continuously enrolled for the years 2010 to 2013. We identified beneficiaries who switched once from Medicaid FFS to Medicaid MC during the study period. We then compared those beneficiaries' ambulatory care patterns with those of 2 matched control groups: Medicaid

ABSTRACT

OBJECTIVES: To observe any change in ambulatory care utilization after switching from Medicaid fee-for-service (FFS) to Medicaid managed care (MC).

STUDY DESIGN: We conducted a statewide longitudinal study of 21,048 adult Medicaid beneficiaries in New York State who switched from FFS to MC in 2011 or 2012, with 2 sets of controls ($n = 21,048$ with continuous FFS; $n = 21,048$ with continuous MC) who were matched on age, gender, dual-eligible status, and number of chronic conditions.

METHODS: We measured ambulatory care utilization in the 12 months before and 12 months after the switch date, using regression to adjust for case mix and account for matching.

RESULTS: Overall, switching from Medicaid FFS to Medicaid MC was associated with greater absolute decreases over time in ambulatory visits and providers compared with controls (-1.49 visits vs continuous FFS and -1.60 visits vs continuous MC; each $P < .0001$; -0.10 providers vs continuous FFS and -0.12 providers vs continuous MC; each $P < .0001$). The subset of switchers with 5 or more chronic conditions had the greatest absolute decreases in visits (-5.88 visits vs continuous FFS and -5.98 visits vs continuous MC; each $P < .0001$) and providers (-1.37 providers vs continuous FFS and -1.39 providers vs continuous MC; each $P < .0001$). Significant decreases in visits and providers were also observed for switchers with 3 to 4 chronic conditions but not for those with 0 to 2 chronic conditions.

CONCLUSIONS: Switching from Medicaid FFS to Medicaid MC was associated with a decrease in ambulatory utilization, especially for the sickest patients.

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beneficiaries with continuous FFS and Medicaid beneficiaries with continuous MC. The Weill Cornell Medicine Institutional Review Board approved the study protocol.

Data

We used statewide Medicaid claims for 2010 to 2013, extracting the following claim-level variables: beneficiary study identifier (ID), beneficiary date of birth, beneficiary gender, date of service, insurance product type (FFS vs MC), rendering provider ID, rendering provider specialty, Current Procedural Terminology (CPT) codes, and *International Classification of Diseases, Ninth Revision* codes. Claims had the same level of detail, regardless of insurance product type. We also extracted monthly beneficiary-level enrollment data, including dual-eligible status.

Study Sample and Variables

We included adult Medicaid beneficiaries (≥ 18 years) in New York who were continuously enrolled from January 1, 2010, to December 31, 2013 (48 months). We then restricted the cohort to only those who had 4 or more ambulatory visits each year, because we sought to focus on those with higher levels of utilization and because characterizing patterns of care based on 3 or fewer visits can yield statistically unstable estimates (Figure 1).⁶ To define ambulatory visits, we used a modified version of the definition of ambulatory visits from the National Committee for Quality Assurance (NCQA), which is a list of applicable CPT codes.⁷ The NCQA definition excludes emergency department visits. Our modifications restricted the definition to evaluation and management visits for adults in an office setting.⁸ We excluded those beneficiaries who had outlier observations (>99.9 th percentile) for the counts of visits or providers for those visits, as those values may be erroneous.

We restricted the sample to (1) those who had switched once during the study period from FFS to MC, (2) those who had continuous FFS, and (3) those who had continuous MC (Figure 1). This excluded those who switched from MC to FFS and those who switched insurance products multiple times. Among those who switched once from FFS to MC, we further restricted the sample to those who had a switch date in calendar year 2011 or 2012 (“switchers”), so that we would have 12 months of data before and 12 months of data after the switch date. Note that we use the term “switcher” to refer to a beneficiary who was observed in claims as having changed from FFS to MC; we cannot determine from our data whether the beneficiary or the state initiated the switch. We randomly assigned a date in 2011 or 2012 to serve as a “time zero” (analogous to switch date) for each of the beneficiaries with continuous coverage (FFS or MC).

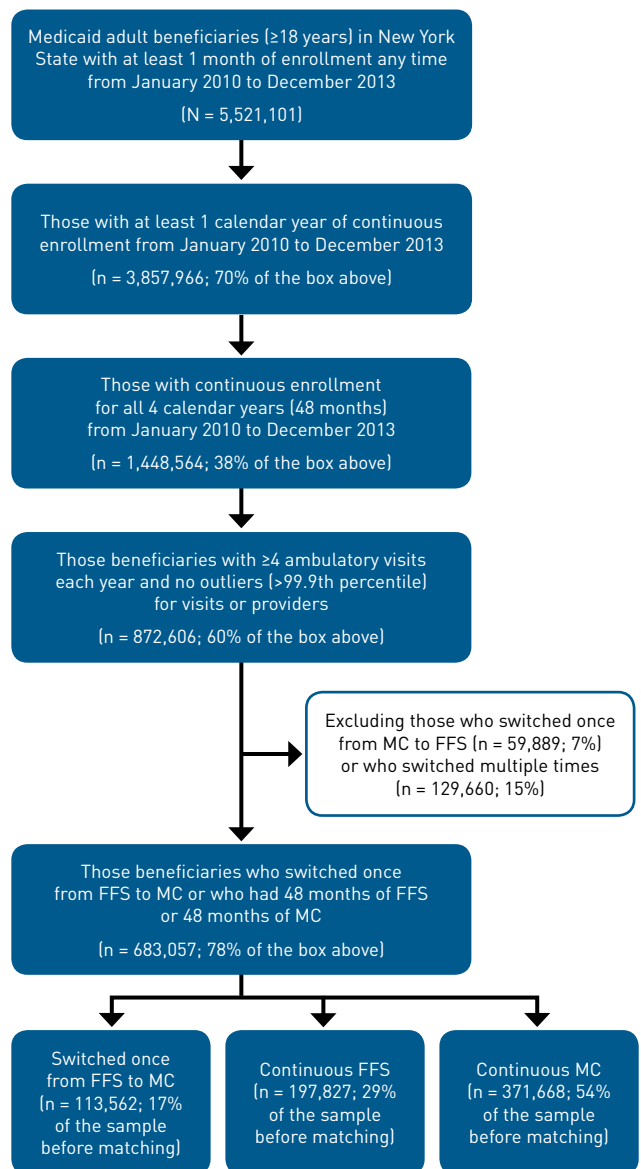
We then derived 2 matched control groups. The rationale for matching in the context of cohort studies is that it removes potential confounding due to the variables used for matching, thereby decreasing heterogeneity across the study groups.⁹ For the first control

TAKEAWAY POINTS

In this longitudinal study of Medicaid beneficiaries in New York State, we examined patterns of ambulatory care before versus after switching from fee-for-service (FFS) to managed care (MC). We included 2 concurrent matched control groups: those with continuous FFS and those with continuous MC.

- ▶ Overall, switching from Medicaid FFS to Medicaid MC was associated with a significant decrease in ambulatory visits and providers compared with changes over time in both control groups.
- ▶ The largest decreases in ambulatory visits and providers were seen in the subset of “switchers” with 5 or more chronic conditions.

FIGURE 1. Derivation of the Sampling Frame



FFS indicates fee-for-service; MC, managed care.

TABLE 1. Baseline Characteristics of the Cohort of Adult Medicaid Beneficiaries Before and After Matching^a

Before Matching	Switchers	Continuous FFS	Continuous MC
	Overall ^b (n = 113,562)	(n = 197,827)	(n = 371,668)
Age in years, mean (SD)	60.2 (20.2)	61.9 (17.2)	47.1 (14.1)
Gender, female, %	67.4	59.2	70.1
Dual eligible, %	17.0	88.5	3.4
Number of chronic conditions, %			
0	18.1	13.0	30.9
1-2	31.0	36.1	41.9
3-4	26.0	32.1	20.4
≥5	25.0	18.9	6.8
Charlson-Deyo Index score, mean (SD)	2.26 (2.47)	1.58 (1.91)	0.89 (1.41)
After Matching	Switchers ^b (n = 21,048)	Continuous FFS (n = 21,048)	Continuous MC (n = 21,048)
Age in years, mean (SD)	57.6 (19.2)	57.6 (19.2)	57.6 (19.2)
Gender, female, %	65.3	65.3	65.3
Dual eligible, %	36.8	36.8	36.8
Number of chronic conditions, %			
0	15.4	15.4	15.4
1-2	34.8	34.8	34.8
3-4	28.9	28.9	28.9
≥5	20.9	20.9	20.9
Charlson-Deyo Index score, mean (SD)	2.65 (2.70)	1.57 (1.95)	1.50 (1.80)

FFS indicates fee-for-service; MC, managed care.

^aBeneficiaries were matched on age, gender, dual-eligible status, and number of chronic conditions (0, 1-2, 3-4, or ≥5). We did not match on both number of chronic conditions and the Charlson-Deyo Index score because those variables are correlated. Group differences for age, gender, dual-eligible status, and number of chronic conditions were statistically significant prior to matching ($P < .0001$ for each comparison) but not after matching ($P = 1.00$ for each comparison). Group differences for the Charlson-Deyo Index score were present before and after matching ($P < .05$).

^b"Switchers" are those who switched once from FFS to MC.

group, we matched switchers with those who had continuous FFS, identifying individual pairs of beneficiaries who matched exactly on age, gender, dual-eligible status, and number of chronic conditions (0, 1-2, 3-4, or ≥5). The count of chronic conditions was of the 26 deduplicated chronic conditions in CMS' Chronic Conditions Warehouse.¹⁰ If more than 1 exact match was found, we selected 1 match at random. For the second control group, we considered all switchers anew and matched them with those who had continuous MC, matching exactly on age, gender, dual-eligible status, and number of chronic conditions. Of the switchers who matched, more than 70% had matches in both the continuous FFS and continuous MC populations; thus, we further refined the sample to include only those switchers with both a FFS match and a MC match, as this improved the clarity and interpretability of the findings.

Statistical Analysis

We characterized the cohort (stratified by study group, before and after matching), based on age, gender, dual-eligible status, and number of chronic conditions. We also characterized the cohort using the Charlson-Deyo Comorbidity Index, a measure of case mix that we

did not match on due to its correlation with the number of chronic conditions.^{11,12} Matching on number of chronic conditions was prioritized over matching on Charlson-Deyo Index score to facilitate analyses stratified by number of chronic conditions. We then adjusted for the Charlson-Deyo Index score, as described below.

We tallied the number of ambulatory visits in the 12 months before and the 12 months after the switch date (or time zero) for both the switchers and their matched controls. Similarly, we tallied the number of ambulatory providers for those visits. We also calculated "fragmentation scores" for each 12-month period using a reversed Bice-Boxerman Index,^{8,13} which has also been called a Fragmentation of Care Index.¹⁴ We used Poisson models (for numbers of visits and providers) and bounded Tobit models (for fragmentation scores) to determine adjusted absolute estimates of average numbers of ambulatory visits, numbers of ambulatory providers, and fragmentation scores within each time period, adjusting for case mix.

We also calculated differences in outcomes within groups over time. Then we adjusted differences for case mix and estimated the difference-in-differences (between groups over time), using generalized estimating equations to take into account the matched design.

We considered P values $< .05$ to be significant. All analyses were conducted using SAS version 9.4 (SAS Institute; Cary, North Carolina).

RESULTS

Study Sample

We identified 1,448,564 Medicaid beneficiaries who were continuously enrolled for the 4 study years (Figure 1). Of those, 872,606 (60%) had 4 or more ambulatory visits each year and no outliers for the number of visits or providers. Of those, 683,057 (78%) were in the 3 subgroups of interest: continuous FFS ($n = 197,827$), continuous MC ($n = 371,668$), or switched once from FFS to MC ($n = 113,562$).

Overall, before matching, the switchers had an average age of 60 years, which was between the average ages of the FFS group (62 years) and the MC group (47 years) ($P < .0001$) (Table 1). Approximately two-thirds of the switchers were female (67.4%) compared with 59.2% in FFS and 70.1% in MC ($P < .0001$). The FFS group had the highest percentage of dual-eligible beneficiaries at 88.5% compared with 17.0% of switchers and 3.4% of MC ($P < .0001$). The switchers were the sickest group, with 25.0% of them having 5 or more chronic conditions compared with 18.9% in FFS and 6.8% in MC ($P < .0001$). The switchers were also sickest according

TABLE 2. Average Adjusted Ambulatory Visits, Providers, and Care Fragmentation Scores for Medicaid Beneficiaries Who Switched Once From FFS to MC Compared With 2 Control Groups, Overall and Stratified by Number of Chronic Conditions^a

	Switchers ^b			Continuous FFS			Continuous MC			DID (switcher – FFS)	DID (switcher – MC)
	Pre ^c	Post ^c	Difference (post – pre)	Pre ^c	Post ^c	Difference (post – pre)	Pre ^c	Post ^c	Difference (post – pre)		
Overall											
Visits, mean	15.28	13.58	-1.78	14.69	14.44	-0.29	13.75	13.62	-0.18	-1.49*	-1.60*
Providers, mean	4.46	4.42	-0.05	4.42	4.47	0.04	4.47	4.54	0.07	-0.10*	-0.12*
Fragmentation score, mean	0.56	0.59	0.03	0.58	0.59	0.01	0.60	0.61	0.01	0.02*	0.02*
0 Chronic Conditions											
Visits, mean	9.92	11.18	1.27	11.20	11.77	0.58	9.85	10.48	0.65	0.68*	0.62*
Providers, mean	3.33	4.17	0.83	3.41	3.63	0.21	3.71	3.94	0.23	0.62*	0.60*
Fragmentation score, mean	0.49	0.59	0.10	0.52	0.54	0.02	0.60	0.63	0.02	0.08*	0.07*
1-2 Chronic Conditions											
Visits, mean	12.67	12.89	0.23	13.25	13.54	0.29	11.61	12.01	0.41	-0.07	-0.18
Providers, mean	3.80	4.32	0.53	3.90	4.09	0.19	3.96	4.19	0.23	0.33*	0.30*
Fragmentation score, mean	0.52	0.58	0.06	0.54	0.56	0.02	0.58	0.60	0.02	0.04*	0.04*
3-4 Chronic Conditions											
Visits, mean	16.14	14.07	-2.08	14.57	14.33	-0.24	13.95	13.96	0.00	-1.84*	-2.08*
Providers, mean	4.57	4.40	-0.16	4.43	4.48	0.06	4.47	4.54	0.08	-0.23*	-0.25*
Fragmentation score, mean	0.57	0.58	0.01	0.59	0.60	0.01	0.60	0.60	0.01	0.00	0.01
≥5 Chronic Conditions											
Visits, mean	24.57	17.05	-7.58	19.48	17.80	-1.70	19.30	17.70	-1.61	-5.88*	-5.98*
Providers, mean	6.79	5.15	-1.65	5.86	5.59	-0.28	5.62	5.37	-0.26	-1.37*	-1.39*
Fragmentation score, mean	0.67	0.63	-0.04	0.66	0.66	0.00	0.64	0.64	0.00	-0.04*	-0.04*

DID indicates difference-in-differences; FFS, fee-for-service; MC, managed care.

* $P < .0001$.

^aThe control groups are matched on age, gender, dual-eligible status, and number of chronic conditions (0, 1-2, 3-4, or ≥5).

^b"Switchers" are those who switched once from FFS to MC.

^cThe pre- and post periods reflect the 12 months prior to and after the switch date (or time zero date for controls). Absolute pre- and post values are adjusted for case mix. Differences were also adjusted for case mix and account for the matched design.

to mean Charlson-Deyo Index scores (2.26 vs 1.58 for FFS and 0.89 for MC; $P < .0001$).

Of those who switched once from FFS to MC, 26,879 matched with a continuous FFS beneficiary and 29,626 matched with a continuous MC beneficiary. Of those, 21,048 switchers had a match in both the continuous FFS and continuous MC groups. These 21,048 switchers and their 1:1 matches in each of the 2 control groups made up the final sample ($n = 63,144$).

After matching on age, gender, dual-eligible status, and number of chronic conditions, the study groups no longer differed in the distribution of these variables (Table 1). Differences persisted in the Charlson-Deyo Index scores, as expected.

Baseline Patterns of Ambulatory Utilization Overall

In the year prior to switching, switchers overall had more ambulatory visits than FFS beneficiaries (average of 15.28 visits vs 14.69 visits; $P < .0001$) and MC beneficiaries (15.28 vs 13.75; $P < .0001$), adjusting for case mix (Table 2). In the year prior to switching, switchers overall had similar numbers of ambulatory providers (adjusted average count of 4.46 providers) as FFS beneficiaries (4.42) and MC

beneficiaries (4.47). Baseline fragmentation scores were slightly lower in switchers than in FFS beneficiaries (0.56 vs 0.58; $P < .0001$) and MC beneficiaries (0.56 vs 0.60; $P < .0001$).

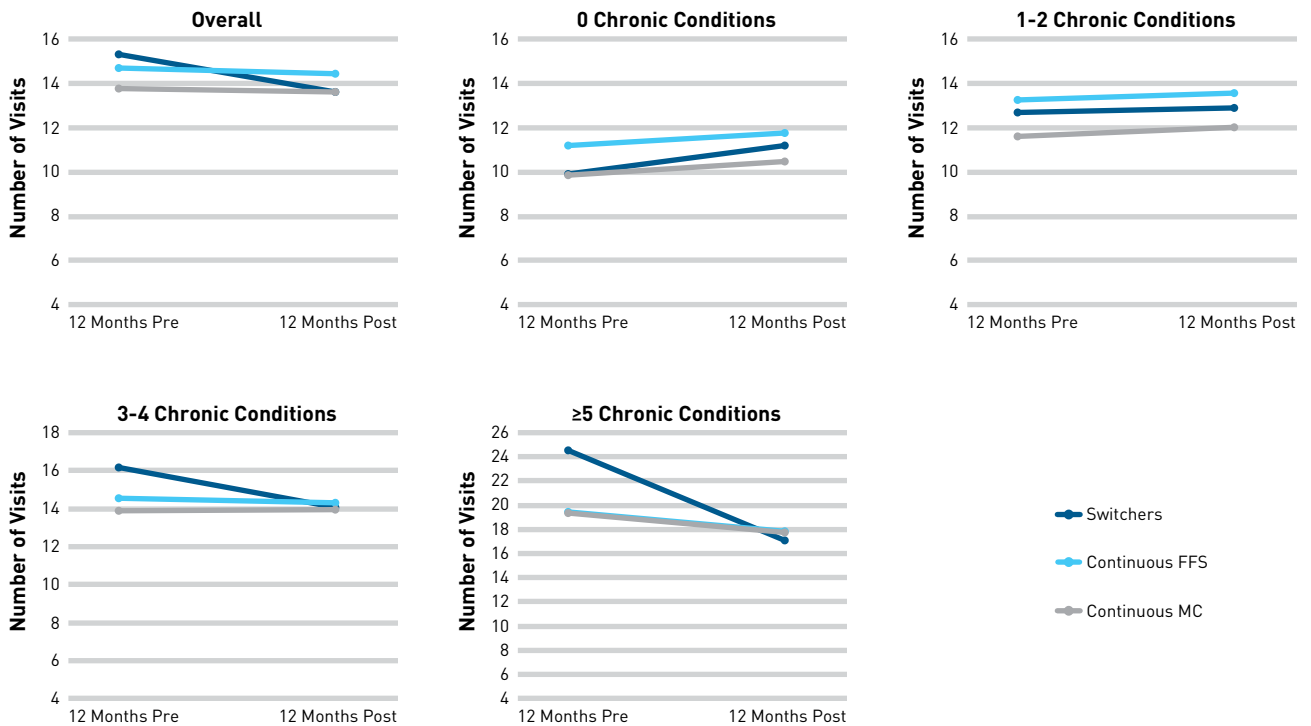
Changes Over Time in Ambulatory Utilization Overall

In all 3 groups, the average adjusted ambulatory visit count decreased over time. The decrease was greatest in the switcher group, which began with the most visits and decreased to an absolute count similar to that of the MC group (decreasing over time by 1.49 more visits than the FFS group and 1.60 more visits than the MC group; each $P < .0001$) (Table 2; Figure 2). The average adjusted numbers of providers also decreased the most in the switcher group (decreasing over time by 0.10 more providers than the FFS group and 0.12 more than the MC group; each $P < .001$) (Table 2; Figure 2). Fragmentation scores overall were fairly stable in all 3 groups over time (Table 2; Figure 3).

Variation in Change Over Time by Number of Chronic Conditions

The change over time in adjusted counts of visits was driven by changes in those with 5 or more chronic conditions (Table 2; Figure 2).

FIGURE 2. Adjusted Number of Ambulatory Visits per Medicaid Beneficiary for Those Who Switched From FFS to MC Compared With 2 Control Groups, Overall and Stratified by the Number of Chronic Conditions^a



FFS indicates fee-for-service; MC, managed care.

^a“Switchers” are those who switched once from FFS to MC. Control beneficiaries were matched to switchers based on age, gender, dual-eligible status, and number of chronic conditions. Absolute numbers of ambulatory visits are shown for the 12-month periods prior to and after the switch date (or time zero date for controls), adjusting for case mix. Table 2 shows which comparisons were statistically significant.

Adjusted ambulatory visit rates decreased from 24.6 to 17.1 visits per year among switchers with 5 or more chronic conditions, an absolute decrease of 7.5 visits per year. This was an adjusted absolute decrease of nearly 6 visits more than the decrease seen in the control groups (–5.88 visits compared with FFS and –5.98 visits compared with MC; each $P < .0001$). Adjusted counts of visits also decreased among switchers with 3 to 4 chronic conditions, decreasing by 1.84 more visits than FFS and by 2.08 more visits than MC (each $P < .0001$). Switchers with 1 to 2 chronic conditions had changes in adjusted visit counts that were similar to those of their FFS and MC peers. Switchers with 0 chronic conditions actually had slightly more visits than their FFS and MC peers over time.

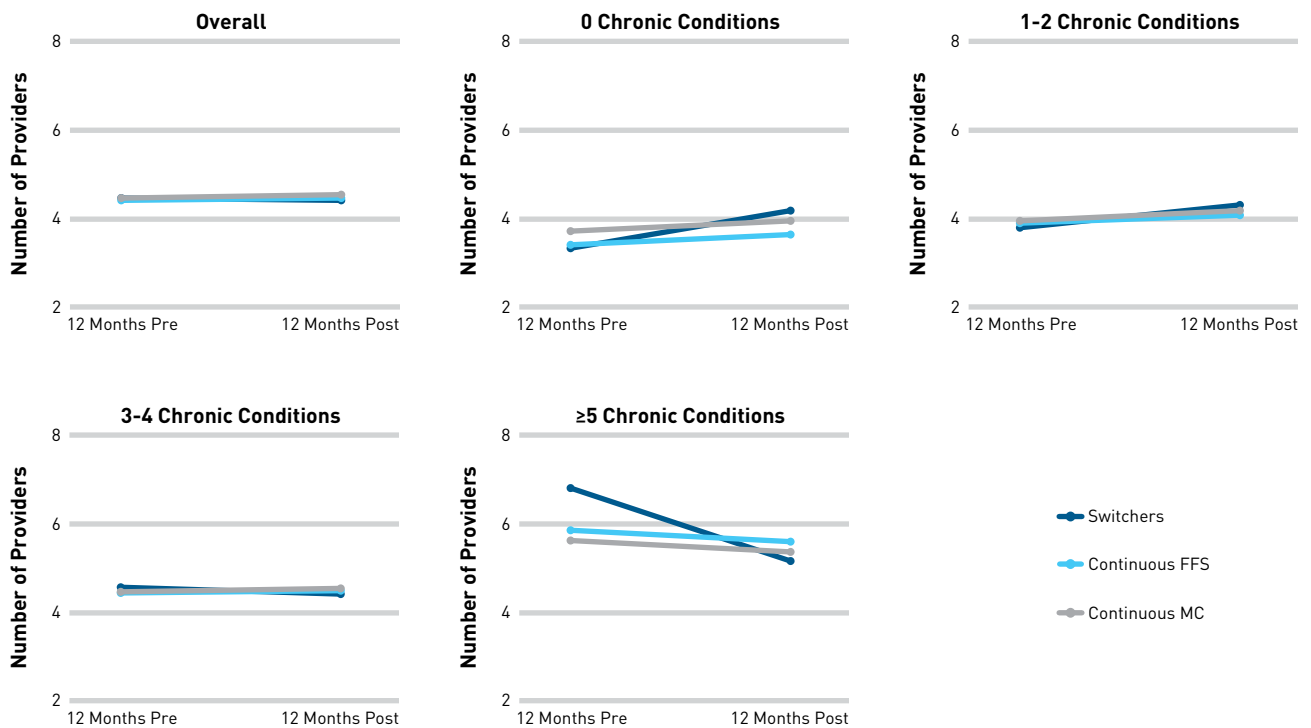
Switchers with 5 or more chronic conditions also had the greatest decrease over time in the adjusted count of providers (decreasing by 1.37 providers compared with their FFS counterparts and by 1.39 providers compared with their MC counterparts) (Table 2; Figure 3). Switchers with 3 to 4 chronic conditions decreased their adjusted count of providers over time relative to the control groups, but switchers with 1 to 2 chronic conditions or 0 chronic conditions increased their adjusted count of providers over time relative to the control groups.

Relative to the control groups over time, switchers with 5 or more chronic conditions had slight decreases in fragmentation scores, but switchers with 3 to 4, 1 to 2, or 0 chronic conditions had slight increases (Table 2).

DISCUSSION

In this study of adult Medicaid beneficiaries, we found that those who switched from FFS to MC were different from those with continuous FFS or continuous MC. The switchers were sicker than their peers, and they had a higher adjusted mean number of ambulatory visits at baseline than either control group. By 12 months after switching, the rate of ambulatory visits had decreased significantly among switchers overall to below that of both control groups ($P < .0001$ for each comparison).

These overall changes in ambulatory visits were driven by the subgroup of those with 5 or more chronic conditions, who experienced an average absolute decrease of 8 visits per beneficiary (decreasing from 25 visits per year to 17 visits per year) in the 12 months after switching, which was a decrease of 6 visits more than the FFS group and 6 visits more than the MC group

FIGURE 3. Adjusted Number of Ambulatory Providers per Medicaid Beneficiary for Those Who Switched From FFS to MC Compared With 2 Control Groups, Overall and Stratified by the Number of Chronic Conditions^a

FFS indicates fee-for-service; MC, managed care.

^a“Switchers” are those who switched once from FFS to MC. Control beneficiaries were matched to switchers based on age, gender, dual-eligible status, and number of chronic conditions. Absolute numbers of ambulatory providers are shown for the 12-month periods prior to and after the switch date (or time zero date for controls), adjusting for case mix. Table 2 shows which comparisons were statistically significant.

($P < .0001$ for each comparison). Among those with 5 or more chronic conditions, switching from FFS to MC was also associated with a decrease in the number of providers (from 7 providers to 5 providers per year) and a decrease in fragmentation score (from 0.67 to 0.63) ($P < .0001$ for each comparison). As the number of chronic conditions decreased, the effect of switching on ambulatory utilization decreased and then even changed to a small net increase in utilization.

New York had various programs in place at the time of this study that encouraged or required MC enrollment for Medicaid beneficiaries, most of which were funded by the federal government through waivers of Section 1115 of the Social Security Act.^{4,15} This section of the Social Security Act gives the secretary of HHS the authority to approve experimental, pilot, or demonstration projects that promote the objectives of the Medicaid program.¹⁵ However, this study period largely preceded other major initiatives in New York, such as Medicaid Health Homes, which are intended to facilitate care management and care coordination, especially among Medicaid beneficiaries with chronic illnesses.¹⁶ Although Medicaid Health Homes were authorized under the Affordable Care Act in 2010, enrollment has been done slowly and in phases,

with the program reaching only 1.6% of the intended population by the beginning of 2013.¹⁶ The study period also preceded large-scale Medicaid redesign through the Delivery System Reform Incentive Program, which was also funded through a Section 1115 waiver but did not begin until 2014.¹⁷ Thus, our findings can serve as a foundation for future studies that will examine the effects of these newer programs.

Most previous studies of Medicaid FFS versus Medicaid MC have focused on outcomes such as hospitalization, selected ambulatory quality measures, beneficiaries' self-reported access to care, and beneficiaries' self-reported satisfaction with care.¹⁸⁻²⁵ Thus, this study adds to the literature by following beneficiaries over time for changes in ambulatory care after switching from FFS to MC.

The results of this study support the assertion that MC can reduce ambulatory utilization for the sickest beneficiaries. Our finding is consistent with that of a study of a global payment system for commercially insured patients in Massachusetts, which found that the intervention had the greatest effect (in that case, on healthcare spending) among the sickest patients.²⁶ Our data suggest a missed opportunity to manage the care patterns of those with a moderate number of chronic conditions. Three-fourths of switchers had 0 to 4

chronic conditions, and their ambulatory utilization was not trivial; for example, those with 1 to 2 chronic conditions had 13 visits in the year before switching and 13 visits the year after. Among those with 0 chronic conditions or 1 to 2 chronic conditions, it is not clear why the switchers had slightly more visits and/or providers over time compared with the control groups, although the magnitude of this difference-in-difference was small.

Limitations

This study has several limitations. Because this study was observational, we cannot infer causality. The groups had large differences prior to matching, especially with respect to the proportion of beneficiaries who were dual eligible; matching decreased this source of heterogeneity, but unmeasured differences across groups may still be present. We do not have access to information on why any particular beneficiary switched from FFS to MC, as the reason for the switch and the person or entity that initiated the switch are not contained in claims. We do not have data on clinical appropriateness or quality of care, and we cannot equate fragmentation with lack of coordination. This study does not fully explain the mechanisms by which changes in ambulatory utilization occur; future studies, including qualitative investigations, are needed to better understand how a switch from FFS to MC changes decision making from the perspectives of beneficiaries, providers, and plan administrators. This study included adults only, and results may not be generalizable to children with Medicaid. This study also took place in New York; results may need to be replicated in other states.

CONCLUSIONS

We found that switching from Medicaid FFS to Medicaid MC was associated with a decrease in ambulatory utilization, primarily for the sickest patients (those with ≥ 5 chronic conditions). This suggests that opportunities exist to decrease utilization in those with a moderate burden of chronic illness, who still have considerable ambulatory utilization and who are even more numerous than the sickest subset of beneficiaries. ■

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