Evaluation of the Part D Enhanced Medication Therapy Management (MTM) Model: Third Evaluation Report

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LIST OF ACRONYMS

Acronym	Definition
AAPOR	American Association for Public Opinion Research
ACSC	Ambulatory Care-Sensitive Conditions
ADE	Adverse Drug Event
ADT	Admission, Discharge, and Transfer
AES	Actuarial Equivalent Standard
AHRQ	Agency for Healthcare Research and Quality
AMR	Annual Medication Review
BA	Basic Alternative
BCBS FL	Blue Cross Blue Shield of Florida
BCBS NPA	Blue Cross Blue Shield Northern Plains Alliance
BQ	Baseline Quarter
CAHPS	Consumer Assessment of Healthcare Providers and Systems
CI	Confidence interval
CME	Common Medicare Environment
CMR	Comprehensive Medication Review
CMS	Centers for Medicare & Medicaid Services
Comp.	Comparison Group
COPD	Chronic Obstructive Pulmonary Disease
CWF	Common Working File
DDI	Drug-Drug Interaction
DiD	Difference-in-differences
DME	Durable Medical Equipment
DTP	Drug therapy problem
E&M	Evaluation and Management
ED	Emergency department
EDB	Enrollment Database
Enhanced MTM	Enhanced Medication Therapy Management
EMR	Electronic Medical Record
ESRD	End-stage renal disease
FMR	Follow-up medication reviews
GMMS	Genoa Medication Management Systems
HCC	Hierarchical Condition Categories
HCUP	Healthcare Cost and Utilization Project
HH	Home Health
HIE	Health Information Exchange
HPMS	Health Plan Management System
HRM	High-Risk Medication
HRR	Hospital Referral Region
HS	Hospice
HT	HealthTag
IP	Inpatient
IPAC	Institutional Post-Acute Care
ITT	Intent-to-Treat
IVR	Interactive voice response
LIS	Low-Income Subsidy
LTC	Long-term care
MA-PDP	Medicare Advantage Prescription Drug Plan
MARx	Medicare Advantage and Prescription Drug Plan System
MBSF	Master Beneficiary Summary File

Acronym	Definition
MCBS	Medicare Current Beneficiary Survey
MDS	Minimum Data Set
Med Rec	Medication Reconciliation
Med Use	Medication Utilization
MMP	Medicare-Medicaid Plan
MRP	Medication-related problem
MSA	Medication Safety Alert
MSR	Medication Safety Review
MTC	Medication Therapy Counseling
MTM	Medication Therapy Management
MTMP	Medication Therapy Management Program
NA	Not Applicable
NDA	Non-Disclosure Agreement
OAD	Oral Antidiabetics
OP	Outpatient
PAC	Pharmacy Advisor Counseling
PB	Physician/Carrier
PBM	Pharmacy Benefit Manager
PBP	Plan benefit package
PBPM	Per-beneficiary per-month
PDE	Part D Drug Event
PDP	Prescription Drug Plan
PMAP	Provider Medication Action Plan
SEAMS	Self-Efficacy for Appropriate Medication Use Scale
SilverScript/CVS	SilverScript Insurance Company/CVS
SNF	Skilled Nursing Facility
SNOMED CT	Systematized Nomenclature of Medicine – Clinical Terms
SPCM	Specialty Pharmacy Care Management
SSI	SilverScript Insurance Company
STD	Standard deviation
SUPD	Statin Use in Persons with Diabetes
TC	Transaction Code
TMR	Targeted Medication Review
Treat.	Treatment Group
TRHC	Tabula Rasa HealthCare
UnitedHealth	UnitedHealth Group
USD	United States Dollar

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EXECUTIVE SUMMARY

The Centers for Medicare & Medicaid Services (CMS) launched the Enhanced Medication Therapy Management Model ("the Model") to test whether providing Part D Prescription Drug Plan (PDP) sponsors with programmatic flexibilities and payment incentives can improve therapeutic outcomes and reduce Medicare expenditures.

Background

Medication therapy management (MTM) describes a range of services intended to optimize medication use and to prevent medication-related issues. In the traditional MTM program, CMS requires that Medicare Part D plan benefit packages (PBPs) provide a uniform set of MTM services to beneficiaries who meet specific criteria. These criteria include the presence of multiple chronic conditions, use of multiple Part D-covered medications, and the likelihood of incurring high drug expenditures.[1] Provision of all MTM services is funded from a portion of the sponsor's annual bid, limiting sponsors' incentives to expand services or targeting beyond the required minimums, because such enhancements may require reducing their profits or increasing the premium. As a result, traditional MTM services generally fulfill only basic Part D compliance requirements.

The Enhanced MTM Model's five-year performance period began on January 1, 2017. The Model has four key innovations with respect to the traditional MTM program:[2]

(i) **Additional MTM flexibility:** Participating sponsors can design their own Enhanced MTM interventions. They can tailor interventions to meet the needs of their specific beneficiary populations in terms of both the beneficiaries targeted to receive services and the types of MTM services provided.

(ii) **Prospective payments for Model implementation costs:** CMS provides monthly payments on a per-beneficiary per-month (PBPM) basis to cover the costs of MTM benefits and services under the Model. Payment amounts are calculated prospectively based on sponsors' projections of their Enhanced MTM implementation costs, and take into account the projected size of their targeted population.

(iii) **Retrospective performance-based payments:** Performance-based payments are provided to incentivize sponsors to improve beneficiary outcomes and reduce downstream expenditures. They are awarded contingent on reductions in Medicare Parts A and B costs for participating PBP enrollees relative to a benchmark. If a sponsor

[1] CMS sets the core targeting criteria, but PDPs can choose certain elements of their implementation. For example, PDPs may choose which chronic conditions satisfy the multiple chronic condition criterion, but cannot require that beneficiaries have more than three of these conditions to be eligible for MTM.

[2] For further information, please refer to: "Evaluation of the Part D Enhanced Medication Therapy Management (MTM) Model: First Evaluation Report" (October 2019), https://downloads.cms.gov/files/mtm-firstevalrpt.pdf.

qualifies for a performance-based payment, Medicare delivers a fixed $2 PBPM amount through an increase in its contribution to the PBP's Part D premium. This premium subsidy makes plans more price-competitive by decreasing the plan premium paid by beneficiaries.

(iv) **Data reporting:** Participating sponsors are required to submit monthly beneficiary-level eligibility data in the Medicare Advantage Prescription Drug data transaction system (MARx) to document which beneficiaries qualify to receive Enhanced MTM services. Quarterly Encounter Data document Enhanced MTM activities and services provided to beneficiaries, using Systematized Nomenclature of Medicine – Clinical Terms (SNOMED CT) codes.

This Third Evaluation Report presents estimates of the Model's impacts on outcomes for participating PBP enrollees, including on measures of medication use and patient safety, gross Parts A and B expenditures, expenditures net of prospective and performance-based payments, and service setting-specific expenditures and utilization. This Third Evaluation Report also provides an assessment of Model implementation through 2019, with a description of changes in Enhanced MTM interventions and a presentation of trends in Enhanced MTM eligibility and service receipt over time.

Who Are the Enhanced MTM Model Sponsors?

Six Part D sponsors ("sponsors") participated in the Model in Model Years 1, 2, and 3 (Executive Summary Table 1). The Model was tested in five of the 34 Medicare Part D PDP Regions: Arizona, Louisiana, Florida, the Upper Midwest and Northern Plains (Iowa, Minnesota, Montana, Nebraska, North Dakota, South Dakota, Wyoming), and Virginia. All sponsors, except Blue Cross Blue Shield Northern Plains Alliance (BCBS NPA) and Blue Cross Blue Shield of Florida (BCBS FL), participated in all five test PDP regions and operated one PBP in each PDP region.

Executive Summary Table 1: 22 Plan Benefit Packages (PBPs) Operated by Six Sponsors Participated in the Enhanced MTM Model

Sponsor	Number of Participating PBPs	Model Year 1 (2017) Enrollment	Model Year 2 (2018) Enrollment	Model Year 3 (2019) Enrollment
All Participating Sponsors	22	***1,878,277***	***1,867,724***	***1,852,097***
SilverScript Insurance Company/CVS (SilverScript/CVS)	5	794,257	1,003,077	987,071
Humana	5	457,506	287,568	255,658
Blue Cross Blue Shield Northern Plains Alliance (BCBS NPA)	1	241,499	239,964	219,299
UnitedHealth Group (UnitedHealth)	5	175,940	134,280	206,205
WellCare	5	155,092	150,201	132,561
Blue Cross Blue Shield of Florida (BCBS FL)	1	64,631	60,858	55,976

Source: Common Medicare Environment (CME). Enrollment numbers only include beneficiaries in Enhanced MTM–participating PBPs.

About 1.9 million beneficiaries were enrolled in PBPs participating in the Model in each Model Year (Executive Summary Table 1). Three sponsors (SilverScript/CVS, Humana, and UnitedHealth) experienced notable changes in enrollment across Model Years that were likely unrelated to their participation in Enhanced MTM. These changes appear related to plans' benchmark status, premium changes, or market consolidation. All sponsors except UnitedHealth saw small drops in enrollment between Model Years 2 and 3.

What Are the Enhanced MTM Interventions?

Each sponsor created multiple Enhanced MTM interventions to address specific needs in its beneficiary population. The targeting criteria used to determine beneficiary eligibility for these interventions clustered around five categories: (i) medication utilization; (ii) high Medicare Parts A, B, and/or D costs; (iii) presence of one or more chronic conditions; (iv) recent discharge from the hospital; and (v) vaccine status.

Sponsors offered a mix of different services for each specific Enhanced MTM intervention. Examples of Enhanced MTM services include medication reconciliation, comprehensive medication review (CMR), targeted medication review (TMR), tailored education, and medication adherence counseling. Sponsors (or their vendors) provided these services to their beneficiaries via phone, in-person, and automated methods (e.g., interactive voice response).

Key Findings

How Did the Model Impact Medicare Parts A and B Expenditures?

Over the first three years of Model implementation, there have been no significant cumulative Modelwide impacts on total gross Medicare Parts A and B expenditures (Executive Summary Table 2). There were also no statistically significant impacts in any individual Model Year. Modelwide impacts were driven by the two largest sponsors – SilverScript/CVS and Humana – which together accounted for 64 percent of all beneficiaries enrolled in Model-participating plans.

Executive Summary Table 2: Modelwide, There Were No Significant Impacts on Gross Medicare Expenditures

	Cumulative	Model Year 1 (2017)	Model Year 2 (2018)	Model Year 3 (2019)
Parts A and B Expenditures (Per-Beneficiary Per-Month Estimate in $)				
Difference-in-Differences (DiD)	-$2.21	-$4.03	-$1.22	-$1.00
95% Confidence Interval	(-7.60, 3.19)	(-10.38, 2.32)	(-8.31, 5.88)	(-8.21, 6.21)

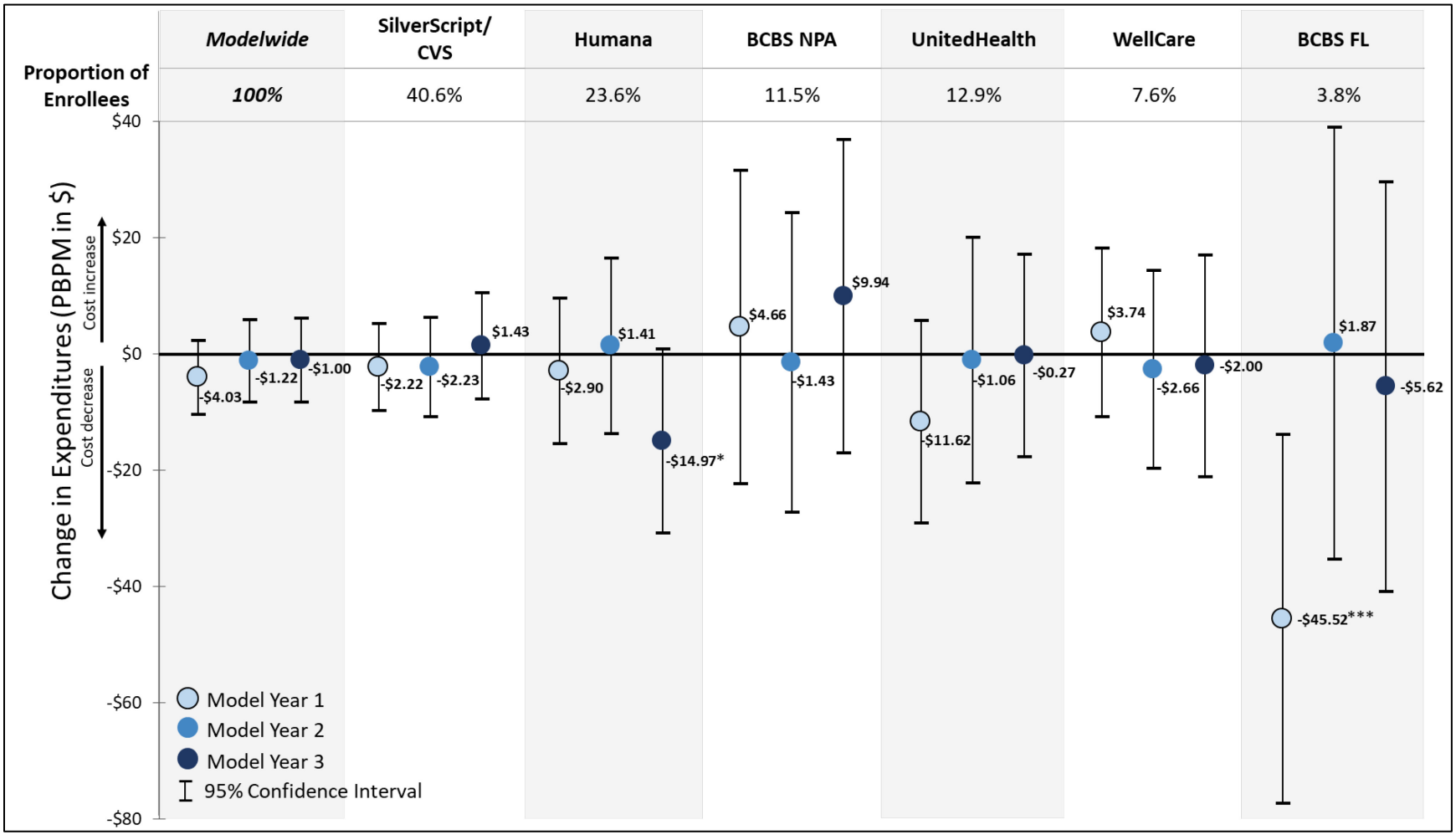
Notes: The unit of observation is a beneficiary-month. Number of Enhanced MTM observations: 59,785,685 (1,519,200 beneficiaries). Number of comparison observations: 117,140,427 (3,245,111 beneficiaries). Each difference-in-differences (DiD) estimate corresponds to change relative to the baseline period.

The Model also had no significant cumulative impacts on gross Medicare Parts A and B expenditures for any sponsor. Most sponsor-level impacts were generally small and not statistically significant for any Model Year. The only sponsors with statistically significant impacts on Medicare Parts A and B expenditures were BCBS FL in Model Year 1[3] and Humana in Model Year 3 (Executive Summary Figure 1).[4]

[3] As discussed in the Enhanced Medication Therapy Management Second Evaluation Report, neither the unique features of BCBS FL's Enhanced MTM implementation, its enrollee characteristics, regional conditions specific to Florida during Model Year 1, nor outlier observations seem likely to be the cause of the estimated decrease in Model Year 1 expenditures for BCBS FL. Given that it was not sustained over time, it is possible that the Model Year 1 estimate for BCBS FL was due to random variation or mean reversion.

[4] The Model Year 3 estimate of Model impacts on gross Medicare Parts A and B expenditures for Humana was significant at the 10 percent level.

Executive Summary Figure 1: Changes in Gross Medicare Parts A and B Expenditures Were Not Statistically Significant for Most Sponsors and Model Years



Notes: * p-value < 0.10; ** p-value < 0.05; *** p-value < 0.01.

How Did the Model Impact Expenditures Net of Medicare Model-Related Payments?

The Model generated net losses in each of the first three Model Years, but none of the estimates were statistically significant. Estimated impacts on gross Medicare Parts A and B expenditures were combined with Model prospective payments and performance-based payments to produce estimates of net impacts on Medicare expenditures ("net expenditures") (Executive Summary Table 3). In each Model Year, Modelwide prospective payments were between $3 and $4 PBPM and average distributed performance-based payments were about $1 PBPM. In each of the three Model Years, the Model's payments to sponsors were larger than the non-significant decreases in gross Medicare Parts A and B expenditures. Thus, in the three Model Years assessed, while the Model produced a cumulative estimated reduction of $2.21 PBPM in gross expenditures, it generated a non-significant net increase of $2.43 PBPM in costs after accounting for Model-related payments to sponsors. The Model generated non-significant net losses of $146.69 million in total across all three Model Years (95% confidence interval [CI]: -$178.64 million, $472.03 million).

Executive Summary Table 3: Impacts on Net Medicare Expenditures Were Not Statistically Significant Through Model Year 3

	Number of Beneficiary -months [N]	Change in Gross Medicare Expenditures PBPM in $ (95% CI) [A]	Prospective Payments PBPM in $ [B]	Performance -based Payments PBPM in $ [C]	**Change in Net Expenditures**		
					PBPM in $ (95% CI) [D=A+B+C]	**Total Annual in $ million (95% CI)** [N*D]	**P-value**
Cumulative	60,269,232	-2.21 (-7.60, 3.19)	3.51	1.13	2.43 (-2.96, 7.83)	146.69 (-178.64, 472.03)	0.376
Model Year 1	20,255,908	-4.03 (-10.38, 2.32)	3.11	1.12	0.20 (-6.15, 6.55)	4.00 (-124.63, 132.62)	0.951
Model Year 2	20,092,909	-1.22 (-8.31, 5.88)	3.90	1.16	3.84 (-3.25, 10.94)	77.19 (-65.27, 219.85)	0.288
Model Year 3	19,920,415	-1.00 (-8.21, 6.21)	3.52	1.12	3.64 (-3.57, 10.85)	72.43 (-71.20, 216.05)	0.322

Notes: PBPM: per-beneficiary per-month; CI: confidence interval. PBPM changes in net expenditures [D] are calculated as the sum of the estimated change in gross Medicare expenditures [A] and Medicare prospective payments [B] and performance-based payments [C] to sponsors. Negative net expenditures estimates represent net savings and positive estimates represent net losses to the Medicare program. Changes in net expenditures for Model Years 1 and 2 differ slightly from those reported in the Model Second Evaluation Report due to minor updates in the sample populations and updated sources of data. The total annual estimate may deviate from the [N*D] manual calculation due to rounding.

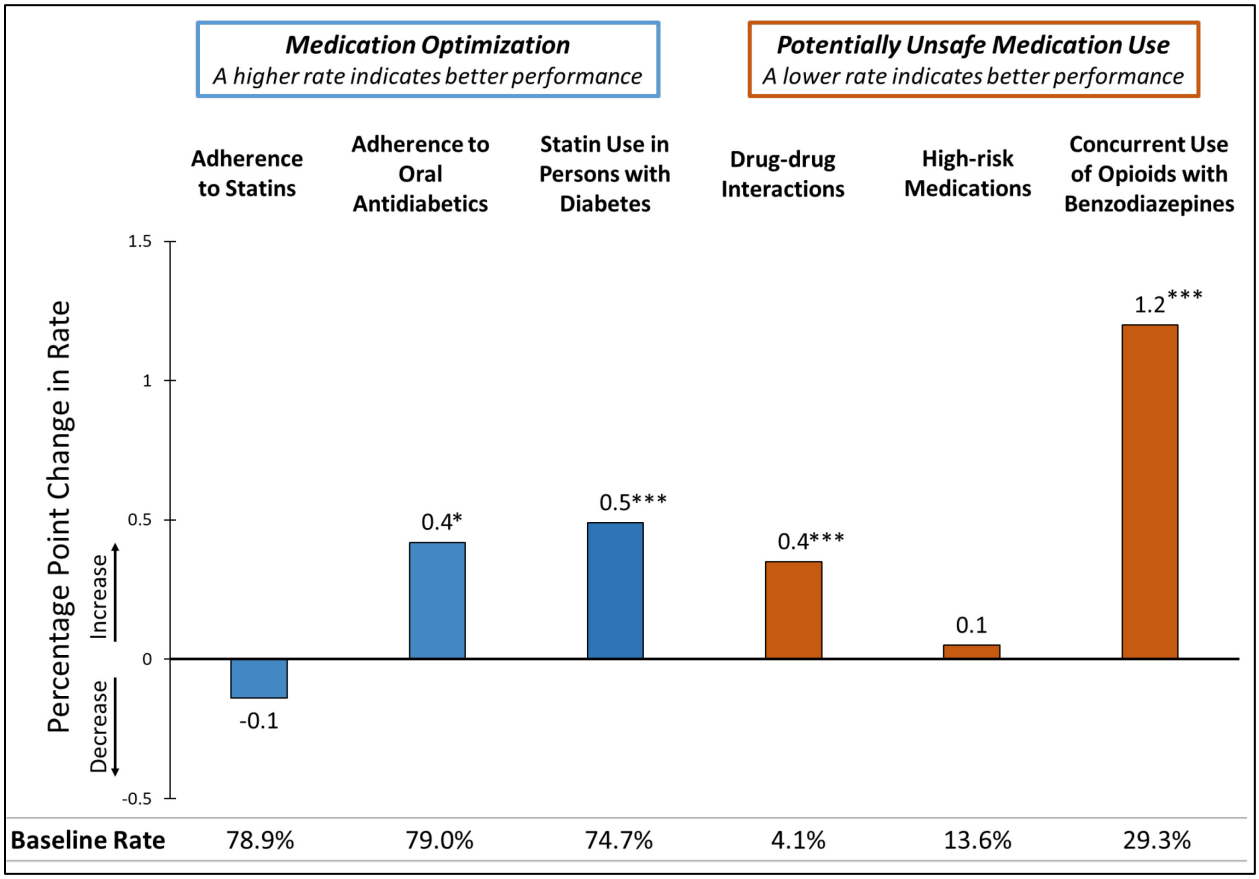
Did Medication Use and Patient Safety Improve?

Enhanced MTM interventions focus on improving beneficiaries' medication therapies and addressing inappropriate use of medications and drug therapy problems. These interventions have the potential to improve medication adherence, increase use of recommended medications, and reduce unsafe medication use. Analyses of select medication use and patient safety measures found mixed evidence of Modelwide impacts.

There were modest Modelwide improvements in medication use for diabetes. Specifically, there were small improvements in adherence to oral antidiabetics (OADs) and statin use in persons with diabetes (SUPD) for enrollees in Model-participating plans relative to the comparison group. There was no cumulative impact on adherence to statins (prescribed to manage heart disease). The rate of adherence to OADs increased cumulatively by 0.4 percentage points from a baseline rate of 79.0 percent (see Executive Summary Figure 2). There was also a statistically significant cumulative increase of 0.5 percentage points in the rate of SUPD, from a baseline of 74.7 percent. Sponsor efforts to target diabetic beneficiaries to improve their diabetes management may have enabled these Modelwide improvements.

Measures of potentially unsafe medication use did not improve for enrollees in Model-participating plans as much as for the comparison group. The rates of both drug-drug interactions (DDIs) and concurrent use of opioids and benzodiazepines ("concurrent use") did not decrease as much among enrollees in Model-participating plans as they did among the comparison group. There were relative increases of 0.4 and 1.2 percentage points in the rates of DDIs and concurrent use, respectively, from baseline rates of 4.1 percent for DDIs and 29.3 percent for concurrent use (see Executive Summary Figure 2). These findings were contrary to expectations. The Modelwide rate of high-risk medication (HRM) use did not change.

Executive Summary Figure 2: Mixed Evidence of Model Impacts on Medication Use and Patient Safety: Relative Improvements in Two Medication Use Measures and Deterioration in Two Patient Safety Measures



Notes: * p-value < 0.10; ** p-value < 0.05; *** p-value < 0.01. Figure shows difference-in-differences (DiD) point estimates and 95 percent confidence intervals. Baseline Rates refer to regression-adjusted pre-implementation rates among enrollees in Model-participating plans.

How Did the Model Impact Specific Service Settings?

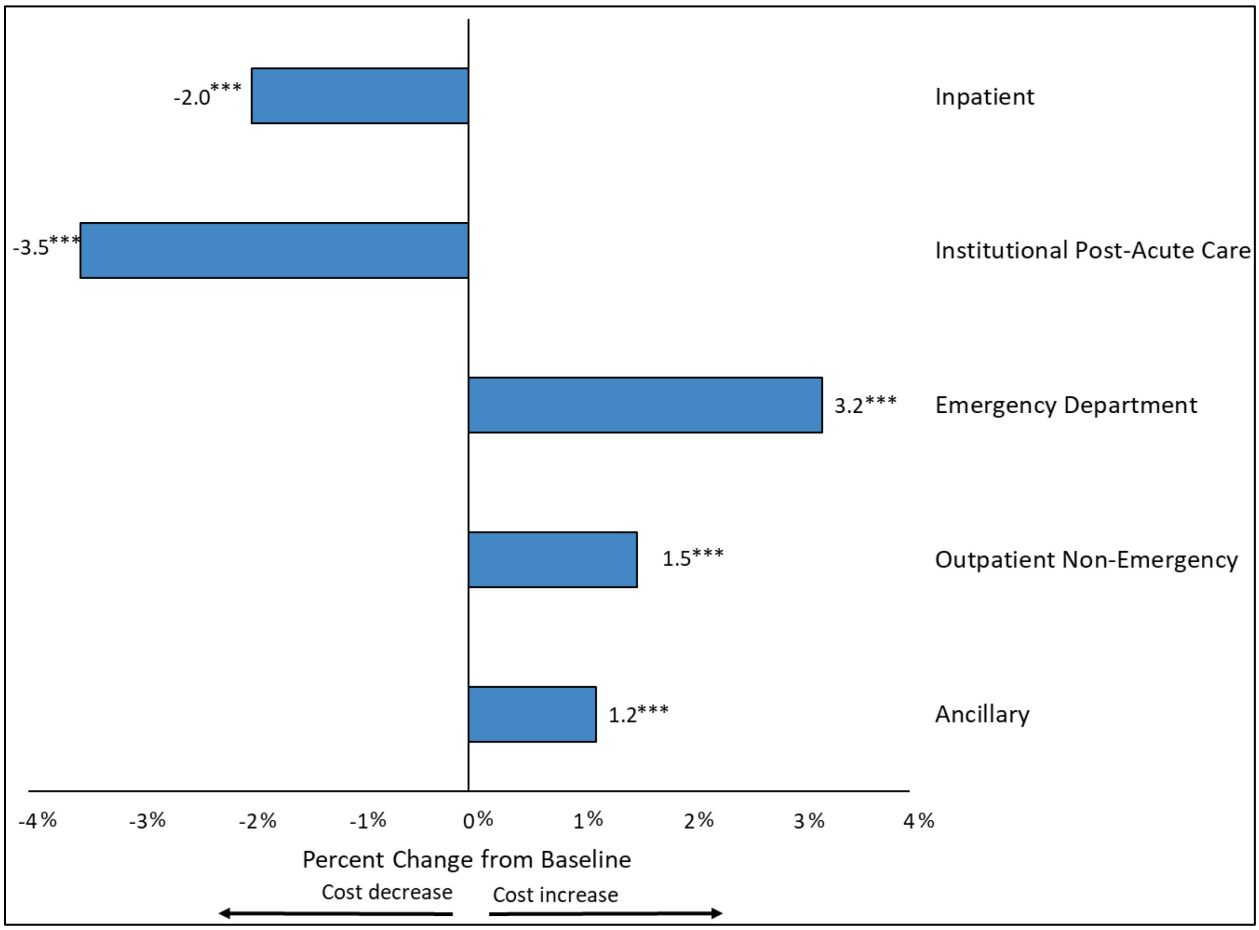
According to the Model's theory of action, improved medication use resulting from tailored Enhanced MTM services may lead to better management of chronic conditions and fewer adverse drug events. These improvements could reduce emergency department and inpatient hospital and related institutional post-acute care utilization and costs. At the same time, Enhanced MTM services may encourage greater patient-prescriber interaction, leading to increases in utilization and costs in non-emergency outpatient and ancillary service settings, at least in the short term. Analyses of Model impacts for setting-specific utilization and expenditures found decreases in Modelwide expenditures and some utilization measures in the inpatient and institutional post-acute care settings. These decreases were partially offset by

increases in Modelwide utilization and related expenditures in the outpatient (emergency and non-emergency) and ancillary settings.

Expenditures and some measures of utilization for hospital inpatient services and institutional post-acute care decreased moderately. Specifically, inpatient expenditures decreased by $5.34 PBPM, corresponding to a 2.0 percent decrease from baseline (Executive Summary Figure 3). There were no cumulative impacts on the number of inpatient admissions and related length of stay. The rate of 30-day all-cause hospital unplanned readmissions ("readmissions") decreased cumulatively by 5.1 readmissions per 1,000 admissions (3.4 percent decrease from baseline). Institutional post-acute care expenditures decreased by $4.07 PBPM, corresponding to a 3.5 percent decrease from baseline. This was driven in part by decreases in the length of stay in skilled nursing facilities (SNFs) by 13.0 days per 1,000 beneficiaries per month (4.0 percent decrease from baseline). There were no cumulative changes in the number of admissions to SNFs. The decreases in expenditures and the lack of significant change in the number of admissions suggest that the average cost of treatment in these settings decreased, with the Model resulting in lower costs per admission for enrollees in Enhanced MTM plans. However, the estimated impacts on utilization and expenditures related to post-acute care may be confounded by contemporaneous impacts of overlapping Medicare initiatives (e.g., Shared Savings Program, Next Generation Accountable Care Organization Model) as well as broader, systematic trends towards shorter lengths of stay in post-acute care for the Medicare population in general, which may have varied by region.

Utilization and related expenditures in the outpatient and ancillary service settings increased, partially offsetting the reductions in the inpatient and institutional post-acute care settings. Cumulative increases in expenditures for outpatient emergency department, outpatient non-emergency, and ancillary services ranged from $0.96 to $3.02 PBPM. These estimated increases correspond to 1.2 to 3.2 percent of their respective baselines (Executive Summary Figure 3) and were observed in each Model Year. Utilization in these settings also increased. Outpatient emergency department, outpatient non-emergency department, and evaluation and management (E&M) visits increased by 1.3, 9.1, and 6.0 visits per 1,000 beneficiaries per month, respectively. These increases correspond to 0.9 to 2.5 percent of baseline, depending on the setting. As mentioned above, Enhanced MTM services encourage beneficiaries to follow up with their prescribers in a primary care setting, which could explain the increases in utilization and expenditures for outpatient and ancillary services. Increases in expenditures and utilization for emergency services were unexpected based on the Model's theory of change.

Executive Summary Figure 3: Expenditure Decreases in Inpatient and Institutional Post-Acute Care Settings Were Offset by Increases in Emergency, Outpatient, and Ancillary Settings



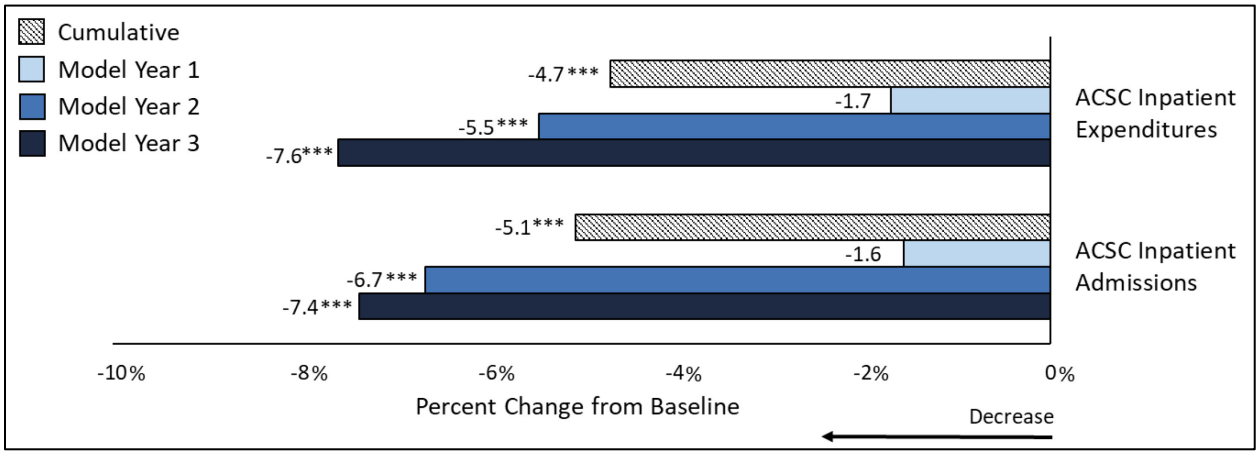
Notes: * p-value < 0.10; ** p-value < 0.05; *** p-value < 0.01. Estimates correspond to percent changes from baseline.

Inpatient admissions and related expenditures for ambulatory care-sensitive conditions (ACSCs) decreased.[5] Enhanced MTM interventions are intended to address gaps in care and promote care coordination and alignment of care priorities between pharmacists and physicians. Such preventive care could improve the management of ACSCs and reduce preventable downstream inpatient utilization and expenditures. In the data used for this report, ACSCs accounted for around 7 percent of baseline inpatient expenditures and 10 percent of baseline inpatient stays of beneficiaries enrolled in Model-participating plans. The Model resulted in moderate cumulative decreases in ACSC-related inpatient expenditures of $0.91 PBPM (or 4.7 percent from baseline). The Model also resulted in decreases in ACSC-related

[5] Ambulatory care-sensitive conditions are conditions for which inpatient care may be preventable through preventive, primary care or early interventions aimed at reducing further complications or severe disease.

inpatient admissions of 0.1 admissions per 1,000 beneficiaries per month (or 5.1 percent from baseline) (see Executive Summary Figure 4). The cumulative decreases in ACSC-related inpatient expenditures accounted for around 17 percent of the cumulative decrease in total inpatient expenditures. The Model's estimated impacts on ACSC-related expenditures and utilization increased (in absolute value) over time.

Executive Summary Figure 4: ACSC-Related Inpatient Expenditures and Admissions Decreased



Notes: * p-value < 0.10; ** p-value < 0.05; *** p-value < 0.01. Estimates correspond to percent changes from baseline.

How Did Enhanced MTM Interventions Change Between Model Years 1 and 3?

Each sponsor offered multiple Enhanced MTM interventions and the portfolio of interventions evolved between Model Years 1 and 3. The Model allowed sponsors to modify their implementation approaches and also make changes to their targeting approaches and/or the services provided to eligible beneficiaries. Some sponsors, such as BCBS FL and BCBS NPA, used the Model as an opportunity to quickly test various strategies; other sponsors, such as Humana, preferred to take the time to gather information before making adjustments to their interventions, so that modifications would be based on data-driven insights. While sponsors continued to make changes to their portfolio of interventions in Model Year 3, these changes were not as extensive as in the prior Model Year. Sponsors reported that some changes to interventions reflect efforts to address perceived gaps in care and promote care coordination. Changes over time in the criteria for beneficiary eligibility indicate an increasing focus on beneficiaries with high medical costs and recent hospitalizations.

The Enhanced MTM eligibility rate increased over the first three Model Years, from 34 percent in Model Year 1 to 41 percent in Model Year 3. Sponsors' efforts to add new

interventions and expand some current interventions increased the number of beneficiaries who were newly eligible for interventions. As a result, even though total PBP enrollment remained stable across the first three Model Years, the number of eligible beneficiaries increased, leading to increases in eligibility rates.

Implementation changes and expansions in eligibility in Model Year 3 slightly increased the number and proportion of beneficiaries receiving significant services. Sponsors have been testing new interventions and changes to Enhanced MTM service provision over the course of Model implementation. This experimentation continued, but at a smaller scale, in Model Year 3. Sponsors generally made fewer intervention changes than in Model Year 2 and reached fewer new beneficiaries with significant services. In Model Year 3, an additional 43,000 eligible beneficiaries received significant services relative to Model Year 2. Over half a million beneficiaries received services in Model Year 3 (40.5 percent of eligible beneficiaries). In Model Year 3 the number of beneficiaries who received select significant services—CMR, TMR, transitions-of-care, and medication adherence services[6]—increased relative to previous Model Years, though the proportion of eligible beneficiaries who received services only increased for TMRs. The proportion of eligible beneficiaries who received adherence services remained stable between Model Years 2 and 3, and dropped for transitions-of-care and CMR services due to steeper increases in the number of beneficiaries eligible for these services.

Conclusions and Next Steps

For most sponsors, efforts to expand and optimize Enhanced MTM interventions continued into Model Year 3, though not to the same extent as in Model Year 2. These efforts led to continued increases in Modelwide eligibility for and receipt of services over time. However, there were no statistically significant impacts on total Medicare Parts A and B expenditures through the end of 2019. Medicare's prospective and performance-based payments to sponsors were larger than the decreases in Medicare Parts A and B expenditures in all Model Years. The Model, therefore, generated net losses for Medicare, though the estimate is not statistically significant. Estimated impacts for measures of medication use and specific settings suggest that the Model is improving on some beneficiary outcomes, and may have reduced certain types of costly utilization (e.g., readmissions).

Future evaluation reports will continue to assess Model impacts on expenditures, utilization, and medication use for beneficiaries enrolled in Model-participating plans. They will also continue to review Model implementation and changes over additional Model Years to

[6] A medication adherence service can consist of either an interactive service with a pharmacist to investigate and address beneficiary non-adherence or risk for non-adherence to medications, or an automated contact, such as refill reminders, through interactive voice response (IVR).

provide insight and context on the mechanisms through which the Model may impact outcomes of interest.

1 INTRODUCTION

The Centers for Medicare & Medicaid Services (CMS) launched the five-year Enhanced Medication Therapy Management (MTM) Model ("the Model") in 2017. The Model tests whether giving Medicare Part D Prescription Drug Plan (PDP) sponsors ("sponsors") flexibilities and payment incentives for the provision of MTM services to beneficiaries leads to improvements in therapeutic outcomes while reducing Part A and B Medicare expenditures. This Third Evaluation Report covers the first three years of Model implementation (January 1, 2017 – December 31, 2019), and presents Model impacts on Medicare expenditures and related health service use, as well as an assessment of Model implementation.

The term "Medication Therapy Management" describes a range of services, intended to optimize medication use and to detect and prevent medication-related issues. Usually provided by pharmacists, MTM services include medication reviews, the provision of related education and advice to patients, and collaboration with patients and their prescribers to develop patient-centered plans for optimal therapeutic outcomes. Previous research suggests that MTM services have the potential to improve adherence to prescribed medications, increase drug safety, improve health, reduce adverse events, and lower expenditures for chronically ill individuals.[7,8]

In the traditional MTM program, CMS eligibility targeting requirements are established as a minimum threshold.[9] The traditional eligibility criteria target Part D enrollees who have multiple chronic diseases, are taking multiple Part D drugs, and are likely to incur annual costs for covered Part D drugs that exceed a predetermined level, as described in Title 42 of the Code of Federal Regulations § 423.153(d).[10] Sponsors are required to offer a minimum level of MTM services to all eligible beneficiaries, including annual comprehensive medication reviews (CMRs) and quarterly targeted medication reviews (TMRs). Traditional MTM sponsors have the option to expand their targeting criteria to include additional beneficiaries for services and to

[7] Barry A. Bunting, Benjamin H. Smith, and Susan E. Sutherland, "The Asheville Project: clinical and economic outcomes of a community-based long-term medication therapy management program for hypertension and dyslipidemia." *Journal of the American Pharmacists Association* 48, no. 1 (2008): 23-31, https://doi.org/10.1331/JAPhA.2008.07140.

[8] Saranrat Wittayanukorn, Salisa C. Westrick, Richard A. Hansen, Nedret Billor, Kimberly Braxton-Lloyd, Brent I. Fox, and Kimberly B. Garza, "Evaluation of medication therapy management services for patients with cardiovascular disease in a self-insured employer health plan." *Journal of Managed Care & Specialty Pharmacy* 19, no. 5 (2013): 385-395, http://www.doi.org/10.18553/jmcp.2013.19.5.385.

[9] Medicare Part D plans required to offer MTM include stand-alone PDPs, Medicare Advantage Prescription Drug plans (MA-PDs), and Medicare-Medicaid Plans (MMPs).

[10] CMS sets the core targeting criteria, but PDPs can choose certain elements of their implementation. For example, PDPs may select the chronic conditions that satisfy the multiple chronic condition criterion. Sponsors may also choose whether to target beneficiaries with at least two or three chronic conditions, but cannot require that beneficiaries have more than three of these conditions.

offer additional services to eligible beneficiaries.[11] However, provision of all MTM services is considered an administrative cost and funded from a part of the sponsor's annual bid. Expansions beyond the minimum requirements may be used as a marketing tool, but such expansions may increase beneficiary premiums or reduce sponsors' profits. In 2016, before the start of the Model, about a quarter of Part D sponsors employed optional expanded targeting criteria, and less than a quarter provided optional additional services under traditional MTM.[12]

In January 2017, CMS launched the five-year Model across five PDP regions. The participants are six sponsors operating eligible stand-alone PDPs, offering basic prescription drug coverage.[13] The Model's four key components are described below:[14]

(1) Additional flexibility gives sponsors significant latitude in intervention design. Unlike traditional MTM, there are no minimum required targeting criteria or services, allowing sponsors to implement interventions tailored to their populations.[15] For example, sponsors may offer different services based on beneficiaries' risk profiles, instead of providing a uniform set of services to all targeted beneficiaries.

(2) Sponsors receive prospective payments from CMS for administrative expenses. Prospective payment amounts are designed to cover administrative costs for their projected target population and their CMS-approved targeting approaches. As mentioned above, the traditional MTM program covers administrative expenses as a component of the plan's bid.

(3) Sponsors receive performance-based payments from CMS, contingent on reductions in Medicare Parts A and B costs. Performance-based payments are intended to incentivize MTM activities that result in improvements in beneficiary outcomes and thus reductions in downstream Medicare Parts A and B expenditures (e.g., via a reduction in drug-related adverse events). Sponsors receive these payments

[11] CMRs are interactive medication reviews and consultations with beneficiaries to assess their medication use for medication-related problems, resulting in a standardized written summary. TMRs are performed to assess specific actual or potential medication-related problems, which may result in a follow-up intervention with beneficiaries and/or their prescribers.

[12] "2016 Medicare Part D Medication Therapy Management (MTM) Programs Fact Sheet: Summary of 2016 MTM Programs" (May 4, 2016), https://www.cms.gov/Medicare/Prescription-Drug-Coverage/PrescriptionDrugCovContra/Downloads/CY2016-MTM-Fact-Sheet.pdf.

[13] Eligible stand-alone PDPs are those that offer basic prescription drug coverage in the form of the defined standard benefit, actuarially equivalent standard benefits, or basic alternative benefits. Plan benefit packages that offer enhanced alternative coverage are not eligible for participation in the Enhanced MTM Model.

[14] For additional details about the differences between the traditional MTM program and the Enhanced MTM Model, please see the "Evaluation of the Part D Enhanced Medication Therapy (MTM) Model: First Evaluation Report," (October 2019), https://downloads.cms.gov/files/mtm-firstevalrpt.pdf.

[15] The Model also offers participating PDPs an opportunity to receive PBP enrollee Medicare Parts A and B claims data from CMS. This information can be leveraged for targeting and service provision.

contingent on expenditure reductions of at least 2 percent for beneficiaries enrolled in participating Plan Benefit Packages (PBPs), relative to a benchmark.[16] The traditional MTM program does not offer performance-based payments.

(4) Sponsors have additional data reporting requirements for the Model. Sponsors are required to submit monthly beneficiary-level eligibility data in the Medicare Advantage Prescription Drug data transaction system (MARx). Sponsors are also required to submit quarterly Encounter Data, which document the details of Enhanced MTM services provided to beneficiaries in a flexible manner using Systematized Nomenclature of Medicine – Clinical Terms (SNOMED CT) codes.[17,18] The traditional MTM program requires standalone PDPs to report limited MTM beneficiary-level data focused on MTM eligibility and the provision of required MTM services (CMRs and TMRs) on an annual basis to CMS.

The remainder of this introductory section provides background information on the participating sponsors (Section 1.1) and their Enhanced MTM interventions (Section 1.2), and a high-level overview of the evaluation questions addressed by this Third Evaluation Report (Section 1.3).

1.1 Who Are the Enhanced MTM Model Participants?

Six sponsors participate in the Model, operating 22 PBPs across five PDP regions Table 1.1 and Figure 1.1). The six sponsors are SilverScript Insurance Company/CVS (SilverScript/CVS), Humana, Blue Cross Blue Shield Northern Plains Alliance (BCBS NPA), UnitedHealth Group (UnitedHealth), WellCare, and Blue Cross Blue Shield of Florida (BCBS FL).[19] All sponsors except BCBS FL and BCBS NPA are active in all five participating PDP regions.

[16] Performance-based payments are awarded with a two-year delay, and take the form of an increase in Medicare's contribution to plans' Part D premium (i.e., an increase in the direct subsidy component of the Part D payment), thus decreasing the plan premium paid by beneficiaries, and improving PDPs' competitive market position.

[17] These eligibility data are stored in MARx Transaction Code (TC) 91 files.

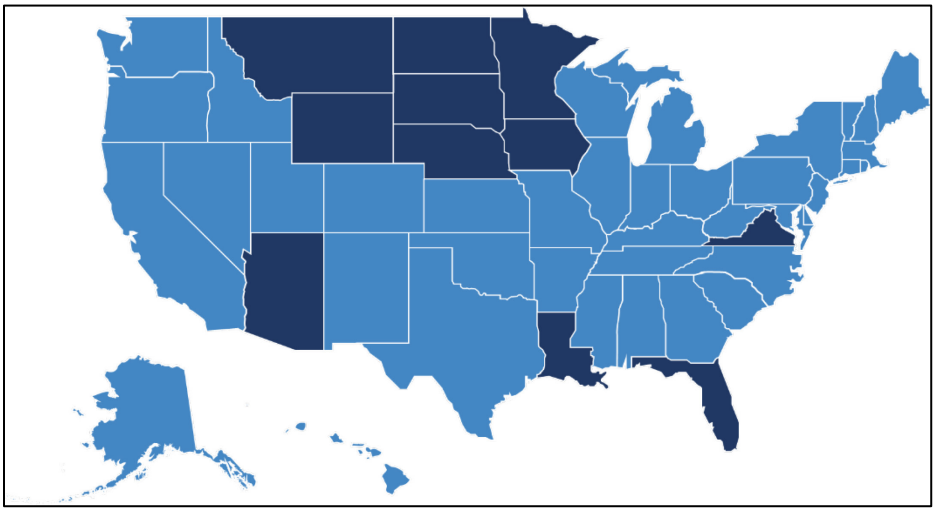
[18] SNOMED CT is a medical coding system designed to capture and represent detailed clinical content to describe a broad range of healthcare-related activities and support information exchange in multiple healthcare settings. More information can be found at: SNOMED International, "SNOMED CT Starter Guide" (2017). https://confluence.ihtsdotools.org/download/attachments/28742871/doc_StarterGuide_Current-en-US_INT_20170728.pdf.

[19] Eligible PBPs include PDPs that offer basic prescription drug coverage in the form of the defined standard benefit, actuarially equivalent standard benefits, or basic alternative benefits. Plan benefit packages that offer enhanced alternative coverage are ineligible for participation in the EnhancedMTM Model.

Table 1.1: Six Sponsors Operating 22 PBPs Participate in the Enhanced MTM Model

Sponsor	Number of Participating PBPs (Total: 22)
SilverScript Insurance Company/CVS (SilverScript/CVS)	5
Humana	5
Blue Cross Blue Shield Northern Plains Alliance (BCBS NPA)	1
UnitedHealth Group (UnitedHealth)	5
WellCare	5
Blue Cross Blue Shield of Florida (BCBS FL)	1

Figure 1.1: The Enhanced MTM Model Covered Five Medicare Part D PDP Regions[a]



[a] The five PDP regions covered in the Model include: Arizona, Louisiana, Florida, the Upper Midwest and Northern Plains (Iowa, Minnesota, Montana, Nebraska, North Dakota, South Dakota, Wyoming), and Virginia. There are 34 PDP regions in total.

About 1.9 million beneficiaries were enrolled across the participating sponsors' Enhanced MTM PBPs in each of the first three Model years (Table 1.2). In Model Year 3 (2019), nearly 1 million (53 percent) of those beneficiaries were enrolled in plans operated by SilverScript/CVS, the Model's largest sponsor, while fewer than 56,000 (3 percent) were enrolled in the plan operated by BCBS FL, the Model's smallest sponsor.

While Modelwide enrollment across all Enhanced MTM PBPs remained fairly constant over the first three years, individual sponsors' enrollment varied (Table 1.2), due to changes in PBP benchmark status or premiums, or PBP consolidation. SilverScript/CVS's enrollment increased substantially from Model Year 1 (2017) to Model Year 2 (2018) (by about 26 percent) and remained stable in Model Year 3 (2019). Conversely, Humana's enrollment decreased

substantially between Model Years 1 and 2 (by about 37 percent),[20] and decreased by a smaller amount in Model Year 3 (by about 11 percent). UnitedHealth also experienced considerable enrollment fluctuations across Model Years, with a substantial decrease in enrollment between Model Years 1 and 2 (by about 24 percent)[21] and a substantial increase (by about 54 percent) between Model Years 2 and 3. There are two likely factors in UnitedHealth's increase in enrollment in Model Year 3. First, four PBPs that were previously not in the Model were consolidated into four Enhanced MTM PBPs. Second, three out of five Enhanced MTM PBPs gained benchmark status in Model Year 3, making these plans eligible for automatic enrollment of dually eligible beneficiaries and low-income subsidy (LIS) recipients by CMS. Across sponsors, nearly 70 percent of the beneficiaries who were enrolled in an Enhanced MTM PBP in 2017 remained enrolled in that PBP or another Enhanced MTM PBP (within the same or different sponsor) through the third year of Model implementation. Appendix B.4 provides details on Enhanced MTM PBPs' benchmark status, premiums, and annual enrollment.

[20] In Model Year 2 (2018), some beneficiaries were automatically disenrolled from Humana's Florida PBP, which lost its benchmark status in 2018, and enrolled in other Florida PBPs, including the Florida PBP operated by SilverScript/CVS.

[21] In Model Year 2 (2018), premiums increased for UnitedHealth's Florida PBP, likely explaining this decrease in UnitedHealth's enrollment.

Table 1.2: Total Modelwide Enrollment in Participating PBPs Was Fairly Constant Over the First Three Model Years; Sponsor-level Enrollment Varied

Sponsor	Model Year 1 (2017) Enrollees[a]	Model Year 2 (2018) Enrollees[a]	Model Year 3 (2019) Enrollees[a]	Change Between 2017 and 2018 (%)	Change Between 2018 and 2019 (%)	Beneficiaries Continuously Enrolled Years 1-3[b] (%)
All Participating Sponsors	***1,878,277***	***1,867,724***	***1,852,097***	***-0.6***	***-0.8***	***69.9***
SilverScript/CVS	794,257	1,003,077	987,071	26.3	-1.6	71.0
Humana	457,506	287,568	255,658	-37.1	-11.1	67.3
BCBS NPA	241,499	239,964	219,299	-0.6	-8.6	76.0
UnitedHealth	175,940	134,280	206,205	-23.7	53.6	64.9
WellCare	155,092	150,201	132,561	-3.2	-11.7	63.4
BCBS FL	64,631	60,858	55,976	-5.8	-8.0	81.8

Source: Common Medicare Environment (CME). This enrollment only includes beneficiaries in Enhanced MTM-participating contract PBPs.

[a] Beneficiaries ever enrolled in an Enhanced MTM participating PBP during the specified Model Year.

[b] Beneficiaries continuously enrolled in one or more Enhanced MTM PBPs for at least one month in each of the three Model Years (within the same or different Enhanced MTM sponsor), as a proportion of Model Year 1 (2017) enrollees. At the sponsor level, beneficiaries who switched between Enhanced MTM sponsors over the three years are reported in Table 1.2 for the first Enhanced MTM sponsor in which they were enrolled.

1.2 What Are Enhanced MTM Interventions?

Sponsors used the flexibility of the Model to create portfolios of multiple Enhanced MTM interventions designed to address specific needs in their beneficiary populations. Each Enhanced MTM intervention is composed of a unique combination of sponsor-specific targeting criteria, defined as a set of requirements that determine which beneficiaries are eligible, and a corresponding set of Enhanced MTM outreach and services offered to the eligible beneficiaries.[22] Sponsors offered the same portfolio of Enhanced MTM interventions consistently across all of their participating PBPs, and eligible beneficiaries who met a specific intervention's targeting criteria were offered the same services.

1.2.1 Overview of Targeting and Services

As highlighted in the First Evaluation Report,[23] most of the Model's innovation was found in sponsors' approaches to targeting eligible beneficiaries rather than outreach or services. (Appendix A of this report presents additional details about Enhanced MTM interventions by

[22] Participating sponsors refer to Enhanced MTM interventions as "Enhanced MTM programs." The Enhanced Medication Therapy Management (MTM) Model First Evaluation Report also referred to Enhanced MTM interventions as "Enhanced MTM programs."

[23] For further information, please refer to: "Evaluation of the Part D Enhanced Medication Therapy Management (MTM) Model: First Evaluation Report" (October 2019), https://downloads.cms.gov/files/mtm-firstevalrpt.pdf.

sponsor.) Under Enhanced MTM, sponsors exercised their substantial flexibility in establishing targeting criteria for determining which beneficiaries were eligible for interventions. The types of outreach conducted and services delivered were similar to those in traditional MTM, though some differences are highlighted below.

Each of the sponsors' Enhanced MTM interventions had different targeting criteria. The targeting criteria clustered around five categories of health characteristics: (i) medication utilization; (ii) high Medicare Parts A, B, and D costs; (iii) presence of one or more chronic conditions; (iv) recent discharge from the hospital; and (v) vaccine status.[24] The first three of these five categories are similar to, but broader than, the traditional MTM targeting criteria categories. For example, under the medication utilization category, there are four common sub-categories: (i) drug therapy problems (DTPs),[25] (ii) opioid medications, (iii) newly prescribed medications, and (iv) number of medications (i.e., polypharmacy).

In addition to establishing different targeting criteria for each intervention, sponsors also offered eligible beneficiaries different types and varied frequencies of "significant services," depending on the Enhanced MTM interventions for which they were eligible.[26] This approach differed from traditional MTM, which requires that all eligible beneficiaries are offered, at minimum, an annual CMR and quarterly TMRs. There were 12 categories of significant services sponsors offered under Enhanced MTM, which fall under five broader groupings, as shown in Table 1.3, and discussed in the Second Evaluation Report in more detail.[27] Sponsors (or their vendors) typically conducted outreach via mail, phone, in-person outreach, automated methods (such as interactive voice response [IVR]), web alerts, email, and text to offer significant services to eligible beneficiaries. Additional outreach to non-responsive beneficiaries and multimodal outreach (which includes web, email and text alerts) were new approaches implemented by sponsors participating in Enhanced MTM. None of the sponsors used these approaches for their standalone Part D plans before participating in the Model.

[24] SilverScript/CVS's HealthTag intervention was the only Enhanced MTM intervention that targeted beneficiaries primarily based on vaccination status.

[25] DTPs encompass medication adherence issues, adverse drug reactions/interactions, gaps in care, dosage issues, and unnecessary or inappropriate drug therapy.

[26] Significant services are tailored services intended to address specific beneficiary needs. Sponsors also offered non-significant services, which included general, non-tailored outreach (e.g., welcome letters and educational newsletters). This report focuses on the provision of significant services.

[27] "Evaluation of the Part D Enhanced Medication Therapy Management (MTM) Model: Second Evaluation Report" (November 2020), https://innovation.cms.gov/data-and-reports/2020/mtm-secondevalrpt.

Table 1.3: The 12 Significant Service Categories Fall Into Five Broader Groups

Medication Reconciliation		**Description**
1	Medication reconciliation	An interactive service, separate from a CMR, to ensure the sponsor's record of beneficiary medications is current
2	Medication reconciliation (transitions of care)	A similar service to a regular medication reconciliation but with a focus on capturing medication changes that occurred as a result of a hospitalization
Comprehensive Medication Review (CMR)		
3	CMR	An interactive service to comprehensively and systematically review a beneficiary's medication regimen and identify and develop a plan to address medication-related problems
4	CMR (transitions of care)	A similar service to regular CMR but with a focus on identifying and addressing medication-related problems that occur after a beneficiary is discharged from the hospital
Targeted Medication Review (TMR)		
5	TMR (beneficiary-facing)	A focused, beneficiary-facing service to address specific, pre-identified medication issues
6	TMR (prescriber-facing)	A focused, provider-facing service to address specific, pre-identified medication issues
7	TMR (transitions of care, prescriber-facing)	A focused prescriber-facing service to address a specific, medication issue or issues that arise after a beneficiary is discharged from the hospital
Medication Adherence		
8	Medication adherence (delivered by pharmacist)	An interactive service to investigate and address beneficiary non-adherence or risk for non-adherence to medications
9	Medication adherence (delivered by automated outreach)	A service that involves automated contact, such as refill reminders, through Interactive Voice Response (IVR)
Other Services		
10	Case/disease management	Services to address cost or social issues that affect a beneficiary's ability to obtain and/or adhere to medications
11	Social support and cost-sharing	An interactive service to support beneficiaries in controlling their disease state(s) and/or coordinate care across multiple healthcare entities
12	Immunizations	Services that involve assessing the need for, providing reminders or information about, and/or administering vaccines

1.2.2 Intervention Changes Over Time

During the third year of the Model's five-year performance period, sponsors continued to make changes to Enhanced MTM interventions, though not to the same extent as in Model Year 2 (2018). Since the start of Model implementation, all sponsors except Humana have added at least one new Enhanced MTM intervention. Overall, sponsors added fewer interventions in Model Year 3 than in Model Year 2 (four vs. seven new interventions, respectively). However, the ongoing changes in Model Year 3 show that sponsors are still testing and learning about the interventions they are offering to their plan enrollees. For the Model as a whole, intervention changes over the first three years show sustained focus on medication utilization and increasing attention to beneficiaries who experience a discharge from the hospital. Sponsors such as BCBS FL and BCBS NPA were more dynamic, in that they added new interventions or made more changes to existing interventions, whereas other sponsors such as Humana were more stable. The more dynamic sponsors report approaching the Model as an opportunity to quickly test different strategies; others have been more conservative in their changes, and attribute this to a desire to accumulate more data and make adjustments only in cases where cumulative data indicate the need for change. Section 3 categorizes each sponsor based on the extent of modifications to its portfolio of Enhanced MTM interventions and discusses them in more detail.

1.3 How Is the Enhanced MTM Model Expected to Improve Outcomes?

The Model's theory of change (see Figure 1.2) illustrates the potential pathways through which the Model's financial incentives and implementation flexibilities could improve therapeutic outcomes for beneficiaries and decrease downstream Medicare Parts A and B expenditures. In the Model, sponsors receive payments for administrative and implementation expenses in the form of prospective payments. This reduces the financial barriers that may limit sponsors' provision of MTM services to all enrollees who could potentially benefit from them. Sponsors use Model flexibilities to design and offer tailored Enhanced MTM interventions to address the needs of their enrollees. In implementing the interventions, sponsors target eligible beneficiaries, offer Enhanced MTM services, and coordinate with prescribers to provide recommendations resulting from the interventions. Beneficiaries who meet Enhanced MTM intervention eligibility requirements can receive offered services, such as CMRs, TMRs, and adherence counseling. As appropriate, beneficiaries' prescribers are also expected to receive and act on timely information about beneficiaries' medication risks, thereby reducing the risk of medication issues.

The theory of change describes how Enhanced MTM services could directly affect proximal impacts and subsequent distal impacts. For example, the expanded targeting criteria

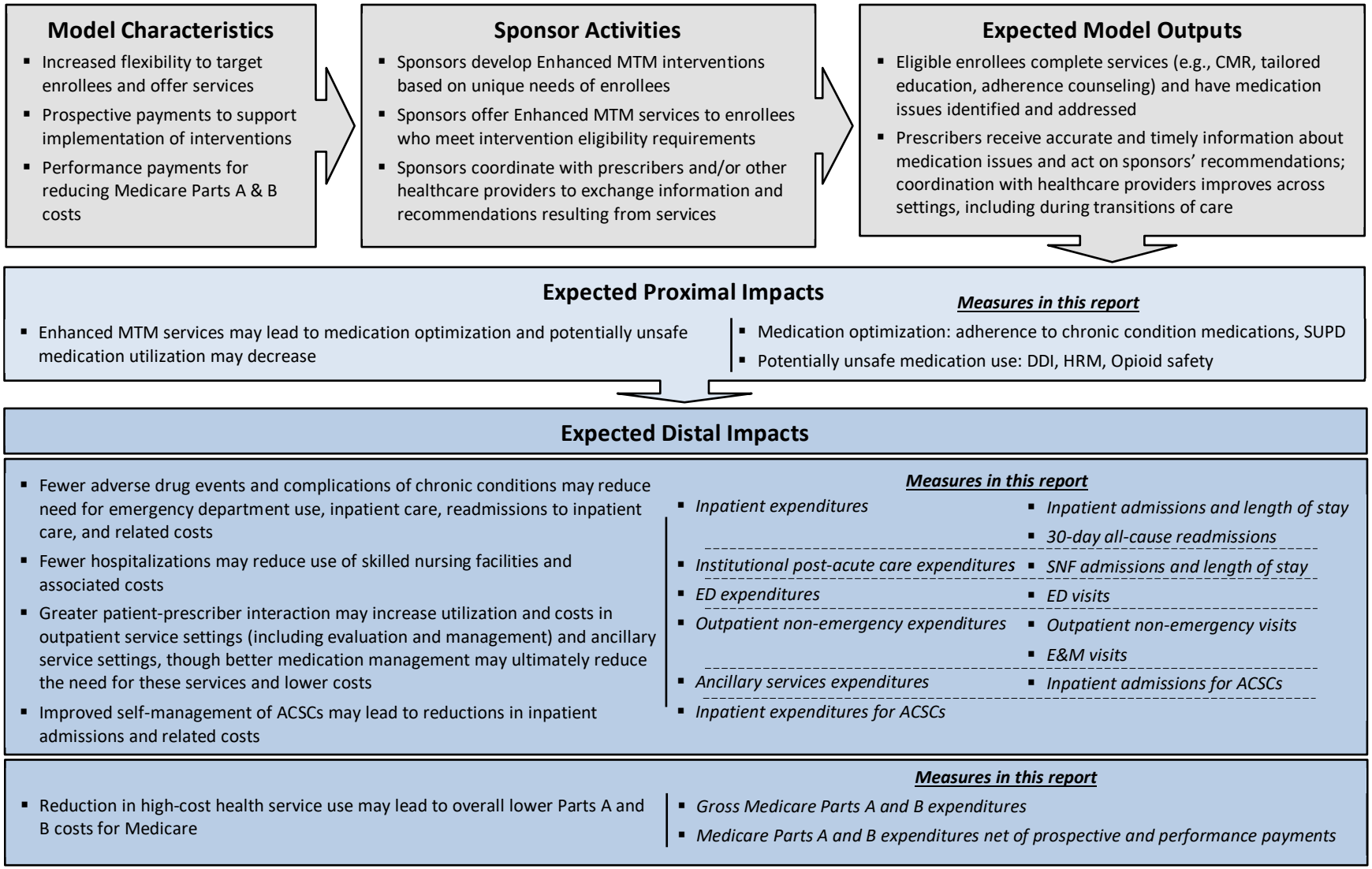
and service provision under the Model may directly encourage a greater number of beneficiaries to improve their medication-taking behavior, reflected in improvements in medication use and patient safety-related outcomes.[28] Additionally, better management of medications could lead to fewer downstream adverse drug events or other complications of existing conditions, reducing the need for emergent care, inpatient care, post-acute care, and related expenditures. Beneficiaries with ambulatory care-sensitive conditions (ACSCs), conditions for which inpatient care may be preventable through primary care or early interventions, may be able to better manage their conditions following Enhanced MTM services, which include adherence and disease management education.[29] There is thus potential for downstream reductions in inpatient admissions and expenditures related to ACSCs in particular.

At the same time, increased access to medication counseling via the Enhanced MTM interventions can motivate beneficiaries to seek appropriate care for previously unresolved issues (for example, identification of unaddressed issues and discussion of potential solutions during a CMR or TMR). This may lead to subsequent increases in evaluation and management visits and other non-emergency outpatient service use. Resolving unaddressed issues in this manner may, in turn, improve beneficiaries' health outcomes or prevent adverse medical events, thus reducing the need for higher-cost services in the inpatient and post-acute care settings. Overall, the Model's goal is to reduce Parts A and B expenditures beyond what is achieved under the traditional MTM approach, net of Model prospective and performance-based payments.

[28] The Model's interventions also have the potential to improve beneficiary experience, for example, by improving beneficiaries' perceptions of care coordination among healthcare providers and self-efficacy for managing their conditions. Appendix B.7 on Beneficiary Experience addresses this evaluation dimension.

[29] Some examples include WellCare's Medication Adherence intervention, which identifies beneficiaries who are likely to become non-adherent to statins, renin-angiotensin system antagonists, and oral antidiabetics to receive adherence-related services, and BCBS NPA's Chronic Care Management intervention, which identifies diabetic beneficiaries who take multiple medications to receive services to help them achieve established clinical goals.

Figure 1.2: Enhanced MTM Evaluation Theory of Change: Potential Pathways for Expected Outcomes



Notes: CMR: comprehensive medication review; SUPD: statin use in persons with diabetes; DDI: drug-drug interaction; HRM: high-risk medications; SNF: skilled nursing facility; ED: emergency department; E&M: evaluation and management; ACSCs: ambulatory care-sensitive conditions.

This Third Evaluation Report analyzes Medicare administrative data, Model-specific data, and interviews with sponsors to assess Model implementation and impacts over the first three years of the implementation (2017-2019). The report addresses each component of the theory of change, starting with the Model's overall impact on Medicare's Parts A and B expenditures (Sections 2.3 and 2.4). Next, the report explores the underlying mechanisms of observed impacts by analyzing proximal outcomes related to medication use (Section 2.5). Sections 2.6 and 2.7 then examine health service setting-specific expenditures and related utilization to provide context for the aggregate spending impacts. Finally, the report investigates implementation-related drivers of Model outcomes, including sponsors' activities in response to the Model's incentives and flexibilities (Section 3).

2 HOW DID THE ENHANCED MTM MODEL IMPACT MEDICARE PARTS A AND B EXPENDITURES AND HEALTH SERVICES UTILIZATION?

Section Summary

Over the first three years of Model implementation, there have been no significant Modelwide impacts on gross Medicare Part A and B expenditures, cumulatively or by Model Year. The cumulative effect of the Model on gross expenditures was also generally small and not statistically significant for any individual sponsor. Humana was the only sponsor with an estimated decrease in Model Year 3: $14.97 PBPM (or 1.6 percent from baseline, significant at the 10 percent level).

In each of the first three years of implementation, the sum of Medicare's prospective and performance-based payments to sponsors was slightly larger than the estimated decreases in Medicare Parts A and B expenditures. Consequently, **the Model has generated net losses for Medicare, though the estimates are not statistically significant.** Cumulatively, total estimated net losses were $146.7 million; net losses in Model Year 3 were similar to losses in Model Year 2, at $3.64 PBPM.

Analyses of select medication use and patient safety measures found mixed evidence of Modelwide impacts. There were modest Modelwide improvements in medication use for diabetes (adherence to oral antidiabetics, statin use among diabetics). Sponsor efforts to target diabetic beneficiaries may have enabled these Modelwide improvements. **However, measures of potentially unsafe medication use (drug-drug interactions, concurrent use of opioids and benzodiazepines) did not improve for enrollees in Model-participating plans as much as for those in the comparison group.** These findings were contrary to expectations. There is neither an intentional mechanism nor empirical evidence from the implementation assessment to suggest that the Model would have these impacts on the assessed measures of patient safety.

There were moderate Modelwide decreases in cumulative expenditures for inpatient and institutional post-acute care. These decreases were partially offset by increases in expenditures for emergency department, outpatient non-emergency, and ancillary services. Estimated changes in health services utilization are generally aligned with the estimated changes in expenditures.

For the Model as a whole, there were also cumulative decreases in hospital inpatient expenditures and visits specifically related to ambulatory care-sensitive conditions (ACSCs), for which inpatient care may be preventable through preventive care, primary care, or early interventions. The cumulative decreases in ACSC-related inpatient expenditures grew in magnitude over time, and accounted for around 17 percent of the cumulative decrease in total inpatient expenditures.

There are some differences in estimated impacts across sponsors, but the many dimensions of their varying approaches to Model implementation make it **difficult to confidently attribute cross-sponsor differences to specific features of implementation or characteristics of enrolled beneficiaries**. Taken together, the findings suggest that the Model did not significantly impact total expenditures, but it may have improved some beneficiary outcomes, and may have reduced certain types of costly utilization.

This section presents Model impacts on beneficiaries enrolled in Model-participating PBPs in Model Years 1 through 3 (2017 through 2019). As discussed in Section 1.3, the Model's theory of change describes how sponsors' interventions aim to reduce downstream Medicare expenditures and related health service utilization by improving medication use and enhancing patient safety. Specifically, Enhanced MTM services may optimize medication regimens and improve management of chronic conditions, reducing the occurrence of adverse events that require medical care (e.g., emergency department visits, inpatient hospitalizations, and subsequent post-acute care). These reductions in medical expenditures are among the intended goals of the Model.

These analyses use an intent-to-treat (ITT) approach to estimate the impact of the Model across all beneficiaries enrolled in Model participating-PBPs. This includes enrolled beneficiaries who were not eligible for Enhanced MTM services.[30] Thus, the findings presented below represent the impacts on beneficiary outcomes of being enrolled in plans that implemented Enhanced MTM interventions in the first three Model Years.

After a discussion of the analytic methodology and a description of the analytic sample, this section presents the Model's impact on total Medicare Parts A and B expenditures ("gross expenditures") (Sections 2.1 through 2.3).[31] This is followed by a presentation of the Model's impact on Medicare expenditures net of Medicare's prospective payments and performance-based payments to sponsors ("net expenditures"), to assess net savings or losses to Medicare over the first three years of the Model (Section 2.4). Sections 2.5 through 2.7 then follow Model impacts on expenditures through the proximal and distal outcomes presented in the Enhanced MTM theory of change (see Figure 1.2).[32] Finally, Section 2.8 concludes with a summary of Model impacts and cross-sponsor variation in estimates, and a discussion on how aspects of implementation and enrollee characteristics may give rise to these differences.

[30] Section 3.2 provides more details on the proportion of participating plan enrollees who are targeted and receive services.

[31] All expenditure and utilization data come from claims information in the Common Working File (CWF; accessed in April 2020), and expenditures were standardized to control for regional differences in the cost of care (due to labor costs and practice expenses). The CWF is the Medicare Part A and Part B beneficiary benefits coordination and pre-payment claims validation system. To adjust for inflation, expenditures are reported in 2019 US dollars.

[32] Measure definitions and data sources used for the analyses are listed in Appendix B.2.

2.1 Analytic Methodology

This section outlines the methodology for the estimation of Model impacts on expenditures and utilization, including comparison group construction and difference-in-differences (DiD) estimation, as well as the process to calculate Model impacts on net expenditures for Medicare. Appendix B.2 presents additional methodological details.

2.1.1 Selection of Analytic Cohort and Estimation

The analytic cohort for estimating impacts on Medicare Parts A and B expenditures was constructed from the pool of all enrollees in Model-participating PBPs. Using a propensity score matching approach, each Enhanced MTM enrollee was matched to up to four comparison beneficiaries, based on their characteristics in the 12-month period prior to their first enrollment in an Enhanced MTM PBP ("baseline period"). Model impacts on Medicare Parts A and B expenditures and health services utilization were estimated using a DiD framework.

The treatment cohort consists of all beneficiaries enrolled in Model-participating PBPs in 2017, 2018, or 2019 who had at least one month of exposure to the Model (i.e., were enrolled in an Model-participating PBP after the Model's launch) and 12 months of continuous Medicare Parts A, B, and D enrollment before their exposure to the Model.[33] These enrollment restrictions ensure data availability for matching and estimation of Model impacts. Beneficiaries were excluded from analyses if they received hospice care before or in the first month of their exposure to the Model (around 1.2 percent of beneficiaries). Table 2.1 summarizes the proportion of beneficiaries remaining in the pre-matching analytic sample after exclusions were applied, both Modelwide and for each sponsor. After all exclusions were applied, about 63 percent of beneficiaries enrolled in participating plans remained in the treatment cohort. Of those who did not satisfy enrollment restrictions, about a quarter were new Medicare enrollees, 40 percent had non-continuous Parts A, B, and D enrollment, and another 35 percent were enrolled in Medicare Advantage during the 12-month period prior to their exposure to the Model.

[33] Previous sensitivity analyses, which relaxed the enrollment criteria to only require 6 months of continuous Medicare Parts A, B, and D enrollment prior to exposure to the Model, produced results consistent with those that utilized 12 months of enrollment.

Table 2.1: Percent of Starting Sample Included in Treatment Cohort after Exclusions

	Modelwide	SilverScript /CVS	Humana	BCBS NPA	UnitedHealth	WellCare	BCBS FL
Starting Sample	2,467,376	1,121,961	524,515	286,391	272,129	192,321	70,059
% of starting sample included in treatment cohort	62.5%	55.8%	69.2%	61.5%	73.8%	60.6%	84.7%

Beneficiary-months that were eligible for inclusion in analyses were identified for the beneficiaries who satisfied the enrollment restrictions outlined above. All baseline months were included in analyses, and post-exposure months were included in analyses conditional on availability of complete fee-for-service claims data (e.g., beneficiaries had not died or switched to Medicare Part C). Post-exposure beneficiary-months were censored from analyses after beneficiaries switched to an Enhanced MTM-participating plan of a different sponsor than their original Part D plan, because in that case it is not possible to attribute any estimated impacts to a specific sponsor.[34]

To select appropriate comparison beneficiaries for the treatment cohort, potential comparators who were not exposed to the Model were identified and similar enrollment restrictions were applied.[35] Potential comparators resided in PDP regions that do not offer the Model, and were enrolled in plan types eligible for participation in the Model (i.e., Defined Standard, Basic Alternative, or Actuarially Equivalent Standard PDPs).[36]

After identifying the treatment cohort and the cohort of potential comparators, propensity score estimation was conducted. The propensity score model included individual beneficiary characteristics in the 12-month period before Model exposure (e.g., variables related to demographic and clinical characteristics, past Parts A and B expenditures, and healthcare utilization) and regional variables (e.g., urban/rural status based on zip code information, quarterly Parts A and B expenditures, and healthcare utilization in Hospital Referral Region of residence).

[34] Based on analyses conducted for the Second Evaluation Report, 17.9 percent of the matched treatment cohort were censored, with 7.8 percent censored due to death, and 10.1 percent censored due to changes in enrollment type. These percentages were very similar for the matched comparison cohort. The length of enrollment during the post-exposure period is also very similar between the treatment and comparison groups.

[35] Because potential comparators were not exposed to the Model, dates of pseudo-exposure to the Model for this group were assigned based on the distribution of dates in the treatment population, and enrollment restrictions applied based on these dates.

[36] Geographic restrictions were applied to the potential comparison group to remove beneficiaries who reside in regions (New England, New York, New Jersey, Hawaii, and Alaska) far from the Model's test area, and those who reside in Maryland (due to the waiver currently in place for hospital payments).

Matching was performed separately for beneficiaries first enrolled in Enhanced MTM PBPs in 2017 or 2018, and 2019.[37] For beneficiaries first enrolled in Enhanced MTM PBPs in 2017 or 2018, propensity scores were estimated at the sponsor level, and matching was conducted separately for each Enhanced MTM PBP. For beneficiaries who first enrolled in Enhanced MTM PBPs in 2019, propensity scores were estimated at the sponsor level for beneficiaries enrolled in SilverScript/CVS, UnitedHealth, and Humana PBPs. For beneficiaries first enrolled in 2019 in BCBS NPA, WellCare, and BCBS FL PBPs, a composite cohort of all three sponsors was created, and a single propensity score model was estimated for this composite cohort. The estimation of a single propensity score model for these three sponsors was necessary due to the small sample size of the incoming cohort of enrollees for each of these sponsors.

Matching was conducted separately for each Enhanced MTM PBP, and matching weights were applied to account for many-to-many matching with replacement. Baseline demographic and clinical characteristics of the matched analytic sample are described in Section 2.2. Appendix B.2 includes a more detailed discussion of the process for the selection of the analytic cohort.

Impact estimates were produced for all outcomes of interest using a DiD framework. Impact estimates were produced for the Model as a whole (by pooling together all sponsor-specific analytic cohorts) and separately for each sponsor. A single DiD model specification produces cumulative impacts, which estimate the average impact of the Model across all three Model Years, as well as impacts separately by Model Year. The unit of observation for all expenditure and utilization outcomes, except for readmissions, medication use, and patient safety measures, is a beneficiary-month. All estimates shown correspond to changes relative to baseline, and standard errors were clustered at the beneficiary level in all specifications.

Readmissions are defined as unplanned, follow-up admissions to any acute care hospital (general acute or critical access hospital) within 30 days of initial discharge ("index admission") from another acute care hospital. The DiD models for readmissions are linear probability models that estimate the change in the rate of readmissions per 1,000 index admissions.[38] For the readmissions models, the unit of observation is an index hospital admission. All estimates correspond to changes relative to baseline, and standard errors were clustered at the beneficiary level.

[37] The matched samples of beneficiaries first enrolled in Enhanced MTM in 2017 or 2018 used in Second Evaluation Report analyses were preserved to the extent possible, conditional on enrollment restrictions (e.g., potential comparators may not be enrolled in Enhanced MTM PBPs at any point in 2017 or later) that were updated to incorporate information from Model Year 3 (2019).

[38] Additional covariates were included in the DiD models to control for baseline characteristics of beneficiaries who contributed index admissions and readmissions to the sample. These covariates are: age under 65 years; eligibility for low-income subsidy or dual Medicare-Medicaid coverage; and original Medicare entitlement category of disabled or end-stage renal disease.

For analyses of medication use and patient safety measures (e.g., adherence to statins, use of high-risk medications), the unit of observation is a beneficiary-year. These analyses use beneficiary-years rather than beneficiary-months because the medication use outcomes generally require a longer period for accurate measurement. Beneficiary-years were included in analyses of a given measure if they satisfied that measure's inclusion criteria (outlined in Appendix B.2.2, Appendix Table B.2.15), and if there was at least one matched treatment or comparison beneficiary-year that also satisfied that measure's inclusion criteria for that given year.[39] Appendix Table B.3.7 lists the proportion of the original samples (the samples used in analyses of medical expenditure and utilization outcomes) that were included in analyses of each medication use and patient safety measure.

Similar to the models for readmissions, the DiD models for medication use and patient safety measures are also linear probability models. The estimates correspond to the percentage point change in the rate of each measure (e.g., rate of high adherence to statins, rate of high-risk medication use) for treatment beneficiaries relative to comparators. Matching weights were applied, and standard errors were clustered at the beneficiary level. Appendix B.2.3 provides further details on all regression models.[40]

2.1.2 Net Expenditure Calculations

The impact of the Model on Medicare's net expenditures accounts for the estimated change in gross expenditures and includes costs incurred by Medicare for prospective and performance-based payments to participating sponsors. Specifically, Modelwide impacts on net Medicare expenditures take into account:

(i) DiD estimates of Model impacts on gross expenditures for beneficiaries enrolled in Model-participating PBPs, based on analyses described in Section 2.1.1 and presented in Section 2.3;

(ii) Modelwide average per-beneficiary per-month (PBPM) prospective payments to participating sponsors made by Medicare; [41] and

[39] Based on the matches assigned to the beneficiaries on their index (or pseudo-index) month. As a robustness check, an alternative sample that additionally required beneficiaries to contribute observations both in the baseline and in the post-exposure period was also used, and produced similar findings.

[40] Sensitivity analyses found that the expenditures estimates were robust to the removal or truncation of outliers.

[41] Information on prospective payments was provided to Acumen by CMS. The authorized monthly prospective payment amounts were used to calculate the average PBPM prospective payment. Prospective payments for November and December 2018 for WellCare were not allocated until January 2019. Consequently, prospective payment information for 2018 and 2019 was used to impute prospective payments for November and December 2018 for WellCare.

(iii) Modelwide PBPM performance-based payments made by Medicare to qualifying participating sponsors.[42]

The PBPM change in Modelwide net expenditures is the sum of the values of estimated changes in Modelwide PBPM gross Medicare expenditures, Modelwide PBPM prospective payments, and Modelwide PBPM performance-based payments. If the resulting sum is negative, the Model has generated net savings (i.e., Medicare's payments to sponsors were smaller than decreases in Medicare Parts A and B expenditures of beneficiaries enrolled in participating PBPs relative to comparators). If the sum is positive, then the Model has generated net losses (i.e., Medicare's payments to sponsors were larger than decreases in Medicare Parts A and B expenditures of beneficiaries enrolled in participating PBPs relative to comparators).

The Modelwide PBPM changes in net expenditures were then multiplied by the total number of all beneficiary-months enrolled in participating PBPs to produce changes in total net expenditures. The calculation of performance-based payments required enrollment projections for April 2020 through December 2020 and the entire year of 2021, because enrollment data for that time period were not available at the time of writing this report. For this reason, the changes in net expenditures presented in this report are preliminary. These estimates will be updated as enrollment data become available in subsequent reports.

2.2 Characteristics of the Analytic Cohort

The treatment and comparison cohorts are generally well-matched on observable characteristics such as demographics, health service utilization, costs and clinical profiles. For example, measures of baseline healthcare utilization such as inpatient admissions and related expenditures are similar between treatment and comparison groups. Table 2.2, Table 2.3, and Table 2.4 present descriptive characteristics for the pooled cohort of beneficiaries first enrolled in Enhanced MTM PBPs in 2017-2018 and the cohort of beneficiaries first enrolled in 2019, along with their matched comparators. These descriptive statistics correspond to the 12-month period before Model exposure (the baseline period). Additional details on sample sizes, and figures and tables comparing trends in baseline Medicare Parts A and B expenditures between the treatment group and comparators, are presented in Appendix B.2.

Beneficiaries in the analytic cohort tend to be white and reside in urban areas (Table 2.2). About 40 percent were dually eligible for Medicare and Medicaid during the baseline period

[42] Performance-based payments are awarded with a two-year delay. For example, performance results in Model Year 1 (2017) determine eligibility for performance-based payments that are awarded in Model Year 3 (2019). For plans that qualified for performance-based payments based on Model Year 1, Model Year 2 (2018), and Model Year 3 performance, the total expected amount of performance-based payments awarded in 2019, 2020, and 2021 (using enrollment projections) was calculated, and then these amounts were translated into PBPM amounts for 2017, 2018, and 2019 (based on 2017, 2018, and 2019 enrollment), respectively.

(Table 2.2), and about 44 percent were eligible for the low-income subsidy (LIS). About 17 percent had at least one inpatient admission, 4 percent had at least one SNF stay, and 28 percent had at least one emergency department (ED) visit. In the baseline year, about 15 percent of inpatient admissions resulted in a readmission to an inpatient setting (Table 2.3). Beneficiaries in the sample used, on average, about four medications concurrently (Table 2.3). About 79 percent of beneficiaries in the treatment cohort had high adherence (a PDC rate of 80% or higher) to statins and to oral antidiabetics prior to exposure to the Model (Table 2.4). Among diabetic beneficiaries, about 75 percent used statins in the baseline year. Beneficiaries in the analytic cohort had low rates of potentially unsafe medication use in the baseline year. About 4 percent had a drug-drug interaction, 14 percent used high-risk medications, and 29 percent had concurrent use of opioids and benzodiazepines (Table 2.4).

Beneficiaries in the analytic cohort are well-matched on baseline average costs per beneficiary. Average baseline annual costs per beneficiary were about $4,000 for Part D and $11,000 for Parts A and B, of which about $3,000 were in the inpatient setting. Baseline average inpatient costs per beneficiary for admissions related to the ACSC Chronic composite measure were also well-matched at about $207 (Table 2.3).

Table 2.2: The Treatment and Comparison Cohorts Are Well-Matched on Baseline Demographic Characteristics

Characteristics (12 months before exposure to the Enhanced MTM Model; weighted)	Treatment		Comparison	
	Mean	***STD***	**Mean**	***STD***
Number of Beneficiaries	1,519,200		3,245,111	
Age				
% Below 65 Years Old	24.5	*43.0*	24.6	*43.1*
% 65-69 Years Old	21.5	*41.1*	21.6	*41.1*
% 70-74 Years Old	20.4	*40.3*	20.3	*40.2*
% 75-79 Years Old	13.9	*34.6*	13.9	*34.6*
% 80+ Years Old	19.7	*39.7*	19.6	*39.7*
% Female	58.0	*49.4*	58.0	*49.4*
Race				
% White	81.4	*38.9*	81.3	*39.0*
% Black	10.6	*30.8*	10.7	*30.9*
% Other	8.0	*27.1*	8.0	*27.2*
% Urban	80.3	*39.8*	77.7	*41.6*
% Dually Eligible	39.8	*48.9*	40.0	*49.0*
% with LIS Status	44.3	*49.7*	44.6	*49.7*
% Disabled (Original Enrollment Reason)	32.6	*46.9*	32.7	*46.9*
% with ESRD (Original Enrollment Reason)	0.6	*7.6*	0.6	*7.6*

Notes: STD: standard deviation; ESRD: end-stage renal disease; LIS: low-income subsidy. "% Disabled" and "% with ESRD" are based on beneficiaries' original reason for Medicare eligibility.

Sources: CME and Enrollment Database (EDB).

Table 2.3: The Treatment and Comparison Cohorts Are Well-Matched on Baseline Health Services Utilization, Cost, and Clinical Profile Characteristics

Characteristics (12 months before exposure to the Enhanced MTM Model; weighted)	Treatment		Comparison	
	Mean	***STD***	**Mean**	***STD***
Number of Beneficiaries	1,519,200		3,245,111	No data
Inpatient (IP) Admissions				
% with 0 IP Admissions	83.1	*37.5*	83.0	*37.6*
% with 1 IP Admissions	11.6	*32.0*	11.6	*32.0*
% with 2+ IP Admissions	5.4	*22.6*	5.4	*22.6*
% of IP Admissions with a Readmission	15.1	*35.8*	14.7	*35.4*
Skilled Nursing Facility (SNF) Admissions				
% with 0 SNF Admissions	96.1	*19.4*	96.2	*19.0*
% with 1 SNF Admissions	2.8	*16.5*	2.7	*16.2*
% with 2+ SNF Admissions	1.1	*10.5*	1.1	*10.2*
Emergency Department (ED) Visits				
% with 0 ED Visits	72.0	*44.9*	70.9	*45.4*
% with 1 ED Visit	16.8	*37.4*	17.1	*37.7*
% with 2+ ED Visits	11.2	*31.5*	11.9	*32.4*
Evaluation and Management (E&M) Visits				
% with 0 E&M Visits	7.9	*27.0*	7.1	*25.7*
% with 1-5 E&M Visits	35.3	*47.8*	35.2	*47.8*
% with 6-10 E&M Visits	27.2	*44.5*	27.5	*44.7*
% with 11-15 E&M Visits	14.9	*35.6*	15.1	*35.9*
% with 16+ E&M Visits	14.7	*35.4*	15.0	*35.7*
Part D Utilization				
Average Number of Concurrent Medications	3.69	*2.95*	3.79	*2.93*
Costs				
Average Total Annual Part D Costs per Beneficiary	$4,058	*$12,634*	$4,072	*$13,174*
Average Total Annual Parts A and B Costs per Beneficiary	$11,144	*$23,549*	$11,492	*$24,552*
Average Annual IP Costs per Beneficiary	$3,104	*$11,366*	$3,085	*$11,297*
Average Annual IP Costs Related to ACSCs per Beneficiary	$207	*$2,168*	$206	*$2,147*
Clinical Profile				
Average HCC Risk Score	1.16	*1.17*	1.17	*1.18*

Notes: STD: standard deviation; ACSC: ambulatory care-sensitive condition; HCC: Hierarchical Condition Categories. Readmissions are defined as follow-up unplanned hospital admissions that occur within 30 days of a hospital discharge.

Sources: Prescription Drug Event (PDE) data, Common Working File (CWF), Master Beneficiary Summary File (MBSF)

Table 2.4: The Treatment and Comparison Cohorts Are Well-Matched on Baseline Measures of Medication Use and Patient Safety

Characteristics (12 months before exposure to the Enhanced MTM Model; weighted)	Treatment		Comparison	
	Rate	*STD*	Rate	*STD*
Number of Beneficiaries	1,519,200		3,245,111	
Medication Optimization				
% with Statin PDC ≥ 80%	79.2	*40.6*	78.0	*41.3*
% with Oral Antidiabetics PDC ≥ 80%	79.2	*40.6*	78.0	*41.5*
% of Diabetics with Statin Use	74.9	*43.4*	74.7	*43.6*
Potentially Unsafe Medication Use				
% with a Drug-drug Interaction	4.1	*19.9*	4.6	*20.9*
% using High-risk Medications	13.7	*34.4*	14.1	*34.2*
% with Concurrent Use of Opioids and Benzodiazepines	29.1	*45.4*	29.0	*44.9*

Notes: PDC: Proportion of Days Covered.
Sources: CME and PDE.

Baseline characteristics for each sponsor are presented in Appendix B.2. Beneficiaries enrolled in SilverScript/CVS, Humana, and WellCare PBPs are younger, less likely to be white, and more likely to have at least one ED visit in the baseline period compared to beneficiaries enrolled in BCBS NPA, BCBS FL, and UnitedHealth. Beneficiaries enrolled in BCBS NPA and BCBS FL PBPs are less likely to be eligible for LIS or be dually eligible for Medicare and Medicaid compared to other sponsors, and tend to have fewer inpatient admissions (and lower associated costs) in the baseline period. Additionally, BCBS NPA beneficiaries had the lowest average total medical costs per beneficiary in the baseline period ($8,862), while Humana beneficiaries had the highest ($11,887). Across sponsors, BCBS NPA beneficiaries also had some of the highest baseline rates of adherence to chronic medications (e.g., 86 percent of beneficiaries were highly adherent to statins) and the lowest baseline rates of potentially unsafe medication use (e.g., 17 percent of beneficiaries had concurrent use of opioids with benzodiazepines). Humana beneficiaries, on the other hand, had the lowest rates of adherence to chronic medications (e.g., 75 percent of beneficiaries were highly adherent to statins) and the highest rates of potentially unsafe medication use (e.g., 32 percent of beneficiaries had concurrent use of opioids with benzodiazepines).

Figure 3.6 found in Section 3.3.1 provides additional information on cross-sponsor differences in Enhanced MTM service receipt rates.

2.3 Model Impacts on Gross Parts A and B Expenditures

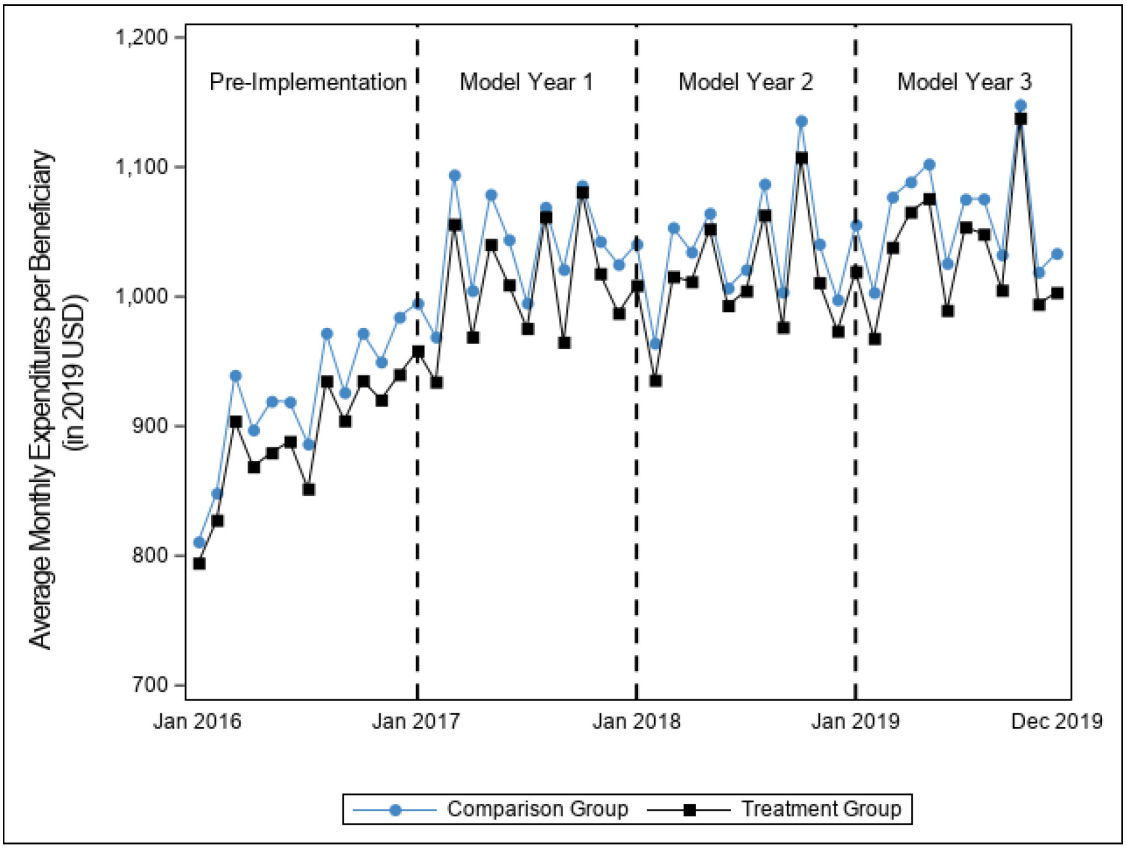
Decreases in Medicare Parts A and B expenditures for beneficiaries enrolled in Enhanced MTM plans were small and not statistically significant in the first three years of Model implementation. Among individual sponsors, the cumulative impact of the Model on gross expenditures was also generally small and not statistically significant. Humana was the only sponsor with an estimated decrease in total expenditures for Model Year 3: $14.97 PBPM (or 1.6 percent from baseline, significant at the 10 percent level).

Estimates of the Model's impact on gross Medicare Parts A and B expenditures are presented below, first for the Model as a whole and then by individual sponsor.

2.3.1 Modelwide Estimates for Medicare Parts A and B Expenditures

Beneficiaries enrolled in Enhanced MTM plans had small and statistically non-significant decreases in gross Medicare Parts A and B expenditures relative to comparators over the first three years of Model implementation. Figure 2.1 shows monthly average expenditures per beneficiary for the 12 months prior to January 2017, when Model implementation began, ("pre-implementation"), and the first three years of Model implementation ("post-implementation"). Average gross Medicare expenditures for the treatment and comparison groups track each other closely both before and after Model implementation.

Figure 2.1: Medicare Parts A and B Expenditures for the Treatment and Comparison Groups Track Each Other Closely Both Pre- and Post-Implementation



Notes: From left to right, the dashed red lines represent the beginning of Model Year 1, Model Year 2, and Model Year 3. The area to the left of the dashed red line at January 2017 represents the pre-implementation period.

The DiD estimates are consistent with this visual representation of trends; over the first three years of Model implementation, there have been no significant Model impacts on gross Parts A and B expenditures for Medicare, cumulatively or by Model Year (see Table 2.5).[43]

Table 2.5: Modelwide, Decreases in Parts A and B Expenditures Were Small and Not Statistically Significant

	Cumulative	Model Year 1 (2017)	Model Year 2 (2018)	Model Year 3 (2019)
Per-Beneficiary Per-Month Estimate (in $)				
Difference-in-Differences	- $2.21	- $4.03	- $1.22	- $1.00
P-value	0.423	0.214	0.737	0.786
95% Confidence Interval	(-7.60 , 3.19)	(-10.38 , 2.32)	(-8.31 , 5.88)	(-8.21 , 6.21)
Relative Difference	-0.25%	-0.45%	-0.14%	-0.11%
Means (beneficiary-month, regression-adjusted)				
Baseline Enhanced MTM Mean	$889.97	$887.84	$888.31	$894.34
Intervention Period Enhanced MTM Mean	$1,018.95	$1,009.22	$1,016.60	$1,033.36
Baseline Comparison MTM Mean	$918.12	$919.61	$914.36	$920.21
Intervention Period Comparison MTM Mean	$1,049.30	$1,045.02	$1,043.87	$1,060.23

Notes: The unit of observation is a beneficiary-month. Number of Enhanced MTM observations: 59,785,685 (1,519,200 beneficiaries). Number of comparison observations: 117,140,427 (3,245,111 beneficiaries). Each DiD estimate corresponds to change relative to the baseline period. The relative difference is calculated as the DiD estimate divided by the baseline Enhanced MTM regression-adjusted mean, and expressed as a percentage.

2.3.2 Sponsor-Level Estimates for Medicare Parts A and B Expenditures

The Model did not have significant cumulative impacts on gross Medicare Parts A and B expenditures for any sponsor (Table 2.6). Sponsor-level cumulative estimates were generally small in magnitude, with the exception of BCBS FL in Model Year 1. The cumulative gross expenditures estimate for BCBS FL was -$17.35 PBPM (corresponding to a 2.10 percent decrease from baseline), largely driven by a significant and large estimated decrease in expenditures in Model Year 1, which was not sustained in later Model Years (see Figure 2.2).[44]

[43] Estimated Model impacts on gross expenditures for Model Years 1 and 2 differ slightly from those reported in the Second Evaluation Report due to minor updates to the sample populations and updated sources of data.

[44] As discussed in the Enhanced Medication Therapy Management Second Evaluation Report, the unique features of BCBS FL's Enhanced MTM implementation do not provide sufficient explanation for the significant impacts on expenditures that were only observed in Model Year 1. Enrollee characteristics, regional conditions specific to Florida during Model Year 1, and outlier observations also do not seem likely to be the cause of the estimated decrease in Model Year 1 expenditures for BCBS FL. Given that it was not sustained over time, it is possible that the Model Year 1 estimate for BCBS FL is due to random variation or mean reversion rather than the impact of the Model. For further discussion of BCBS FL's Model Year 1 estimated impact on expenditures, please refer to the Enhanced Medication Therapy Management Second Evaluation Report.

Table 2.6: Across Sponsors, Cumulative Impacts on Medicare Parts A and B Expenditures Were Generally Small and Not Statistically Significant

	Gross Parts A and B Expenditures for Medicare					
	SilverScript/ CVS	Humana	BCBS NPA	UnitedHealth	WellCare	BCBS FL
Cumulative Estimate (per-beneficiary per-month)						
Difference-in-Differences (DiD)	- $1.08	- $4.67	$4.27	- $4.27	- $0.09	- $17.35
P-value	0.748	0.411	0.695	0.564	0.990	0.211
95% Confidence Interval	(-7.65, 5.49)	(-15.81, 6.47)	(-17.04, 25.57)	(-18.76, 10.22)	(-13.12, 12.95)	(-44.55, 9.84)
Relative Difference	-0.12%	-0.49%	0.61%	-0.47%	-0.01%	-2.10%
Means (beneficiary-month, regression-adjusted)						
Baseline Enhanced MTM Mean	$902.47	$960.88	$692.76	$900.35	$924.31	$827.70
Intervention Period Enhanced MTM Mean	$1,042.26	$1,054.57	$861.28	$1,015.86	$1,081.16	$1,015.05
Baseline Comparison MTM Mean	$924.06	$994.66	$753.54	$936.44	$911.17	$849.52
Intervention Period Comparison MTM Mean	$1,064.94	$1,093.02	$917.78	$1,056.22	$1,068.11	$1,054.23
Sample Information						
Total Enhanced MTM Beneficiary-months	25,279,845	12,464,573	7,729,905	7,112,516	4,635,305	2,563,541
Total Enhanced MTM Beneficiaries	617,342	357,963	174,645	196,552	114,860	57,838
Total Comparison Beneficiary-months	58,915,450	29,064,753	11,900,082	16,615,040	16,360,398	4,153,265
Total Comparison Beneficiaries	1,600,794	832,589	290,759	529,496	469,056	102,092

Notes: The unit of observation is a beneficiary-month. Each cumulative estimate corresponds to change relative to the baseline period. The relative difference is calculated as the DiD estimate divided by the baseline Enhanced MTM regression-adjusted mean, and expressed as a percentage.

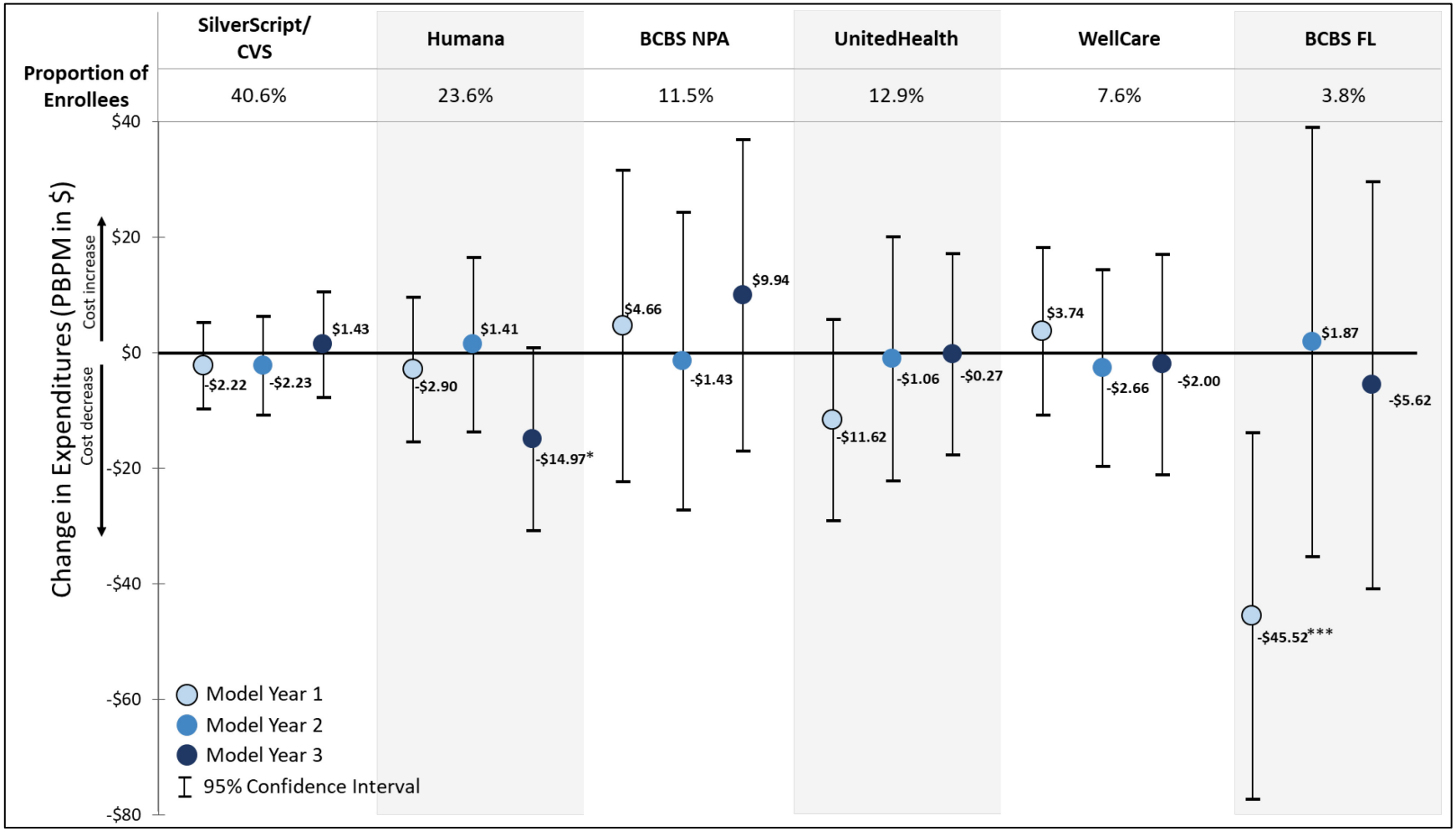
As Table 2.6 shows, most sponsor-level estimates of Medicare Parts A and B expenditures were generally small and not statistically significant for any Model Year. In addition, as shown in Figure 2.2, there was no consistent pattern in the direction of estimates over time. For each sponsor, the confidence intervals of estimates for each Model Year largely overlap (see Appendix B.3 for tables with detailed sponsor-level findings). In Model Year 3 (2019), only Humana had a significant change in expenditures (at the 10 percent level) among all sponsors; gross expenditures decreased for Humana by $14.97 PBPM in Model Year 3, corresponding to a decrease of 1.55 percent relative to baseline.

The reason behind the estimated decrease in Humana's expenditures in Model Year 3 only is unclear. Should these impacts persist in future model years, this would provide stronger evidence that the decrease is related to the sponsor's Enhanced MTM interventions.

Overall, based on the first three years of Model implementation, there is little evidence to suggest that the Model has had significant impacts on gross Medicare Parts A and B expenditures for enrollees of Model-participating plans. As discussed in Section 3,

implementation in Model Year 3 was more stable relative to Model Year 2 (2018), in that fewer interventions were added and fewer changes were made to existing interventions. However, some sponsors did make changes to their Enhanced MTM implementation. For example, BCBS NPA, WellCare, and BCBS FL all added new interventions during Model Year 3, and all sponsors except UnitedHealth adjusted their targeting criteria to expand eligibility (please see Section 3 for additional details). Future reports will leverage additional years of data to determine whether the impacts of Enhanced MTM change over time.

Figure 2.2 For Most Sponsors and Model Years, Changes in Parts A and B Expenditures Were Small and Lacked Statistical Significance



Notes: * p-value < 0.10; ** p-value < 0.05; *** p-value < 0.01.

2.4 Model Payments and Net Expenditures

Medicare's prospective and performance-based payments to sponsors for the Model were larger than the decreases in Medicare Parts A and B expenditures. The Model, therefore, generated net losses ($2.43 PBPM) for Medicare, though the estimate is not statistically significant.

CMS provides participating sponsors with (i) prospective payments, which aim to cover sponsors' projected costs of Model implementation, and (ii) performance-based payments, which are designed to incentivize participating sponsors to improve beneficiary outcomes and reduce downstream medical expenditures. To determine whether the Model reduces net costs to Medicare, these payments are combined with the estimated impact on gross expenditures to generate estimates of the Model's impact on Medicare's net expenditures.

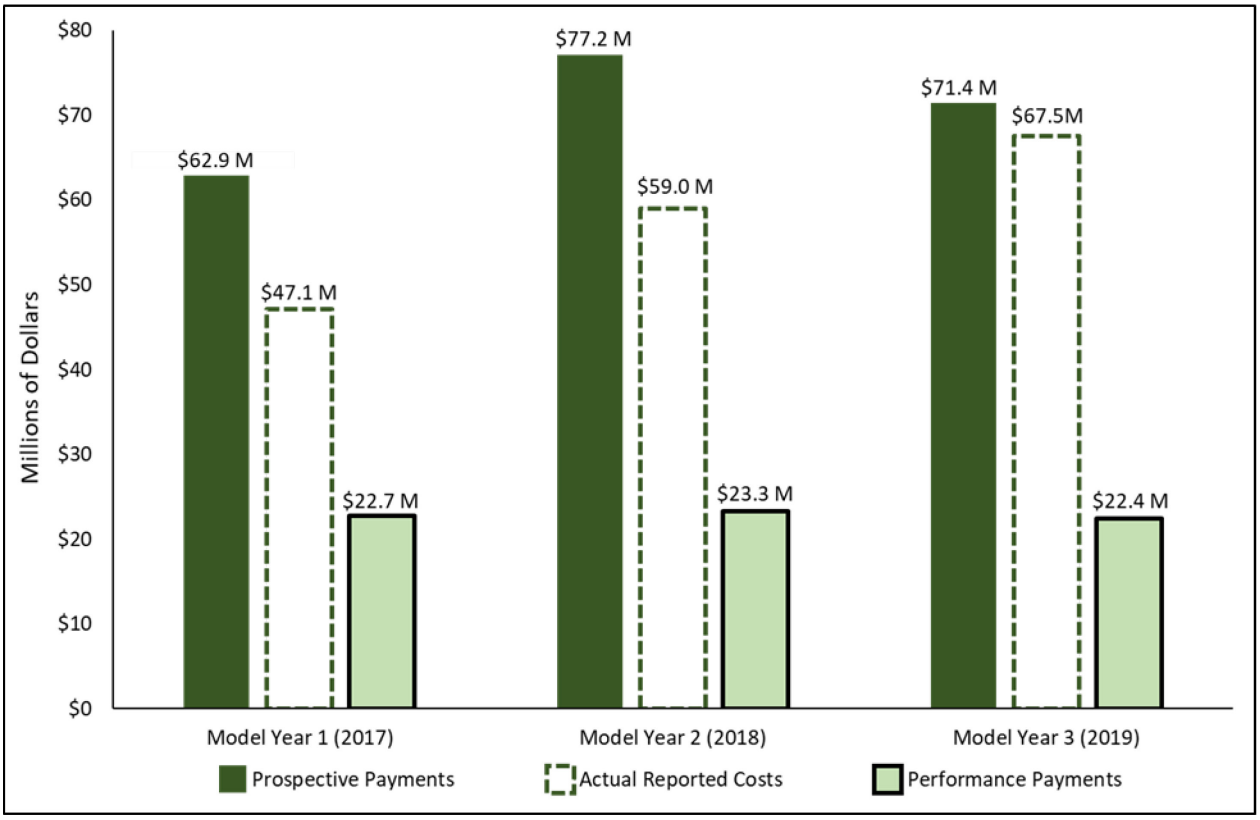
2.4.1 Enhanced MTM Prospective Payments and Performance-based Payments

CMS provides participating sponsors with per-beneficiary per-month (PBPM) prospective payments to implement Enhanced MTM interventions. Sponsors provide projected implementation costs to CMS annually, along with the expected number of targeted beneficiaries for each participating PBP and specific intervention. CMS then aggregates this information to determine a total prospective payment amount. For ease of disbursement, CMS divides the prospective payment among all beneficiaries enrolled in the sponsors' participating PBP and not just those targeted for interventions. For example, if a sponsor expects to provide services to 50 percent of beneficiaries enrolled in the PBP, the total projected implementation cost for providing those services is submitted to CMS. Based on this projection, CMS then allocates the prospective payment on a PBPM basis for all beneficiaries enrolled in the PBP.

In Model Year 3, CMS prospectively paid sponsors about $71 million in total to cover sponsors' anticipated Model implementation costs (Figure 2.3). These payments are about 7 percent lower than prospective payments paid in Model Year 2, which were about $77 million. Sponsors reported spending less for implementation than their prospective payment amounts in each Model Year. Actual reported costs increased over time and were a greater percentage of prospective payments as the Model progressed. Sponsors spent about 75 percent, 76 percent, and 95 percent of prospective payment amounts in actual reported costs in Model Year 1, Model Year 2, and Model Year 3, respectively.

CMS awards performance-based payments contingent on identifying a net reduction in Medicare Parts A and B expenditures of at least 2 percent for beneficiaries enrolled in participating PBPs, relative to a benchmark. The performance payment is distributed as a fixed $2 PBPM amount in the form of an increase in Medicare's contribution to the PBP's Part D premium (i.e., an increase in the direct subsidy component of Part D payment), thus decreasing the plan premium paid by beneficiaries. Performance-based payments are awarded with a two-year delay. For example, performance results in Model Year 1 determine eligibility for performance-based payments that are awarded in Model Year 3. Total annual performance-based payments were similar across Model Years, averaging about $22.8 million (Figure 2.3).[45] To calculate net expenditures, performance-based payments are attributed to the year in which they were earned, and not to the year when they were awarded.

Figure 2.3: The Difference Between Actual Reported Costs[a] and Prospective Payments Narrowed, and Performance-based Payments Remained Stable Over Time



Sources: Data provided by CMS. Participating sponsors submit Actual Reported Costs to the Enhanced MTM Model's Implementation Contractor annually. Information about which PBPs qualified for performance-based payment was received directly from CMS. Information on PBP enrollment was from the EDB.

[45] Eleven and 14 out of 22 participating PBPs received payments due to their Model Year 1 and Model Year 2 performance, respectively.

Notes: Because performance-based payments are awarded with a two-year delay, Acumen projected enrollment for April through December 2020 (to estimate performance-based payments for Model Year 2 [2018]) and all of 2021 (to estimate performance-based payments for Model Year 3 [2019]). Please see Section 2.1.2 for additional methodology details.

[a] Actual Reported Cost is the product of each PBP's PBPM total actual costs for a given Model Year and the annual total of PDP enrollee-months, aggregated across all participating plans.

2.4.2 Model Impact on Net Expenditures

To determine the Model's impact on Medicare's net expenditures, estimated impacts on gross Medicare Parts A and B expenditures were combined with the payments that CMS makes to sponsors. Each component of net expenditures, calculated using the methodology described in Section 2.1.2, is presented in Table 2.7.

Cumulatively for Model Years 1 through 3, prospective payments were $3-$5 PBPM for most sponsors and performance-based payments were $1.06-$1.53 PBPM. As discussed in the preceding section, estimated decreases in total Medicare Parts A and B expenditures were relatively small in magnitude and not significantly different from zero in any Model Year.

Cumulatively and across all three Model Years, payments by CMS to sponsors exceeded estimated Model impacts on Medicare Parts A and B expenditures. The estimated changes in net expenditures were not significantly different from zero cumulatively or in any Model Year (Table 2.7). That is, the Model generated non-significant net losses for Medicare in all Model Years. In Model Year 1, net expenditures for Medicare increased by $0.20 PBPM, and they increased by $3.84 PBPM and $3.64 PBPM in Model Years 2 and 3, respectively.[46] Cumulatively across all three Model Years, the total estimated net loss was $146.7 million.

Impacts on net expenditures did not change substantially between Model Years 2 and 3. The three components of net expenditures (estimates of the Model's impact on gross expenditures, prospective payments, and performance-based payments) were fairly similar across both Model Years (Table 2.7).

[46] Changes in net expenditures for Model Years 1 and 2 slightly differ from those reported in the Second Evaluation Report due to minor updates in the sample populations and updated sources of data.

Table 2.7: The Enhanced MTM Model Did Not Have a Statistically Significant Impact on Cumulative Net Expenditures Through Model Year 3

	Number of Beneficiary-months [N]	Change in Gross Medicare Expenditures PBPM in $ (95% CI) [A]	Prospective Payments PBPM in $ [B]	Performance-based Payments PBPM in $ [C]	Change in Net Expenditures		
					PBPM in $ (95% CI) [D=A+B+C]	**Total Annual in $ million (95% CI)** [N*D]	**P-value**
Cumulative	60,269,232	-2.21 (-7.60, 3.19)	3.51	1.13	2.43 (-2.96, 7.83)	146.69 (-178.64, 472.03)	0.376
Model Year 1 (2017)	20,255,908	-4.03 (-10.38, 2.32)	3.11	1.12	0.20 (-6.15, 6.55)	4.00 (-124.63, 132.62)	0.951
Model Year 2 (2018)	20,092,909	-1.22 (-8.31, 5.88)	3.90	1.16	3.84 (-3.25, 10.94)	77.19 (-65.27, 219.85)	0.288
Model Year 3 (2019)	19,920,415	-1.00 (-8.21, 6.21)	3.52	1.12	3.64 (-3.57, 10.85)	72.43 (-71.20, 216.05)	0.322

Notes: PBPM: per-beneficiary per-month; CI: confidence interval. PBPM changes in net expenditures [D] are calculated as the sum of the estimated change in gross Medicare expenditures [A] and Medicare prospective payments [B] and performance-based payments [C] to sponsors. Negative net expenditures estimates represent net savings and positive estimates represent net losses to the Medicare program. Changes in net expenditures for Model Years 1 and 2 slightly differ from those reported in the Enhanced MTM Model Second Evaluation Report due to minor updates in the sample populations and updated sources of data. The total annual estimate may deviate from the [N*D] manual calculation due to rounding.

2.5 Model Impacts on Medication Use and Patient Safety

Analyses of select medication use and patient safety measures found mixed evidence of Modelwide impacts.

- There were limited Modelwide impacts on measures of medication optimization. Specifically, there were modest improvements in medication use for diabetes, and no impacts on medication adherence to statins. Sponsor efforts to target diabetic beneficiaries to improve their diabetes management may have enabled these Modelwide improvements.
- There were no Modelwide improvements in measures of potentially unsafe medication use. The rates of both drug-drug interactions and concurrent use of opioids and benzodiazepines did not decrease as much among enrollees in Model-participating plans as they did among comparators. The Modelwide rate of high-risk medication use did not change.

The Model's theory of change suggests that Enhanced MTM has the potential to optimize medication-taking behavior and reduce potentially unsafe medication use (see Figure 1.2). This subsection focuses on Model impacts on these types of proximal outcomes. Improvements in these proximal outcomes provide potential mechanisms for impacts on distal outcomes such as medical expenditures and related utilization. As discussed in Section 2.3, the Model has not, to date, resulted in significant reductions in total Medicare Parts A and B expenditures. Figure 2.4 describes in more detail the expected impacts of the Model on various medication use and safety-related measures, based on the theory of action presented in Figure 1.2. The proximal outcome measures related to medication use discussed in this subsection fall into two main categories: medication optimization and potentially unsafe medication use.[47]

[47] Please see Appendix B.2.2 for the definitions of the measures presented in this report.

Figure 2.4: Enhanced MTM May Lead to Medication Optimization and to Reductions in Potentially Unsafe Drug Utilization

Measure Category	Expected Model Impacts	
Medication Optimization	**Tailored Enhanced MTM services may lead to medication optimization** ▪ Services that address non-adherence and medication reconciliation services may **increase** the rate of beneficiaries with high adherence and the rate of statin use in persons with diabetes	***Measures in this report*** ▪ *Adherence to statins* ▪ *Adherence to oral antidiabetics* ▪ *Statin use in persons with diabetes*
Potentially Unsafe Medication Use	**Regular medication reviews may lead to reductions in potentially unsafe drug utilization** ▪ Enhanced MTM interventions that focus on drug therapy problems and opioid utilization may **decrease** rates of high-risk medication use, drug-drug interactions, and higher-risk opioid utilization	***Measures in this report*** ▪ *Drug-drug interactions* ▪ *High-risk medications* ▪ *Concurrent use of opioids with benzodiazepines*

Medication Optimization: Medication optimization refers to sponsor efforts to improve medication therapies and medication-taking behavior via tailored Enhanced MTM interventions. Medication optimization may be reflected in improved adherence to chronic medications and increases in the use of recommended medications based on a beneficiary's clinical profile. This report discusses Model impacts on three related measures:

(i) adherence to statins;

(ii) adherence to oral antidiabetics; and

(iii) statin use in persons with diabetes (SUPD).[48]

Statins and oral antidiabetics are commonly prescribed chronic medications used by beneficiaries at risk for cardiovascular disease and who have diabetes, respectively. The two adherence measures assess the change in the proportion of beneficiaries who are highly adherent to these chronic medications.[49] CMS reports these measures publicly for all Part D sponsors as

[48] Model impacts on adherence to renin angiotensin system antagonists (RASAs), used to control hypertension, were also assessed. Detailed estimates are omitted for brevity.

[49] These medication adherence measures are adapted from the Pharmacy Quality Alliance (PQA) proportion of days covered (PDC) metric, which assesses the proportion of days with prescription coverage. High adherence is defined as the proportion of days covered by prescription claims for medications in a given therapeutic category that is equal to or greater than 80 percent.

measures of care quality, and some sponsors have used the Model as an opportunity to test new approaches to improve their performance on these scores. As reported in the Second Evaluation Report, all sponsors except Humana targeted beneficiaries based on their actual or expected adherence to select medications, and implemented various services that focus on addressing non-adherence.[50] Sponsors also targeted beneficiaries based on the presence of chronic conditions and provided, for example, diabetes- or cardiovascular disease-focused services.

The third measure of medication optimization is the rate of statin use in persons with diabetes. Initiation of statin therapy in patients with diabetes is a standard of clinical care to minimize risk of developing cardiovascular disease, particularly among diabetic patients older than 40 years.[51] Sponsors have implemented various diabetes-focused interventions that may impact beneficiaries' diabetes management and promote the use of statins (e.g., BCBS FL's Diabetes Plus 3 and SUPD interventions, or Humana's diabetes-focused TMR services).

Potentially Unsafe Medication Use: Potentially unsafe medication use is at the center of sponsor efforts to improve outcomes for targeted beneficiaries. Identifying and addressing inappropriate use of medications and drug therapy problems has the potential to generate downstream decreases in preventable hospitalizations and related expenditures. Enhanced MTM CMRs and TMRs can directly address potentially unsafe medication utilization because these services systematically review a beneficiary's medication regimen and develop a plan to address medication-related problems. This report discusses Model impacts on three measures of potentially unsafe medication use:

(i) rates of drug-drug interactions (DDIs) (the percentage of beneficiaries who filled two or more drugs that should not be taken together);

(ii) rates of high-risk medication use (HRM) (the percentage of beneficiaries who filled drugs with a high risk of serious side effects in the elderly); and

(iii) rates of concurrent use of opioids with benzodiazepines ("concurrent use").[52]

All sponsors targeted beneficiaries based on the presence of drug therapy problems (e.g., both Humana's and UnitedHealth's main risk-based interventions use the presence of drug therapy problems as part of their core targeting strategy). Additionally, BCBS NPA and WellCare have implemented interventions focused specifically on opioid use.

[50] Please see "Evaluation of the Part D Enhanced Medication Therapy Management (MTM) Model: Second Evaluation Report" (November 2020), https://innovation.cms.gov/data-and-reports/2020/mtm-secondevalrpt.

[51] "The New 2017 American Diabetes Statement on Standards of Medical Care in Diabetes: Reducing Cardiovascular Risk in Patients With Diabetes." American College of Cardiology. Accessed November 22, 2020. https://www.acc.org/latest-in-cardiology/articles/2017/05/22/11/00/new-2017-american-diabetes-statement-on-standards-of-medical-care-in-diabetes.

[52] Model impacts were also assessed on two additional measures of opioid utilization: rate of opioid use at high dosage, and rate of opioid use from multiple providers. Detailed estimates are omitted for brevity.

The remainder of this subsection presents findings from analyses of the Model's impacts on medication optimization and potentially unsafe medication use.

2.5.1 Estimates for Measures of Medication Optimization

There were limited effects on measures of medication optimization, with modest improvements for measures of medication use for diabetes. While there were no cumulative Modelwide impacts on adherence to statins, the rate of high adherence to oral antidiabetics increased cumulatively by 0.4 percentage points from a baseline rate of 79.0 percent (see Figure 2.5).[53] This small cumulative increase was only significant at the 10 percent level and was driven by improvements in Model Year 1 that were not sustained in Model Years 2 and 3 (see Appendix B.3.2 for detailed estimates by Model Year).

There was also a small but statistically significant cumulative increase of 0.5 percentage points in the rate of statin use among diabetics, from a baseline of 74.7 percent, which was driven by improvements over the first two Model Years. Diabetes is an area of focus for many Enhanced MTM interventions, as most sponsors either targeted beneficiaries with chronic conditions (including diabetes) or have implemented interventions that aim to improve diabetes management. For example, WellCare and BCBS FL specifically targeted beneficiaries who qualify for the SUPD Medicare STAR measure. The estimated Modelwide impacts on measures of medication use for diabetes may thus reflect the combined impact of many interventions on diabetic beneficiaries and the promotion of high adherence and statin use among that group.

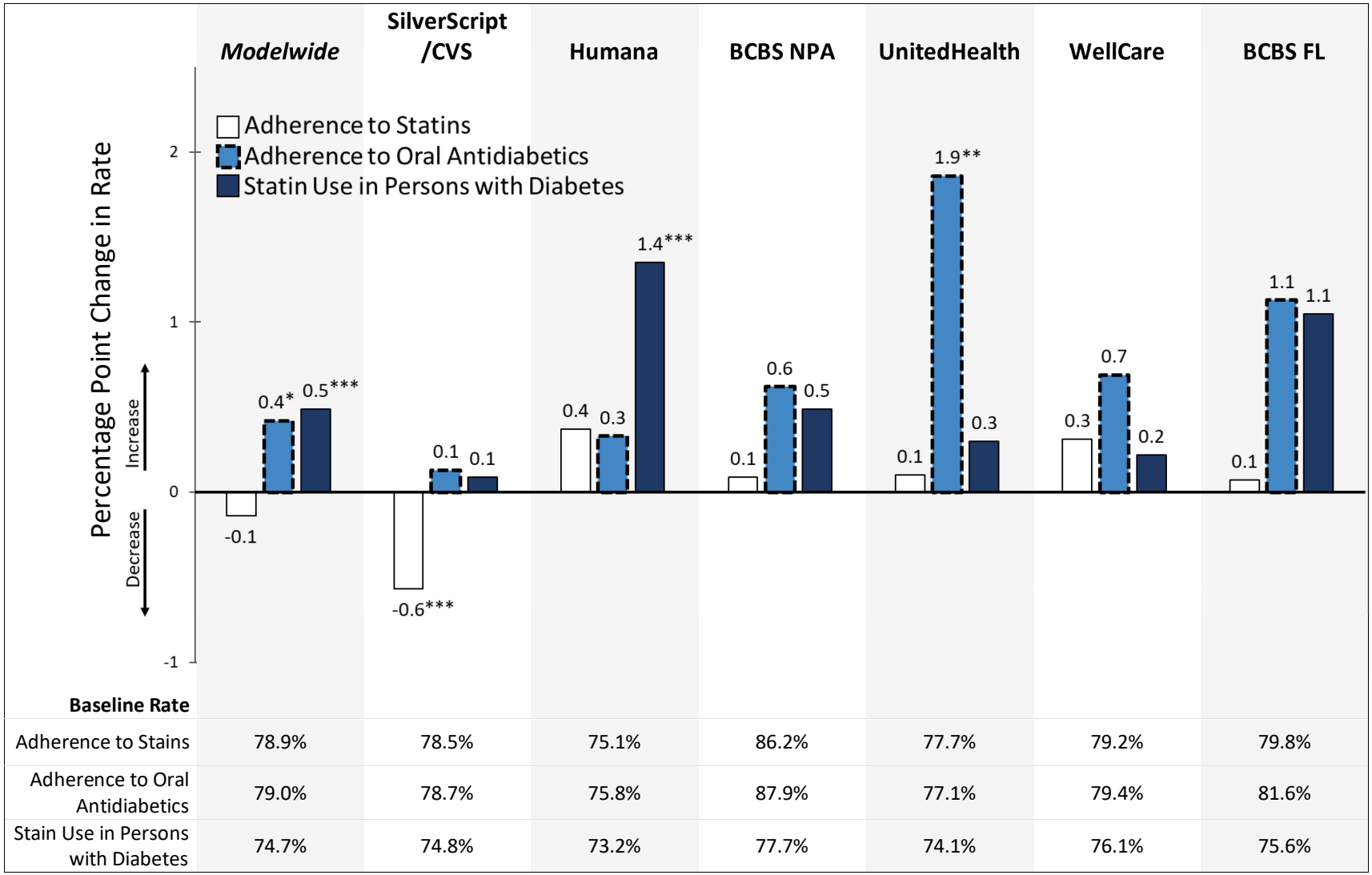
Sponsor variation: As Figure 2.5 shows, there was some cross-sponsor variation in estimated impacts on medication optimization. For most sponsors there were no cumulative impacts on adherence to statins, but there was a small cumulative decrease of 0.6 percentage points (from a baseline of 78.9 percent) for SilverScript/CVS. Adherence to statins for this sponsor increased over time, but adherence for comparators increased more, from a lower baseline (see Appendix Table B.3.15 for regression-adjusted rates).

The two other medication optimization measures improved for one sponsor each: adherence to oral antidiabetics increased significantly (by 1.9 percentage points from a baseline rate of 77.1 percent) for UnitedHealth, and the rate of SUPD increased significantly (by 1.4 percentage points from a baseline rate of 73.2 percent) for Humana. Both of these sponsors target diabetic beneficiaries in their interventions. The presence of diabetes is a factor that enters UnitedHealth's risk-scoring algorithm, and Humana offers comprehensive diabetes care education as a service in the context of its main risk-stratification intervention. Nevertheless, other sponsors also offered services tailored to diabetics without seeing significant impacts. For

[53] There were also no Modelwide impacts on adherence to RASAs cumulatively or for any Model Year.

example, BCBS FL's Diabetes Plus 3 and SUPD interventions specifically target diabetic beneficiaries. However, the number of beneficiaries targeted by the Diabetes Plus 3 intervention has decreased considerably over time, and the number of beneficiaries targeted by the SUPD intervention is very small (see Section 3.2.2 for more details). It is possible that the implementation of diabetes-focused interventions was more effective for Humana and UnitedHealth relative to other sponsors. Alternatively, perhaps the estimated improvements on measures related to diabetes for Humana and UnitedHealth were significant because these sponsors had lower baselines for these measures relative to other sponsors (as shown in the bottom of Figure 2.5), so improvements were easier to achieve.

Figure 2.5: Impacts on Measures of Medication Optimization



Baseline Rate	Modelwide	SilverScript /CVS	Humana	BCBS NPA	UnitedHealth	WellCare	BCBS FL
Adherence to Stains	78.9%	78.5%	75.1%	86.2%	77.7%	79.2%	79.8%
Adherence to Oral Antidiabetics	79.0%	78.7%	75.8%	87.9%	77.1%	79.4%	81.6%
Stain Use in Persons with Diabetes	74.7%	74.8%	73.2%	77.7%	74.1%	76.1%	75.6%

Notes: * p-value < 0.10; ** p-value < 0.05; *** p-value < 0.01. "Baseline Rate" is the regression-adjusted baseline rate among Enhanced MTM beneficiaries.

2.5.2 Estimates for Measures of Potentially Unsafe Medication Use

The three measures of potentially unsafe medication use show no Modelwide improvements and, in some cases, deterioration for beneficiaries exposed to the Model relative to the comparison group. There was no Modelwide cumulative change in the rate of high-risk medication use. The rates of both drug-drug interactions (DDIs) and concurrent use of opioids and benzodiazepines ("concurrent use") increased by 0.4 and 1.2 percentage points (from baseline rates of 4.1 and 29.3 percent) for enrollees in Model-participating plans relative to the comparison group, respectively. There were estimated Modelwide increases in all Model Years for these two measures (see Figure 2.6 for cumulative estimates, and Appendix B.3.2 for estimates by Model Year).[54]

These findings are unexpected and do not align with the Model's theory of change. There is neither an intentional mechanism nor empirical evidence from the implementation assessment to suggest that the Model would have these impacts on the assessed measures of patient safety. As previously discussed, identifying and addressing drug therapy problems and inappropriate medication use is a goal of all sponsor interventions, and two sponsors (BCBS NPA and WellCare) also have dedicated interventions focusing on opioid use.

One potential explanation for these findings is that the Model does not affect these measures, and that the DiD estimates capture secular change rather than the difference between impacts for beneficiaries exposed to the Model, and the counterfactual. As discussed in Section 2.2, the treatment cohort and the comparison group are generally well-matched in demographic and clinical characteristics, and in baseline trends in expenditures. However, the rates of DDI and concurrent use were not explicitly used in the matching algorithm, and there are baseline differences for rates of DDIs between the treatment cohort and the comparison group.

Comparators had slightly higher rates of DDIs at baseline. Over the course of implementation, underlying rates of DDI remained constant for Enhanced MTM beneficiaries. However, rates of DDI decreased for the comparison group, leading to the relative increase in rates of DDIs for Enhanced MTM beneficiaries captured by the estimates (see Appendix B.3.2 for these regression-adjusted rates).[55] Given that the treatment cohort and the comparison group are overall similar in characteristics but started at different baseline rates of DDIs, it is possible that the estimates capture convergence in that measure between the treatment and comparison groups that would have occurred regardless of Model implementation. It is not possible to confidently attribute the lack of improvement for Enhanced MTM beneficiaries to baseline DDI

[54] The rate of opioid use at high dosage also increased cumulatively, by 0.8 percentage points, with significant increases in all three Model Years. There were no Modelwide impacts on the rate of opioid use from multiple providers cumulatively or for any Model Year.

[55] Post-intervention rates of DDIs are still higher for the comparison group than for Enhanced MTM enrollees.

rates that were low, with little margin for further improvement, or to less effective methods for addressing DDIs among participating plan enrollees.

Baseline rates of concurrent use were similar between Enhanced MTM enrollees and the comparison group. Over the course of Model implementation, these rates decreased for Enhanced MTM beneficiaries, but they decreased even more among the comparison group, leading to a positive Modelwide DiD estimate. There is no mechanism for the Model to increase concurrent use, and it is not clear why rates of concurrent use decreased more among the comparison group than among Model enrollees. A potential explanation is that the DiDs are confounded by regional trends in opioid utilization and overlapping state efforts to curb the opioid epidemic that have occurred concurrently with Enhanced MTM implementation.[56]

Sponsor variation: Rates of DDIs increased for all sponsors relative to the comparison group, though the increases were not significant for BCBS FL and UnitedHealth (Figure 2.6). Significant increases ranged between 0.3 and 0.5 percentage points from baselines that ranged from 3.8 to 4.5 percent. As discussed above, these findings are unexpected because there is neither a theoretical mechanism nor evidence from any individual sponsor's implementation assessment to suggest that the Model would increase rates of DDI.

Although, Modelwide, there was no significant change in the rate of high-risk medication use, three sponsors saw a significant reduction and two sponsors experienced small significant increases. SilverScript/CVS and Humana saw significant increases of 0.2 and 0.8 percentage points (from baseline rates of 13.7 and 14.9 percent), respectively. There were no cumulative impacts on high-risk medication use for BCBS NPA. In contrast, there were decreases in the rate of high-risk medication use for UnitedHealth (0.5 percentage points from a baseline rate of 16.1 percent), WellCare (0.5 percentage points from a baseline rate of 13.9 percent), and BCBS FL (1.1 percentage points from a baseline rate of 12.4 percent). There are no consistent implementation or demographic differences that explain this cross-sponsor variation. As noted above, all sponsors have interventions focusing on drug therapy problems such as DDIs and high-risk medications.

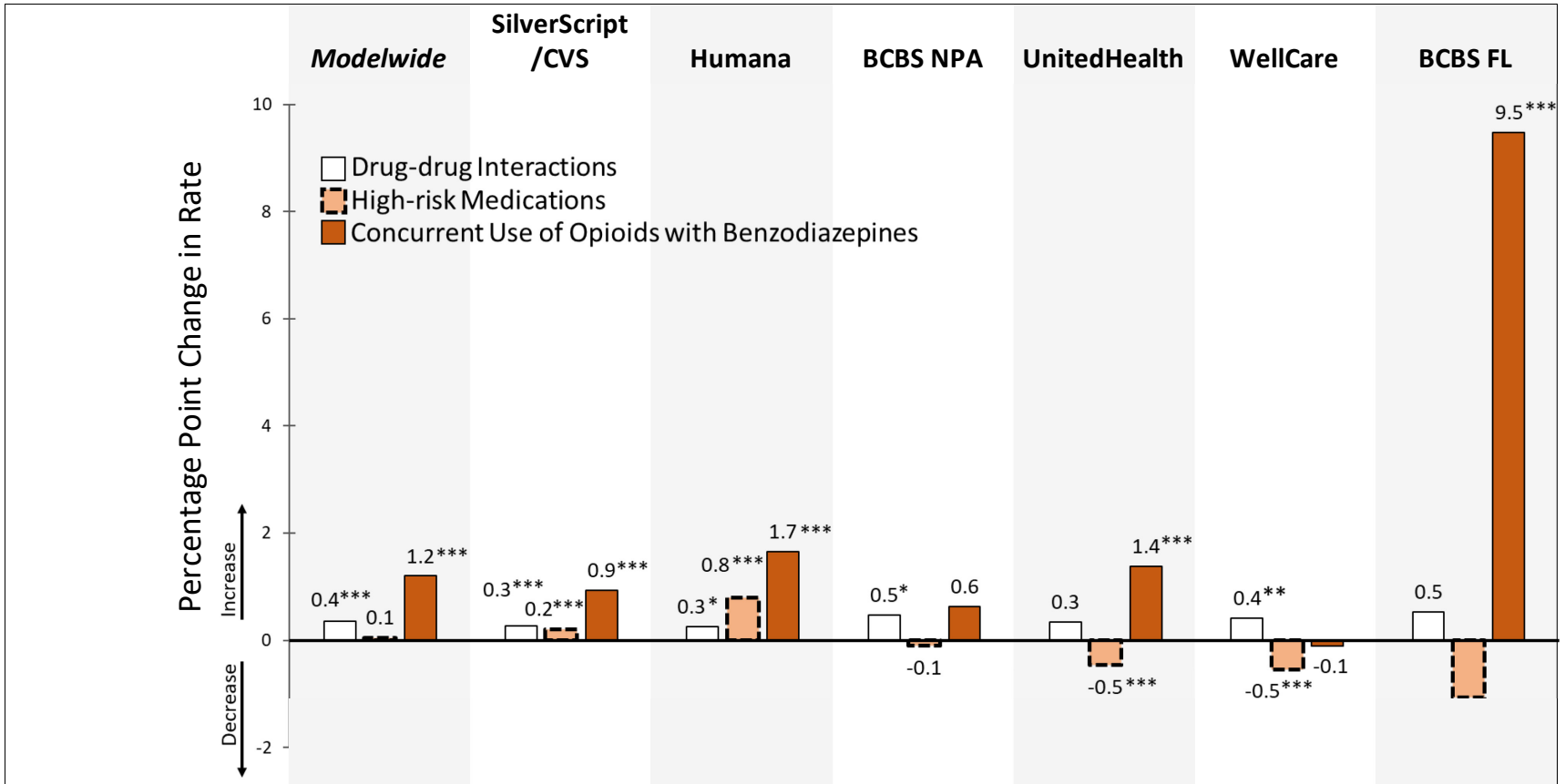
There is also cross-sponsor variation in the rate of concurrent use of opioids and benzodiazepines. There were no significant cumulative changes for BCBS NPA and WellCare, the two sponsors with interventions focused on opioid use, but all other sponsors saw cumulative increases. For BCBS NPA, the baseline rate of concurrent use was lower than for its comparators, and it decreased by similar amounts over the period of Model implementation. For WellCare, the rate of concurrent use was slightly higher than its comparators', and it decreased

[56] The selection of comparison regions in the matching algorithm took into account baseline regional similarities in healthcare utilization and costs, but did not account for differences in rates of opioid use and policies to combat opioid-related utilization.

by the same amount, leading to a very small and non-significant DiD estimate. For most sponsors with increases in the rate of concurrent use of opioids and benzodiazepines, the estimates ranged between 0.9 (for SilverScript/CVS) and 1.7 (for Humana) percentage points from baselines ranging from 29.3 (for SilverScript/CVS) to 31.9 percent (for UnitedHealth). As mentioned above for Modelwide estimates, observed increases for these sponsors are unlikely to represent Model impacts on these measures.

Notably, rates of concurrent use for BCBS FL enrollees changed substantially over the course of Model implementation, but for reasons unrelated to the Model. BCBS FL experienced a big increase in the rate of concurrent use of opioids and benzodiazepines, of 9.5 percentage points from a low baseline rate of 15.4 percent. Starting in 2017, the formulary for this plan expanded to cover some benzodiazepines, leading to large increases in prescriptions of these medications. This resulted in a large increase in the rate of concurrent use of opioids and benzodiazepines for this sponsor, which was sustained in all Model Years as these medications continued to be covered by the plan. The corresponding rate for comparators was relatively stable, resulting in the large DiD estimate shown in Figure 2.6. While the timing of this formulary change coincides with the start of the Model, there is no evidence that the resulting change in the rate of concurrent use is related to Model implementation.

Figure 2.6: Impacts on Measures of Unsafe Medication Use



Baseline Rate	Modelwide	SilverScript /CVS	Humana	BCBS NPA	UnitedHealth	WellCare	BCBS FL
Drug-drug Interactions	4.1%	4.5%	3.8%	3.8%	4.4%	4.1%	3.2%
High-risk Medications	13.6%	13.7%	14.9%	9.9%	16.1%	13.9%	12.4%
Concurrent Use of Opioids with Benzodiazepines	29.3%	29.3%	31.7%	16.4%	31.9%	29.5%	15.4%

Notes: * p-value < 0.10; ** p-value < 0.05; *** p-value < 0.01. "Baseline Rate" is the regression-adjusted baseline rate among Enhanced MTM beneficiaries.

2.5.3 Discussion of Model Impacts on Medication Use and Patient Safety

Estimated impacts of Enhanced MTM on medication use suggest modest Modelwide cumulative improvements for measures of medication use for diabetes, namely adherence to oral antidiabetics and statin therapy. For all other measures of medication optimization and potentially unsafe medication use, the evidence often points to larger gains among comparators than among Enhanced MTM enrollees. In addition, the differences across sponsors are not always neatly explained by differences in Model implementation and intervention focus, in baseline rates, or in the demographic makeup of their enrollee populations. Considered together, these findings do not constitute strong evidence that the Model is currently affecting the proximal outcomes that could mediate impacts on downstream outcomes such as medical expenditures. For many of the measures presented in this section, behavioral change and/or changes in prescribing practices must occur before impacts can be detected in the data. Such changes may require sustained, long-term efforts by sponsors and the provision of regular, high-intensity beneficiary- and prescriber-facing services.

The measures examined in this section are a subset of all possible medication optimization and safety measures. The measures examined were selected because they were in alignment with the stated objectives of many sponsors' interventions, widely accepted, and can be computed using readily available secondary data sources. The measures discussed do not comprehensively assess all medication use changes that may have occurred as a result of Enhanced MTM. For example, the adherence measures discussed do not capture all classes of medications. Adherence to insulins, for instance, was not assessed, because there is no standardized method to measure this outcome using claims.[57] The Model may have affected polypharmacy or duplicate therapy, or led to changes in dosage or timing of medications and to over-the-counter therapies that may also impact downstream outcomes.

[57] See discussion on insulin here: https://www.pqaalliance.org/measures-overview#pdc-dr.

2.6 Model Impacts on Expenditures and Utilization by Service Delivery Setting

Statistically significant decreases in expenditures for hospital inpatient services and institutional post-acute care were partially offset by increases in expenditures for emergency department, outpatient non-emergency, and ancillary services.

- Modelwide, estimated impacts on health service utilization mostly aligned with impacts on related expenditures. Notably, there were cumulative decreases in the rate of hospital readmissions.
- Estimated impacts for most (four out of six) individual sponsors were consistent with these Modelwide findings, though the magnitude of impacts varied by sponsor.

The previous sections discussed Model impacts on total Parts A and B expenditures for Medicare and on proximal medication use and patient safety measures. The Model's theory of change, presented in Figure 1.2, anticipates that proximal impacts on medication use, drug-related patient safety, and management of chronic conditions provide the mechanism for achieving distal impacts on medical utilization and related expenditures. As discussed in previous sections, there is currently no evidence of significant Model impacts on total Parts A and B expenditures or on the medication use and patient safety measures examined.

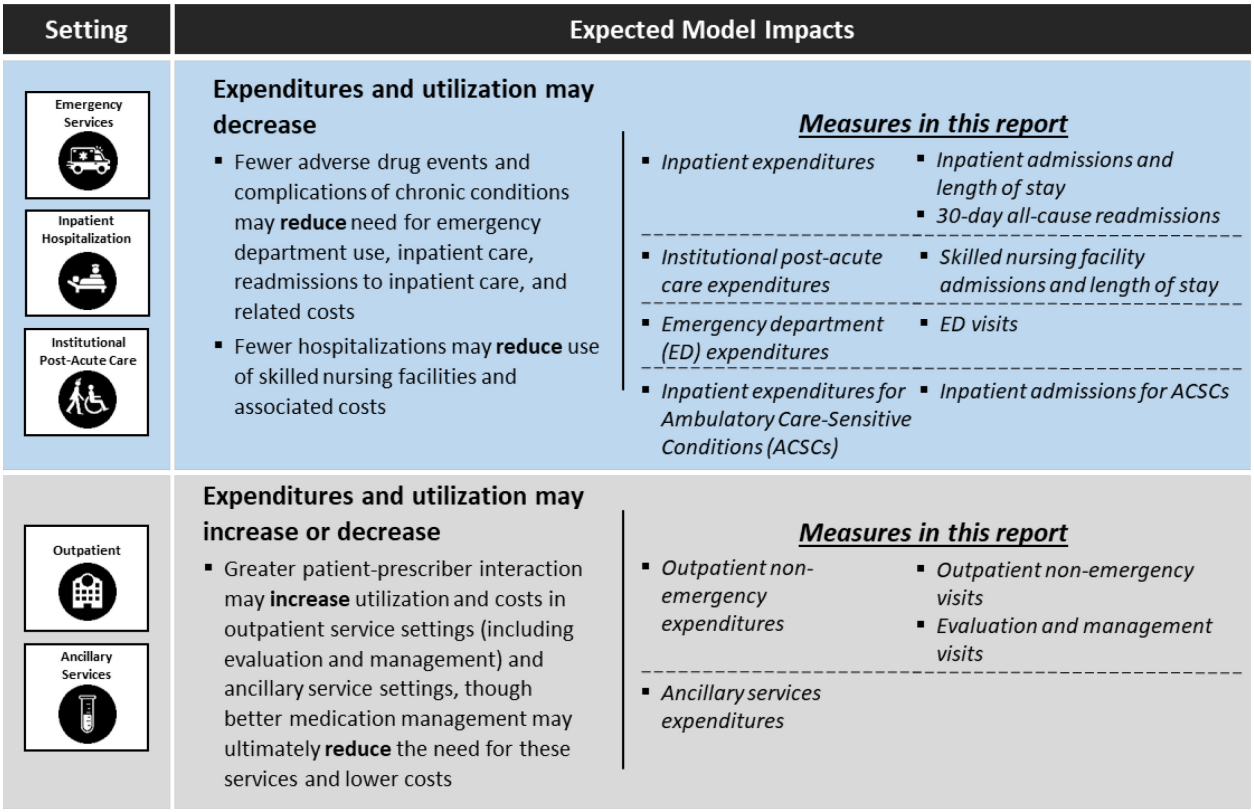
This section examines the impact of the Model on selected measures of healthcare utilization and expenditures expected to be impacted by Enhanced MTM services. Figure 2.7 provides detail on the Model's theory of action and the expected Model impacts on specific service delivery settings. For example, the Model may result in improvements in medication use leading to fewer adverse drug events (e.g., dangerous DDIs) and complications from chronic condition mismanagement. These improvements may reduce the need for emergency department services, hospitalizations, readmissions to inpatient care, and use of skilled nursing facilities and other post-acute care. The Model is thus expected to decrease utilization and related expenditures in emergency and inpatient service delivery settings.

As discussed in the Second Evaluation Report, in the first two Model Years there were decreases in service utilization and related expenditures for inpatient settings, and increases for outpatient (including emergency department) and ancillary settings. These impacts on setting-specific expenditures partially offset each other, resulting in no statistically significant changes in total Parts A and B expenditures. This report updates analyses of impacts on setting-specific

utilization and expenditures to include information from Model Year 3 and assess the extent to which these offsetting impacts are still present.[58]

Model impacts on Medicare expenditures and related utilization for select service delivery settings are presented below. Measures presented in this report are listed in Figure 2.7.

Figure 2.7: Potential Impacts of Enhanced MTM Depend on the Service Delivery Setting



[58] The definitions of service delivery settings for this Enhanced MTM Third Evaluation Report have been updated, so the estimates presented in this section are not directly comparable to the estimates presented in the Second Evaluation Report. Please see Appendix B.2.2 for the definitions of the measures presented in this report.

2.6.1 Modelwide Estimates for Expenditures and Utilization by Service Delivery Setting

Expenditures by Service Delivery Setting

For the Model as a whole, there were moderate, statistically significant decreases in expenditures for hospital inpatient services and institutional post-acute care, consistent with the Model's theory of change. These increases were partially offset by increases in expenditures for emergency department, outpatient non-emergency, and ancillary services. These findings are similar to those reported in the Second Evaluation Report. Table 2.8 presents Model impacts on setting-specific expenditures across all three Model Years. Figure 2.8 shows the estimated relative change from baseline for each Model Year.

Cumulative inpatient and institutional post-acute care expenditures decreased by $5.34 PBPM and $4.07 PBPM, respectively. This represents a 2.0 percent decrease from baseline for inpatient expenditures and a 3.5 percent decrease from baseline for institutional post-acute care expenditures. There were cumulative increases in expenditures for emergency department, outpatient non-emergency, and ancillary services ranging from $0.96 PBPM to $3.02 PBPM, corresponding to a change from baseline between 1.2 and 3.2 percent.

Table 2.8: Small Statistically Significant Cumulative Decreases in Inpatient Expenditures and Institutional Post-Acute Care Expenditures Were Partially Offset by Increases in Outpatient Expenditures

	Setting-Specific Expenditures for Medicare (Cumulative), Modelwide				
	Inpatient	**Institutional Post-Acute Care**	**Emergency Department**	**Outpatient Non-Emergency**	**Ancillary**
Per-Beneficiary Per-Month (in $)					
Difference-in-Differences (DiD)	**- $5.34*** **	**- $4.07*** **	**$0.96*** **	**$3.02*** **	**$1.07*** **
P-value	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
95% Confidence Interval	(-8.20, -2.48)	(-6.33, -1.81)	(0.73, 1.18)	(2.01, 4.03)	(0.63, 1.51)
Relative Difference	-1.97%	-3.52%	3.21%	1.53%	1.16%
Means (beneficiary-month, regression-adjusted)					
Baseline Enhanced MTM Mean	$270.78	$115.57	$29.75	$197.63	$92.16
Intervention Period Enhanced MTM Mean	$318.66	$132.77	$31.78	$212.59	$96.42
Baseline Comparison MTM Mean	$267.80	$122.93	$31.53	$196.65	$94.82
Intervention Period Comparison MTM Mean	$321.03	$144.20	$32.59	$208.59	$98.01

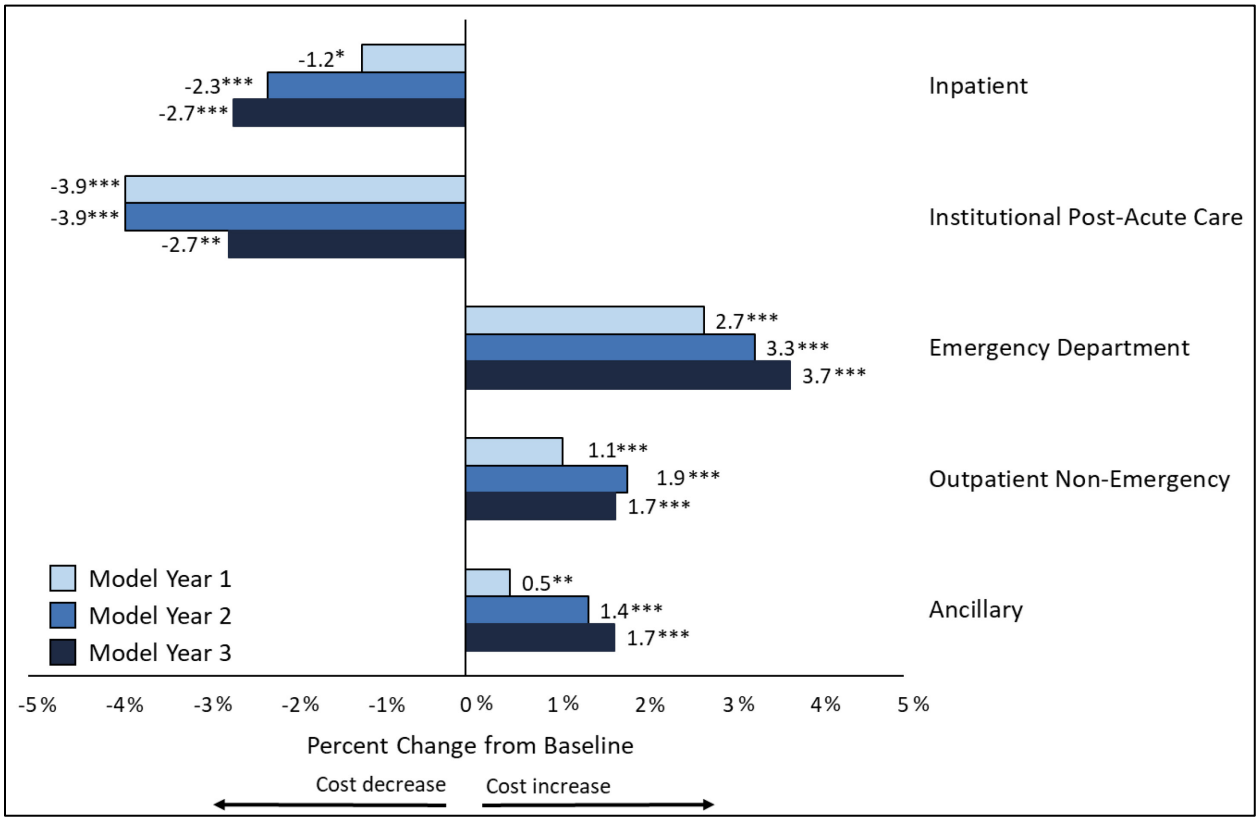
Notes: * p-value < 0.10; ** p-value < 0.05; *** p-value < 0.01. Number of Enhanced MTM observations: 59,785,685 (1,519,200 beneficiaries). Number of comparison observations: 117,140,427 (3,245,111 beneficiaries). The unit of observation is a beneficiary-month. Each cumulative estimate corresponds to change relative to the baseline period. Relative difference is calculated as the DiD estimate divided by the baseline Enhanced MTM regression-adjusted mean, and expressed as a percentage. Estimates significant at the 5 percent level are in bold.

Modelwide increases in expenditures for outpatient non-emergency and ancillary services are also consistent with the Model's theory of change, but the increases in outpatient emergency services expenditures are harder to interpret and are unexpected. Enhanced MTM services encourage beneficiaries to follow up with their prescribers, and thus could lead to increased expenditures related to primary care (i.e., outpatient non-emergency and ancillary services). It is possible that the estimated increases in emergency department expenditures also reflect a rise in demand for non-urgent care in the emergency department setting.[59]

The estimated Modelwide decreases in inpatient and institutional post-acute care expenditures and increases in expenditures for emergency services, outpatient non-emergency, and ancillary services are observed in all three Model Years (see Figure 2.8). The decreases in inpatient and institutional post-acute care expenditures in Model Year 3 correspond to about 2.7 percent of baseline. The decreases in inpatient and institutional post-acute care expenditures for Model Year 3 are similar to the estimated decreases in Model Year 2. Estimates of increases in emergency department, outpatient non-emergency, and ancillary services expenditures also did not change much between Model Year 2 and Model Year 3. Estimates for Model Year 3 ranged, depending on the setting, from 1.7 to 3.7 percent of baseline. (For full results, including DiD estimates and regression-adjusted means on expenditures across service delivery settings for each Model Year, see Appendix B.3.3.)

[59] Shreya Kangovi, Frances K. Barg, Tamala Carter, Judith A. Long, Richard Shannon, and David Grande, "Understanding Why Patients of Low Socioeconomic Status Prefer Hospitals Over Ambulatory Care." Health Affairs 32, no. 7 (July 2013): 1196-203.

Figure 2.8: Changes in Expenditures for Service Delivery Settings Were Similar between Model Years 2 and 3



Notes: * p-value < 0.10; ** p-value < 0.05; *** p-value < 0.01. Estimates correspond to percent changes from baseline. Full results, including DiD estimates and baseline period and intervention period regression-adjusted means, are available in Appendix B.3.3.

Utilization by Service Delivery Setting

For the Model as a whole, estimated impacts on utilization of related health services were mostly aligned with the impacts on gross expenditures presented above, and showed decreases in utilization of some services related to inpatient or institutional post-acute care. Specifically, there were cumulative decreases in the rate of hospital readmissions by 5.1 readmissions per 1,000 admissions (3.4 percent decrease from baseline).[60] There were also cumulative decreases in the length of stay at SNFs by 13.0 days per 1,000 beneficiaries per month (4.0 percent decrease from baseline) (Figure 2.9). These decreases were consistent with the Model's theory of change and with the estimated decrease in expenditures for inpatient and institutional post-acute care (Figure 2.8). There were no cumulative changes in the number of inpatient admissions and related length

[60] Readmissions are defined as follow-up unplanned hospital admissions that occur within 30 days of a hospital discharge.

of stay, or in the number of SNF admissions. Given the cumulative decreases in expenditures for these settings, this suggests that the average cost of treatment in these settings decreased over the course of Model implementation, with lower costs per admission for enrollees in Enhanced MTM plans relative to comparators.

The cumulative decrease in readmissions is aligned with the decrease in expenditures for inpatient services (Figure 2.8), but it did not result in a significant cumulative decrease in the overall number of inpatient admissions (Figure 2.9). Overall, readmissions are a small proportion of all inpatient admissions (the baseline readmissions rate is around 15 percent). Therefore, a small effect on the rate of readmissions may not be detectable in the total number of inpatient admissions, though it may be detectable in inpatient expenditures. The cumulative DiD estimate on readmissions implies that there was a decrease of 5.1 readmissions per 1,000 admissions, corresponding to a 3.4 percent (or 0.51 percentage point) cumulative decrease for the Model as whole. This is a small impact on the number of admissions, but a rough calculation suggests that the cumulative decrease in readmissions accounts for over a fifth of the observed cumulative decrease in inpatient expenditures.[61] In addition, Enhanced MTM interventions may have a direct impact on readmissions (and related expenditures) without any direct impacts on admissions. For example, transitions-of-care interventions are intended to reduce the risk of medication-induced adverse events following an inpatient discharge. These interventions could directly reduce the rate of readmissions via better care coordination and medication management.

Estimated impacts for inpatient and institutional post-acute care service utilization shifted over time (Figure 2.9). For example, both inpatient admissions and the inpatient length of stay increased slightly in Model Year 1. By Model Year 3, however, these estimates were either negative (in the case of fewer inpatient admissions), or zero (in the case of inpatient length of stay). The magnitude of estimated decreases in the rate of readmissions grew over time, particularly between Model Years 1 and 2, consistent with larger estimated decreases in inpatient expenditures over time (Figure 2.8). Similarly, even though there were no significant cumulative impacts in the number of SNF admissions, there were significant decreases in Model Year 3 (by

[61] About 15 percent of admissions result in a readmission. Therefore, with 25.5 inpatient admissions per 1,000 beneficiaries per month at baseline, there are about 22.2 index admissions and 3.3 readmissions per 1,000 beneficiaries per month at baseline. The cumulative estimate for readmissions (-5.08 per 1,000 index admissions) implies that, with 22.2 index admissions per 1,000 beneficiaries at baseline, readmissions decreased by 0.11 per 1,000 beneficiaries.
Cumulatively, expenditures for inpatient services decreased by $5.34 PBPM. In addition, baseline hospital inpatient expenditures were $270.78 PBPM and there were 25.5 inpatient admissions per 1,000 beneficiaries per month at baseline. This means that the cost of each inpatient admission is about $10,619. Under the assumption that the cost of a readmission is the same as the cost of an admission, a decrease of 0.11 readmissions would imply a decrease of about $1,168 (per 1,000 beneficiaries), accounting for about 22 percent of the estimated cumulative monthly decrease in hospital inpatient expenditures. If readmissions are more expensive than index admissions, then the estimated decrease in readmissions accounts for a larger fraction of estimated decreases in inpatient expenditures.

2.5 percent of baseline), following non-significant changes in Model Years 1 and 2. Estimated impacts on the length of stay for SNF stays have grown over time, from a non-significant decrease in Model Year 1 to a large decrease (by 8.3 percent of baseline) in Model Year 3.

The estimated impacts on utilization and expenditures related to post-acute care may be confounded by contemporaneous impacts of overlapping Medicare initiatives and systematic trends towards shorter lengths of stay in institutional post-acute care among the Medicare population in general. For example, Medicare's Shared Savings Program or CMMI models such as the Next Generation Accountable Care Organization (NGACO) Model, the Bundled Payments for Care Improvement (BPCI) Initiative, and the Comprehensive Care for Joint Replacement (CJR) Model have been associated with decreases in expenditures related to post-acute care.[62] These models have been active at the same time and in some of the same regions as the Enhanced MTM Model. These models began before the Enhanced MTM Model was implemented. Part of their implementation period is included in the baseline period in the Enhanced MTM Model's analyses. Importantly, the regions where these initiatives are active include both regions where the Model is implemented, and also regions from which comparators are drawn. Still, it is plausible that the impacts of Enhanced MTM may have been confounded by these initiatives if: (i) there was a change in their impacts at the same time that Enhanced MTM was implemented, and (ii) there are systematic differences in exposure to these initiatives between Enhanced MTM beneficiaries and comparators. For example, the overlapping initiatives may have had a greater presence in the Enhanced MTM regions relative to comparator regions. Future reports will assess the overlap in Enhanced MTM beneficiaries' exposure to other co-occurring initiatives in more detail.

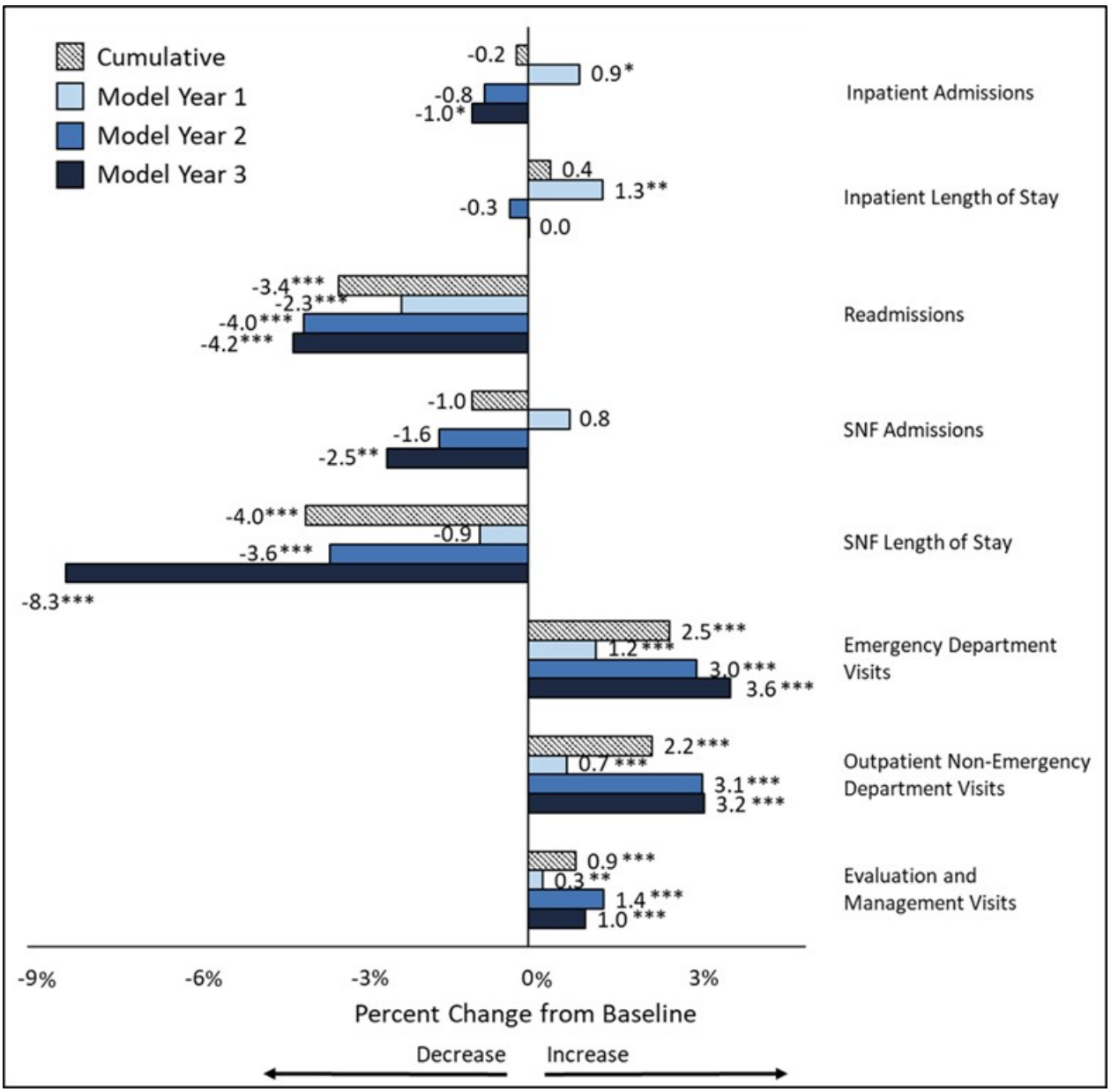
Expenditures in outpatient and ancillary service settings continued to increase for enrollees of Enhanced MTM plans relative to comparators (Figure 2.8). These impacts were mirrored in estimates of changes in utilization for these settings. Cumulatively for the Model as a whole, there were significant increases in the number of emergency department, outpatient non-emergency department, and E&M visits (Figure 2.9). Outpatient emergency department, outpatient non-emergency department, and E&M visits increased by 1.3, 9.1, and 6.0 visits per 1,000 beneficiaries per month, respectively. These increases correspond to 2.5 (for outpatient emergency department visits), 2.2 (for outpatient non-emergency department visits), and 0.9 (for E&M visits) percent of baseline. Estimated increases in these settings increased in magnitude between Model Years 1 and 2. Estimates for Model Year 3 were similar in size to Model Year 2

[62] For details on the NGACO Model, see: https://innovation.cms.gov/innovation-models/next-generation-aco-model. For details on the BPCI Initiative, see: https://innovation.cms.gov/innovation-models/bundled-payments. For details on the CJR Model, see: https://innovation.cms.gov/innovation-models/cjr. See also: McWilliams, J. Michael, Laura A. Hatfield, Bruce E. Landon, Pasha Hamed, and Michael E. Chernew. "Medicare spending after 3 years of the Medicare Shared Savings Program." New England Journal of Medicine 379, no. 12 (2018): 1139-1149.

estimates. As discussed in the Model's theory of change presented in Figure 1.2, increases in outpatient non-emergency and E&M visits could occur as Model interventions encourage greater patient-prescriber interaction and beneficiaries seek additional primary care. For example, services focused on vaccine awareness encourage beneficiaries to follow up with their provider to discuss whether a given vaccine is warranted. As discussed earlier in this section, the increase in emergency department visits is unexpected based on the Model's theory of change, and may also reflect increased demand for non-urgent care via the emergency department.

Full results, including DiD estimates and baseline period and intervention period regression-adjusted means for outcomes related to healthcare utilization, are available in Appendix B.3.4.

Figure 2.9: Model Impacts on Most Health Utilization Outcomes Were Sustained or Grew in Magnitude between Model Years 2 and 3



Notes: * p-value < 0.10; ** p-value < 0.05; *** p-value < 0.01. Estimates correspond to percent changes from baseline. Full results, including DiD estimates and baseline period and intervention period regression-adjusted means, are available in Appendix B.3.4.

2.6.2 Sponsor-level Estimates for Expenditures and Utilization by Service Delivery Setting

The interventions offered by the sponsors generally aim to improve medication use, thereby reducing the occurrence of adverse health events, leading to reductions in unnecessary downstream healthcare utilization and related expenditures. However, estimated impacts may differ across sponsors due to differences in the types of interventions, the groups of targeted beneficiaries, and the approach to delivering Enhanced MTM services. In addition, Modelwide estimates on setting-specific expenditures are driven by impacts for SilverScript/CVS and Humana, as these two sponsors together account for about two-thirds of beneficiaries in the treatment cohort. To understand cross-sponsor differences better, this section discusses sponsor-specific findings from impact analyses for expenditure and utilization outcomes by service delivery setting (see Figure 2.10 and Figure 2.11).

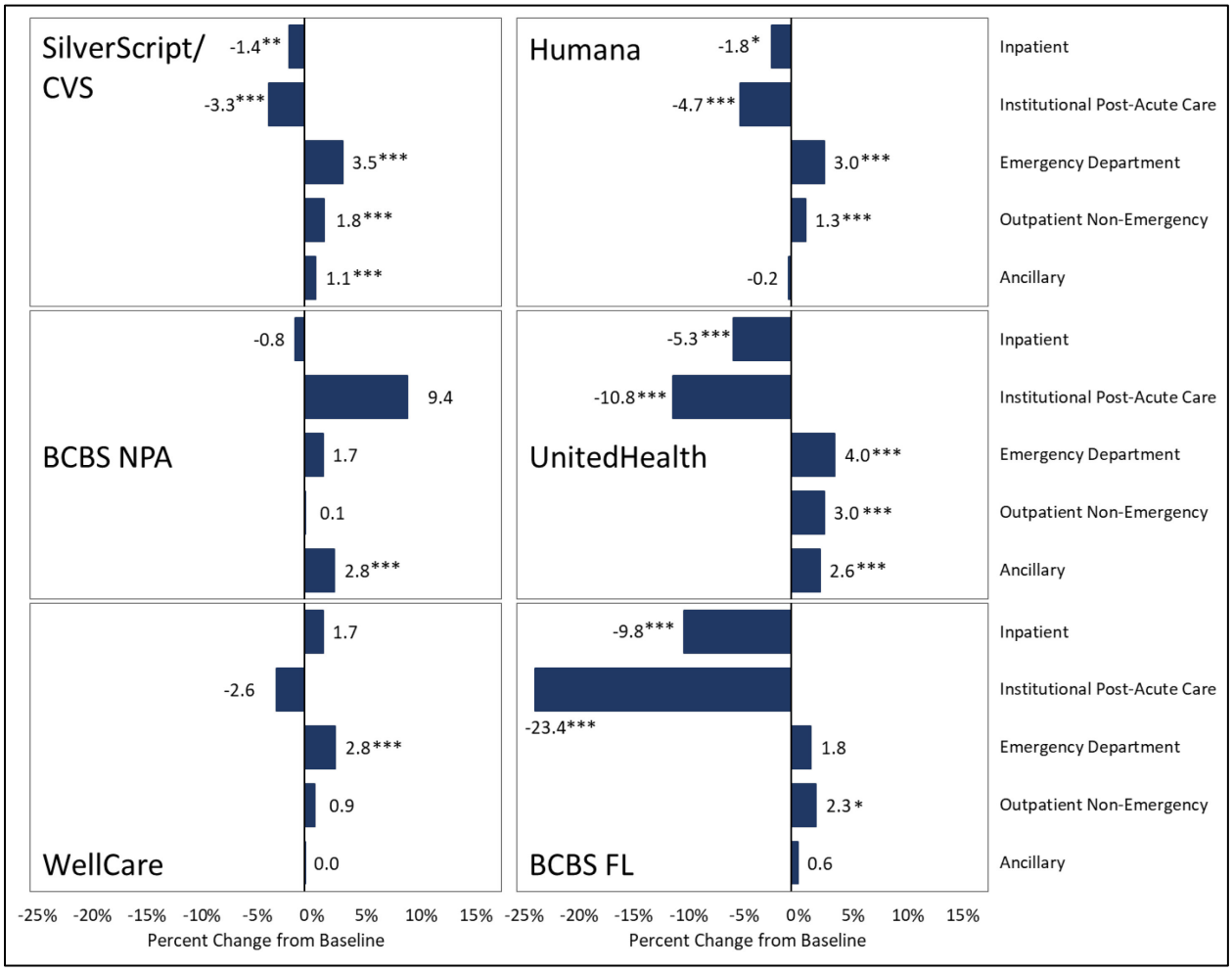
Setting-specific impacts for most sponsors are generally similar to the Modelwide impacts discussed previously. (Full results including DiD estimates on expenditures by service delivery setting and by sponsor are presented in Appendix B.3.) However, the magnitude of estimated impacts varies by sponsor.

The significant Modelwide decreases in expenditures for inpatient and institutional post-acute care are driven by four sponsors (SilverScript/CVS, Humana, UnitedHealth, and BCBS FL; Figure 2.10). The three sponsors with the largest decreases in these expenditures (Humana, UnitedHealth, and BCBS FL) have all offered transitions-of-care interventions since Model Year 1. Though SilverScript/CVS does not offer a transitions-of-care intervention, its Medication Therapy Counseling intervention uses a proprietary algorithm intended to specifically target beneficiaries likely to incur high medical costs in the future, and offers multiple, recurring, high-intensity services (see Appendix A for more details).

The remaining two sponsors, BCBS NPA and WellCare, did not see significant changes in expenditures for inpatient and institutional post-acute care. Though both sponsors began offering transitions-of-care interventions in Model Year 3, these interventions targeted relatively few beneficiaries (see Section 3.2.2 for more details). In addition, most interventions that these sponsors offer focus more on medication use than on high medical costs. WellCare does not offer any interventions that target beneficiaries based on medical costs, and BCBS NPA's only intervention targeting beneficiaries with high costs ("low-risk/high-cost" intervention) is small and of limited duration (see Section 3 for more details).

For full results, including DiD estimates and regression adjusted on expenditures across service delivery settings for each sponsor and each Model Year, see Appendix B.3.3.

Figure 2.10: The Magnitude of Cumulative Impacts on Expenditures across Service Delivery Settings Varied by Sponsor



Notes: * p-value < 0.10; ** p-value < 0.05; *** p-value < 0.01. Estimates correspond to percent changes from baseline. Full results, including DiD estimates and baseline period and intervention period regression-adjusted means, are available in Appendix B.3.3.

Similar to Modelwide findings, sponsor-level impacts on health service utilization were generally aligned with impacts on setting-specific expenditures. For most sponsors, there were decreases in readmissions and SNF length of stay, offset by increases in health service use in the outpatient setting (Figure 2.11). Similar to sponsor-level expenditure impacts described above, there was variation in the magnitude of estimated impacts among sponsors.

There were no cumulative impacts on the number of inpatient admissions for any sponsor. For all sponsors except WellCare, there was a significant decrease in the rate of readmissions that ranged in magnitude from 2.6 to 8.6 percent of baseline. Given the decrease in inpatient expenditures for SilverScript/CVS, Humana, UnitedHealth, and BCBS FL, this

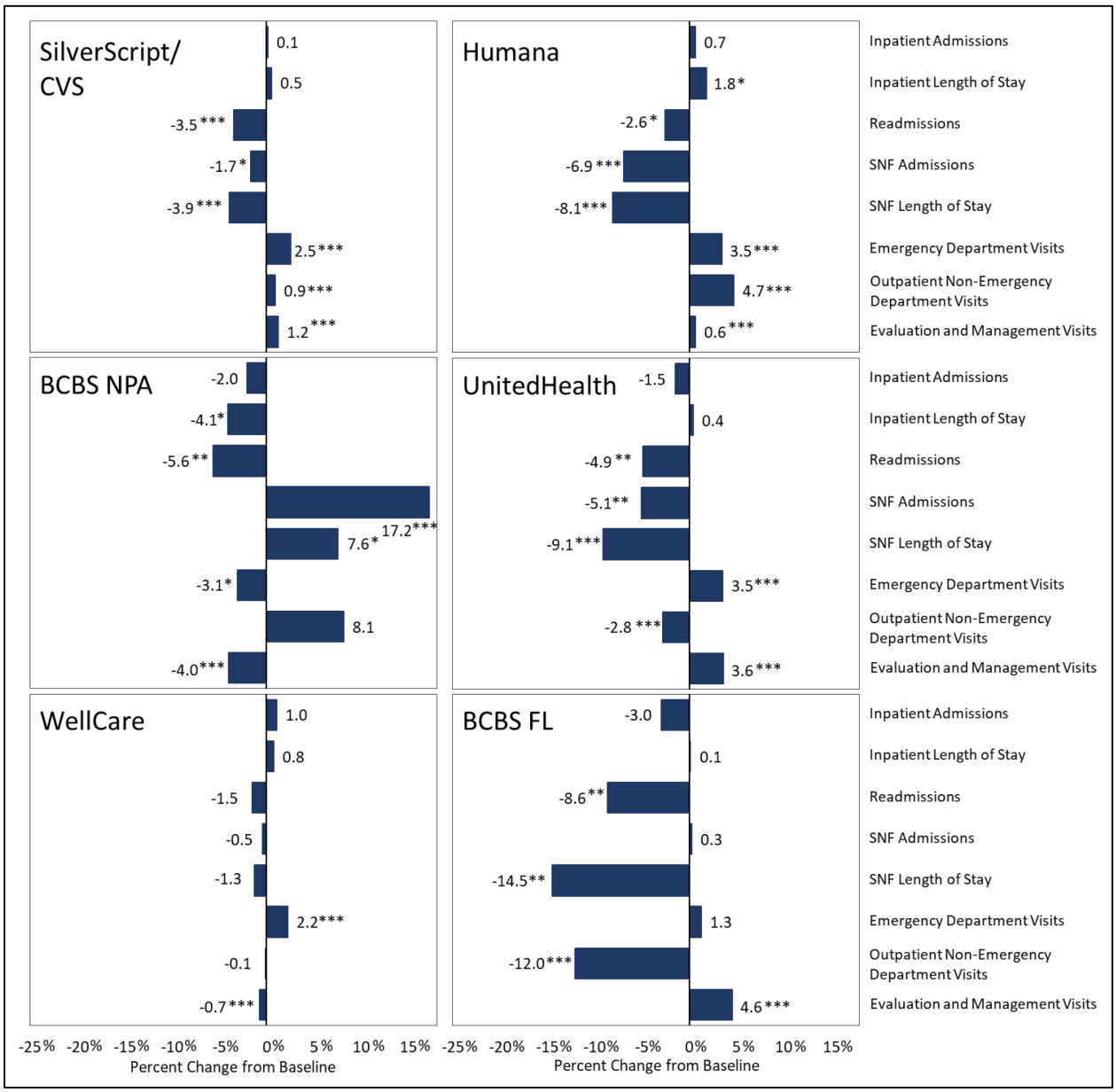
suggests that the decrease in readmissions may have contributed to the overall reduction in inpatient expenditures.

Sponsors with substantial decreases in utilization related to SNF care (SilverScript/CVS, Humana, UnitedHealth, and BCBS FL) all offered interventions that explicitly and consistently targeted beneficiaries based on high costs, and/or transitions-of-care interventions, which may decrease expenditures related to post-discharge adverse events.

Only BCBS NPA had a cumulative increase in the length of stay for SNF care (by 7.6 percent of baseline; Figure 2.11). This estimated increase is not consistent with the Model's theory of change, nor is it aligned with the non-significant decreases in inpatient admissions. The increase in length of stay for SNF care among BCBS NPA enrollees is driven by the estimate for Model Year 1 (see Appendix Table B.67 for estimates by Model Year). Estimates of impacts on the length of stay for SNF care in Model Years 2 and 3 are smaller in magnitude and not statistically significant. Additional information from future Model Years will determine whether the estimated cumulative increase in SNF utilization for BCBS NPA persists (please see Appendix A.3 for additional information about BCBS NPA's interventions).

Full results, including DiD estimates and baseline period and intervention period regression-adjusted means for outcomes related to healthcare utilization, are available in Appendix B.3.4.

Figure 2.11: Cumulative Impacts on Health Services Utilization Varied by Sponsor



Notes: * p-value < 0.10; ** p-value < 0.05; *** p-value < 0.01. Estimates correspond to percent changes from baseline. Costs associated with Outpatient Non-Emergency Department Visits and Evaluation and Management Visits are included in Outpatient non-Emergency Expenditures. Full results, including DiD estimates and baseline period and intervention period regression-adjusted means, are available in Appendix B.3.4.

2.7 Model Impacts on Expenditures and Utilization Related to Ambulatory Care-Sensitive Conditions

For the Model as a whole, there were cumulative decreases in inpatient expenditures and inpatient admissions related to ambulatory care-sensitive conditions (ACSCs) such as chronic obstructive pulmonary disease and heart failure. The decreases in ACSC-related inpatient expenditures grew larger over time and accounted for approximately 17 percent of the cumulative decrease in total inpatient expenditures. Estimated impacts for most individual sponsors were consistent with these Modelwide findings, though the magnitude of impacts varies by sponsor.

As laid out in the Model's theory of change in Figure 1.2, MTM can play an important role in the management of beneficiaries' chronic conditions. Specifically, the Model is expected to identify and resolve medication-related problems via tailored service provision to eligible beneficiaries. The interventions implemented by the sponsors are also expected to provide prescribers with timely information and recommendations for any necessary changes to beneficiaries' medication regimens, and to promote better prescriber-pharmacist coordination.

Based on the analytic findings presented in Section 2.5, there is currently limited evidence of beneficial Model impacts on medication use, and small but statistically significant cumulative improvements were observed for measures related to the control of diabetes. As discussed in Section 2.6, Enhanced MTM interventions may have impacted medication use and patient safety in ways either not captured by the measures assessed in Section 2.5 (e.g., by affecting other chronic conditions than those assessed), or not detectable by analyses of claims (e.g., by introducing behavioral changes).

To further assess Model impacts on the management of chronic conditions, this subsection focuses on medical expenditures and utilization related to ambulatory care-sensitive conditions (ACSCs).

Ambulatory care-sensitive conditions are conditions for which inpatient care may be preventable through preventive, primary care or early interventions aimed at reducing further complications or severe disease.[63] These conditions are thus areas where Model impacts on distal outcomes could be detected. If the tailored interventions offered by Enhanced MTM lead to optimized medication regimens, better care coordination, and increased provider oversight, medical expenditures and related utilization are expected to decrease. For example, beneficiaries

[63] Agency for Health Research and Quality. "Guide to Prevention Quality Indicators: Hospital Admission for Ambulatory Care Sensitive Conditions." April 2002. https://www.ahrq.gov/downloads/pub/ahrqqi/pqiguide.pdf.

who can self-manage their COPD or diabetes with appropriate guidance from a provider may be less likely to be hospitalized for these conditions than beneficiaries with poorly managed COPD or diabetes. As discussed in Section 3.1, sponsors have reported that their Enhanced MTM interventions reflect efforts to address perceived gaps in care and care coordination, foster collaboration and alignment of care priorities between pharmacists and physicians, and thus play an active role in preventive care that could decrease preventable downstream inpatient utilization and expenditures. In the data used for this report, ACSCs account for over 7 percent of baseline inpatient expenditures, and around 10 percent of all baseline inpatient stays were related to ACSCs.

To assess Model impacts on expenditures and utilization for ACSCs, the evaluation team used an ACSC chronic composite measure developed by CMS that focuses on three conditions: diabetes, COPD/asthma, and heart failure.[64] Although this measure was not constructed or validated specifically with Part D sponsors or medication therapy management in mind, optimization of medication regimens and early resolution of drug therapy problems are both integral parts of high-quality primary care for these conditions. These are focus areas for many Enhanced MTM interventions, and all sponsors incorporated chronic condition information, including for these specific conditions, in their targeting.[65] This section discusses findings from analyses of Model impacts on inpatient expenditures and utilization for the ACSC Chronic Composite Measure.[66] Modelwide cumulative estimates and estimates by Model Year, as well as cumulative findings for each individual sponsor, are presented below.

2.7.1 Modelwide Estimates for Expenditures and Utilization Related to Ambulatory Care-Sensitive Conditions

As predicted by the Model's theory of change, there were Modelwide cumulative decreases in inpatient expenditures and inpatient admissions related to ACSCs. Figure 2.12

[64] The ACSC Chronic Composite Measure includes the following primary diagnoses: short-term and long-term complications from diabetes; COPD or asthma; heart failure; uncontrolled diabetes; lower extremity amputation among patients with diabetes. See: https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeedbackProgram/Downloads/2016-ACSC-MIF.pdf.

[65] Interventions that incorporate chronic conditions information in their targeting criteria include: SilverScript/CVS's Medication Therapy Counseling and Pharmacy Advisor Counseling; Humana's Risk-Based intervention; BCBS NPA's Chronic Conditions Management Initiative; UnitedHealth's Risk-Based intervention; WellCare's High Utilizer intervention, Select Drug Therapy Problems (DTP) intervention, and Medication Adherence intervention; and BCBS FL's Hospital Prevention intervention, Diabetes Plus 3 intervention, and Medication Adherence intervention. Additional information about sponsors' interventions can be found in Appendix A.

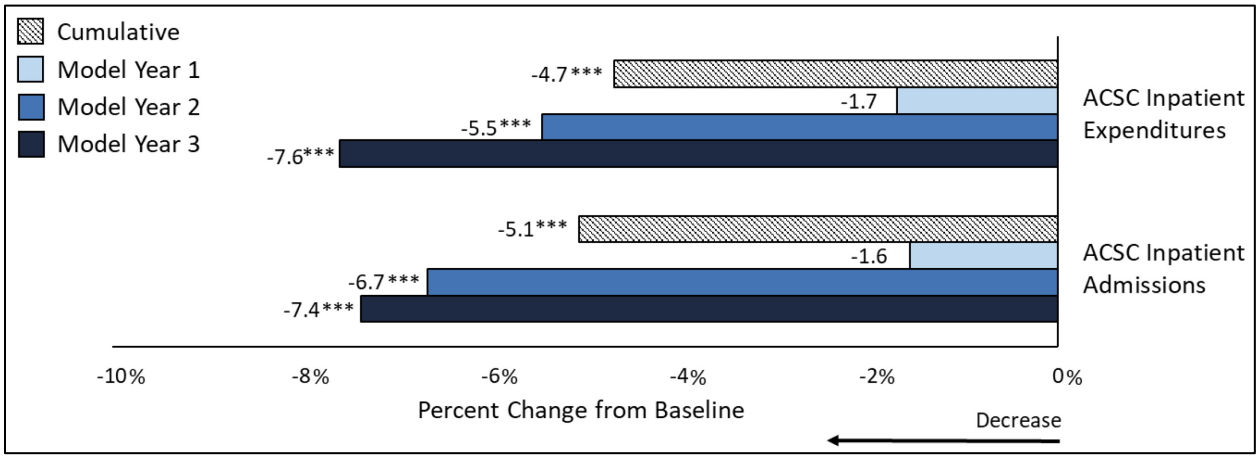
[66] Model impacts on emergency department expenditures and related utilization were also assessed for the diagnoses included in the ACSC Chronic Composite Measure. There were no cumulative impacts on emergency department expenditures for related diagnoses for the Model as a whole. Emergency department visits increased Modelwide, but this estimate was driven by a single sponsor (Humana).

presents the Model's impacts on inpatient expenditures and inpatient admissions related to the ACSC Chronic Composite Measure. Over time, the decrease in inpatient expenditures for ACSCs became larger and statistically significant, corresponding to 7.6 percent of baseline in Model Year 3. There was a parallel decrease in inpatient admissions that also grew over time, corresponding to 7.4 percent of baseline in Model Year 3. The cumulative decreases in ACSC-related inpatient expenditures account for approximately 17 percent of the cumulative decrease in total inpatient expenditures. Depending on the Model Year, decreases in ACSC-related inpatient expenditures account for between 10.3 percent (in Model Year 1) and 20.7 percent (in Model Year 3) of the estimated decrease in inpatient expenditures.[67]

The Modelwide improvements on ACSC-related expenditures and utilization suggest that Enhanced MTM, as predicted by the Model's theory of action, has the potential to affect distal outcomes related to the management of chronic conditions, where optimization of medication regimens is particularly important. Given the lack of proximal impacts on the measures of medication use and patient safety discussed in Section 2.5, these improvements would have to be mediated by changes in medication use that are not related to higher adherence to statins, decreases in high-risk medication use, and fewer DDIs. For example, the improvements discussed in this section could be the result of behavioral changes and better medication-taking behavior (e.g., changes in the timing of medications and improved adherence), improved doctor-pharmacist coordination, or other changes in medication regimens (e.g., decreases in duplicative therapies). For full results, including DiD estimates and regression-adjusted means on ACSC-related inpatient expenditures and admissions for each Model Year, see Appendix B.3.5.

[67] Model impacts on inpatient and emergency department expenditures and related utilization were assessed separately for measures related to COPD/asthma, heart failure, diabetes, and bacterial pneumonia. There were no significant, cumulative impacts for expenditure and utilization outcomes related to diabetes and bacterial pneumonia. Cumulative inpatient expenditures related to COPD/Asthma and Heart Failure Measures showed the largest decreases, suggesting that impacts for these conditions drive the estimated decreases for the ACSC Chronic Composite Measure (full findings not shown for brevity).

Figure 2.12: Modelwide, ACSC-Related Inpatient Expenditures and Admissions Decreased Across All Three Model Years



Notes: * p-value < 0.10; ** p-value < 0.05; *** p-value < 0.01. Estimates correspond to percent changes from baseline. Full results, including DiD estimates and baseline period and intervention period regression-adjusted means, are available in Appendix B.3.5.

2.7.2 Sponsor-level Estimates for Expenditures and Utilization Related to Ambulatory Care-Sensitive Conditions

For most sponsors (SilverScript/CVS, Humana, BCBS NPA, and BCBS FL), there were cumulative decreases in inpatient expenditures and/or admissions related to the ACSC Chronic Composite Measure (Figure 2.13). For SilverScript/CVS, Humana, and BCBS FL these impacts were generally aligned with the sponsor-level estimated impacts on overall inpatient expenditures presented in Section 2.6. SilverScript/CVS's cumulative decreases in ACSC-related inpatient expenditures (3.7 percent of baseline) and admissions (4.5 percent of baseline) were driven by impacts on these two measures in Model Years 2 and 3 (see Appendix B.3 for full results). In these two years, SilverScript/CVS expanded delivery of its Medication Therapy Counseling intervention, which includes chronic conditions in its targeting algorithm, and this implementation change may partly account for this sponsor's impacts. The decrease in inpatient expenditures related to ACSCs for SilverScript/CVS accounts for 18.9 percent of the cumulative decrease in total inpatient expenditures (see Section 2.6) for this sponsor.

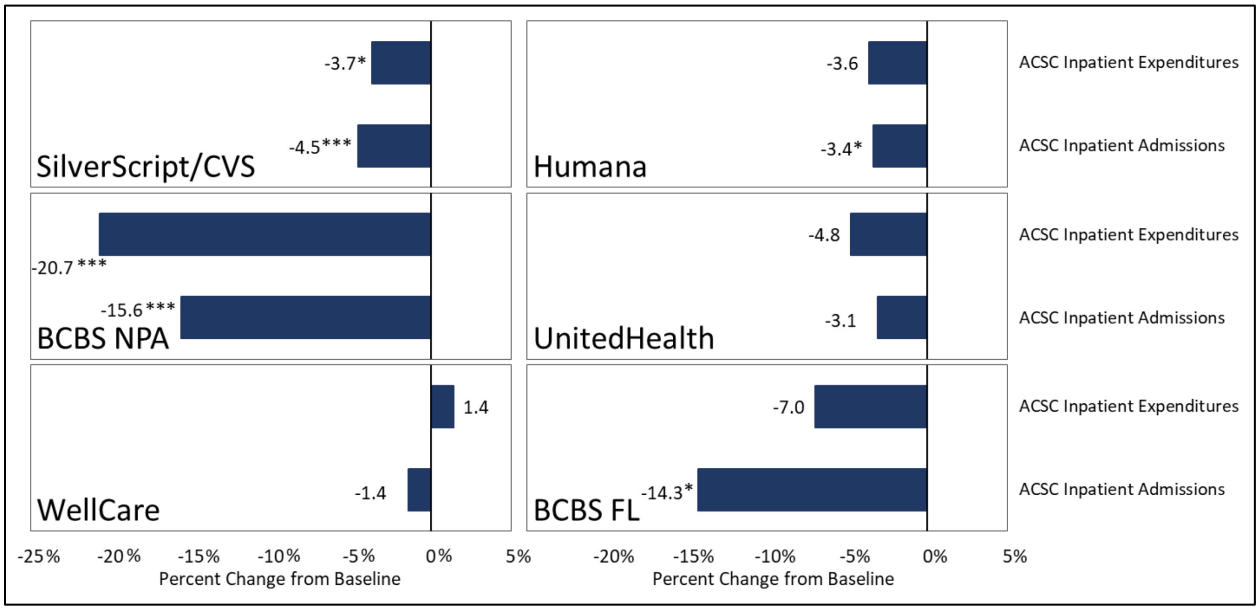
For Humana, the cumulative decrease in ACSC-related inpatient admissions (by 3.4 percent of baseline) was driven by impacts in Model Years 2 and 3 on inpatient admissions related to COPD/asthma and heart failure. The cumulative decrease in expenditures related to ACSCs was not significant, but it was significant for Model Year 3. Humana made several adjustments to its interventions that may have impacted outcomes for beneficiaries with these conditions. In Model Year 2, there was a significant increase in the proportion of enrollees who were eligible for Enhanced MTM and received significant services. In Model Year 2 there was

also a notable expansion of Humana's Transitions-of-Care intervention. In Model Year 3 Humana expanded the Transitions-of-Care Medication Reconciliation services that it offers to patients with COPD or congestive heart failure to include additional prompts for pharmacists so they provide condition-specific information related to the management of these chronic conditions. Additionally, in Model Year 3 Humana incorporated diagnoses for select chronic conditions into the process that determines which TMRs to offer to eligible enrollees. Humana reported that the use of claims data for this purpose helped to reliably identify enrollees with COPD, asthma, or a recent heart attack, and to provide appropriate treatment in each case.

For BCBS FL, inpatient admissions related to ACSCs dropped by 14.3 percent of baseline, though the decrease in expenditures was not significant. The decrease in admissions was driven by impacts on inpatient admissions for heart failure in Model Years 1 and 3. This could be related to BCBS FL's Hospital Prevention Intervention, which targets beneficiaries with heart failure who have high Parts A, B, and D expenditures.

There were particularly large, statistically significant decreases in ACSC-related inpatient expenditures and admissions for BCBS NPA (Figure 2.13). However, admissions and expenditures related to ACSCs account for a small proportion of all inpatient admissions and expenditures (about 6 percent for this sponsor), so these impacts did not shift overall inpatient expenditures and related admissions (Section 2.6). ACSC-related inpatient impacts were driven by decreases in inpatient expenditures related to asthma/COPD and heart failure (results not shown). Over the course of the Model's first three years, BCBS NPA expanded targeting criteria and interventions to include additional beneficiaries for new medication counseling, adherence services, and medication reconciliation. However, BCBS NPA did not offer interventions specifically targeting beneficiaries with chronic conditions until the third quarter of Model Year 3. At that time, BCBS NPA implemented a community pharmacy-based initiative targeting diabetic beneficiaries. There are no interventions offered by BCBS NPA that specifically target beneficiaries with asthma/COPD or heart failure. Thus, the mechanism behind the magnitude of impacts for BCBS NPA is not entirely clear, and could be related to medication optimization through its main high-risk intervention. For full results, including DiD estimates and regression-adjusted means on ACSC-related inpatient expenditures and admissions for each sponsor and Model Year, see Appendix B.3.5.

Figure 2.13: Cumulatively for Most Sponsors, ACSC-Related Inpatient Expenditures and Related Admissions Decreased



Notes: * p-value < 0.10; ** p-value < 0.05; *** p-value < 0.01. Estimates correspond to percent changes from baseline. Full results, including DiD estimates and baseline period and intervention period regression-adjusted means, are available in Appendix B.3.5.

2.8 Summary of Model Impacts and Variation across Sponsors

This section discussed Model impacts on various proximal and distal outcomes related to medication use, medical expenditures, and related utilization and highlighted some cross-sponsor similarities and differences in estimates. Table 2.9 summarizes these findings.

Overall, the Model had no impact on distal outcomes of total Medicare Parts A and B expenditures, and improvements were limited for proximal outcomes related to medication use. Although there were no significant improvements for most proximal outcomes (with the exception of measures related to medication use for the control of diabetes), expenditures and utilization for inpatient and institutional post-acute care (including ACSCs) decreased. These decreases were offset by increases in expenditures and utilization for outpatient and ancillary care, resulting in no impact on total expenditures.

These Modelwide impacts conceal some differences across sponsors that could be attributed to differences in implementation and/or in the demographic characteristics of each sponsor's enrollees. As the two largest sponsors, SilverScript/CVS and Humana drove Modelwide findings, especially on expenditure and utilization outcomes. For these two sponsors, decreases in most inpatient and institutional post-acute care costs and utilization outcomes were offset by increases in most outpatient and ancillary costs and related services, as in Modelwide findings. Neither SilverScript/CVS nor Humana improved potentially unsafe medication use, though there were improvements for Humana in statin use among diabetics. Among the other four sponsors, the expenditure and utilization estimates for BCBS FL and UnitedHealth are the most similar to the estimates for SilverScript/CVS and Humana (and the Model overall).

However, in contrast to findings for SilverScript/CVS and Humana, there were some decreases (or lack of significant increases) for outpatient expenditures and/or utilization for BCBS FL and UnitedHealth. In addition, adherence to oral antidiabetics (OADs) improved for UnitedHealth, and use of high-risk medications decreased for both UnitedHealth and BCBS FL. Findings for the remaining two sponsors, WellCare and BCBS NPA, diverged the most from overall Model findings, and from findings for other sponsors. Except for a small decrease in E&M visits and in the rate of high-risk medication use, there is little evidence of significant improvements on outcomes for WellCare. This is the case even for the rate of readmissions, where decreases are observed for all other sponsors. For BCBS NPA, there were no significant impacts on expenditures, with the exception of a small increase in the ancillary setting and large decreases in inpatient expenditures for ACSCs. Utilization findings were mixed, though there were decreases in inpatient admissions for ACSCs. There were no impacts on medication use for this sponsor, except for an increase in the rate of DDIs similar to those observed for the Model overall and for most other sponsors.

Table 2.9: Summary Findings from Cumulative Estimates for All Statistically Significant Analytic Outcomes, Modelwide and for All Sponsors

Analytic Outcome	Modelwide	SilverScript/ CVS	Humana	BCBS NPA	UnitedHealth	WellCare	BCBS FL
Total Medicare Parts A and B Expenditures							
Medication Optimization							
Statin Adherence		↓					
OAD Adherence	⇧				⇧		
SUPD	⇧		⇧				
Potentially Unsafe Medication Use							
DDIs	↑	↑	↑	↑		↑	
HRM		↑	↑		⇩	⇩	⇩
Opioids-Benzodiazepines	↑	↑	↑		↑		↑
Inpatient (IP) and Institutional Post-Acute Care (IPAC) Expenditures and Utilization							
IP Expenditures	⇩	⇩	⇩		⇩		⇩
IP Expenditures for ACSCs	⇩	⇩		⇩			
IP Admissions							
IP Admissions for ACSCs	⇩	⇩	⇩	⇩			⇩
IP Length of Stay			↑	⇩			
Readmissions	⇩	⇩	⇩	⇩	⇩		⇩
IPAC Expenditures	⇩	⇩	⇩		⇩		⇩
SNF Admissions		⇩	⇩	↑	⇩		
SNF Length of Stay	⇩	⇩	⇩	↑	⇩		⇩
Emergency Department (ED) Expenditures and Utilization							
ED Expenditures	↑	↑	↑		↑	↑	
ED Visits	↑	↑	↑	⇩	↑	↑	
Outpatient Non-Emergency Department (OP non-ED) and Ancillary Expenditures and Utilization							
OP non-ED Expenditures	↑	↑	↑		↑		↑
OP non-ED Visits	↑	↑	↑	↑	⇩		⇩
E&M Visits	↑	↑	↑	⇩	↑	⇩	↑
Ancillary Expenditures	↑	↑		↑	↑		

Notes: White arrows with black borders represent statistically significant (at 10 percent level) cumulative improvements in medication optimization and potentially unsafe medication use, and decreases in cumulative expenditures and utilization. Red arrows represent statistically significant (at 10 percent level) deteriorations in cumulative medication optimization and potentially unsafe medication use, and increases in cumulative expenditures and utilization. Opioids-Benzodiazepines refers to concurrent use of these two classes of medications. Missing arrows indicate a lack of a statistically significant result.

The Model's design offered sponsors substantial flexibility in targeting, outreach, and provision of MTM services, compared to the highly structured traditional program. Taken together, the evaluation findings suggest that allowing sponsors this flexibility does not adversely impact the quality of care, nor does it impact total expenditures. At the same time, the multiple dimensions of the six sponsors' varying approaches to Model implementation make it

difficult to confidently identify specific features of implementation or beneficiary characteristics that drive sponsor-specific findings. With this caveat in mind, the remainder of this concluding section offers a qualitative assessment that highlights some similarities and differences across sponsors and links them to similarities and differences in the estimated impacts outlined above.

In terms of implementation differences, sponsors with more consistent decreases in outcomes measuring inpatient expenditures and related utilization tended to either directly target beneficiaries with high medical expenditures, or offer wide-reaching transitions-of-care interventions. There were significant decreases in inpatient expenditures and in readmission rates for all sponsors with established transitions-of-care interventions. Targeting for chronic conditions seems to result in decreases in ACSC-related expenditures and utilization for most sponsors, though there are exceptions.[68]

Differences in service receipt rates also do not seem to be a major factor in differences in estimated Model impacts. For example, based on analyses of Encounter Data, WellCare has completed services to almost one-third of its enrollees, which is a relatively large fraction compared to other sponsors (see Section 3.3.1 for more details). However, there is little evidence of Model impacts for WellCare. That said, in some cases, expanded services coincide with improved impacts. For example, in Model Year 3, gross Medicare Parts A and B expenditures decreased only for Humana. Humana was the most stable among sponsors, and made few changes in the number and content of its interventions across Model Years. Humana's focused efforts on improving targeting, outreach, and service receipt rates for its established interventions may explain the decreases in gross expenditures, but additional data are needed to determine whether these impacts persist.

Differences in the characteristics of plans and their enrollee populations may also account for some of the differences in estimated impacts. The plans operated by BCBS FL and BCBS NPA are not benchmark plans, and the BCBS FL plan has a significantly higher premium than other Model-participating plans. Thus, the plans operated by these sponsors were comprised of older, healthier beneficiaries who are less likely to be eligible for LIS than beneficiaries of other sponsors.[69] Model estimates suggest that beneficiaries increased their interactions with physicians after being exposed to Enhanced MTM. Regular interaction with physicians for

[68] For example, there were no significant impacts on ACSC-related inpatient expenditures or utilization for UnitedHealth, despite its risk-based intervention having a secondary focus on beneficiaries with chronic conditions. Similarly, there were large decreases in ACSC-related expenditures and utilization for BCBS NPA, even though this sponsor did not offer interventions specifically targeting beneficiaries with chronic conditions until the third quarter of Model Year 3, when it targeted diabetic beneficiaries.

[69] The plans operated by UnitedHealth also had higher premiums than other Model-participating plans over the first two Model Years, and none of them had benchmark status, though this changed in Model Year 3 after some plan consolidations. Three UnitedHealth plans achieved benchmark status in Model Year 3, and one of them waived the de minimis amount.

primary care purposes is encouraged during Enhanced MTM services. Estimates show that cumulative increases in emergency department expenditures were significant for the four sponsors with high volumes of low-income beneficiaries among their enrollees (SilverScript/CVS, Humana, UnitedHealth, and WellCare), but were not significant for the two sponsors with small proportions of low-income enrollees (BCBS NPA and BCBS FL). This is consistent with LIS beneficiaries being more likely to use the emergency department for non-urgent care services.

Differences across sponsors in the clinical profile of beneficiaries may also drive some cross-sponsor differences in impacts. For example, Humana and UnitedHealth had slightly lower baseline rates of adherence to OADs and SUPD, and they were the only two sponsors with significant improvements in these measures, possibly because gains in these measures were easier to achieve for them than for other sponsors.

In summary, the Model has not produced net savings for Medicare over the first three years of implementation. At the same time, taken together, the estimated impacts suggest that the Model may be improving upon some beneficiary outcomes, and may have reduced certain types of costly utilization (e.g., readmissions). Survey findings have also shown that beneficiary perceptions of care coordination have improved (see Appendix B.7). Sponsors continued to make Model implementation changes during Model Year 3, such as expanding targeting criteria and improving beneficiary service receipt (Section 3), and the full impact of these ongoing changes may not be captured in these estimates. Findings in later Model Years for many outcomes are encouraging, suggesting that some impacts may require more time to manifest, and that downstream decreases in gross Medicare Parts A and B expenditures may occur over a longer span of time. Future evaluation reports will continue to assess Model impacts on expenditures, utilization, and medication use for beneficiaries enrolled in Model-participating plans.

3 HOW DID ENHANCED MTM INTERVENTIONS EVOLVE OVER MODEL YEARS 1 TO 3?

Section Summary

Enhanced MTM interventions are composed of a unique combination of sponsor-specific targeting criteria and a corresponding set of Enhanced MTM outreach and services offered to eligible beneficiaries. **Each sponsor offered multiple Enhanced MTM interventions and, for most sponsors, the set of interventions evolved between Model Years 1 and 3.** Sponsors made fewer changes to their set of interventions as the Model progressed; Modelwide, four new interventions were added in Model Year 3 compared to seven new interventions in Model Year 2. Newly implemented interventions and refinements to existing interventions demonstrate a growing sponsor focus on beneficiaries with recent hospitalizations and promoting care coordination.

Modelwide, total enrollment was relatively stable across all Model Years (at about 1.9 million), while the number of plan enrollees eligible for Enhanced MTM ("eligible beneficiaries") steadily increased from 1.2 million in Model Year 1 to 1.4 million in Model Year 3. As a result, **the Modelwide Enhanced MTM eligibility rate has increased over the first three Model Years.**

The total number and proportion of eligible beneficiaries receiving significant services continued to increase in Model Year 3. Over half a million, or 41 percent, of eligible beneficiaries received significant services in Model Year 3 (up from roughly 400,000 or 34 percent in Model Year 1). The number of eligible beneficiaries receiving a CMR and TMR increased in Model Year 3. Sponsors expanded their transitions-of-care interventions between Model Year 2 and 3, increasing eligibility from 12,000 to 25,000 beneficiaries and the number of beneficiaries who received transitions-of-care services from 7,000 to 12,000. The number of plan enrollees who were eligible for and received medication adherence services increased at similar rates in Model Year 3, resulting in a stable proportion (43 percent) of eligible beneficiaries who received adherence services between Model Years 2 and 3.

Sponsors used the Model's incentives and flexibility to design and continually refine Enhanced MTM interventions, resulting in expansions of eligibility and service receipt over the course of Model implementation. Through these interventions, the Model is expected to change beneficiaries' medication use and downstream healthcare utilization and expenditures. This section discusses changes to these interventions through Model Year 3 (Section 3.1), and presents trends over time in beneficiary eligibility (Section 3.2) and service receipt

(Section 3.3).[70] This report focuses on changes made between Model Years 2 and 3. Prior Enhanced MTM Evaluation Reports cover implementation during the first two Model Years in more detail.[71]

3.1 How Did Implementation of Enhanced MTM Interventions Change in Model Years 1-3?

Each sponsor offered multiple Enhanced MTM interventions and, for most sponsors, the set of interventions evolved across Model Years.

- Sponsors made fewer changes to their set of interventions as the Model progressed; Modelwide, four new interventions were added in Model Year 3 compared to seven new interventions in Model Year 2.
- Newly implemented interventions and refinements to existing interventions demonstrate a growing sponsor focus on beneficiaries with recent hospitalizations and promoting care coordination.

By providing sponsors with prospective payments to cover implementation costs, the Model offers an incentive for sponsors to test innovative approaches to medication therapy management. The Model's flexibilities also allow for modifications in sponsors' implementation approaches over time. As a result, it is not surprising that sponsors made changes to their interventions, including targeting approaches and the services provided to eligible beneficiaries, during the first three Model Years. Understanding these changes in implementation is critical for interpreting the beneficiary eligibility and service receipt statistics presented later in this section, as well as the estimated impacts of the Model on beneficiaries' health service use and expenditures, discussed in Section 2.

[70] The eligibility and service receipt figures presented in this section may differ from previous Evaluation Reports due to retroactive corrections made by sponsors to the source data files (MARx, Enhanced MTM Encounter Data, and intervention-specific eligibility files provided to Acumen by sponsors). Additionally, there are potential inaccuracies in the data reported in this section for two sponsors—BCBS FL and Humana— because there are known errors in Humana's Enhanced MTM Encounter Data and BCBS FL's MARx data. The sponsors are working to correct these errors, but at the time of this report draft, corrected data were not yet available. For more details about source data issues, see Appendix B.5.

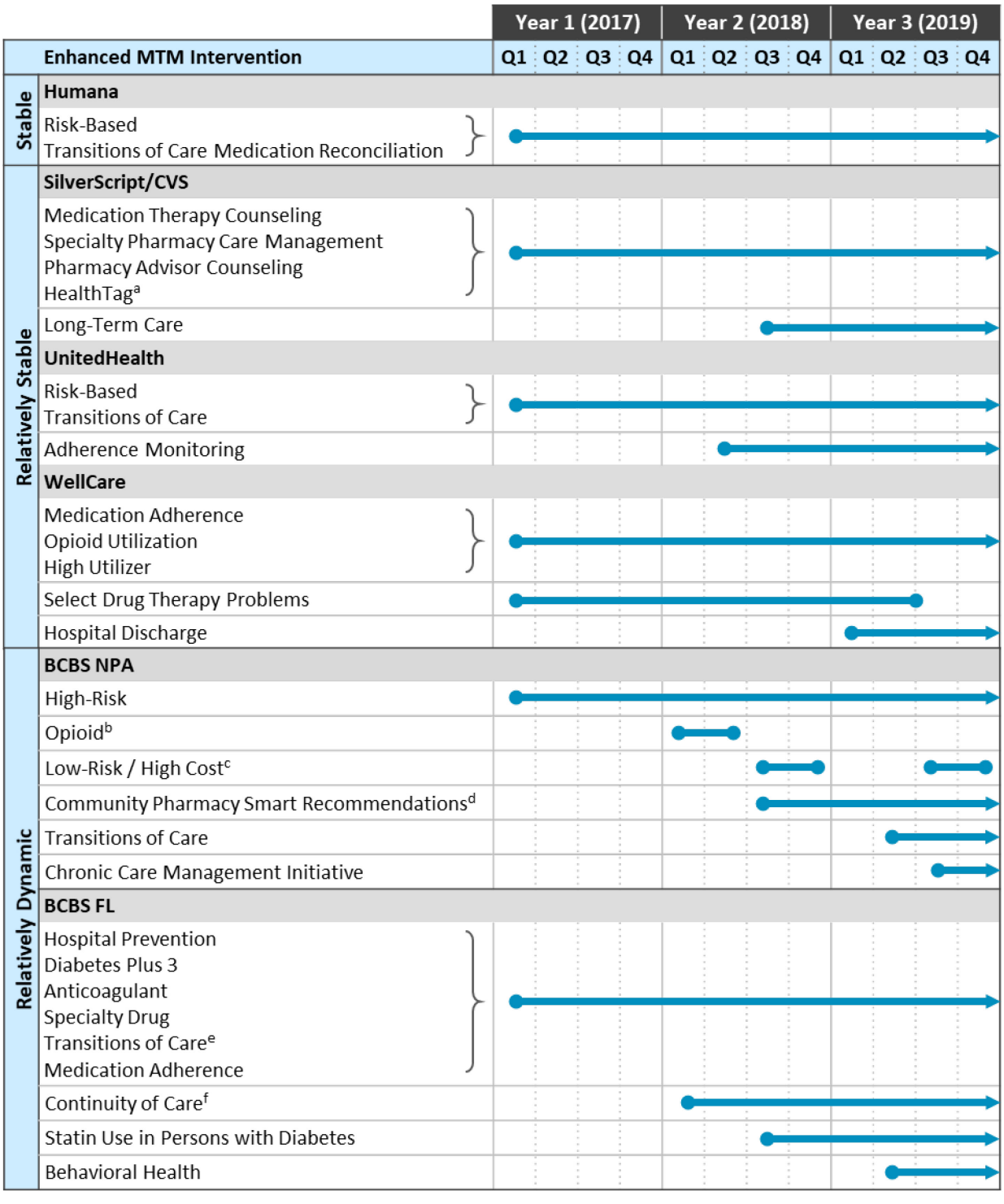
[71] For further details on previous Evaluation Reports, please refer to: "Evaluation of the Part D Enhanced Medication Therapy Management (MTM) Model: First Evaluation Report" (October 2019), https://downloads.cms.gov/files/mtm-firstevalrpt.pdf and "Evaluation of the Part D Enhanced Medication Therapy Management (MTM) Model: Second Evaluation Report" (November 2020), https://innovation.cms.gov/data-and-reports/2020/mtm-secondevalrpt.

This section provides a description and assessment of sponsors' intervention changes through Model Year 3. In summary, each sponsor offered multiple Enhanced MTM interventions and, for most sponsors, the set of interventions evolved between Model Years 1 and 3, with a growing, common focus on transitions-of-care and care coordination interventions.

Sponsors continued to make changes to their portfolio of interventions in Model Year 3, though not to the same extent as in the prior Model Year (Figure 3.1). In Model Year 3, four new interventions were added, fewer than the seven new interventions added in Model Year 2.[72] Additionally, Model Year 3 marked the first instance of a sponsor removing an Enhanced MTM intervention. Halfway through Model Year 3 (July 2019), WellCare discontinued its Select DTP intervention after internal analyses revealed that Enhanced MTM services for the individual DTPs addressed by the intervention either did not produce medical savings or did not offset the costs to run the intervention.

[72] For further information about intervention changes between Model Years 1 and 2, please refer to: "Evaluation of the Part D Enhanced Medication Therapy Management (MTM) Model: Second Evaluation Report" (November 2020), https://innovation.cms.gov/data-and-reports/2020/mtm-secondevalrpt.

Figure 3.1: Sponsors Added Fewer Interventions in Model Year 3 than Model Year 2



[a] SilverScript/CVS's HealthTag intervention delivers vaccine and Enhanced MTM service reminders.

[b] BCBS NPA's Opioid intervention was a short-term, primarily education-focused intervention for healthcare providers who either prescribed opioids with competing drugs or prescribed high volumes of opioids. It started in Model Year 2 and concluded as planned later that year.
[c] As planned, BCBS NPA launched and completed the Low-Risk/High-Cost intervention with one cohort of beneficiaries in Model Year 2, and implemented the intervention again with a separate cohort of beneficiaries beginning in Q3 of Model Year 3.
[d] BCBS NPA's Community Pharmacy Smart Recommendations intervention offers brief services (e.g., new medication and adherence assessments, immunization compliance assessments, and medication reconciliation) in the community pharmacy setting.
[e] In Model Year 2, BCBS FL expanded its Transitions of Care intervention to include beneficiaries discharged from emergency departments for certain conditions and to offer an in-home intervention for beneficiaries residing in select Florida counties.
[f] BCBS FL's Continuity of Care intervention offers a one-time CMR to beneficiaries who qualified to receive a CMR in the previous Model Year but do not qualify in the current Model Year.

Over the first three Model Years, sponsors utilized the opportunity to make changes to their portfolios of interventions to different degrees. Sponsors were grouped into three categories based on the stability of their portfolio of Enhanced MTM interventions since the Model began, according to three characteristics—new interventions, targeting changes, and service additions—as described below. The differences in stability reflect sponsors' different approaches to the Enhanced MTM Model.

(1) **Stable (Humana):** no added interventions, targeting changes for up to one intervention, and minimal added services (up to one added service)

(2) **Relatively stable (SilverScript/CVS, UnitedHealth, and WellCare):** one added intervention over the course of Model implementation, targeting changes for up to two interventions, and up to one added service

(3) **Relatively dynamic (BCBS NPA and BCBS FL):** multiple added interventions in multiple Model Years, targeting changes for multiple interventions, and multiple added services

The sponsors that made few or no changes reported that these decisions were primarily based on a desire to accumulate more data about existing intervention effects before implementing additional interventions. The two relatively dynamic sponsors approached the Model as an opportunity to quickly try and test different interventions. All sponsors reported tracking the effectiveness of their interventions (e.g., rates of successful beneficiary outreach; service completion rates; number of medication-related problems identified and resolved; medication adherence rates; savings in medical costs) and that their findings motivated any adjustments to implementation. Because the Model's performance-based payments incentivize interventions with the potential for reducing beneficiaries' Medicare Parts A and B expenditures, sponsors particularly focused on gauging their performance with regard to reducing downstream

medical expenditures. Additional details about the evolution of each sponsor's portfolio of interventions, grouped by the three categories of intervention stability, are provided below. Further details about each sponsor's intervention implementation, targeting, and services are available in Appendix A.

As Figure 3.1 shows, across the three years, Humana had the most stable portfolio of Enhanced MTM interventions. Humana was the only sponsor that did not add to (or remove) either of its two Enhanced MTM interventions since the Model began. Humana did, however, make refinements to its existing transitions-of-care intervention by incorporating health information exchange (HIE) data into the targeting approach to identify more eligible beneficiaries starting in Model Year 2.

SilverScript/CVS, UnitedHealth, and WellCare had relatively stable portfolios of interventions. These three sponsors each added only one new intervention since Model start. This group also made relatively few changes to targeting criteria. UnitedHealth did not make any targeting criteria changes to existing interventions. SilverScript/CVS began targeting beneficiaries with an additional chronic condition for one of its interventions in Model Year 2. WellCare made targeting criteria adjustments to two interventions in Model Year 3; it made minor targeting adjustments to one intervention to expand the types of medications included in targeting and to another to align criteria with updated CMS definitions and measures. The interventions added by UnitedHealth and WellCare resulted in one new significant service offering each (an automated adherence CMR and a transitions-of-care CMR, respectively).

The remaining sponsors, BCBS FL and BCBS NPA, had a relatively dynamic portfolio of interventions. They added multiple interventions across Model Years. They also made targeting criteria changes to multiple interventions. For BCBS NPA, the changes consisted of significantly expanding targeting criteria to new focus areas (transitions of care and diabetes management) for one intervention and adding a new variable into the risk stratification algorithm for another intervention. For BCBS FL, the changes consisted of expanding targeting for its transitions-of-care intervention, as well as adjusting targeting criteria for some interventions to reduce the number of eligible beneficiaries to better align with BCBS FL's projections. The new interventions implemented by BCBS FL and BCBS NPA also resulted in multiple new service offerings—prescriber-facing and beneficiary-facing TMRs for BCBS FL and case/disease management, vaccine reminders, and pharmacist-led adherence services for BCBS NPA.

Although sponsors had different approaches to implementing their Enhanced MTM interventions, there was an increasing number of transitions-of-care interventions across the Model Years, which highlights that targeting beneficiaries who experience a discharge from the hospital has become a growing priority area for the Enhanced MTM sponsors.

In Model Year 1, Humana, BCBS FL, and UnitedHealth implemented Enhanced MTM interventions for beneficiaries who are discharged from the hospital, and in Model Year 3, BCBS NPA and WellCare also added a transitions-of-care intervention. SilverScript/CVS intended to implement a transitions-of-care intervention in Model Year 1 but was unable to set up referral systems and data feeds with hospitals and health systems, and therefore abandoned this intervention. Thus, as of Model Year 3, all sponsors except SilverScript/CVS offered transitions-of-care interventions. Sponsors that implemented transitions-of-care interventions, reported an effort to quickly identify and address medication issues arising after hospitalization and changes in medication regimens that could result in adverse events or hospital readmissions.

Over the course of the Model, sponsors also implemented other types of interventions to address gaps in care and care coordination beyond transitions-of-care interventions. For BCBS FL, adding a behavioral health intervention in Model Year 3 was an attempt to better address the complex care and medication needs of beneficiaries with behavioral health conditions (e.g., depression, anxiety, alcohol-related disorders, attention-deficit hyperactivity disorders), which were not being explicitly addressed as part of its other interventions. With the addition of its care management intervention in Model Year 3, BCBS NPA aimed to help beneficiaries with diabetes achieve established clinical goals (e.g., reaching certain hemoglobin A1C and blood pressure levels). The rationale for adding this intervention was to not only leverage pharmacist expertise to better manage beneficiaries' chronic conditions, but also to foster collaboration and alignment with physician care priorities, and thus play an active role in preventive care that could decrease preventable downstream inpatient utilization and expenditures.

> "*We know that every patient is an individual and every patient has unique needs and problems that are contributing to the management of their disease. What we wanted to do was start aligning pharmacists and pharmacy care with a lot of the same metrics that Medicare is holding physicians accountable to, and if we can do that, it creates a teamwork effect between physician and pharmacist, but also allows the pharmacist to evaluate the patient and determine what the appropriate interventions are to achieve that goal.*"
>
> - *Chief Executive Officer, Enhanced MTM vendor*

Other sponsors implemented interventions that focused on care coordination, which are still ongoing. These interventions include, for example, SilverScript/CVS's intensive case and disease management intervention for beneficiaries with select rare conditions and Humana's Risk-Based intervention, which includes a comprehensive disease management service for select beneficiaries with diabetes. Sponsors' efforts may have contributed to improvements in beneficiaries' perceptions of care coordination. A repeated survey conducted for this evaluation among beneficiaries eligible for Enhanced MTM found statistically significant Modelwide

improvements in beneficiaries' perceptions of care coordination relative to baseline measurement. (See Appendix B.7 for additional details.)

3.2 How Did Beneficiary Eligibility Change in Model Years 1-3?

Modelwide, total enrollment was relatively stable across all Model Years (at about 1.9 million), while the number of plan enrollees eligible for Enhanced MTM ("eligible beneficiaries") steadily increased from 1.2 million in Model Year 1 to 1.4 million in Model Year 3.

Enhanced MTM beneficiary eligibility depends on both the volume and composition of plan enrollment, as well as the targeting parameters of interventions implemented by sponsors. Changes to any of these factors will result in changes in eligibility. Overall, beneficiary eligibility for Enhanced MTM increased over time (Section 3.2.1), but changes in eligibility varied by sponsor and intervention (Section 3.2.2). This section provides more details about beneficiary eligibility for Enhanced MTM over the first three Model Years, with a focus on changes between Model Years 2 and 3.

3.2.1 Beneficiary Eligibility for Enhanced MTM

Modelwide, overall plan enrollment in Model Year 3 remained stable, while the number of beneficiaries eligible for Enhanced MTM services increased (Figure 3.2). There was some variation among sponsors. Plan enrollment declined for all sponsors except UnitedHealth between Model Year 2 and Model Year 3. Enrollment in UnitedHealth's Enhanced MTM plans increased in Model Year 3 due to plan consolidation, with new enrollees coming from UnitedHealth plans that did not previously participate in Enhanced MTM. Given the changes in enrollment and number of beneficiaries eligible for Enhanced MTM services, eligibility rates between Model Years 2 and 3 increased for all sponsors except UnitedHealth (Figure 3.3). This led to a Modelwide increase in the Enhanced MTM eligibility rate, which has been trending up since Model Year 1.[73]

At the sponsor level, Enhanced MTM eligibility rates remained relatively stable for three sponsors (SilverScript/CVS, WellCare, and UnitedHealth) across all three Model Years, while the other three sponsors had more fluctuation in eligibility rates (Figure 3.4). These fluctuations are discussed in more detail in the following section (Section 3.2.2). Eligible beneficiaries who

[73] As discussed in the First Evaluation Report, a substantially higher number and proportion of beneficiaries are eligible for Enhanced MTM relative to traditional MTM. For further information, please refer to: "Evaluation of the Part D Enhanced Medication Therapy Management (MTM) Model: First Evaluation Report" (October 2019), https://downloads.cms.gov/files/mtm-firstevalrpt.pdf.

were continuously enrolled in a sponsor's Enhanced MTM-participating plans largely remained eligible across multiple Model Years (see Appendix B.5 for additional details).

Figure 3.2: Modelwide Eligibility Rates Rose over Model Years 1-3

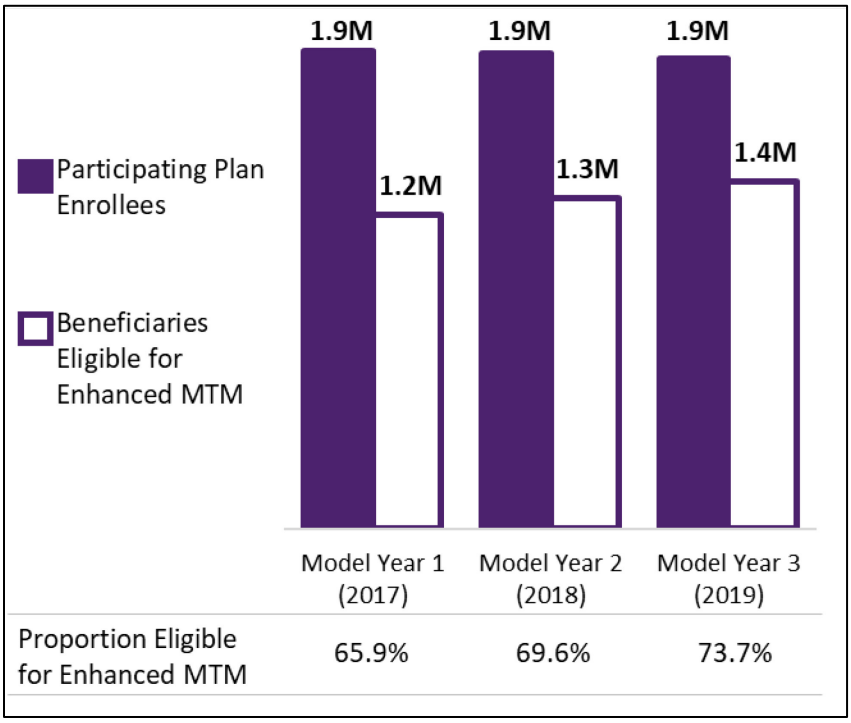


Figure 3.3: Plan Enrollment Decreased for All Sponsors except UnitedHealth between Model Years 2 and 3, while the Number of Beneficiaries Eligible for Enhanced MTM Increased for All Sponsors except Humana and WellCare

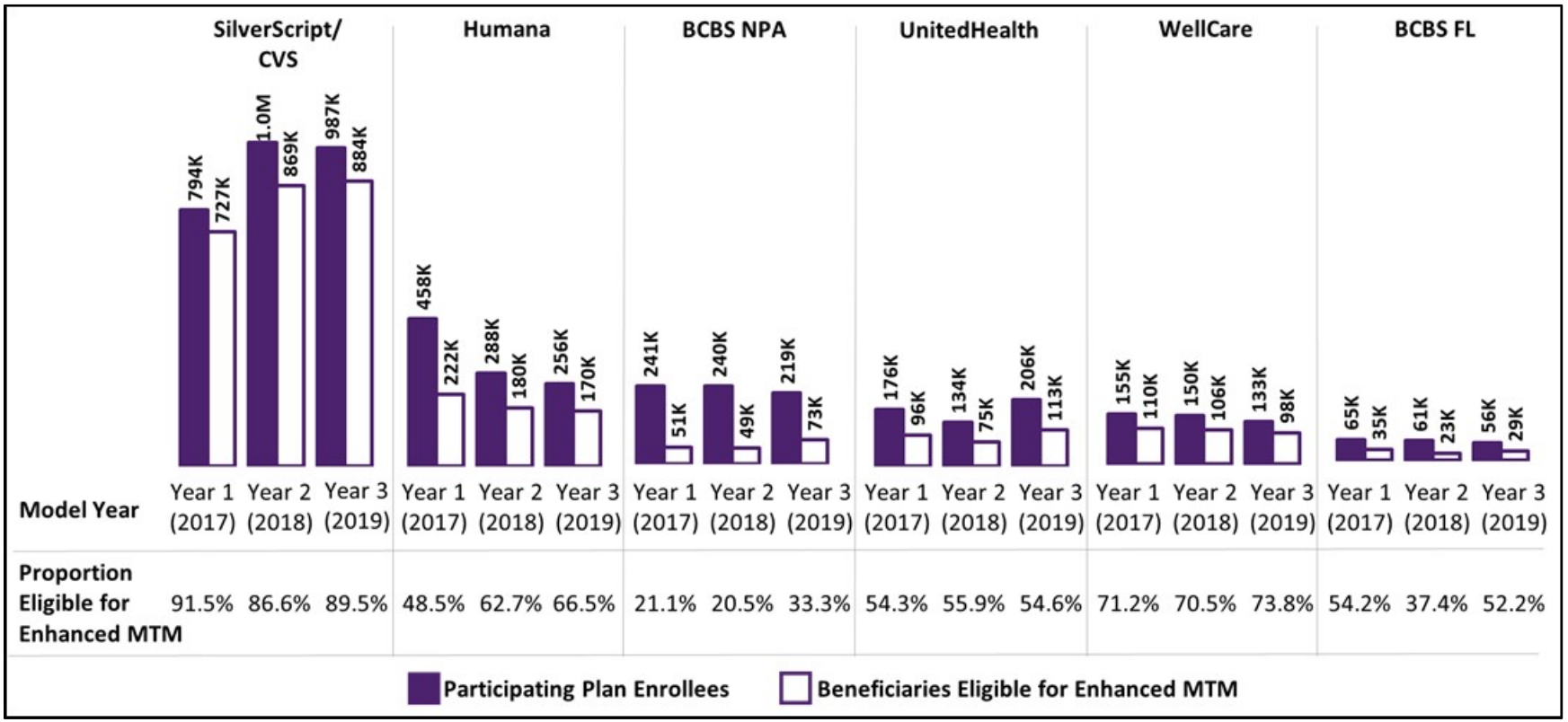
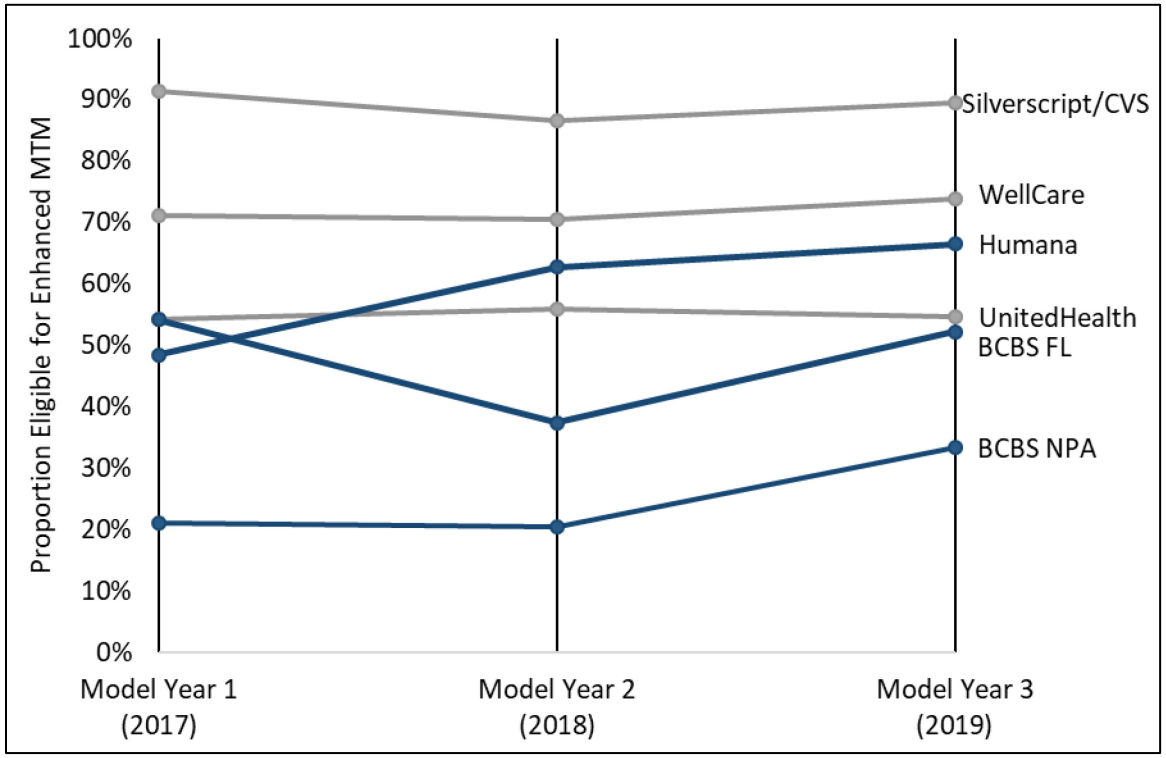


Figure 3.4: Eligibility Rates for Three Sponsors Remained Relatively Stable between Model Years



3.2.2 Targeting Beneficiaries for Specific Enhanced MTM Interventions

In all Model Years, the vast majority of eligible beneficiaries were targeted based on medication utilization. All sponsors offered at least one intervention with primary targeting criteria related to medication utilization ("Med Use" in Table 3.1). Among the beneficiaries targeted based on medication use, almost all (roughly 99 percent) were targeted due to DTPs and over half were targeted based on newly prescribed medications (see Appendix B.5 for more details about beneficiary eligibility across medication utilization sub-categories). In all Model Years, beneficiaries eligible based on their vaccination needs were attributable to a single intervention by SilverScript/CVS (HealthTag). As shown in Table 3.1, Modelwide eligibility increased in four of five targeting categories in all three Model Years. Increases between Model Years 1 and 2 were generally higher than increases between Model Years 2 and 3.

Table 3.1: Modelwide Eligibility Increased in All Targeting Categories except Chronic Conditions

Enhanced MTM Targeting Category	Model Year 1 (2017)		Model Year 2 (2018)		Model Year 3 (2019)	
	Interventions Using as Primary Targeting Category	Beneficiaries Ever Eligible for Category *(Proportion Eligible for Category)*	Interventions Using as Primary Targeting Category	Beneficiaries Ever Eligible for Category *(Proportion Eligible for Category)*	Interventions Using as Primary Targeting Category	Beneficiaries Ever Eligible for Category *(Proportion Eligible for Category)*
All Categories	***19***	***1,237,604***	***26***	***1,299,234***	***29***	***1,364,805***
Med Use	10	974,550 *(78.7%)*	14	1,032,974 *(79.5%)*	13	1,084,196 *(79.4%)*
Vaccine	1	630,326 *(50.9%)*	1	708,346 *(54.5%)*	1	755,838 *(55.4%)*
Conditions	3	72,843 *(5.9%)*	3	76,230 *(5.9%)*	5	65,263 *(4.8%)*
High Costs	2	50,205 *(4.1%)*	5	104,559 *(8.0%)*	5	122,059 *(8.9%)*
Transitions	3	7,735 *(0.6%)*	3	12,119 *(0.9%)*	5	24,991 *(1.8%)*

Sources: CME. MARx; Enhanced MTM Encounter Data; intervention-specific eligibility files.
Notes: Med Use: targeting based on medication utilization; Vaccine: targeting beneficiaries based on the need for a vaccine; Conditions: targeting based on the presence of one or more chronic conditions; High Costs: targeting based on high Medicare Parts A, B, and/or D costs; and Transitions: targeting beneficiaries who experience a recent discharge from the hospital. Beneficiaries may be eligible for more than one intervention and category. Beneficiaries eligible in the Vaccine category were attributable to a single sponsor and intervention (SilverScript/CVS's HealthTag intervention).

Eligibility changes shown in Table 3.1 suggest that, over the course of Model implementation, sponsors increasingly sought to address the needs of beneficiaries with high

medical and/or drug costs and transitions of care. The number of beneficiaries targeted based on these categories increased substantially across all Model Years, which is consistent with the Model's incentives for reductions in beneficiaries' medical expenditures. As discussed in Section 2.4, sponsors that offered these types of interventions since the start of the Model saw cumulative decreases in expenditures related to inpatient and institutional post-acute care over the first three years of Model implementation (these decreases were partially offset by increases in expenditures for outpatient and ancillary care).

Interventions focusing on high costs and transitions of care were relatively small in size, but increased substantially between Model Years 1 and 3.

The increase in the proportion of beneficiaries targeted based on high costs and transitions of care was a result of the addition of new interventions, as well as other implementation factors. For example, the substantial increase in eligibility for interventions targeting beneficiaries with high medical or pharmacy costs between Model Years 1 and 2 was attributable to a large increase in the number of beneficiaries eligible for SilverScript/CVS's Medication Therapy Counseling intervention, as shown in Table 3.3. SilverScript/CVS added pharmacy capacity through a vendor for this intervention, which offers CMRs, TMRs, and other Enhanced MTM significant services to beneficiaries predicted to be at high risk for high healthcare costs, in the latter half of Model Year 2 to better meet projected eligibility and service completion estimates. Beyond the interventions added by BCBS NPA and WellCare, increases in eligibility for transitions-of-care interventions were due to expanded targeting criteria (BCBS FL in Model Year 2), increasing use of Admission, Discharge, and Transfer (ADT) data (Humana in Model Years 2 and 3), and more hospitals participating in Florida's HIE, resulting in more robust ADT data (BCBS FL in Model Year 3).

The intervention changes made by the two relatively dynamic sponsors, BCBS NPA and BCBS FL, resulted in notable shifts in the relative size of their interventions and corresponding eligibility rates across the three Model Years, as shown in Table 3.2. These sponsors added new interventions and adjusted targeting criteria for existing interventions. This had the effect of disqualifying some beneficiaries who were eligible in previous Model Years from eligibility in subsequent Model Years, moving beneficiaries with existing eligibility between interventions, and identifying beneficiaries who were newly eligible for interventions. For example, BCBS NPA narrowed its targeting thresholds for its risk-based interventions. This resulted in a lower number and proportion of beneficiaries eligible for both its Low-Risk/High-Cost intervention in Model Year 3 relative to Model Year 2, and its High-Risk intervention in Model Years 2 and 3 relative to Model Year 1. Additionally, targeting changes for and substantial expansion of the number of community pharmacies involved in BCBS NPA's Community Pharmacy Smart Recommendation intervention led to a higher number and proportion of beneficiaries eligible for

the intervention in Model Year 2. For BCBS FL, targeting changes and intervention additions resulted in fluctuations in the relative sizes of its interventions. For example, the new Behavioral Health intervention added in Model Year 3 became BCBS FL's second largest intervention. On net, the intervention and enrollment changes increased the number of beneficiaries eligible for interventions for BCBS NPA and decreased the number for BCBS FL, between Model Years 1 and 3.

Table 3.2: The Two Relatively Dynamic Sponsors—BCBS NPA and BCBS FL—Had the Most Substantial Shifts in Eligibility among Interventions between Model Years 2 and 3

Sponsor and Enhanced MTM Intervention	Enhanced MTM Targeting Category	Model Year 1 (2017)		Model Year 2 (2018)			Model Year 3 (2019)		
		Beneficiaries Eligible	Proportion Eligible (%)	Beneficiaries Eligible	Proportion Eligible (%)	Change from Prior Year	Beneficiaries Eligible	Proportion Eligible (%)	Change from Prior Year
BCBS NPA		**51,003**		**49,105**			**73,100**		
High-Risk	Med Use	50,644	99.3[a]	36,220	73.8	↓	46,586	63.7	↓
Opioid	Med Use	-	-	9,893	20.1	-	-	-	-
Low-Risk/High-Cost	High Costs	-	-	9,569	19.5	-	6,937	9.5	↓
Community Pharmacy Smart Recommendations	Med Use	-	-	893	1.8	-	17,348	23.7	↑
Chronic Care Management	Conditions	-	-	-	-	-	2,885	3.9	-
Transitions of Care	Transitions	-	-	-	-	-	1,233	1.7	-
BCBS FL		**35,022**		**22,734**			**29,223**		
Hospital Prevention	High Costs	10,531	30.1	3,073	13.5	↓	2,236	7.7	↓
Diabetes Plus 3	Conditions	12,478	35.6	4,918	21.6	↓	4,956	17.0	↓
Anticoagulant	Med Use	5,118	14.6	1,864	8.2	↓	3,208	11.0	↑
Specialty Drug	Med Use	2,038	5.8	79	0.3	↓	71	0.2	↓
Medication Adherence	Med Use	17,430	49.8	11,036	48.5	No Change	10,506	36.0	↓
Transitions of Care	Transitions	3,253	9.3	5,212	22.9	↑	8,511	29.1	↑
Continuity of Care	High Costs	-	-	5,507	24.2	-	1,500	5.1	↓
Statin Use in Persons with Diabetes	Med Use	-	-	1,026	4.5	-	1,239	4.2	No Change
Behavioral Health	Conditions	-	-	-	-	-	9,011	30.8	-

Sources: CME. MARx; Enhanced MTM Encounter Data; intervention-specific eligibility files.

Notes: Cells with "-" signify that the sponsor did not offer the intervention in that Model Year or a consecutive Model Year. Arrows indicate a more than 10 percent directional change in the proportion of beneficiaries eligible for a specific intervention (out of the sponsor's total number of beneficiaries eligible for Enhanced MTM in each Model Year) between two consecutive Model Years. Cells with "No Change" indicate there was a less than 10 percent change in the proportion of beneficiaries eligible for a specific intervention between two consecutive Model Years. Beneficiaries are often eligible for more than one intervention, resulting in a sum of the eligible beneficiaries by intervention exceeding the actual total.

[a] The remaining 0.7% is due to a very slight mismatch between the MARx data and the intervention-specific eligibility data used to calculate the figures presented in this table.

For the other sponsors, there were some fluctuations in intervention-level eligibility, but the relative size of many interventions was generally consistent between Model Years 2 and 3, as shown in Table 3.3. Among the stable sponsors, only one to two sponsors added interventions each Model Year. These additions did not yield increases in the numbers of eligible beneficiaries. Among the existing interventions, some intervention-level eligibility changes were attributable to targeting criteria or implementation-related changes; others were not. For example, Humana expanded use of ADT data to target beneficiaries for its transitions-of-care intervention, thus increasing the number of eligible beneficiaries over time. With the addition in Model Year 2 of a new vendor for its Medication Therapy Counseling intervention, SilverScript/CVS was able to offer services to more beneficiaries and thus was able to expand its quota and identify more eligible beneficiaries. Not all intervention-level eligibility changes were due to intervention changes; eligibility changes also stemmed from changes in the number and composition of plan enrollment or other contextual factors, such as secular changes in opioid prescribing practices in the case of WellCare's opioid intervention.

Table 3.3: The Four More Stable Sponsors Had Some Fluctuations in Eligibility, Though the Relative Size of Their Interventions Was Consistent between Model Years 2 and 3

Sponsor and Enhanced MTM Intervention	Enhanced MTM Targeting Category	Model Year 1 (2017)		Model Year 2 (2018)			Model Year 3 (2019)		
		Beneficiaries Eligible	Proportion Eligible (%)	Beneficiaries Eligible	Proportion Eligible (%)	Change from Prior Year	Beneficiaries Eligible	Proportion Eligible (%)	Change from Prior Year
SilverScript/CVS		**726,911**		**868,854**			**883,639**		
Medication Therapy Counseling	High Costs	39,688	5.5	86,277	9.9	↑	107,693	12.2	↑
Specialty Pharmacy Care Management	Conditions	46,739	6.4	53,505	6.2	No Change	31,599	3.6	↓
Pharmacy Advisor Counseling	Med Use	504,615	69.4	634,073	73.0	No Change	641,810	72.6	No Change
HealthTag	Vaccine	630,326	86.7	708,346	81.5	No Change	755,838	85.5	No Change
Long-Term Care	High Costs	-	-	134	0.0	-	3,736	0.4	↑
Humana		**221,663**		**180,175**			**169,946**		
Risk-Based	Med Use	196,000	88.4	172,439	95.7	No Change	164,620	96.9	No Change
Transitions of Care Medication Reconciliation	Transitions	1,300	0.6	3,349	1.9	↑	7,556	4.4	↑
UnitedHealth		**95,518**		**75,114**			**112,594**		
Risk-Based	Med Use	94,784	99.2	74,495	99.2	No Change	111,702	99.2	No Change
Transitions of Care	Transitions	3,182	3.3	3,558	4.7	↑	3,131	2.8	↓
Medication Adherence Monitoring	Med Use	-	-	28,177	37.5	-	33,392	29.7	↓
WellCare		**110,415**		**105,911**			**97,842**		
Medication Adherence	Med Use	93,441	84.6	93,512	88.3	No Change	92,870	94.9	No Change
Opioid Utilization	Med Use	28,743	26.0	23,615	22.3	↓	16,790	17.2	↓
Select Drug Therapy Problems	Med Use	51,234	46.4	58,550	55.3	↑	53,617	54.8	No Change
High Utilizer	Conditions	13,628	12.3	17,814	16.8	↑	18,791	19.2	↑
Hospital Discharge	Transitions	-	-	-	-	-	4,560	4.7	-

Sources: CME. MARx; Enhanced MTM Encounter Data; intervention-specific eligibility files.

Notes: Cells with "-" signify that the sponsor did not offer the intervention in that Model Year or a consecutive Model Year. Arrows indicate a more than 10 percent directional change in the proportion of beneficiaries eligible for a specific intervention (out of the sponsor's total number of beneficiaries eligible for Enhanced MTM in each Model Year) between two consecutive Model Years. Cells with "No Change" indicate there was a less than 10 percent change in the proportion of beneficiaries eligible for a specific intervention between two consecutive Model Years. Beneficiaries are often eligible for more than one intervention, resulting in a sum of the eligible beneficiaries by intervention exceeding the actual total.

3.3 How Did Enhanced MTM Service Receipt Change in Model Years 1-3?

The total number and proportion of eligible beneficiaries receiving significant services continued to increase in Model Year 3.

- Over half a million, or 41 percent, of eligible beneficiaries received significant services in Model Year 3 (up from roughly 400,000 or 34 percent in Model Year 1).
- The number of eligible beneficiaries receiving a CMR and TMR increased in Model Year 3.
- Sponsors expanded their transitions-of-care interventions between Model Year 2 and 3, increasing eligibility from 12,000 to 25,000 beneficiaries and the number of beneficiaries who received transitions-of-care services from 7,000 to 12,000.
- The number of plan enrollees who were eligible for and received medication adherence services increased at similar rates in Model Year 3, resulting in a stable proportion (43 percent) of eligible beneficiaries who received adherence services between Model Years 2 and 3.

Enhanced MTM services aim to address the specific health and medication management needs of eligible beneficiaries. As such, receipt of significant services is an important consideration in interpreting the estimated impacts of the Model on downstream outcomes. As noted in Section 1.2.1, there were 12 categories of "significant" services that sponsors used for Enhanced MTM. Modelwide, the number and proportion of eligible beneficiaries receiving significant services continued to increase in Model Year 3 (Section 3.3.1), and receipt rates for select significant services (CMRs, TMRs, transitions-of-care services, and adherence services) that are used across sponsors generally remained high or decreased slightly as a result of an increase in the number of beneficiaries eligible for these services (Section 3.3.2). This section provides more details about receipt of Enhanced MTM services over the first three Model Years, with a focus on changes between Model Years 2 and 3.

3.3.1 Beneficiary Receipt of Significant Enhanced MTM Services

Modelwide, over half a million beneficiaries received significant services in Model Year 3. Relative to Model Year 2, there was a small increase in the number (8 percent) and proportion (3 percent) of eligible beneficiaries receiving significant services (Figure 3.5). These increases were consistent with the increase in the number of beneficiaries eligible for Enhanced MTM, and also resulted in the highest number of significant services delivered (over 1.4 million) of any year since the Model began (detailed information on significant service counts is available in Appendix B.5). Modelwide, the proportion of eligible beneficiaries receiving significant services that were "high-intensity," meaning services that involve interactive discussions with

beneficiaries, remained stable between Model Years 2 and 3 at 28 percent. (See Appendix B.5 for additional details on high- and low-intensity service receipt statistics.) At the sponsor level, changes in the number of beneficiaries receiving significant services in Model Year 3 generally grew as shown in Figure 3.5 and Figure 3.6.

Figure 3.5: The Number and Proportion of Eligible Beneficiaries Receiving Significant Services Increased across Model Years, with Larger Increases Occurring between Model Years 1 and 2

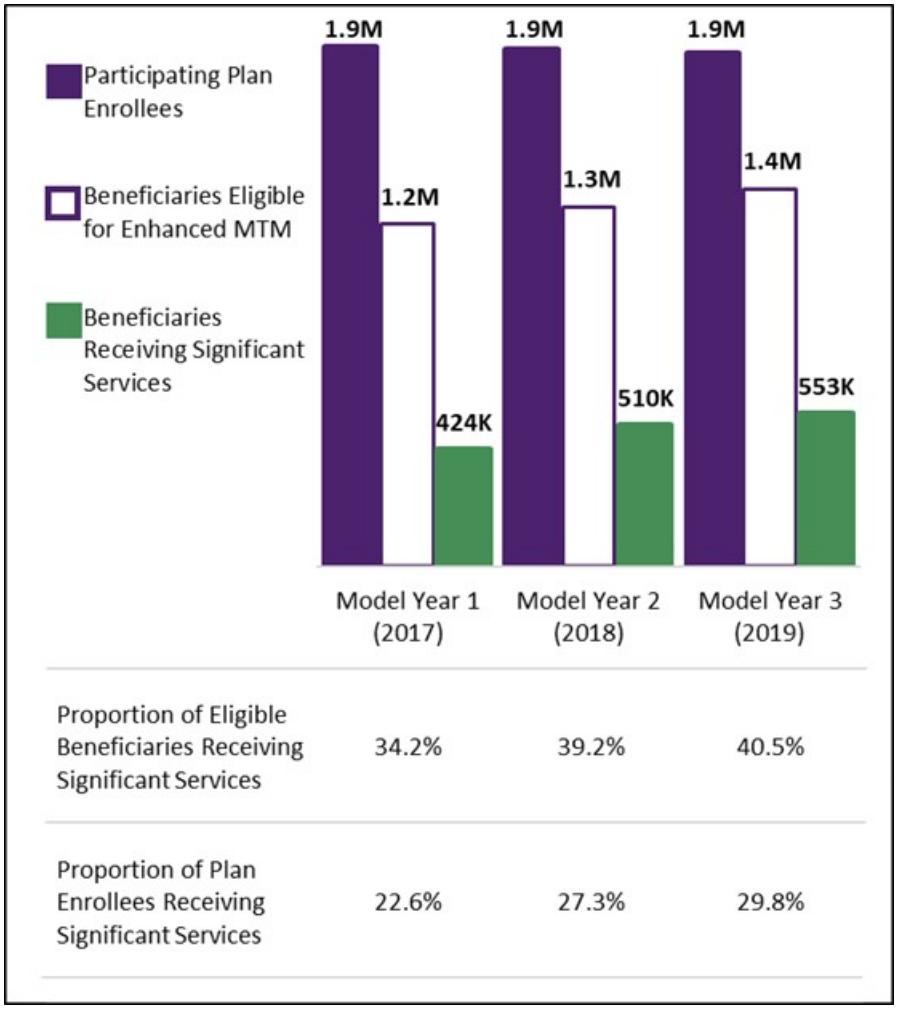
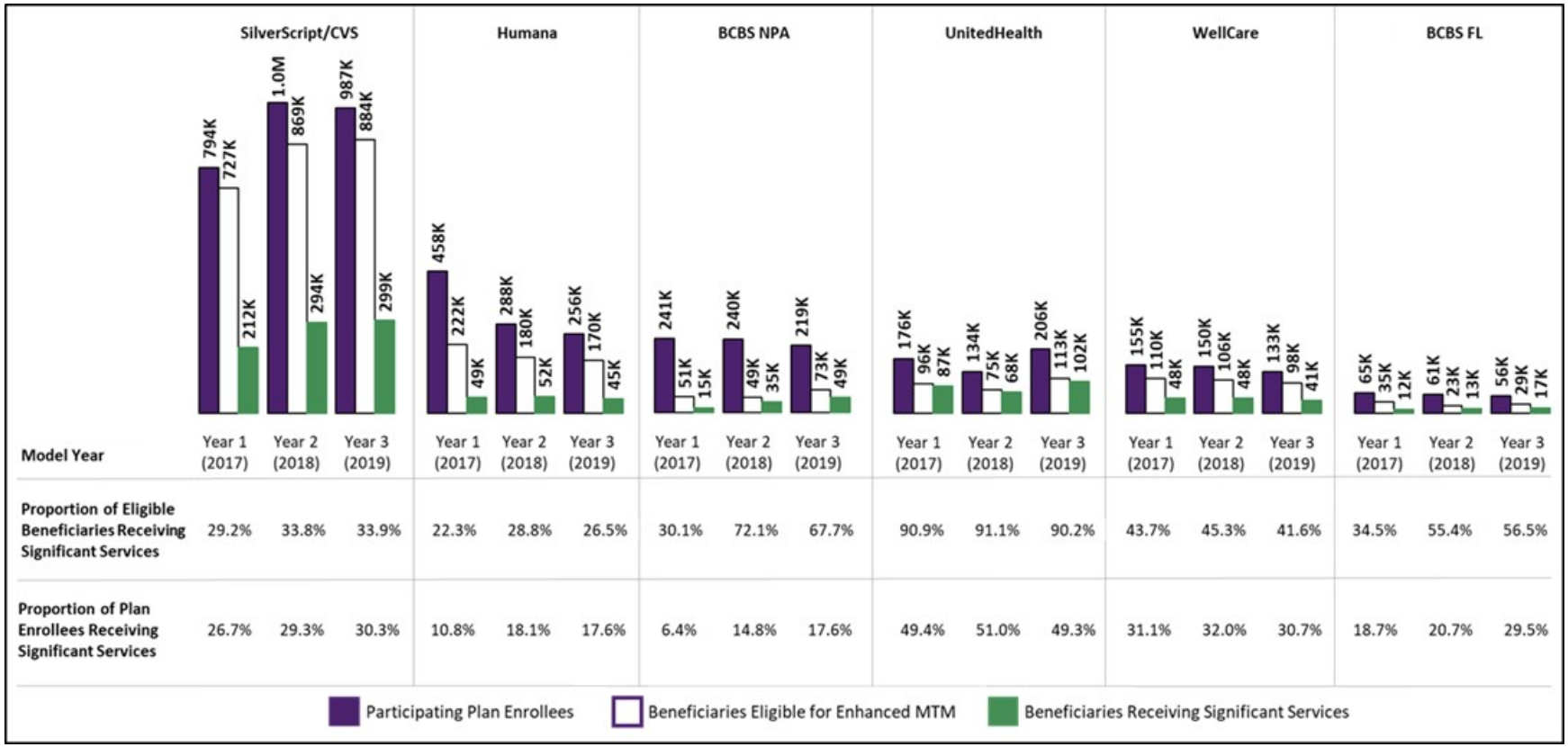


Figure 3.6: Across All Model Years, There Was a Wide Range among Sponsors in the Number and Proportion of Eligible Beneficiaries Who Received Significant Services



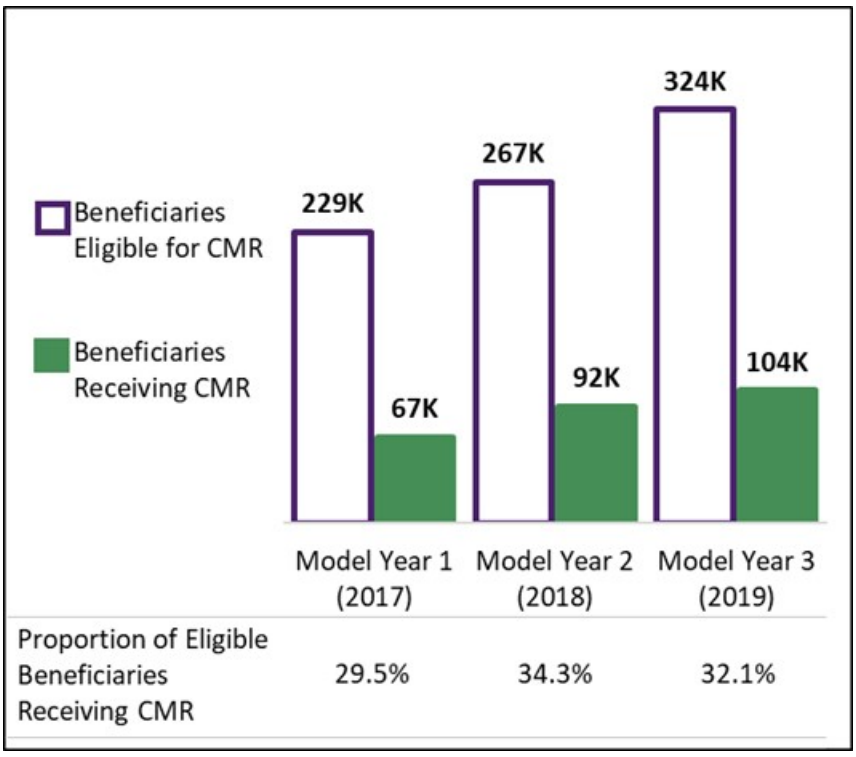
Modelwide, the average number of significant services per beneficiary among those who received a significant service was the same in Model Years 2 and 3 (2.6 significant services) and was consistent across sponsors, with the exception of BCBS FL, which averaged 8.1 and 6.6 services per beneficiary in Model Years 2 and 3, respectively (see Appendix B.5). The higher number of average services per beneficiary for BCBS FL is likely due to its large number of interventions and improvements in how its cost-sharing significant service was delivered.

3.3.2 Beneficiary Receipt of CMRs

The intervention and targeting changes made by sponsors over the first three Model Years resulted in rapid expansion in the number of beneficiaries eligible for CMRs. Though there was a steady Modelwide increase in the number of beneficiaries who received a CMR over the first three Model Years, difficulty in reaching out to and having beneficiaries accept CMRs caused the pace of CMR service receipt to be slower. As a result, the proportion of eligible beneficiaries who received a CMR decreased slightly between Model Years 2 and 3, as shown in Figure 3.7.[74]

[74] As noted in the Enhanced MTM Second Evaluation Report, the proportion of eligible beneficiaries who received a CMR under Enhanced MTM was higher than traditional MTM. For further information, please refer to: "Evaluation of the Part D Enhanced Medication Therapy Management (MTM) Model: Second Evaluation Report" (November 2020), https://innovation.cms.gov/data-and-reports/2020/mtm-secondevalrpt.

Figure 3.7: Modelwide, the Number of Beneficiaries Eligible for a CMR Increased More Than the Number Receiving a CMR across Model Years



Between Model Years 2 and 3, the number of beneficiaries who received a CMR increased for all sponsors except SilverScript/CVS (Table 3.4). The proportion of eligible beneficiaries who received a CMR decreased for SilverScript/CVS, UnitedHealth, and BCBS FL, and increased for Humana, BCBS NPA, and WellCare. However, estimated Model impacts (discussed in Section 2.3) do not seem to be systematically related to these changes in CMR receipt rates.

For SilverScript/CVS, UnitedHealth, and BCBS FL, decreases in the proportion of eligible beneficiaries who received a CMR between Model Years 2 and 3 were due to large increases in the number of beneficiaries eligible for a CMR (the denominator). In the case of BCBS FL, the increase in the number of beneficiaries eligible for a CMR was attributable to the addition of its Behavioral Health intervention in Model Year 3. UnitedHealth's increase was due to the aforementioned influx of plan enrollees, and SilverScript/CVS's increase was due to expanded capacity to offer CMR services with the addition of a new vendor, which resulted in SilverScript/CVS being able to designate a larger number of beneficiaries as eligible for CMRs. SilverScript/CVS also had a small decrease in the actual number of beneficiaries who received a CMR (the numerator).

The increases in the proportion of eligible beneficiaries who received a CMR between Model Years 2 and 3 among the other three sponsors are likely explained by implementation changes, including improvements in beneficiary outreach. For BCBS NPA, the increase is likely due to expanded use of community pharmacies for its High-Risk intervention in Model Year 3 as well as its reassignment of beneficiaries to the call center for outreach when services were not provided. WellCare reported using lessons learned from reaching out to beneficiaries in Model Year 1 to improve its beneficiary outreach processes and CMR receipt rates in subsequent Model Years. These lessons learned included better describing the value of services, conducting "on-the-spot" services at the time of outreach instead of scheduling appointments, and contacting low-income subsidy beneficiaries early in the month. Humana deployed numerous strategies (e.g., changing outreach materials, using incentives, embedding pharmacists in physician offices) to improve beneficiary outreach for services.

> "*Our learnings are around engagement rates—making sure we are still able to engage our unique members at a rate we believe we should. If we begin to see slight dips in that—why? What's driving that? Is it opportunity? Or are [there] other things—or just membership changes relative to projections? We track that pretty closely to see if there are levers that we need to pull to drive engagement.*"
>
> - *Sponsor Enhanced MTM Lead*

Table 3.4: Modelwide, There Was a Steady Increase in the Number of Beneficiaries Who Received a CMR, Though the Proportion of Eligible Beneficiaries Who Received a CMR Was Slightly Lower in Model Year 3

Sponsor	Model Year 1 (2017)		Model Year 2 (2018)		Model Year 3 (2019)	
	Beneficiaries Eligible for CMR	Beneficiaries Receiving a CMR *(Proportion Eligible Receiving CMR)*	Beneficiaries Eligible for CMR	Beneficiaries Receiving a CMR *(Proportion Eligible Receiving CMR)*	Beneficiaries Eligible for CMR	Beneficiaries Receiving a CMR *(Proportion Eligible Receiving CMR)*
All Sponsors	**228,528**	**67,515** ***(29.5%)***	**267,152**	**91,639** ***(34.3%)***	**324,308**	**104,125** ***(32.1%)***
SilverScript/CVS	39,688	9,183 *(23.1%)*	86,411	21,524 *(24.9%)*	111,420	20,087 *(18.0%)*
Humana	43,657	16,453 *(37.7%)*	54,440	22,729 *(41.8%)*	56,437	24,796 *(43.9%)*
BCBS NPA	50,644	14,439 *(28.5%)*	45,785	18,929 *(41.3%)*	53,504	23,685 *(44.3%)*
UnitedHealth	47,601	14,439 *(30.3%)*	38,026	12,307 *(32.4%)*	54,636	16,224 *(29.7%)*
WellCare	23,501	5,211 *(22.2%)*	27,007	7,835 *(29.0%)*	29,026	9,597 *(33.1%)*
BCBS FL	23,437	7,790 *(33.2%)*	15,483	8,315 *(53.7%)*	19,285	9,736 *(50.5%)*

Sources: MARx; Enhanced MTM Encounter Data; intervention-specific eligibility files.
Notes: Beneficiaries could decline specific services, and when possible, counts exclude records associated with a service decline or failed outreach attempt. Eligible beneficiaries are those with program-specific flags in the supplemental data received from sponsors.

3.3.3 Beneficiary Receipt of TMRs

In Model Year 3, the Modelwide number and proportion of eligible beneficiaries who received any TMR continued to increase slightly. In Model Year 3, eligibility for TMRs did not increase as much as eligibility for CMRs, a reflection of the services offered by the new interventions added in Model Year 3; two new interventions offered CMRs, whereas only one offered a TMR. (See Appendix A for additional information about the services offered as part of Enhanced MTM interventions.) At the Modelwide level, the proportion of beneficiaries who received any TMR (beneficiary- or prescriber-facing) increased in Model Year 3. Rates of any TMR receipt varied widely among sponsors, as shown in Table 3.5.

The cross-sponsor variation in TMR receipt rates was primarily due to differences in intervention design. For example, both BCBS FL and UnitedHealth had high rates of TMR receipt for beneficiaries eligible for TMR. The vast majority of TMRs offered as part of BCBS FL's interventions were prescriber-facing, which did not require involving the beneficiary in the

service. UnitedHealth's intervention involves conducting TMRs on its entire beneficiary population, which resulted in a high proportion of beneficiaries receiving a TMR. Additional details about TMR service receipt, including prescriber- and beneficiary-facing TMRs, are available in Appendix B.5.

Table 3.5: The Proportion of Beneficiaries Receiving a TMR Varied among Sponsors Based on Intervention Design

Sponsor	Model Year 1 (2017)		Model Year 2 (2018)		Model Year 3 (2019)	
	Beneficiaries Eligible for TMR	**Beneficiaries Receiving a TMR *(Proportion Eligible Receiving TMR)***	**Beneficiaries Eligible for TMR**	**Beneficiaries Receiving a TMR *(Proportion Eligible Receiving TMR)***	**Beneficiaries Eligible for TMR**	**Beneficiaries Receiving a TMR *(Proportion Eligible Receiving TMR)***
All Sponsors	**857,141**	**206,645 *(24.1%)***	**990,182**	**258,765 *(26.1%)***	**1,037,995**	**288,104 *(27.8%)***
SilverScript/CVS	504,615	78,959 *(15.6%)*	643,661	124,523 *(19.3%)*	653,812	129,440 *(19.8%)*
Humana	190,075	19,642 *(10.3%)*	165,286	26,643 *(16.1%)*	158,359	20,550 *(13.0%)*
BCBS NPA	NA	NA	36,390	20,196 *(55.5%)*	52,905	26,728 *(50.5%)*
UnitedHealth	94,807	84,015 *(88.6%)*	74,495	64,182 *(86.2%)*	111,702	92,943 *(83.2%)*
WellCare	67,644	24,029 *(35.5%)*	69,303	22,256 *(32.1%)*	59,724	16,990 *(28.4%)*
BCBS FL	NA	NA	1,047	965 *(92.2%)*	1,493	1,453 *(97.3%)*

Sources: MARx; Enhanced MTM Encounter Data; intervention-specific eligibility files.
Notes: Beneficiaries could decline specific services, and when possible, counts exclude records associated with a service decline or failed outreach attempt. Eligible beneficiaries are those with program-specific flags in the supplemental data received from sponsors. Cells with NA signify that the sponsor did not offer the service.

3.3.4 Beneficiary Receipt of Transitions-of-care Services

At the Modelwide level, the number of beneficiaries receiving transitions-of-care services continued to steadily increase in Model Year 3. Transitions-of-care services include CMR, medication reconciliation, and prescriber-facing services following a recent hospital discharge. Though the number of beneficiaries receiving transitions-of-care services in Model Year 3 increased, the proportion of eligible beneficiaries who received transitions-of-care services in Model Year 3 declined. This was due to increases in the number of eligible beneficiaries resulting from both the addition of two new transitions-of-care interventions by BCBS NPA and WellCare, and increases in eligibility for Humana and BCBS FL's existing transitions-of-care interventions (Table 3.6). Despite having a lower proportion of the eligible beneficiaries who received transitions-of-care services in Model Year 3, the overall proportion of eligible beneficiaries who received a transitions-of-care service was noticeably higher than general CMR and TMR receipt rates. The transitions-of-care service receipt rates for BCBS FL were substantially higher than those for most sponsors across all three Model Years. The higher service receipt rate for BCBS FL may be due to the fact that it is the only sponsor that offers a prescriber-facing transitions-of-care service. For BCBS FL and Humana, the two sponsors with transitions-of-care interventions since Model Year 1, increases in the number of eligible beneficiaries across Model Years were due to targeting changes, as discussed in Section 3.2.2.

As discussed in Sections 2.3 and 2.6, analyses of Model impacts on beneficiary expenditures and utilization tended to show decreases in expenditures for inpatient and institutional post-acute care for sponsors who offered transitions-of-care interventions since the beginning of Model implementation. In addition, the magnitude of these decreases in expenditures was higher for UnitedHealth and BCBS FL than for other sponsors. As seen in Table 3.6, UnitedHealth and BCBS FL have relatively large numbers of beneficiaries eligible for transitions-of-care interventions and have the highest receipt rates for transitions-of-care services.

Table 3.6: Most Sponsors Had High Proportions of Eligible Beneficiaries Who Received Transitions-of-care Services

Sponsor	Model Year 1 (2017)		Model Year 2 (2018)		Model Year 3 (2019)	
	Beneficiaries Eligible for Transitions Services	Beneficiaries Receiving Transitions Services *(Proportion Eligible Receiving Transitions Services)*	Beneficiaries Eligible for Transitions Services	Beneficiaries Receiving Transitions Services *(Proportion Eligible Receiving Transitions Services)*	Beneficiaries Eligible for Transitions Services	Beneficiaries Receiving Transitions Services *(Proportion Eligible Receiving Transitions Services)*
All Sponsors	**7,740**	**4,809** ***(62.1%)***	**12,171**	**7,347** ***(60.4%)***	**25,003**	**12,356** ***(49.4%)***
Humana	1,300	45 *(3.5%)*	3,354	1,082 *(32.3%)*	7,568	1,193 *(15.8%)*
BCBS NPA	NA	NA	NA	NA	1,233	599 *(48.6%)*
UnitedHealth	3,187	2,295 *(72.0%)*	3,558	1,995 *(56.1%)*	3,131	1,846 *(59.0%)*
WellCare	NA	NA	NA	NA	4,560	1,514 *(33.2%)*
BCBS FL	3,253	2,469 *(75.9%)*	5,259	4,270 *(81.2%)*	8,511	7,204 *(84.6%)*

Sources: MARx; Enhanced MTM Encounter Data; intervention-specific eligibility files.
Notes: All counts exclude records associated with a service decline or failed outreach attempt. Eligible beneficiaries are those with program-specific flags in the supplemental data received from sponsors. Cells with NA signify that the sponsor did not offer the service in a specific Model Year. SilverScript/CVS did not offer a Transition-of-Care service.

3.3.5 Beneficiary Receipt of Medication Adherence Services

Four sponsors implemented medication adherence interventions. These interventions provide focused adherence services consisting of either an interactive service with a pharmacist to investigate and address risk of beneficiary non-adherence, or an automated contact, such as refill reminders, through interactive voice response (IVR). Enhanced MTM adherence services tended to focus on medications included in the Medicare STAR adherence measures, and analyses discussed in Section 2.5 found some evidence of improved adherence for one of these measures, oral antidiabetics (OADs).

Across all Model Years, the Modelwide number and proportion of eligible beneficiaries who received adherence services increased, growing substantially between Model Years 1 and 2 and stabilizing between Model Years 2 and 3. Adherence service receipt rates were also higher than CMR and TMR service receipt rates in any given Model Year. The increase in adherence service receipt rate between Model Years 1 and 2 was largely attributable to the addition of

UnitedHealth's adherence intervention in Model Year 2, which was entirely automated,[75] and consequently had a high rate of receipt. For BCBS NPA, the substantial increase in eligible beneficiaries between Model Years 2 and 3 resulted from expansion of the number of community pharmacies involved in delivering its adherence intervention. WellCare's medication adherence intervention was consistently the largest medication adherence intervention across all sponsors and Model Years (see Table 3.7). The adherence service receipt statistics in this section only reflect adherence services provided as part of adherence-specific interventions. Beneficiaries for all sponsors may have received adherence services as part of other (non-adherence) interventions or have had adherence issues addressed as part of other Enhanced MTM services (e.g., CMRs).

Table 3.7: The Number of Beneficiaries Eligible for and Receiving Adherence Services Varied among Sponsors

Sponsor	Model Year 1 (2017)		Model Year 2 (2018)		Model Year 3 (2019)	
	Beneficiaries Eligible for Adherence Services	**Beneficiaries Receiving Adherence Services *(Proportion Eligible Receiving Adherence Services)***	**Beneficiaries Eligible for Adherence Services**	**Beneficiaries Receiving Adherence Services *(Proportion Eligible Receiving Adherence Services)***	**Beneficiaries Eligible for Adherence Services**	**Beneficiaries Receiving Adherence Services *(Proportion Eligible Receiving Adherence Services)***
All Sponsors	**84,498**	**28,901 *(34.2%)***	**107,637**	**46,381 *(43.1%)***	**115,478**	**49,991 *(43.3%)***
BCBS NPA	NA	NA	796	348 *(43.7%)*	8,315	4,014 *(48.3%)*
UnitedHealth	NA	NA	28,177	17,408 *(61.8%)*	33,392	20,319 *(60.8%)*
WellCare	67,068	23,709 *(35.4%)*	67,628	24,915 *(36.8%)*	63,265	21,890 *(34.6%)*
BCBS FL	17,430	5,192 *(29.8%)*	11,036	3,710 *(33.6%)*	10,506	3,768 *(35.9%)*

Sources: MARx; Enhanced MTM Encounter Data; intervention-specific eligibility files.

Notes: Cells with NA signify that the sponsor did not offer an adherence intervention in a specific Model Year; only discrete medication adherence interventions for which eligible beneficiaries were identified in the intervention-level eligibility data received from sponsors are included in this table. SilverScript/CVS and Humana did not offer adherence interventions. UnitedHealth reported that 2,307 beneficiaries who received an adherence service in 2018 were not reported as eligible in MARx Enhanced MTM eligibility data and were thus excluded from these statistics.

[75] Automated adherence services involve automated contact with a beneficiary, such as refill reminders, through interactive voice response (IVR).

4 CONCLUSIONS AND NEXT STEPS

The Enhanced MTM Model tests whether providing Medicare Part D sponsors with financial incentives and design flexibilities for the provision of MTM services leads to improvements in medication use, and subsequently reduces gross and net Medicare expenditures. The Model's financial incentives include both prospective payments for Enhanced MTM implementation and performance-based payments contingent on reductions in Medicare Parts A and B expenditures for PBP enrollees. This Third Evaluation Report addresses each component of the Model's theory of change (see Figure 1.2 in Section 1.3). The report describes how sponsors used the Model's flexibilities to implement and evolve their Enhanced MTM interventions over the first three years (2017-2019), and examines impacts for beneficiaries enrolled in participating PBPs as well as potential mechanisms for those impacts. It analyzes proximal impacts on medication use and safety and distal impacts on health service utilization and Medicare expenditures. This concluding section summarizes the findings to date, and describes next steps in the evaluation.

Each of the six participating sponsors offered multiple distinct Enhanced MTM interventions to eligible beneficiaries, with each intervention representing a unique combination of targeting criteria and services. In the third year of Model implementation, most sponsors continued to make changes to the Enhanced MTM interventions they offered to their enrollees, although there were fewer changes relative to previous years. Overall, four new interventions were added in Model Year 3, compared to seven new interventions that were added in Model Year 2.

Sponsors took different approaches to implementing Enhanced MTM, and these differences were reflected in the number of changes made to interventions over time. Some sponsors (e.g., BCBS FL and BCBS NPA) reported approaching the Model as an opportunity to quickly test different strategies. Others, such as Humana, reported wanting to gather data over a longer period and making adjustments to their interventions only in cases where cumulative data indicated the need for change. Changes included adding new interventions, modifying targeting criteria, and/or adding services for existing interventions. Sponsors reported that changes to Enhanced MTM interventions reflect efforts to address perceived gaps in care and care coordination. For example, two sponsors (WellCare and BCBS NPA) each added a new intervention in Model Year 3 for beneficiaries with a recent hospital discharge. Though interventions focusing on beneficiaries with high costs and a recent hospital discharge were relatively small in size, the proportion of beneficiaries eligible for these types of interventions increased substantially over time. Overall, sponsors' efforts to add new interventions, expand

current interventions, and optimize service provision have increased both eligibility for and receipt of Enhanced MTM services for the Model as a whole (see Figure 3.5 in Section 3.3.1).

The Model's interventions are designed to improve medication use and safety among beneficiaries, and the evaluation finds small improvements in measures of medication use for diabetes. The analyses find cumulative increases in adherence to oral antidiabetics and statin use in persons with diabetes (SUPD), although the estimated magnitudes were less than a one-percentage-point increase relative to baseline. There are no improvements in medication safety measures for the Model as a whole, and the evidence often points to larger gains among the comparison group than among Enhanced MTM enrollees.

While these measures represent a range of plausible indicators, it is important to note that they do not comprehensively assess all medication use changes that may have occurred as a result of the Model. Enhanced MTM services could also result in recommendations for other types of medication changes, such as the elimination of duplicative therapies, dosage changes, and use of over-the-counter therapies. In addition, Enhanced MTM interventions may encourage behavioral changes and have other proximal impacts that are not captured in Part D claims, but may affect distal outcomes. For example, case or disease management services focus broadly on a beneficiary's condition, education, and counseling for chronic disease management. For these reasons, the Model may affect distal outcomes such as medical expenditures and utilization in specific settings, even though no impacts were detected on these proximal outcomes of medication use and patient safety.

With regard to distal outcomes, there were Modelwide changes in health service use and Medicare Parts A and B expenditures in some specific settings. These changes are largely consistent with the Model's theory of change described in Figure 1.2. As detailed in Section 2.6, there were statistically significant cumulative decreases in expenditures in the inpatient and institutional post-acute care settings for the Model as a whole. This is in line with the expectation that care improvements and better maintenance of chronic conditions from medication management can lead to fewer medication-related adverse events and reduce the need for hospitalizations and associated post-acute care.

The analyses also found decreases in unplanned hospital readmissions, again consistent with sponsors' focus on transitions of care and the expectation that medication management services can reduce medication-related hospitalizations and related post-acute care needs. Decreases in ACSC-related inpatient expenditures accounted for approximately 17 percent of the cumulative decrease in total inpatient expenditures. This suggests that part of the observed decrease in inpatient expenditures may be related to improvements in preventive care for ACSCs. Medication management is a critical part of such care. Given the limited evidence of improvements in the medication use measures that were assessed, it is possible that these

observed changes in expenditures and related utilization are mediated by other, unobserved proximal impacts, such as behavioral change due to focused counseling for chronic disease management. Additionally, as discussed in Section 2, some of these results could be confounded by contemporaneous impacts of other, overlapping CMS initiatives on outcomes such as expenditures for institutional post-acute care. Future reports will assess the overlap in Enhanced MTM beneficiaries' exposure to other, co-occurring initiatives in more detail.

The decreases in expenditures for inpatient and institutional post-acute care were partially offset by increases in expenditures for outpatient non-emergency services (including non-inpatient and non-emergency physician services), outpatient emergency services, and ancillary services. These increases could be due to increased demand for primary care following Enhanced MTM services where regular interactions with providers are encouraged. The increase in emergency department visits (and related spending) is unexpected based on the Model's theory of change, and may be capturing increased demand for non-urgent outpatient care in the emergency department.

Overall, analyses continue to find no significant impacts of the Model on gross or net Medicare expenditures into the third year of the Model. For the Model as a whole, estimated cumulative reductions in total Medicare Parts A and B (gross) expenditures were small in magnitude (a decrease of 0.25 percent relative to baseline) and lacked statistical significance. Medicare's cumulative prospective and performance-based payments to sponsors for the Model ($4.64 PBPM) were larger than the estimated non-significant decreases in Medicare Parts A and B expenditures ($2.21 PBPM). The Model, therefore, generated net losses for Medicare ($2.43 PBPM or about $147 million in total) cumulatively over the first three years, though this estimate is not statistically significant. Similar to the cumulative results, estimates of Modelwide changes in gross and net expenditures were not statistically significant in any of the three Model Years.

There were also no cumulative impacts on overall Medicare Parts A and B expenditures for any individual sponsor. Humana was the only sponsor with an estimated decrease of $14.97 PBPM (or 1.6 percent from baseline, significant at the 10 percent level) in total expenditures for Model Year 3. There was some variation in impacts on medication use and setting-specific expenditures and utilization among sponsors. Because the six sponsors' approaches to Model implementation vary along so many dimensions, it is difficult to confidently identify individual features of implementation or enrollee characteristics that drive sponsor-specific findings. However, there are some similarities and differences across sponsors that are potentially linked to similarities and differences in estimated impacts.

In terms of implementation differences, sponsors with more consistent decreases in outcomes measuring inpatient expenditures and related utilization tended to either directly target beneficiaries with high medical expenditures, or offer wide-reaching transitions-of-care

interventions. There were significant decreases in inpatient expenditures and in readmission rates for all sponsors with transitions-of-care interventions that have been active since the beginning of Model implementation. Targeting for chronic conditions seems to result in decreases in ACSC-related expenditures and utilization for most sponsors, though there are some exceptions. Differences in service receipt rates do not seem to be a major factor in differences in estimated Model impacts. For example, WellCare has completed services for almost one-third of its enrollees, which is a relatively large fraction compared to other sponsors (see Section 3.3.1 for more details). However, there is little evidence of Model impacts for WellCare.

Differences in the characteristics of plans and their enrollee populations may also account for some of the differences in estimated impacts. The plans operated by BCBS FL and BCBS NPA are not benchmark plans, and the BCBS FL plan has a significantly higher premium than other Model-participating plans. The plans operated by these sponsors were comprised of older, healthier beneficiaries who are less likely to be eligible for LIS than beneficiaries of other sponsors. Cumulative increases in emergency department expenditures were significant for the four sponsors with high volumes of low-income beneficiaries among their enrollees (SilverScript/CVS, Humana, UnitedHealth, and WellCare), but were not significant for the two sponsors with small proportions of low-income enrollees (BCBS NPA and BCBS FL). Regular interaction with physicians for primary care purposes is encouraged during Enhanced MTM services. Increases in emergency department expenditures and related utilization are unexpected based on the Model's theory of change, and could also reflect increased demand for non-urgent care in the emergency setting. Differences across sponsors in the clinical profile of beneficiaries may also drive some cross-sponsor differences in impacts. For example, Humana and UnitedHealth had slightly lower baseline rates of adherence to OADs and SUPD. They were the only two sponsors with significant improvements in these measures, possibly because gains were easier to achieve for them than for other sponsors.

In conclusion, the Model, as implemented in the first three years, has not produced net savings for Medicare. There have been continued refinements to interventions, and improvements in Enhanced MTM service receipt rates and in a few proximal outcomes related to medication use. The estimated impacts suggest that the Model may be improving upon some beneficiary outcomes, and may have reduced certain types of costly utilization (e.g., readmissions), though these decreases were partially offset by increases in the outpatient setting. Future evaluation analyses will use additional years of data to assess the Model's impacts on medication use, health service use, and expenditures to assess how these outcomes continue to evolve over time. Finally, future reports will continue to review Model implementation and changes to provide additional insight and context regarding the pathways through which Model interventions may impact expenditures and other outcomes of interest.