Association Between Advanced Primary Care Engagement and Long-Term Chronic Condition Control in a Predominantly Commercially-Insured Population

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Précis (Table of Contents Summary)

Advanced primary care engagement was associated with significant improvements in hypertension, diabetes, cholesterol, and depression control over multiple years.

Take-Away Points

Engagement with an advanced primary care model was associated with sustained improvements in chronic disease control, with implications for employers seeking to improve workforce health and reduce the costs of chronic disease.

- Among nearly 193,000 patients, most of whom were commercially insured, engagement with an advanced primary care (APC) model was associated with large first-year improvements in disease control across hypertension, diabetes, high cholesterol, and depression.
- Improvements were sustained or modestly continued beyond the first year for most conditions, suggesting that APC models may support long-term chronic disease management — not just short-term gains.
- For employers, these findings suggest that offering APC as a benefit option may meaningfully improve health outcomes, potentially reducing absenteeism, improving productivity, and lowering downstream healthcare costs associated with poorly controlled chronic disease.

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Introduction

Chronic conditions affect 60% of US adults and account for 90% of the US healthcare spending.[1] Advanced primary care (APC), characterized by enhanced access and continuity, team-based care management, comprehensive care coordination, patient engagement, and planned population health management, has been associated with reduced emergency department visits and hospitalizations in Medicare.[2] However, evidence on APC's association with chronic condition control in commercially insured populations remains limited.

The objective of this study is to evaluate the longitudinal association between engagement in an APC model and clinical outcomes for patients with one of four chronic conditions (hypertension, diabetes, high cholesterol, and depression).

Methods

We used claims and electronic health record data from One Medical (OM), a national APC practice with a predominately commercially insured population. OM features 24/7 on-demand virtual care, in-person access in >240 locations, multidisciplinary care teams, and remote monitoring. OM's model incorporates core elements of Advanced Primary Care Management, codified by CMS in the 2025 Medicare Physician Fee Schedule,[3] but applies them to all patients regardless of payer.

We used a retrospective cohort design from December 2015-May 2025. Inclusion required two ICD-10 diagnoses for at least one of the four target conditions within 12 months (**Appendix A**). For each condition cohort, we estimated ordinary least squares regressions to assess the association between clinical engagement (continuous months with a clinical measurement for the condition after an initial OM measurement, not merely enrollment) and relevant outcomes. We included patient and year fixed effects to account for time-invariant patient characteristics and temporal shocks. Separate regressions for the overall period, first year, and post-first year assessed differential effects by engagement period.

Outcomes included control of hypertension (<140/90 mmHg), glycemia (A1c<8), lipids (LDL<100), depression (PHQ-9 ≤9), and optimal diabetes management (A1c<8, <140/90 mmHg, LDL<100), and optimal vascular care (<140/90 mmHg, LDL<100). Secondary measures included blood pressure, A1c, LDL, and PHQ-9.

The unit of analysis was the patient-month; estimates were annualized for interpretability. Sensitivity analyses varied engagement intensity definitions and glycemic outcome definition (A1c<7). Subgroup analyses stratified by OM tenure (to evaluate healthy user bias), insurance type, and new-to-OM status (a proxy for newly diagnosed patients, who may be more susceptible to regression-to-the-mean).

Results

Our study included 192,949 total patients across the four conditions (**Table 1**). 87.3% of patients were commercially insured and 12.7% were on Medicare. 27.1% of patients appeared in more than one cohort.

First-year engagement was associated with improvements across all cohorts, with modest improvements or maintenance thereafter (**Table 2**). At baseline, 49% of patients with hypertension had controlled hypertension; after one year, this increased by 27.1 percentage

points (pp) (95% CI: 26.0-28.0), with additional improvement of 2.8 pp per year beyond year 1 (95% CI: 2.0-4.0). Glycemic control increased by 16.7 pp (95% CI: 14.0-19.0) in year 1, with further gains of 4.2 pp per year (95% CI: 3.0-6.0) thereafter. Lipid control increased by 11.6 pp (95% CI: 10.0-14.0), with further gains of 2.5 pp per year (95% CI: 1.0-4.0) thereafter. Depression control increased by 32.8 pp (95% CI: 27.0-38.0) in year 1, but with no statistically significant increase after year 1. Results were similar for the commercially insured subgroup in year 1 and were robust to alternative specifications (**Appendix B-F**).

Discussion

We found that APC engagement was associated with improvements in chronic disease management in the first year and modest improvements or maintenance thereafter. Control levels after APC engagement are higher than HEDIS national estimates for hypertension and diabetes control,[4] and at least similar to estimates for cholesterol[5] and depression levels in other studies.[6]

Study limitations include the absence of a comparison group allowing potential regression-to-the-mean; inability to isolate contributing model components; residual confounding from time-varying factors, and variability in follow-up duration. Nonetheless, the study's large sample, fixed effects design, and robustness across sensitivity analyses support confidence in the associations.

APCs may help address the burden of chronic disease among commercially insured populations over the longer-term, with implications for value-based payment and APC expansion to support preventative care and reduce utilization and costs.

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Association Between Advanced Primary Care Engagement and Long-Term Chronic Condition Control in a Predominantly Commercially-Insured Population: Tables

Table 1. Descriptive Statistics by Chronic Condition Cohort

	Hypertension	Diabetes	Cholesterol	Depression
Overall Statistics				
Total unique patients (n)	72,587	19,024	93,348	31,646
Total patient-months with outcome measurements (n)	351,257	78,300	223,070	60,844
Average months with observed outcome measurements per patient	4.84	4.12	2.39	1.92
Average months between outcome measurements	7.15	7.19	10.99	7.97
Average months between first and last outcome measurements	27.43	22.39	15.27	7.35
Demographic Statistics				
Age (mean, sd)	53.7 (14.6)	55.5 (14.1)	50.1 (13.9)	37.5 (11.2)
Insurance Type (%)				
PPO	61.6%	59.2%	66.9%	74.3%
Medicare	17.6%	10.7%	12.6%	3.0%
POS	9.3%	8.8%	10.4%	10.2%
HMO	6.6%	6.8%	4.9%	4.9%
Other (e.g., EPO, HDHP)	4.9%	14.5%	5.2%	7.6%
Gender (%)				
Female	38.0%	38.2%	34.8%	60.1%
Male	61.6%	61.2%	64.8%	37.8%
Non-Binary	0.4%	0.6%	0.4%	2.0%
Comorbidities				
% of patients with 2+ conditions	27.14%			
% of patients with 3+ conditions	6.19%			
% of patients with all 4 conditions	0.56%			

Abbreviations: PPO, preferred provider organization. POS, point-of-service. HMO, health maintenance organization. EPO, exclusive provider organization. HDHP, high deductible health plan.

Table 2. Main Results by Chronic Condition Cohort

	Baseline → Year 1 Result	First Year		After First Year		Overall	
		Coef	95% CI	Coef	95% CI	Coef	95% CI
Cohort: Hypertension							
Hypertension Control	49% → 76.1%	27.1**	(26.0, 28.0)	2.8**	(2.0, 4.0)	5.4**	(5.0, 6.0)
Optimal Vascular Care	23% → 34.9%	11.9**	(6.0, 18.0)	2.3	(-1.0, 5.0)	3.4**	(2.0, 5.0)
Systolic BP	136.43 → 127.95	-8.48**	(-8.89, -8.06)	-0.93**	(-1.20, -0.65)	-1.76**	(-1.95, -1.57)
Diastolic BP	85.33 → 80.23	-5.10**	(-5.37, -4.83)	-0.42**	(-0.60, -0.24)	-0.98**	(-1.10, -0.85)
Cohort: Diabetes							
Glycemic Control	71% → 87.7%	16.7**	(14.0, 19.0)	4.2**	(3.0, 6.0)	4.6**	(3.0, 6.0)
Optimal Diabetes Management	30% → 46.3%	16.3**	(9.0, 23.0)	3.5	(-1.0, 8.0)	5.3**	(3.0, 8.0)
Hemoglobin A1c	7.57 → 6.67	-0.90**	(-0.99, -0.80)	-0.16**	(-0.21, -0.11)	-0.20**	(-0.24, -0.16)
Cohort: High Cholesterol							
Lipid Control	22% → 33.6%	11.6**	(10.0, 14.0)	2.5*	(1.0, 4.0)	3.2**	(2.0, 4.0)
Optimal Vascular Care	19% → 29.7%	10.7**	(7.0, 15.0)	2.5	(-0.5, 6.0)	3.5**	(2.0, 5.0)
Total Cholesterol	214.10 → 194.14	-19.96**	(-21.94, -17.98)	-1.99*	(-3.44, -0.54)	-4.12**	(-4.98, -3.25)
LDL Cholesterol	132.85 → 116.67	-16.18**	(-18.04, -14.31)	-2.12*	(-3.50, -0.74)	-3.76**	(-4.56, -2.95)
Cohort: Depression							
Depression Control	43% → 75.8%	32.8**	(27.0, 38.0)	0.8	(-6.0, 8.0)	4.0**	(2.0, 6.0)
PHQ-9 Depression Score	11.12 → 6.79	-4.33**	(-4.92, -3.75)	-0.006	(-0.78, -0.77)	-0.63**	(-0.84, -0.42)

Abbreviations: CI, confidence interval; BP, blood pressure; LDL, low-density lipoprotein
Notes: *p<0.01, **p<0.001. Coefficients represent the marginal effect of an additional year of OM engagement (i.e., months with a clinical measurement for the condition after an initial measurement). Baseline values are model-adjusted estimates (where patient_month variable = 0) from the "first year" regressions, reflecting the predicted outcome at the start of engagement after accounting for individual and year fixed effects. Glycemic control (A1c<8), hypertension control (BP<140/90), lipid control (LDL<100), depression control (PHQ<=9), optimal diabetes management (A1c<8, BP<140/90, LDL<100), and optimal vascular care (BP<140/90, LDL<100) are reported in percentage points (pp). Continuous outcomes (A1c, blood pressure, total cholesterol, LDL, and PHQ-9) are reported in their original units and represent absolute changes. For each outcome, the first column also reports the resulting value after one year of engagement (Baseline + First Year coefficient) alongside the baseline value, to aid interpretation. This derived value is shown only for Year 1, since the After First Year and Overall coefficients come from separate models reflecting a per-year marginal effect rather than a change from a single fixed starting point.

Association Between Advanced Primary Care Engagement and Long-Term Chronic Condition Control in a Predominantly Commercially-Insured Population: Appendices

Table of Contents

Appendix A. ICD-10 Diagnosis Codes for Target Chronic Conditions.....2

Appendix B. Sensitivity Analysis: Engagement Intensity.....3

Appendix C. Sensitivity Analysis: Alternative Glycemic Control Threshold Definition.....4

Appendix D. Subgroup Analysis: OM Tenure.....5

Appendix E. Subgroup Analysis: New OM Members.....6

Appendix F. Subgroup Analysis: Returning OM Members.....7

Appendix G. Subgroup Analysis: Commercially Insured Patients Only.....8

Appendix A. ICD-10 Diagnosis Codes for Target Chronic Conditions

Condition	Relevant ICD-10 Code
Diabetes	E11.X
Hypertension	I10.X, I11.X, or I15.X
High Cholesterol	E78.X
Depression	F32.X or F33.X

Note: We took any observation with these ICD-10 codes irrespective of the decimal point.

Appendix B. Sensitivity Analysis: Engagement Intensity

	(4) Top Quartile with Most Clinical Measurements		(5) Bottom 50% with Clinical Measurements	
	Coefficient	95% CI	Coefficient	95% CI
Cohort: Hypertension				
Hypertension Control	4.4**	(3.7, 5.3)	9.6**	(7.9, 11.3)
Optimal Vascular Care	2.8*	(1.1, 4.4)	4.4	(-0.4, 9.4)
Systolic BP	-1.55**	(-1.7, -1.33)	-2.91**	(-3.39, -2.43)
Diastolic BP	-0.79**	(-0.94, -0.66)	-1.78**	(-2.10, -1.47)
Cohort: Diabetes				
Glycemic Control	4.6**	(3.4, 5.8)	4.9*	(1.4, 8.4)
Optimal Diabetes Management	3.5*	(0.7, 6.2)	5.9	(5.0, 16.7)
Hemoglobin A1c	-0.18**	(-0.22, -0.14)	-0.33**	(-0.47, -0.20)
Cohort: High Cholesterol				
Lipid Control	3.0**	(2.2, 4.0)	3.8*	(1.2, 6.5)
Optimal Vascular Care	3.2**	(1.8, 4.6)	4.7	(-0.2, 9.6)
Total Cholesterol	-3.76**	(-4.61, -2.91)	-5.29**	(-7.76, -2.82)
LDL Cholesterol	-3.52**	(-4.31, -2.73)	-4.53**	(-6.97, -2.10)
Cohort: Depression				
Depression Control	4.0*	(1.0, 7.0)	n/a	n/a
PHQ-9 Score	-0.63**	(-0.84, -0.06)	n/a	n/a

Abbreviations: CI, confidence interval; BP, blood pressure; LDL, low-density lipoprotein
Notes: *p<0.01, **p<0.001. Engagement intensity is defined as the number of clinical measurements an OM patient has during the study period. Coefficients represent the marginal effect of an additional year of OM engagement (i.e., months with a clinical measurement for the condition after an initial measurement). For diabetes, top quartile = 5+ observations (visited OM provider in 5 different months for A1c measurement). For hypertension, top quartile = 6+ observations. For cholesterol, top quartile = 3+ observations. For depression, top quartile = 1+ observations. FE model unable to run for bottom 50% with PHQ-9 scores due to perfect multicollinearity. Glycemic control (A1c<8), hypertension control (BP<140/90), lipid control (LDL<100), depression control (PHQ<=9), optimal diabetes management (A1c<8, BP<140/90, LDL<100), and optimal vascular care (BP<140/90, LDL<100) are reported in percentage points (pp). Continuous outcomes (A1c, blood pressure, total cholesterol, LDL, and PHQ-9) are reported in their original units and represent absolute changes.

Appendix C. Sensitivity Analysis: Alternative Glycemic Control Threshold Definition

	First Year		After First Year		Overall	
	Coef	95% CI	Coef	95% CI	Coef	95% CI
Cohort: Diabetes						
Glycemic Control	18.1*	(15.0, 21.0)	4.8*	(3.0, 6.0)	5.2*	(4.0, 6.0)

Notes: *p<0.001. Coefficients represent the marginal effect of an additional year of OM engagement (i.e., months with a clinical measurement for the condition after an initial measurement). This sensitivity analysis placed a stricter criteria on glycemic control, modifying the outcome from A1c<8 to A1c<7. Glycemic control is reported in percentage points (pp).

Appendix D. Subgroup Analysis: OM Tenure

	(6) Patients in OM for 3+ years		(7) Patients in OM for <3 years	
	Coefficient	95% CI	Coefficient	95% CI
Cohort: Hypertension				
Hypertension Control	4.1**	(3.2, 4.8)	12.4**	(11.2, 13.6)
Optimal Vascular Care	1.9**	(0.2, 3.7)	7.6**	(-4.1, 11.2)
Systolic BP	-1.27**	(-1.50, -1.04)	-4.06**	(-4.40, -3.72)
Diastolic BP	-0.65**	(-0.80, -0.50)	-2.41**	(-2.63, -2.18)
Cohort: Diabetes				
Glycemic Control	4.0**	(2.6, 5.4)	7.6**	(5.5, 9.5)
Optimal Diabetes Management	3.5*	(0.4, 6.5)	10.8**	(5.3, 16.3)
Hemoglobin A1c	-0.15**	(-0.19, -0.11)	-0.40**	(-0.47, -0.33)
Cohort: High Cholesterol				
Lipid Control	0.6	(-0.6, 1.8)	6.7**	(5.4, 8.0)
Optimal Vascular Care	0.5	(-1.3, 2.3)	7.7**	(5.3, 10.0)
Total Cholesterol	-1.23*	(-2.32, -0.14)	-8.03**	(-9.32, -6.75)
LDL Cholesterol	-0.98	(-2.00, -0.03)	-8.12**	(-9.32, -6.91)
Cohort: Depression				
Depression Control	0.2	(-4.0, 5.0)	9.6**	(6.0, 13.0)
PHQ-9 Score	-0.14	(-0.65, 0.37)	-1.35**	(-1.74, -0.97)

Abbreviations: CI, confidence interval; BP, blood pressure; LDL, low-density lipoprotein
Notes: *p<0.05; **p<0.001. OM tenure is defined as the length of time that an individual received clinical measurements under OM for our study period (median=3 years). Coefficients represent the marginal effect of an additional year of OM engagement (i.e., months with a clinical measurement for the condition after an initial measurement). Glycemic control (A1c<8), hypertension control (BP<140/90), lipid control (LDL<100), depression control (PHQ<=9), optimal diabetes management (A1c<8, BP<140/90, LDL<100), and optimal vascular care (BP<140/90, LDL<100) are reported in percentage points (pp). Continuous outcomes (A1c, blood pressure, total cholesterol, LDL, and PHQ-9) are reported in their original units and represent absolute changes.

Appendix E. Subgroup Analysis: New OM Members

	First Year		After First Year	
	Coef	95% CI	Coef	95% CI
Cohort: Hypertension				
Hypertension Control	23.0**	(21.0, 25.0)	3.2**	(2.0, 5.0)
Optimal Vascular Care	12.6*	(4.0, 21.0)	3.0	(-1.0, 7.0)
Systolic BP	-8.13**	(-8.77, -7.49)	-0.96**	(-1.35, -0.56)
Diastolic BP	-4.71**	(-5.12, -4.30)	-0.39*	(-0.65, -0.13)
Cohort: Diabetes				
Glycemic Control	16.4**	(13.0, 20.0)	5.4**	(3.0, 8.0)
Optimal Diabetes Management	16.7*	(7.0, 27.0)	3.7	(-3.0, 10.0)
Hemoglobin A1c	-0.79**	(-0.92, -0.66)	-0.21**	(-0.28, -0.15)
Cohort: High Cholesterol				
Lipid Control	12.1**	(8.0, 16.0)	3.0	(-0.5, 6.0)
Optimal Vascular Care	11.0*	(4.0, 18.0)	3.0	(-2.0, 8.0)
Total Cholesterol	-21.99**	(-26.13, -17.85)	-1.49	(-3.91, 0.92)
LDL Cholesterol	-16.71**	(-20.56, -12.86)	-1.17	(-3.45, 1.11)
Cohort: Depression				
Depression Control	28.4**	(18.0, 39.0)	-0.5	(-13.0, 12.0)
PHQ-9 Score	-3.75**	(-4.92, -0.21)	0.27	(-1.24, 1.78)

Abbreviations: CI, confidence interval; BP, blood pressure; LDL, low-density lipoprotein
Notes: *p<0.05; **p<0.001. New OM members are individuals who did not have any previous OM claims prior to their first chronic condition clinical measurement. Coefficients represent the marginal effect of an additional year of OM engagement (i.e., months with a clinical measurement for the condition after an initial measurement). Glycemic control (A1c<8), hypertension control (BP<140/90), lipid control (LDL<100), depression control (PHQ<=9), optimal diabetes management (A1c<8, BP<140/90, LDL<100), and optimal vascular care (BP<140/90, LDL<100) are reported in percentage points (pp). Continuous outcomes (A1c, blood pressure, total cholesterol, LDL, and PHQ-9) are reported in their original units and represent absolute changes.

Appendix F. Subgroup Analysis: Returning OM Members

	First Year		After First Year	
	Coef	95% CI	Coef	95% CI
Cohort: Hypertension				
Hypertension Control	31.0***	(29.0, 33.0)	2.2**	(0.8, 4.0)
Optimal Vascular Care	11.2**	(3.0, 19.0)	1.6	(-3.0, 6.0)
Systolic BP	-8.78***	(-9.32, -8.23)	-0.90***	(-1.28, -0.52)
Diastolic BP	-5.43***	(-5.79, -5.07)	-0.44**	(-0.69, -0.20)
Cohort: Diabetes				
Glycemic Control	16.9***	(13.0, 20.0)	2.9**	(0.7, 5.0)
Optimal Diabetes Management	15.7**	(4.0, 27.0)	3.1	(4.0, 10.0)
Hemoglobin A1c	-1.00***	(-1.14, -0.87)	-0.11**	(-0.18, -0.04)
Cohort: High Cholesterol				
Lipid Control	11.4***	(9.0, 14.0)	2.4*	(0.4, 5.0)
Optimal Vascular Care	10.7***	(6.0, 15.0)	2.2	(-2.0, 6.0)
Total Cholesterol	-19.24***	(-21.49, -17.00)	-2.24*	(-4.05, -0.44)
LDL Cholesterol	-16.00***	(-18.13, 13.89)	=2.57*	(-4.29, -0.84)
Cohort: Depression				
Depression Control	34.4***	(28.0, 40.0)	1.4	(-7.0, 10.0)
PHQ-9 Score	-4.58***	(-5.26, -3.91)	-0.13	(-1.02, 0.75)

Abbreviations: CI, confidence interval; BP, blood pressure; LDL, low-density lipoprotein
Notes: *p<0.05; **p<0.01; ***p<0.001. Returning OM members are individuals who had any OM claim prior to their first visit with a chronic condition clinical measurement. Coefficients represent the marginal effect of an additional year of OM engagement (i.e., months with a clinical measurement for the condition after an initial measurement). Glycemic control (A1c<8), hypertension control (BP<140/90), lipid control (LDL<100), depression control (PHQ<=9), optimal diabetes management (A1c<8, BP<140/90, LDL<100), and optimal vascular care (BP<140/90, LDL<100) are reported in percentage points (pp). Continuous outcomes (A1c, blood pressure, total cholesterol, LDL, and PHQ-9) are reported in their original units and represent absolute changes.

Appendix G. Subgroup Analysis: Commercially Insured Patients Only

	First Year		After First Year	
	Coef	95% CI	Coef	95% CI
Cohort: Hypertension				
Hypertension Control	27.6**	(26.0, 30.0)	3.5**	(2.0, 5.0)
Optimal Vascular Care	10.9**	(5.0, 17.0)	3.7	(-1.0, 9.0)
Systolic BP	-8.17**	(-8.71, -7.63)	-1.55**	(-1.99, -1.10)
Diastolic BP	-5.04**	(-5.40, -4.67)	-0.78**	(-1.09, -0.48)
Cohort: Diabetes				
Glycemic Control	17.6**	(15.0, 21.0)	4.9**	(3.0, 7.0)
Optimal Diabetes Management	16.9**	(8.0, 26.0)	6.7	(-2.0, 15.0)
Hemoglobin A1c	-0.99**	(-1.11, 0.87)	-0.24**	(-0.31, -0.17)
Cohort: High Cholesterol				
Lipid Control	12.0**	(10.0, 14.0)	4.9**	(2.0, 7.0)
Optimal Vascular Care	10.1**	(6.0, 14.0)	6.6*	(1.0, 12.0)
Total Cholesterol	-20.54**	(-22.81, -18.27)	-4.96**	(-7.22, -2.70)
LDL Cholesterol	-17.05**	(-19.14, -14.96)	-5.03**	(-7.12, -2.95)
Cohort: Depression				
Depression Control	31.8**	(26.0, 38.0)	4.1	(-5.0, 13.0)
PHQ-9 Score	-4.19**	(-4.85, -3.54)	0.51	(-1.48, 0.46)

Abbreviations: CI, confidence interval; BP, blood pressure; LDL, low-density lipoprotein
Notes: *p<0.02, **p<0.001. This analysis includes only individuals in the following commercial insurance types: PPO, POS, HMO, EPO, and PPO-HDHP. Coefficients represent the marginal effect of an additional year of OM engagement (i.e., months with a clinical measurement for the condition after an initial measurement). Glycemic control (A1c<8), hypertension control (BP<140/90), lipid control (LDL<100), depression control (PHQ<=9), optimal diabetes management (A1c<8, BP<140/90, LDL<100), and optimal vascular care (BP<140/90, LDL<100) are reported in percentage points (pp). Continuous outcomes (A1c, blood pressure, total cholesterol, LDL, and PHQ-9) are reported in their original units and represent absolute changes.