Supplemental Online Content

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This supplemental material has been provided by the authors to give readers additional information about their work.

eMethods 1. Minimization procedure that the Centers for Medicare & Medicaid Services used to allocate organizations to the intervention and control groups

When organizations joined the Million Hearts® Cardiovascular Disease Risk Reduction Model, they agreed to be randomly assigned to the intervention group or the control (usual care) group. The Centers for Medicare & Medicaid Services (CMS) used a minimization procedure to randomly allocate the 516 participating organizations to the intervention group (N=260) and the control group (N=256). This minimization procedure ensured (1) a roughly equal number of intervention and control organizations; and (2) balance between the two groups on organizations' region in the U.S., number of sites (physical locations where beneficiaries are seen), number of providers, and anticipated number of Medicare fee-for-service [FFS] beneficiaries. Randomization was conducted once, in April 2016, by an independent CMS contractor (NORC at the University of Chicago). The procedure went as follows:

1. Assign all 516 organizations a random number from the uniform distribution.
2. Sort the organizations according to the random number.
3. Randomly assign the first 78 organization (15%) to the intervention or control group.
    - Assign organization 1 to the control group.
    - Assign organization 2 to the intervention group.
    - Assign organization 3 to the control group.
    - Assign organization 4 to the intervention group.
    - …
    - Assign organization 77 to the control group.
    - Assign organization 78 to the intervention group.
4. Assign organization 79 to the intervention or control group, taking into account the organization's characteristics and previous assignments of organizations (that is, the characteristics and assignment of organizations 1 to 78).
    - Temporarily assign organization 79 to the intervention group and calculate an χ^2 test statistic for each of four organization characteristics—the anticipated number of Medicare FFS beneficiaries, the number of service sites, U.S. Department of Health and Human Services (HHS) region, and number of providers. For HHS region, the test statistic measures imbalance for the characteristics for the level of the categorical variable that the 79th organization belongs to. (For example, if organization 79 is in HHS Region 1, it tests for differences between the intervention and control organizations in the number of organizations in HHS Region 1.) For other variables, the test statistic measures imbalance in the total number of anticipated beneficiaries, service sites, and providers.
    - Temporarily assign organization 79 to the control group and repeat.
    - For each characteristic, identify the group assignment—to the intervention group or to control group—that would result in less imbalance for that characteristic, as measured by the χ^2 test statistics.
    - Assign organization 79 to the intervention group if two, three, or four of the characteristics would show less imbalance if organization 79 was assigned to the intervention group. Otherwise, assign organization 79 to the control group.
5. Repeat Step 4 sequentially for each of the remaining organizations (80 through 516).

Some organizations participating in the Million Hearts® Model were large, with over 20 providers and multiple sites. In those cases, CMS chose to randomly assign the whole organization—not individual sites within the organization—to the intervention versus control group out of concerns of contaminating the control group. Specifically, CMS was concerned that, if a large organization made changes to its electronic health record or other shared resources and processes to allow some of its sites (those randomly assigned to the intervention group) to implement the model, those changes could then apply to all sites at the organization (including those randomly assigned to the control group). Therefore, the model could change care at the control group sites, potentially decreasing the model's apparent impact.
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eMethods 2. Identifying the subset of high-risk enrollees with follow-up clinical data and collecting these data

Identifying the population

To estimate the association between the Million Hearts® Model and blood pressure and cholesterol, we limited the main study population to those with follow-up clinical data approximately one year after enrollment. Specifically, we started with the 112,352 Medicare beneficiaries who were in the main study population because they were enrolled in 2017, had medium or high cardiovascular risk at enrollment, and had Medicare Part D coverage. We then further limited this population to those who:

- Were high risk at enrollment (had a predicted 10-year risk of heart attack or stroke greater than 30%). For the intervention group, CMS only collected follow-up clinical data for high-risk patients. (For the control group, CMS collected follow-up clinical data for all patients because neither CMS nor the control organizations categorized control patients by risk level.)

- Were enrolled between January 3, 2017 and October 31, 2017. CMS expected organizations to submit follow-up clinical data 10 to 14 months after a patient enrolled. For this study, we had follow-up clinical data through December 31, 2018. Therefore, to make sure that all enrollees had the potential to have a follow-up visit within the 14 month window, we excluded beneficiaries enrolled in November and December 2017 (for whom we only had a maximum of 12 or 13 months of follow-up data).

- Met eligibility criteria for data submission to CMS. CMS excluded beneficiaries if they died; had a heart attack, stroke, or transient ischemic attack; were no longer enrolled in Medicare Part A and B; did not have Medicare as their primary payer for medical bills; were enrolled in hospice care; or had end-stage renal disease.

- Had non-missing and biologically plausible values submitted by participating organizations for the following data elements: cholesterol (total, LDL and HDL), systolic blood pressure, smoking status, and whether taking aspirin regularly. We excluded implausible values because they were likely due to errors in data entry. Implausible values included total cholesterol levels less than HDL plus LDL cholesterol; total cholesterol less than 80 mg/dL; LDL cholesterol less than 20 mg/dL or greater than 300 mg/dL; HDL cholesterol less than 10 mg/dL; or systolic blood pressure less than 70 mmHg. The registry also did not accept implausibly high values exceeding 320 md/dL total cholesterol, 100 mg/dL HDL cholesterol, or 200 mmHg systolic blood pressure.

As shown in the figure, these restrictions limited the sample to 14,741 high-risk patients enrolled by 216 organizations. Interventions and control organizations submitted follow-up clinical data for 52% (9,592/18,307) and 45% (5,149/11,565) of eligible patients, respectively.

Collecting the clinical data

We used clinical data that CMS collected, via its contractor Deloitte, through the Million Hearts Data Registry. For patients eligible for reassessment visits, organizations submitted the clinical data needed to reassess risk via the registry. While CMS intended organizations to submit reassessment data in a 10 to 14- after enrollment, some organizations submitted data after that, which CMS accepted. The table shows the number of months between enrollment and reassessment visits, by intervention group.

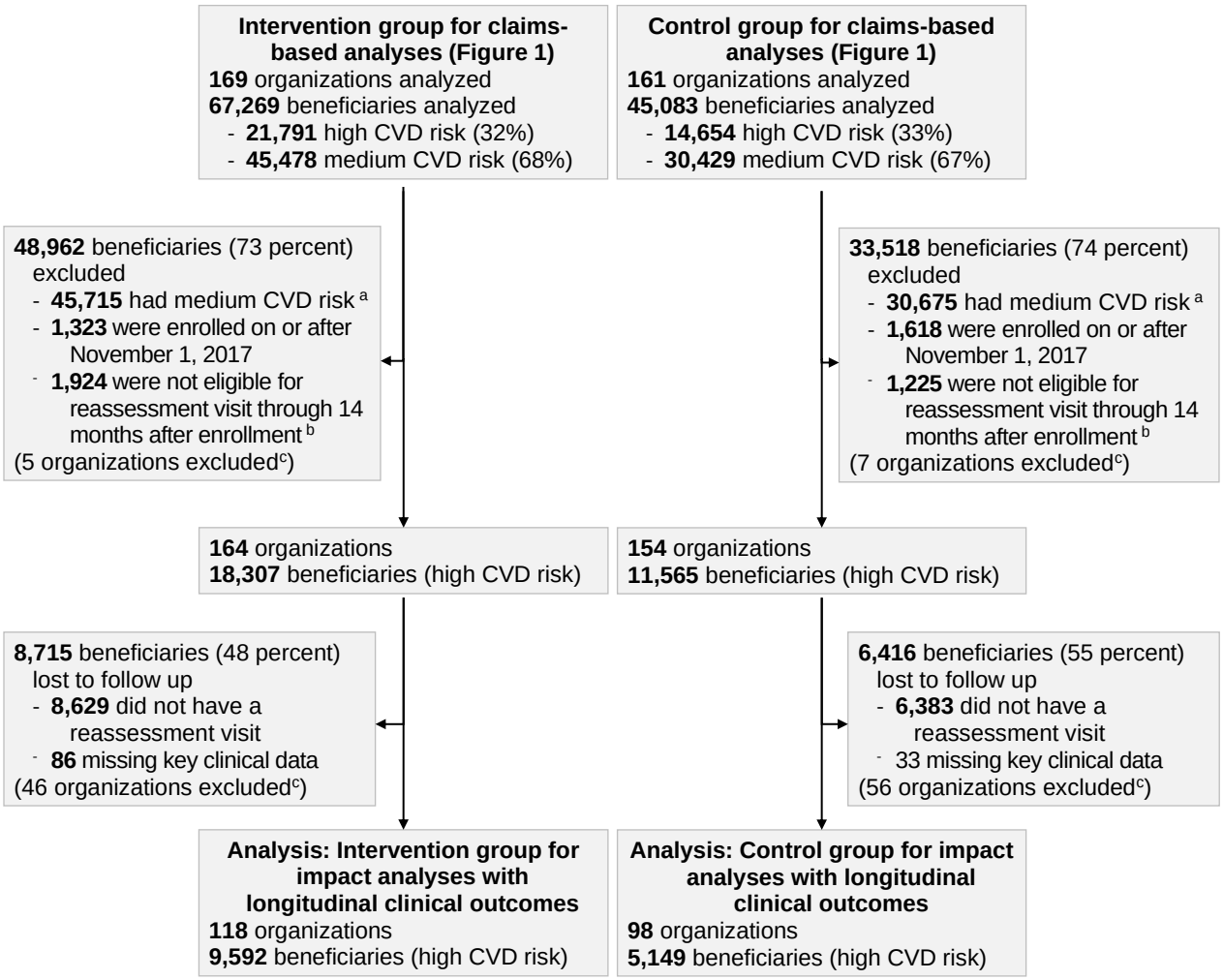
Distribution of the number of months from initial risk assessment to follow-up visit, by intervention group

Treatment Group	N	Mean	Minimum	Maximum	Standard Deviation
Control	5,149	12.8	10	23	2.2
Intervention	9,592	13.0	10	23	2.3

Months are calculated as discrete calendar months between enrollment date and follow-up visit date. Control and intervention group means are not significantly different based on clustered standard errors.

The organizations submitted data there were current as of the time of the reassessment visit. This included systolic blood pressure readings taken during the visit. The cholesterol values could be from lab tests taken up to a year before the visit or two months after.

Flow of organizations, providers, and beneficiaries from enrollment through analysis: Population used for clinical outcomes



Note: High CVD risk beneficiaries were predicted to have, at the date of enrollment, at least 30% or higher risk of a heart attack or stroke in the next 10 years; the risk was 15 to 30% for medium CVD risk beneficiaries and less than 15% for low CVD risk beneficiaries.

[a] Some beneficiaries had a visit recorded in the Million Hearts Data Registry before the enrollment date used for model payment. For these beneficiaries, we included beneficiaries only if they were classified as high CVD risk at both dates. This leads to a minor discrepancy between the number of high- and medium risk beneficiaries in the first and second rows.

[b] Restricts the sample to beneficiaries who remained alive; without heart attack, stroke, or transient ischemic attack; and enrolled in Medicare Part A and B as their primary payer for 14 months after enrollment in the Million Hearts Model.

[c] Organizations are implicitly excluded from the analysis population if none of their enrolled beneficiaries met the inclusion criteria.

CVD = cardiovascular disease; FFS = fee-for-service.

eTable 1. Sensitivity tests for assessing model impacts on initiating or intensifying CVD medications

Outcome	Percentage (denominator)		Difference		P-value
	Intervention	Control	Unadjusted	Adjusted (95% CI)	
Trimmed population					
Initiating or intensifying statins or antihypertensives (high risk)	36.5 (15,334)	32.4 (14,647)	4.1	4.0 pp (2.0, 6.0)	<0.001
Initiating or intensifying statins or antihypertensives (medium risk)	27.5 (30,405)	24.8 (30,418)	2.7	2.6 pp (1.3, 3.9)	<0.001
Systolic Blood Pressure ≥140					
Initiating or intensifying antihypertensives (high risk)	37.5 (10,973)	34.0 (7,446)	3.4	3.3 pp (1.2, 5.5)	0.003
Initiating or intensifying antihypertensives (medium risk)	33.2 (12,565)	30.8 (8,711)	2.5	3.2 pp (1.1, 5.3)	0.003

Abbreviations: CI, confidence interval; CVD, cardiovascular disease; pp, percentage point; SBP, systolic blood pressure

This table shows the results for two sensitivity tests. In both cases, the impact estimates are very similar to the main estimates presented in the manuscript.

1. **In the "trimmed population" test**, we trimmed the intervention group to mimic the 20-provider cap that CMS applied selectively to the control group. To limit outlays to the federal government, CMS capped the number of providers who could enroll Medicare patients in the control group at 20. As a result, in the main analysis, the number of Medicare patients in the intervention group is substantially larger than the number in the control group. When we looked at the number of patients each participating provider enrolled, we found that this number was higher in the control group than in the intervention group—suggesting that, when faced with the 20-provider cap, control group organizations were selecting for participation their providers who could enroll a relatively large number of Medicare patients (this makes sense economically, too, since this approach would increase the payments the control organizations could receive). To mimic this cap for the intervention group, we—separately for each organization with over 20 providers—ranked the providers by the number of patients they enrolled in 2017 (high to low). Then, for each organization, we dropped the 21+ providers and the patients they enrolled from the intervention group. As shown in the table, this resulted in sample sizes that were very similar between the intervention and control groups.

2. In the **"Systolic Blood Pressure ≥140" test**, we changed the systolic blood pressure threshold for being a candidate for initiating or intensifying blood pressure therapy from 130 to 140 mmHg. Clinical guidelines changed recently to define hypertension as >130 mmHg and some providers might elect to recommend anti-hypertensives only if a patient's blood pressure exceeds 140 mmHg.

eTable 2. Covariates used when estimating model impacts on use of medications and on blood pressure and cholesterol levels

Baseline covariate
Clinical indicators of beneficiary's cardiovascular risk
CVD risk score [a]
Modifiable risk [a, b]
Has diabetes (yes/no) [a]
Systolic blood pressure (mm Hg) [a]
Total cholesterol (mg/dL) [a]
HDL cholesterol (mg/dL) [a]
LDL cholesterol (mg/dL) [a, b]
Is treated for or diagnosed with hypertension (yes/no)[a]
Is current smoker (yes/no) [a]
Uses aspirin (yes/no) [a]
Beneficiary demographic and Medicare enrollment characteristics
Age (separately by age group) [c]
Black race (yes/no)
Male (yes/no)
Dually enrolled in Medicare and Medicaid (yes/no)
Originally entitled to Medicare due to disability (yes/no)
Beneficiary health and comorbid conditions
HCC score
Count of chronic conditions
Has chronic kidney disease (yes/no)
Has ischemic heart disease (yes/no)
Has atrial fibrillation (yes/no)
Evidence of heart failure in claims over previous 24 months (yes/no)
Has morbid obesity (yes/no)
Has dementia (yes/no)
Has diabetes with complications (yes/no)
Has dialysis status/acute renal failure/stage 5 chronic kidney disease (yes/no)
Has cancer (yes/no)
Has unstable angina (yes/no)
Has chronic obstructive pulmonary disease (yes/no)
Has vascular disease with complications (yes/no)
Has drug or alcohol dependence (yes/no)
Beneficiary medical service use and spending in year before model enrollment[d]
Total Medicare Parts A and B annualized expenditures[d]
Total inpatient annualized expenditures [d]
Number of hospital admissions [d]
Number of CVD-related hospital admissions [d]
Number of outpatient ED visits or observation stays [d]
Number of CVD-related ED visits or observation stays [d]
Number of office visits [d]
Number of office visits with model-aligned providers [d]
Number of cardiologist office visits [d]
Beneficiary CVD-related procedures in year before model enrollment [d]
Received echocardiogram (yes/no)
Received electrocardiogram (yes/no)
Received cardiac stress test (yes/no)
Received prophylactic vaccination/inoculation (yes/no)
Received colonoscopy or biopsy (yes/no)

Beneficiary CVD-related medication use before model enrollment
Antihypertensive medications in the 120 days before model enrollment (yes/no) [e]
Statins in the 120 days before model enrollment (no/low/moderate/high) [e]
Characteristics of organization enrolling the beneficiary
Total number of practitioners: (1 to 5 or 6 to 19 or 20 or more)
Total number of service sites: (1 or 2 to 5 or 6 or more)
Organization type: (primary care, specialty, or multispecialty, FQHC, RHC, or other health center, CAH, rural hospital, or acute care hospital)
Organization participated in, or had application pending for, another model at randomization (yes/no)
Characteristics of clinician enrolling the beneficiary
Provider specialty (cardiovascular-related physician or primary care physician [noncardiovascular], or other physician or other provider type [nonphysician])
Characteristics of beneficiary's region
Rural (yes/no)
Census region (Midwest, south, west, or other)
Characteristics of beneficiary's Million Hearts® Model enrollment [d]
Days between enrollment and January 3, 2017 [d]
Quarter of year enrollment date is in (first, second, third, or fourth)
Less than 12 months observable in year before enrollment (yes/no)
Data submitted to the registry using bulk upload (yes/no)[a]

Abbreviations: CAH, critical access hospital; CVD, cardiovascular disease; ED, emergency department; FQHC, federally qualified health center; HCC, hierarchical condition category; HDL, high-density lipoprotein; LDL, low-density lipoprotein; RHC, rural health clinic

Note: For estimating impacts of the model on the composite measures, all the variables in this table entered the regression models multiple times depending on eligibility for the underlying outcome. For example, the covariates enter the model once for beneficiaries eligible for initiation and once for beneficiaries eligible for initiation when we estimated impacts on statin initiation *or* intensification.

[a] This variable was constructed using data from the Million Hearts® registry.

[b] To account for missing values, this variable was interacted with an indicator for missing data.

[c] We adjusted for age using indicators for belonging to one of four separate age groups: 40 to 64 years, 65 to 69 years, 70 to 74 years, and 75 to 79 years.

[d] These variables were standardized before being included in the regression models.

[e] When measuring impacts on clinical outcomes (cholesterol and blood pressure), we measured medication used over the year before baseline (rather than only 120 days).

eTable 3. Characteristics of the organizations that participated[a] in the model in 2017 versus those that withdrew or did not participate, by intervention group

Characteristic, %	Intervention group		Control group	
	Participated (N = 171)	Did not participate (N = 89)	Participated (N = 164)	Did not participate (N = 92)
Number of providers				
1 to 5 providers	36	31	31	45*†
6 to 19 providers	27	34†	33	25†
20 or more providers	37	35	36	30†
Number of sites				
1 site	39	33†	35	35
2 to 5 sites	31	40†	32	38†
6 or more sites	30	27	32	27†
Location				
Rural	54	42*†	52	63†
Census region				
Northeast	30	19*†	24	29
Midwest	17	31*†	20	20
South	38	30†	38	35
West	14	19†	17	15
Organization type				
Primary care	52	37†	55	38†
Specialty or multispecialty	23	25	20	27†
FQHC, RHC, or other health center	15	13	15	14
Hospital or other	11	25*†	10	21*
Participates in other CMS models or programs[b]	51	39†	49	35*

Source: Source: Self-reported model application data linked to data from the Million Hearts Data Registry and the CMS National Plan and Provider Enumeration System.

Note: Daggers (†) denote differences between the participating and non-participating organizations that are larger than 0.10 standard deviations., while asterisks (*) denote differences that are statistically significant ($p<0.05$).

[a] We defined organizations as participating if they enrolled patients (of any risk level) in 2017, and as not participating if they withdrew or did not enroll any patients. The sample sizes for participants are slightly larger in this table (by 2 organizations in the intervention group, and 3 organizations in the control group) because we include here organizations that enrolled patients in 2017 but did not make it to the final analytic sample because none of those patients were medium or high risk and had Part D coverage.

[b] Organizations were coded as not participating in other CMS models if they responded on the application that they didn't know. They were coded as participating in the other CMS models if an application was pending at randomization.

FQHC = federally qualified health center; RHC = rural health center.

eTable 4. Baseline characteristics of Medicare patients who were candidates for initiating or intensifying statins or antihypertensive medications, by risk level and intervention group[a]

Patient characteristic	High risk		Medium risk	
	Control (N=14,654)	Intervention (N=21,791)	Control (N=30,429)	Intervention (N=45,478)
Age, mean (SD), years	74.1 (4.2)	74.0 (4.2)	71.3 (4.7)	71.2 (4.9)
Black race	6.7	7.8	6.6	8.2
Male	62.4	62.1	51.2	49.7
Dually enrolled in Medicare and Medicaid	12.9	12.2	13.2	12.8
CVD risk score, mean (SD), percentage point	40.3 (8.9)	40.3 (9.0)	21.5 (4.2)	21.5 (4.2)
Diabetes	62.3	60.0	19.4	20.8
Ischemic heart disease	53.6	52.2	42.1	40.0
Total cholesterol, mean (SD), mg/dL	172.6 (39.2)	172.6 (38.9)	180.5 (37.7)	182.2 (37.6)
HDL-C, mean (SD), mg/dL	48.4 (15.0)	47.9 (14.9)	52.8 (15.4)	52.8 (15.6)
LDL-C, mean (SD), mg/dL[b]	95.4 (33.4)	95.7 (33.1)	101.7 (31.9)	103.3 (31.9)
LDL-C level ≥ 70 mg/dL	79.4	79.8	88.2	89.6
SBP, mean (SD), mmHg	141.0 (16.0)	141.3 (16.3)	132.4 (14.4)	132.1 (14.3)
SBP ≥ 130 mmHg	81.1	80.9	60.4	59.0
Current smoker	13.3	12.1	10.9	10.1
Aspirin use at baseline	48.4	49.4	39.0	40.9
Antihypertensive use at baseline	89.2	89.9	78.1	78.6
Statin use at baseline	66.2	66.9	58.6	57.7
Low intensity	6.9	7.1	6.6	6.5
Medium intensity	40.0	40.2	36.1	36.1
High intensity	19.3	19.6	15.9	15.2

Office visits in year before enrollment, mean (SD), per beneficiary	9.5 (7.3)	9.9 (7.5)	8.9 (7.3)	9.2 (7.5)
Office visits with model-aligned providers in year before enrollment, mean (SD), per beneficiary	3.1 (3.3)	3.2 (3.5)	2.7 (3.0)	2.7 (3.3)
Census region where patient lives				
Northeast	21.6	26.5	22.6	29.0
Midwest	30.9	19.8	31.4	20.6
South	33.3	47.4	31.3	44.9
West	14.3	6.3	14.7	5.5
Rural zip code[b]	27.7	26.3	25.5	23.7
Type of organization enrolling patient				
Primary care	54.7	52.2	54.1	57.4
Specialty	31.1	37.6	33.3	32.5
FQHC, RHC, or other health center	6.1	4.5	5.6	4.8
CAH or rural hospital	2.8	0.6	2.3	0.6
Acute care hospital	5.2	5.1	4.8	4.7

SI conversion factors: To convert cholesterol to mmol/L, multiply values by 0.0259.

Abbreviations: CAH, critical access hospital; CVD, cardiovascular disease; FQHC, federally qualified health center; HCC, hierarchical condition category; HDL-C, high-density lipoprotein; LDL-C, low-density lipoprotein; RHC, rural health center; SBP, systolic blood pressure; SD, standard deviation

Note: High CVD risk indicates beneficiaries with a 30% or higher predicted risk of having a heart attack or stroke in the next 10 years. Medium CVD risk is 15 to 30%. Low CVD risk is less than 15%. Characteristics are measured as of a beneficiary's baseline visit date in the Million Hearts® CVD Model. The exception is cholesterol levels, which can be collected up to five years before or two months after enrollment. For all measures, means are calculated over nonmissing values. None of the between group differences are significant based on clustered standard errors.

[a] Unless otherwise indicated, data are expressed as percentage of participants. Percentages have been rounded and might not total 100.

[b] Data missing: LDL-C level, high risk group, 122 beneficiaries; medium risk group, 102 beneficiaries. Rural zip code, high-risk group, 6 beneficiaries; medium-risk group, 10 beneficiaries.

eTable 5. Baseline characteristics of high-risk Medicare patients with follow-up clinical data, by intervention group[a]

Characteristic	Control (N=5,149)	Intervention (N=9,592)
Age, mean (SD), Years	74.1 (4.0)	74.0 (4.1)
Black race	7.2	7.4
Male	64.0	62.5
Dually enrolled in Medicare and Medicaid	10.7	10.6
CVD risk score, mean (SD), percentage point	39.9 (8.6)	40.5 (9.0)
Diabetes	62.9	66.7
Ischemic heart disease	52.1	50.5
Total cholesterol, mean (SD), mg/dL	172.0 (38.4)	171.3 (38.0)
HDL-C, mean (SD), mg/dL	48.7 (15.1)	47.5 (14.6)
LDL-C, mean (SD), mg/dL	94.6 (32.8)	94.7 (32.3)
LDL-C level ≥ 70 mg/dL	79.0	79.9
SBP, mean (SD), mmHg	140.8 (15.6)	140.6 (16.0)
SBP ≥ 130 mmHg	81.2	79.9
Current smoker	12.2	11.1
Aspirin use at baseline	47.3	48.7
Antihypertensive use at baseline	90.0	90.3
Statin use at baseline	67.2	68.6
Low intensity	7.5	7.1
Medium intensity	39.8	42.2
High intensity	19.9	19.3
Office visits in year before enrollment, mean (SD), per beneficiary	9.0 (6.8)	9.7 (7.1)
Office visits with model-aligned providers in year before enrollment, mean (SD), per beneficiary	3.3 (3.3)	3.5 (3.5)
Census region		
Northeast	20.7	18.8
Midwest	35.6	24.7
South	28.5	51.9
West	15.3	4.5
Rural zip code[b]	24.2	28.6
Type of organization enrolling		
Primary care	57.9	55.1
Specialty	30.7	38.5
FQHC, RHC, or other health center	4.7	3.5
CAH or rural hospital	1.6	0.2
Acute care hospital	5.2	2.7

SI conversion factors: To convert cholesterol to mmol/L, multiply values by 0.0259.

Abbreviations: CAH, critical access hospital; CVD, cardiovascular disease; FQHC, federally qualified health center; HCC, hierarchical condition category; HDL-C, high-density lipoprotein; LDL-C, low-density lipoprotein; RHC, rural health center; SBP, systolic blood pressure; SD, standard deviation

Note: High CVD risk indicates beneficiaries with a 30% or higher predicted risk of having a heart attack or stroke in the next 10 years. Characteristics are measured as of a beneficiary's baseline visit date in the Million Hearts® CVD Model. The exception is cholesterol levels, which can be collected up to five years before or two months after enrollment. For all

measures, means are calculated over nonmissing values. None of the between group differences are significant based on clustered standard errors, except for the census region where patient lives ($p<0.01$).

[a] Unless otherwise indicated, data are expressed as percentage of participants. Percentages have been rounded and might not total 100.

[b] Data missing: Rural zip code, control group with follow-up clinical data, 1 beneficiary

eMethods 3. Using a survey to randomly selected providers to assess the impact of the Million Hearts® Model on self-reported use of cardiovascular disease risk scores and awareness of patient cardiovascular risk

Survey methods. From September to November 2018, we surveyed one randomly selected provider within each intervention and control organization. If the provider did not respond within a month, we surveyed a second randomly selected provider within the organization. We received responses from 71 percent of the providers surveyed, representing 90 percent of the organizations surveyed (see eMethods 3, eFigure 1). The survey asked providers if and how they used risk scores in their clinical care and asked intervention providers about their perceptions of the model. The intervention and control group respondents were generally similar in their specialty, location, and organization type (eMethods 3, eTable 1).

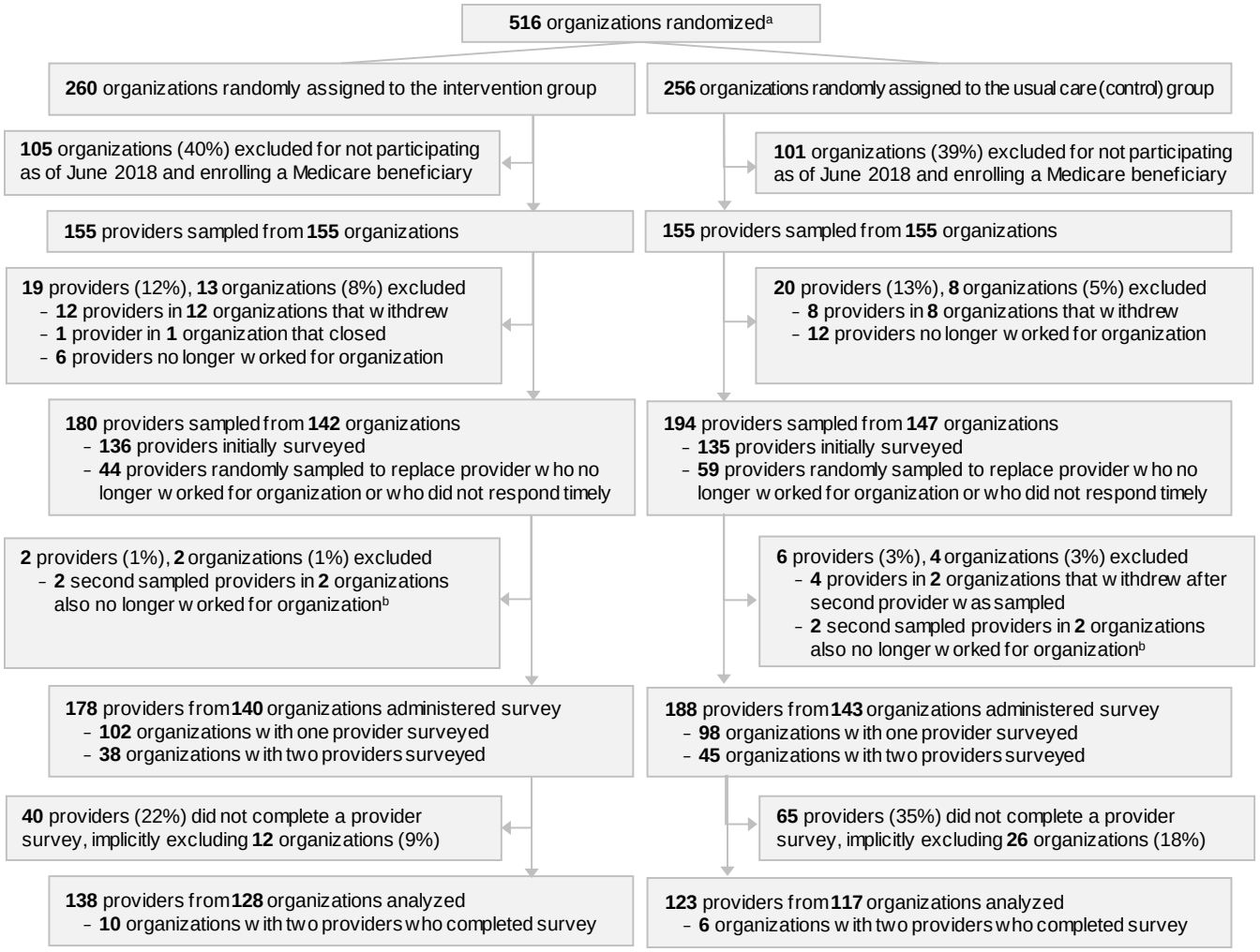
Statistical analysis. We used multinomial regressions to estimates impacts on provider-reported use of cardiovascular risk scores. We show the covariates we used in these regressions in eMethods 3, eTable 2.

In a few cases, we received surveys from two randomly selected providers from the same organization. To ensure that participating organizations were weighted equally in the analysis, each provider received a weight of 1, except for organizations in which two providers completed a survey, who each received a weight of 1/2.

Results. Intervention and control group providers reported similar levels of risk stratification before the Million Hearts® Model began (eTable 6). However, by 2018, intervention groups providers reported risk stratifying a substantially larger share of their patients—for example, 69% versus 41% of intervention and control group providers, respectively, reported risk stratifying at least half their Medicare patients ($p<0.001$).

In addition, among intervention group respondents who reported increased use of risk scores, 73% reported that doing so helped them better identify patients who were at high CVD risk, and 70% reported the same for patients with medium CVD risk (eTable 7). Finally, 71% reported that participating in the Million Hearts® Model prompted their organization to more systematically provide the current standard of CVD preventive care.

Flow of respondents to the provider survey from randomization through analysis



Abbreviations: CMS, Centers for Medicare & Medicaid Services.

[a] CMS received 762 applications, but 246 organizations were not eligible or did not sign a participation agreement.

[b] We did not release a survey to a third provider for these organizations, due to timing and resource constraints on the survey, and to avoid additional burden on the organizations.

Baseline characteristics of surveyed providers and who responded to the survey, by intervention group[a]

	Providers surveyed		Providers who completed survey	
	Control (n=143)	**Intervention (n=140)**	**Control (n=117)**	**Intervention (n=128)**
Number of practitioners in the provider's organization				
1 to 5	28.7	36.4	30.8	35.2
6 to 19	34.3	25.0	34.2	24.2
20 or more	37.1	38.6	35.0	40.6
Provider's organization is located in a rural area	49.7	43.6	49.6	42.2
Census region				
Northeast	23.8	30.0[b]	22.2	28.9
Midwest	20.3	15.7[b]	23.1	15.6
South	37.1	38.6[b]	35.9	39.1
West	18.9	15.0[b]	18.8	16.4
Organization type				
Primary care	53.8	50.7	58.1	51.6
Specialty or multispecialty	21.7	24.3	19.7	23.4
FQHC, RHC, or other health center	14.7	15.7	15.4	16.4
CAH or rural hospital	5.6	2.1	5.1	1.6
Acute care hospital	4.2	7.1	1.7	7.0
Participation in other CMS models or programs	49.7	52.1	50.4	52.3
Responding provider specialty type				
Physicians	76.9	70.7	78.6	71.1
Primary care practitioners	62.9	52.9[c]	65.4	53.1[d]
Cardiovascular	11.9	15.7	10.7	16.4
Other specialists	2.1	2.1	2.6	1.6
Nonphysicians	20.6	27.1	18.4	27.3
Other[e]	2.4	2.5	3.0	1.6

Abbreviations: CAH, critical access hospital; CMS, Centers for Medicare & Medicaid Services; FQHC, federally qualified health center; RHC, rural health clinic.

[a] Unless otherwise noted, data are expressed as number (percentage) of providers. To ensure that participating organizations with at least one provider surveyed or who completed a survey were weighted equally in the analysis, each provider received a weight of 1, except for organizations in which two providers were surveyed or had completed a survey, who thus received a weight of 1/2. Percentages have been rounded and might not total 100.

[b] Nominal $p < .05$ for distribution of regions vs control organizations surveyed.

[c] Nominal $p < .05$ vs control organizations surveyed.

[d] Nominal $p < .05$ vs control organizations that completed survey.

[e] Other includes providers coded as medical students and other providers.

Covariates used when estimating model impacts on provider-reported use of cardiovascular disease risk scores

Baseline covariate
Respondent characteristic
Provider specialty (cardiovascular-related physician/primary care physician [noncardiovascular], other physician, and other provider type [nonphysician])
Organization characteristics
Total number of practitioners: (1 to 5 or 6 to 19 or 20 or more)
Total number of service sites: (1 or 2 to 5 or 6 or more)
Organization type: primary care, specialty or multispecialty, FQHC, RHC, or other health center, CAH, rural hospital, or acute care hospital
Organization was participating in, or had application pending for, another model at application (yes/no)
Rural (yes/no)
Census region (midwest/south/west/other)

eTable 6. Provider self-reported use of cardiovascular risk scores, by intervention group

Survey question	Response	Control Respondents[a] (N=117), %	Intervention Respondents[a] (N=128), %	Percentage Point Difference, Unadjusted[a]	Percentage Point Difference, Adjusted[b] (95% CI)	*p*-Value, Individual Responses[c]	*p*-Value, Distribution[d]
What proportion of Medicare beneficiaries in your panel have you or your clinical team calculated a cardiovascular risk score for, using any risk calculator?	75–100%	23.9	43.8	19.8	18.8 (9.9, 27.8)	< 0.001	< .001
	50–74%	16.7	25.0	8.3	9.2 (-0.2, 18.5)	0.06	
	25–49%	12.8	10.9	-1.9	-2.1 (-10.0, 5.8)	0.60	
	1–24%	21.4	6.3	-15.1	-15.2 (-23.1, -7.2)	< 0.001	
	We do not calculate CVD risk scores	16.2	2.3	-13.9	-8.4 (-13.2, -3.6)	< 0.001	
	Don’t know	9.0	11.7	2.7	-2.3 (-8.6, 3.9)	0.47	
Thinking about the care you provided 2 years ago [before the model began], what fraction of Medicare beneficiaries in your panel then did you or your clinical team calculate CVD risk scores for?	75–100%	17.1	16.0	-1.1	-3.1 (-12.8, 6.7)	0.54	0.51
	50–74%	10.3	10.2	-0.1	1.0 (-6.6, 8.6)	0.80	
	25–49%	11.1	19.1	8.0	6.9 (-2.2, 16.0)	0.14	
	1–24%	23.1	19.1	-3.9	-3.8 (-13.5, 6.0)	0.45	
	We did not calculate CVD risk scores	30.8	23.4	-7.3	-4.8 (-15.2, 5.6)	0.36	
	Don’t know	7.7	12.1	4.4	3.8 (-3.4, 10.9)	0.30	
Are you, or is your clinical team, reviewing	Yes, much more consistently	26.1	48.0	22.0	21.5 (9.8, 33.1)	<0 .001	<0.001

CVD risk scores for Medicare beneficiaries in your panel more consistently now than you were 2 years ago?	Yes, somewhat more consistently	22.6	27.0	4.3	3.8 (-7.0, 14.7)	0.49	
	No change from before	24.4	7.8	-16.5	-14.7 (-23.6, -5.9)	0.001	
	Don't know	1.7	3.1	1.4	1.7 (-1.5, 4.9)	0.29	
	Question not asked[e]	25.2	14.1	-11.2	-12.3 (-21.9, -2.8)	0.01	

Abbreviation: CVD, cardiovascular disease

[a] To ensure that participating organizations with at least one respondent were weighted equally in the analysis, each provider's responses received a weight of 1, except in the case for 10 intervention group and 6 control group organizations in which two providers responded to the survey, whose responses received a weight of 1/2. Thus, response rates within individual categories can sum to a noninteger value, reflecting differences in responses between providers from the same organization.

[b] Differences were regression-adjusted using a multinomial logistic model, controlling for respondent- and organization-level baseline characteristics including the respondent's specialty, organization type and location, number of providers and sites for the organization, and whether the organization participates in other Centers for Medicare & Medicaid Services models or programs. Standard errors were clustered to account for multiple providers per organization completing the provider survey.

[c] The *p*-value indicates the statistical significance of the difference between regression-adjusted intervention and control group response rates for each response category individually.

[d] The *p*-value indicates the joint statistical significance of the differences in regression-adjusted intervention and control group response rates across all response categories for a given question.

[e] This question was not asked of intervention and control group providers who responded that they do not calculate CVD risk scores for their current Medicare beneficiary panel, or that they do not know whether CVD risk scores were calculated

eTable 7. Intervention-group only responses to provider survey asking questions about providers' perceptions of the Million Hearts® model and its effects

Survey question	Response	Intervention respondents[a] (n=128), %
Are you, or is your clinical team, reviewing CVD risk scores for Medicare beneficiaries in your panel more consistently now than you were 2 years ago?	Yes, much more consistently	48.0
	Yes, somewhat more consistently	27.0
	No change from before	7.8
	Don't know	3.1
	Question not asked[b]	14.1
Is calculating CVD risk scores helping you identify Medicare beneficiaries in your panel as high risk who you did not previously recognize as being high risk?[c]	Yes	72.9
	No	26.0
	Don't know	1.0
Is calculating CVD risk scores helping you identify Medicare beneficiaries in your panel as medium risk who you did not previously recognize as being medium risk?[c]	Yes	69.8
	No	27.6
	Don't know	2.6
Has your participation in the CMS Million Hearts® CVD Risk Reduction Model changed how you use CVD risk scores to inform clinical care to reduce CVD risk among high-risk Medicare beneficiaries?[d]	Changed very much	24.8
	Changed somewhat	47.5
	Did not change	26.0
	No response	1.7
Has your participation in the CMS Million Hearts® CVD Risk Reduction Model changed how you use CVD risk scores to inform clinical care to reduce CVD risk among medium-risk Medicare beneficiaries?[d]	Changed very much	22.7
	Changed somewhat	49.2
	Did not change	27.3
	No response	0.8
How much do you agree or disagree with the following statement: Participation in the CMS Million Hearts® CVD Risk Reduction Model has prompted our practice to provide more systematically what is considered the current standard of care in this field.[d]	Strongly agree	31.8
	Somewhat agree	38.8
	Neutral	19.0
	Somewhat disagree	5.0
	Strongly disagree	5.4

Abbreviations: CMS, Centers for Medicare & Medicaid Services; CVD, cardiovascular disease

[a] To ensure that the analysis weighted participating organizations with at least one respondent equally, each provider's responses received a weight of 1, except in the cases for 10 intervention group organizations in which two providers responded to the survey, whose responses received a weight of 1/2. Thus, response rates within individual categories can sum to a noninteger value, reflecting differences in responses between providers from the same organization.

[b] This question was not asked to intervention group providers who responded that they do not calculate CVD risk scores for their current Medicare beneficiary panel, or that they do not know whether CVD risk scores were calculated.

[c] These questions were not asked to intervention group providers who responded that they do not review CVD risk scores for their Medicare beneficiary panel more consistently than two years ago, or that they do not, or do not know whether they, calculate CVD risk scores for their Medicare beneficiary panel.

[d] These questions were not asked to intervention group providers who responded that they were not aware that their organization was participating in the Million Hearts® Model or who did not respond to the question.