

Supplemental Online Content

Anderson TS, Wilson L, Sussman JB. Atherosclerotic cardiovascular disease risk estimates using the Predicting Risk of Cardiovascular Disease EVENTS equation. *JAMA Intern Med*. Published online June 3, 2024. doi:10.1001/jamainternmed.2024.1302

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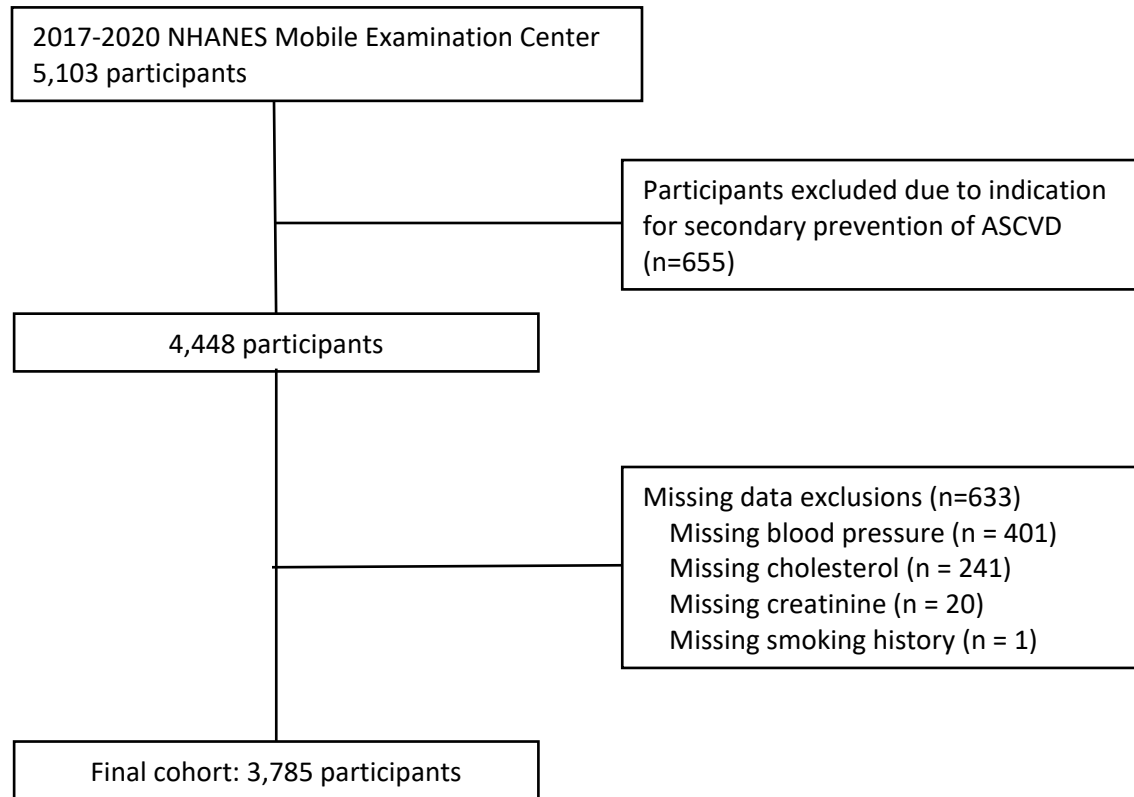
This supplemental material has been provided by the authors to give readers additional information about their work.

eMethods. Estimation of Baseline ASCVD Risk Among Current Statin Users

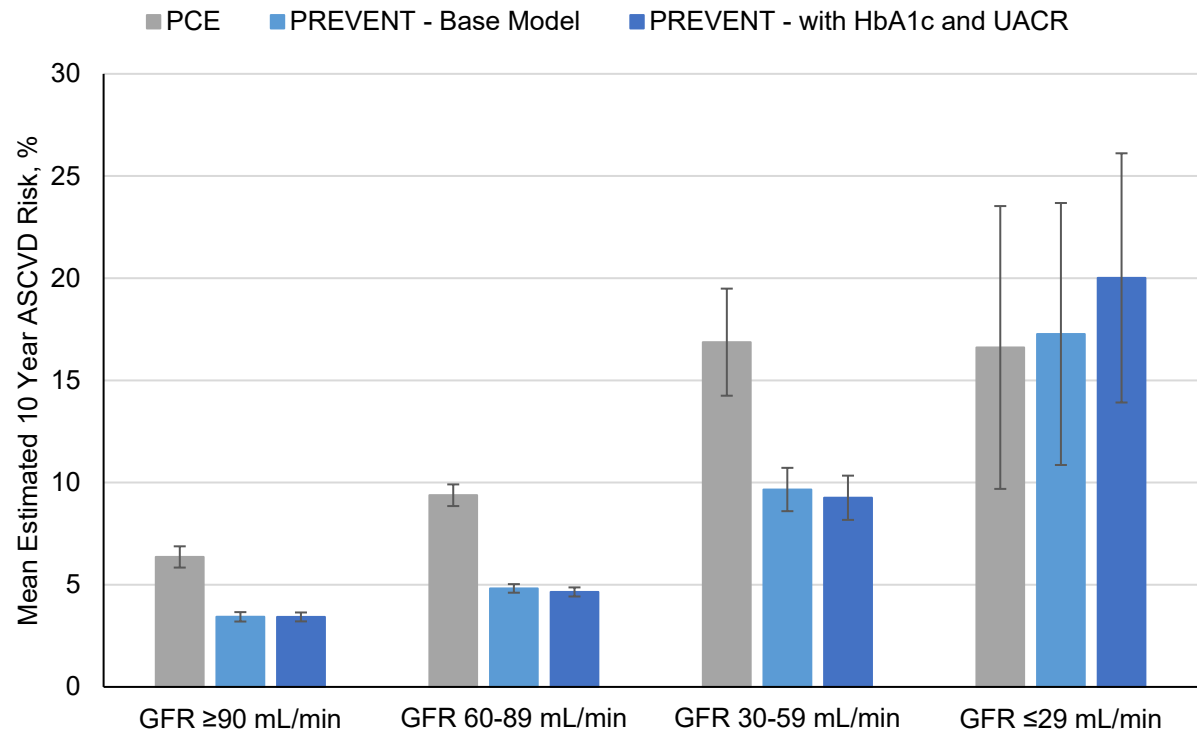
For analyses of guideline recommendations for primary prevention statin use, we recalculated estimated ASCVD risk using an estimated “untreated” cholesterol values. In adults on statins we calculated an estimate of what their total cholesterol would be if they were untreated by estimating the reduction in total cholesterol due to that statin from the adults’ measured total cholesterol and adding this to their measured total cholesterol value. The estimate of an untreated total cholesterol allowed us to describe estimated ASCVD risk if an adult were to stop a statin based on the PREVENT equations reclassifying risk. As NHANES collects medication names but not doses, we identified average effects of each statin on total and LDL cholesterol based on published systematic reviews.^{12,13} We identified the estimated cholesterol reduction in mg/dL for the lowest and highest doses of each statin and used the average of these two values for the primary analysis – shown in table below. In sensitivity analyses, we applied the lowest estimated cholesterol reduction and then the highest estimated cholesterol reduction to all current statin users, in order to provide lower and upper bounds on patients. Since statin effects on HDL levels are variable of uncertain clinical significance and not statistically significant in meta-analyses, we did not re-estimate these values.

	Minimum reduction	Average reduction	Maximum reduction
Total cholesterol, mg/dL			
Atorvastatin	49.49	64.36	79.22
Fluvastatin	19.82	24.12	28.41
Lovastatin	24.94	46.10	67.26
Pitavastatin	65.35	75.99	86.62
Pravastatin	27.28	34.22	41.16
Rosuvastatin	29.03	58.39	87.75
Simvastatin	49.48	54.87	60.26
LDL cholesterol, mg/dL			
Atorvastatin	43.16	51.99	60.82
Fluvastatin	15.46	34.13	52.80
Lovastatin	20.33	35.87	53.41
Pitavastatin	64.97	75.41	85.84
Pravastatin	20.41	33.78	47.14
Rosuvastatin	47.37	58.31	69.24
Simvastatin	36.98	51.93	66.87

eFigure 1. Cohort Construction



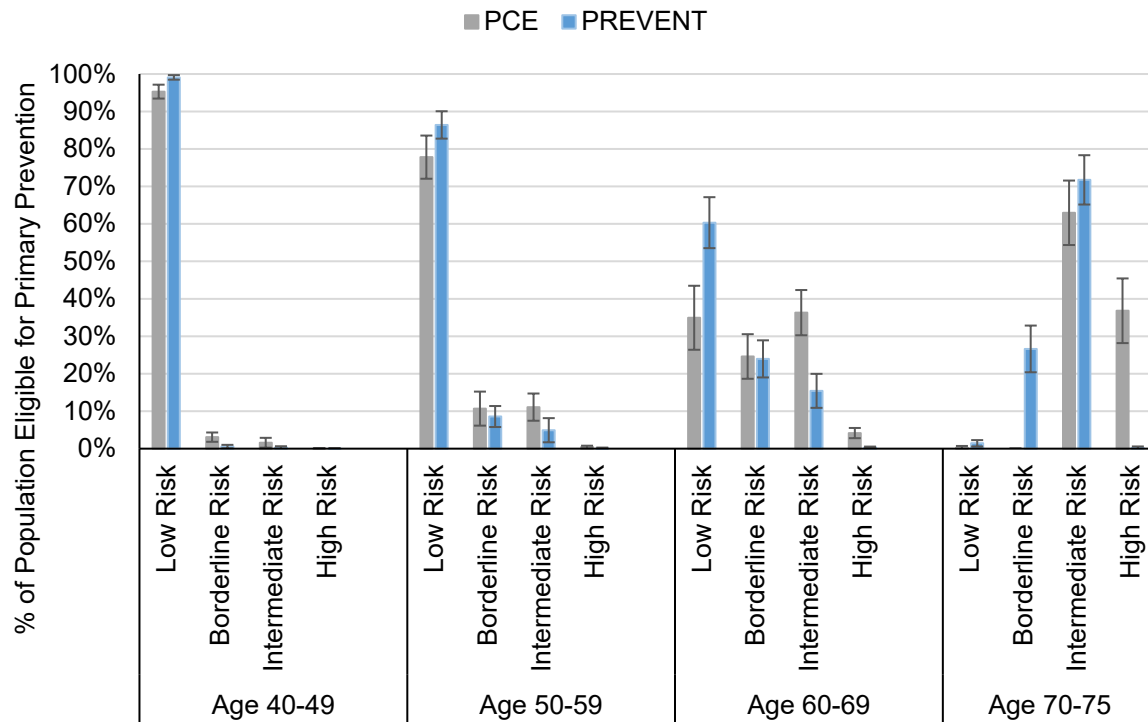
eFigure 2. Estimated Mean 10-Year ASCVD Risk, by Estimated Glomerular Filtration Rate and Calculator



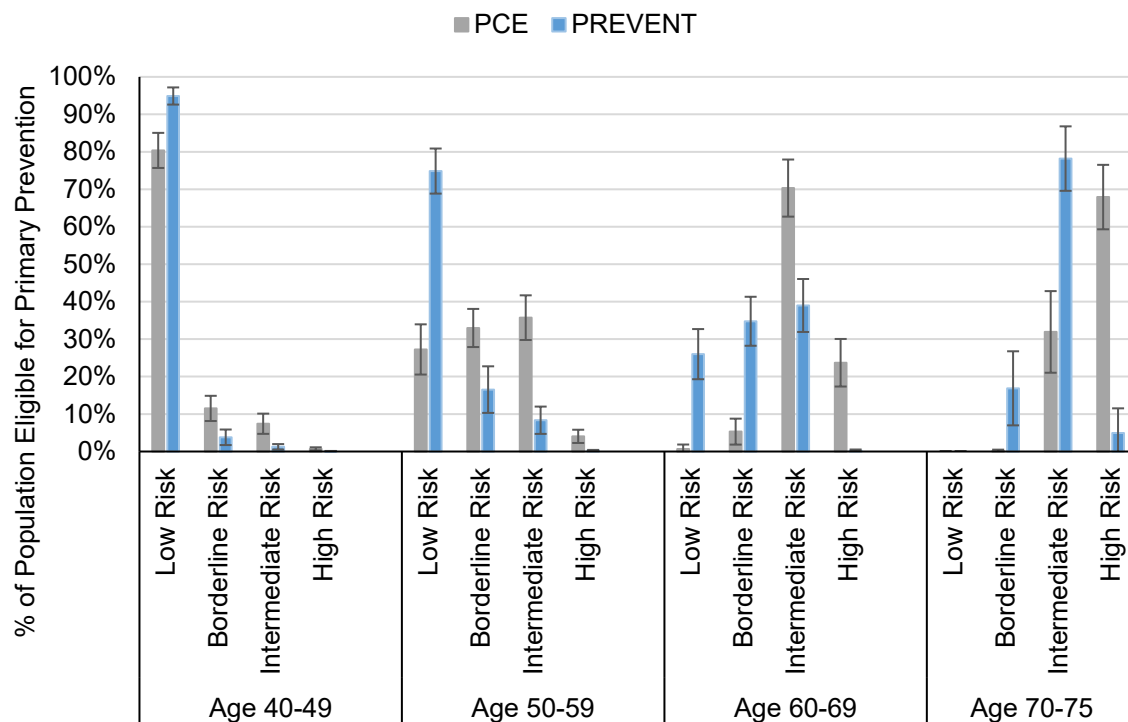
Note: Unweighted sample sizes: eGFR ≥ 90 , N=2122; eGFR 60-89, N = 1422; eGFR 30-59, N = 210; eGFR ≤ 29 , n = 31.

eFigure 3. Differences in 10-Year ASCVD Risk Category Classification Between PCE and PREVENT Calculators, by Sex and Age Category

A) Females

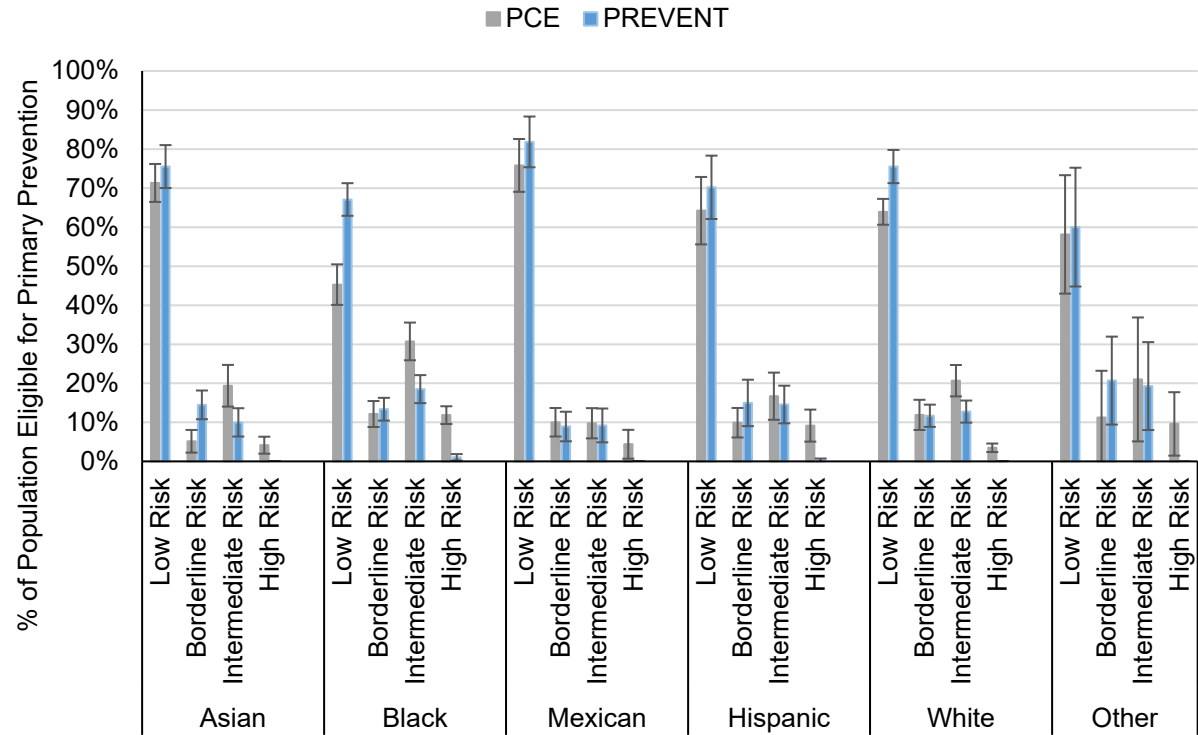


B) Males

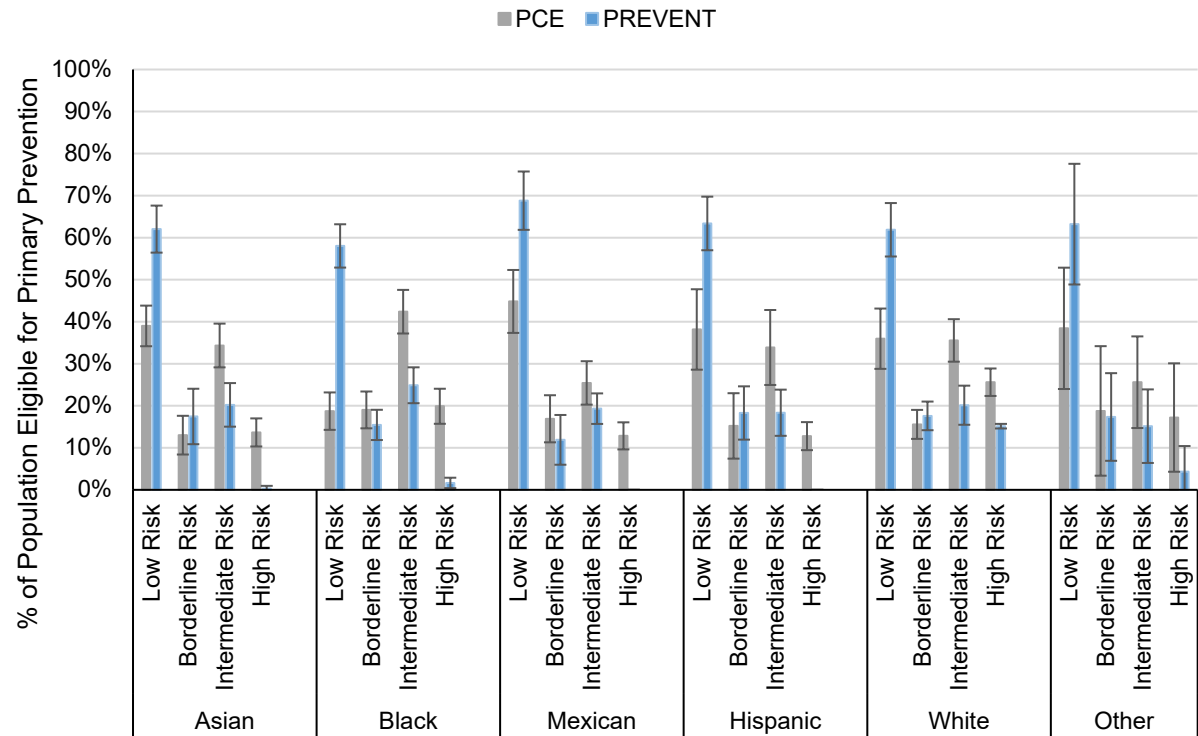


eFigure 4. Differences in 10-Year ASCVD Risk Category Classification Between PCE and PREVENT Calculators, by Sex, Race, and Ethnicity

A) Females



B) Males



eTable 1. Change in 10-Year ASCVD Risk Category Classification Using PREVENT Equations by Proportion of PCE Risk Category

	10-year ASCVD Risk Category by PREVENT Equations, Proportion (95% CI)			
	Low Risk, <5.0%	Borderline Risk, 5.0% - 7.4%	Intermediate Risk, 7.5% - 19.9%	High Risk, >20%
Low Risk by PCEs, <5.0%	99.0 (98.3-99.7)	0.9 (0.2-1.6)	0.1 (0.0-0.1)	-
Borderline Risk by PCEs, 5.0% - 7.4%	89.3 (85.1-93.5)	9.2 (5.1-13.3)	1.4 (0.0-2.8)	0.1 (0.0-0.2)
Intermediate Risk by PCEs, 7.5% - 19.9%	25.6 (22.0-29.2)	46.2 (41.9-50.4)	28.1 (24.3-31.9)	0.1 (0.0-0.2)
High Risk by PCEs, >20%	-	2.3 (0.2-4.4)	94.0 (91.2-96.8)	3.5 (1.7-5.6)

Note: Proportions sum to 100 across rows and represent proportions of PCE risk categories. Blue shading refers to PREVENT equations reclassifying patients into lower risk category, orange shading refers to PREVENT equations reclassifying patients into higher risk categories, and grey shading refers to no change in risk category using PCE or PREVENT equations. No patients were reclassified from low to high risk or high to low risk.

eTable 2. Differences in Populations Recommended Primary Prevention Statins Comparing PCEs and PREVENT Equations Across Different Scenarios of Statin Effects on Cholesterol

Primary Prevention Statin Recommendation ¹	No, millions (95% CI)		
	Scenario 1: Minimum Cholesterol Lowering Effect of Statins among Current Users	Scenario 2: Average Cholesterol Lowering Effect of Statins among Current Users ²	Scenario 3: Maximum Cholesterol Lowering Effect of Statins among Current Users
Statin Not Recommended	61.56 (54.82-68.30)	61.28 (54.58-67.98)	61.16 (54.40-67.92)
Statin Newly Recommended Based on PREVENT	0.18 (0.00-0.39)	0.18 (0.00-0.39)	0.18 (0.00-0.39)
Statin No Longer Recommended Based on PREVENT	18.08 (14.63-19.54)	17.26 (14.80-19.71)	17.20 (14.80-19.60)
Statin Recommended Based on PCEs and PREVENT	27.99 (24.82-31.61)	28.09 (24.96-31.23)	28.28(25.18-31.38)

¹ Primary prevention statin recommendation based on estimated 10-year ASCVD risk $\geq 7.5\%$ or presence of diabetes. For NHANES participants using statins, 10-year ASCVD risk based on “off-statin” cholesterol levels under 3 scenarios of cholesterol lowering effect of statin

² Base case

eTable 3. Differences in Populations Recommended Primary Prevention Statin Use Comparing PCEs and PREVENT Equations When Including Severely Elevated LDL Cholesterol Criteria

	Scenario 1: Recommendation based on off-statin estimated 10-year ASCVD risk $\geq 7.5\%$ or diabetes ¹	Scenario 2: Recommendation based on off-statin estimated 10-year ASCVD risk $\geq 7.5\%$ or diabetes in fasting cohort ²	Scenario 3: Recommendation based on off-statin estimated 10-year ASCVD risk $\geq 7.5\%$, diabetes, or estimated off-statin LDL cholesterol >190 mg/dL
Unadjusted No.	3,785	1,789	1,789
Weighted No. (95% CI)	106.8 (96.6-117.0)	109.2 (97.8-120.6)	109.2 (97.8-120.6)
Primary Prevention Statin Recommendation, No, millions (95% CI) ¹			
Statin Not Recommended	61.28 (54.58-67.98)	62.88 (54.13-71.64)	61.49 (52.98-69.99)
Statin Newly Recommended Based on PREVENT	0.18 (0.00-0.39)	0.15 (0.00-0.37)	0.05 (0.00-0.11)
Statin No Longer Recommended Based on PREVENT	17.26 (14.80-19.71)	18.56 (14.88-22.23)	18.10 (14.46-21.73)
Statin Recommended Based on PCEs and PREVENT	28.09 (24.96-31.23)	27.58 (23.72-31.45)	29.54 (25.73-33.36)

¹ Base case which includes fasting and non-fasting NHANES participants who complete the mobile examination center medical examination.

² Same scenario as base case but using fasting subsample weights

³ Includes statin recommendation based on fasting LDL >190 mg/dL in addition to other primary prevention criteria, calculated in NHANES fasting cohort, using fasting subsample weights