

Applying ACC/AHA guideline to Korean patients

Kiyuk Chang MD

Cardiology

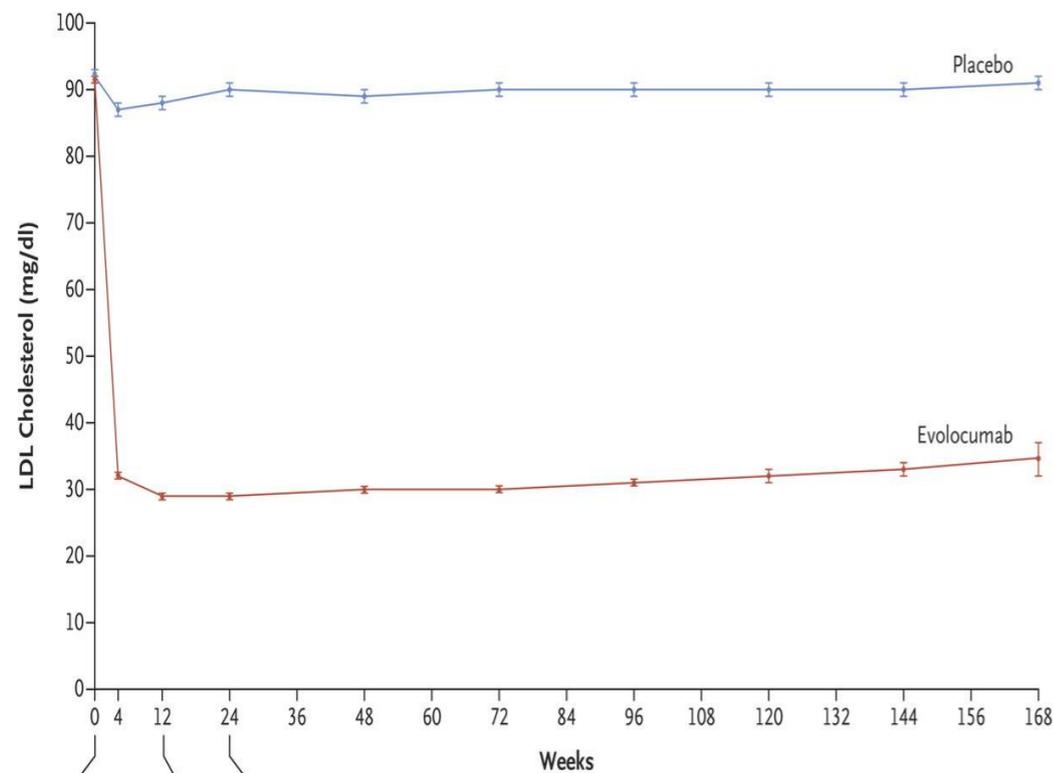
Seoul St. Mary's Hospital

The Catholic University of Korea

Evolocumab & Clinical outcome (FOURIER)

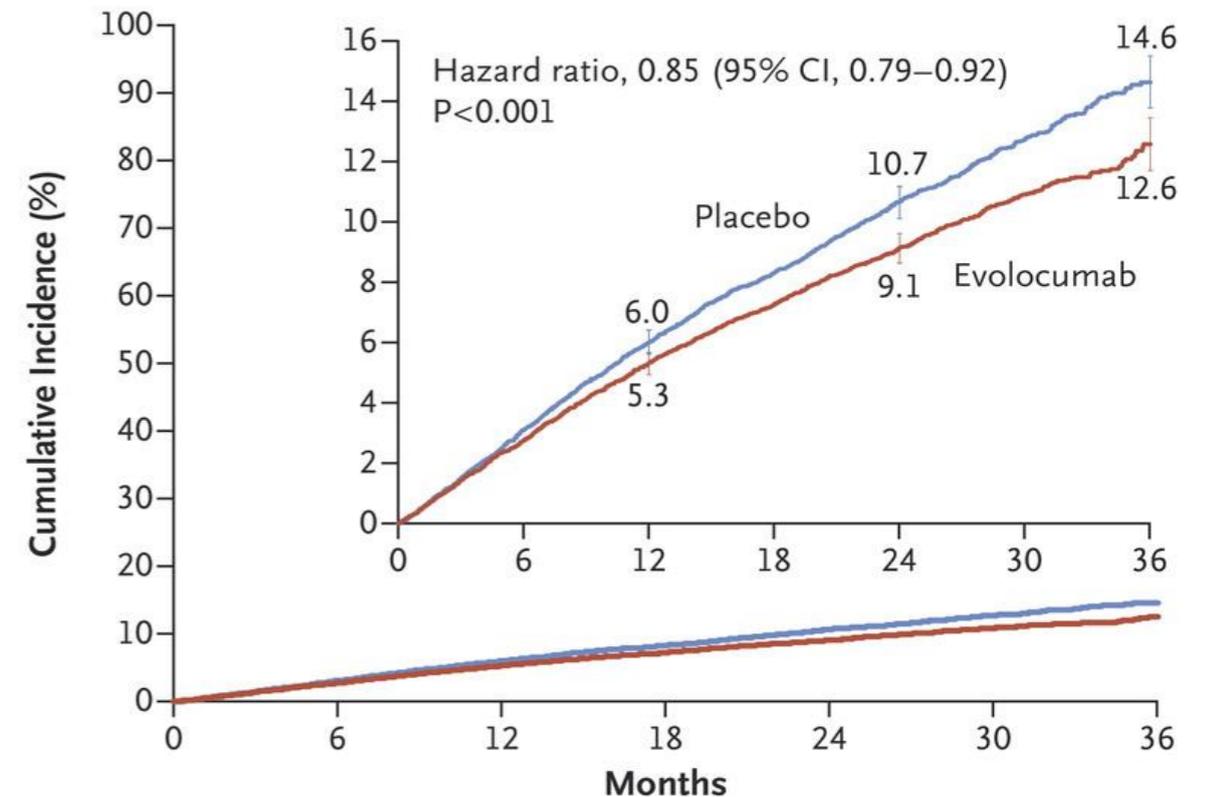
Inclusion criteria

- ASCVD: prior MI, stroke, PAD
- LDL > 70 mg/dL despite atorvastatin 20 mg higher±ezetimibe



No. at Risk	0	4	12	24	36	48	60	72	84	96	108	120	132	144	156	168
Placebo	13,779	13,251	13,151	12,954	12,596	12,311	10,812	6926	3352	790						
Evolocumab	13,784	13,288	13,144	12,964	12,645	12,359	10,902	6958	3323	768						
Absolute difference (mg/dl)		54	58	57	56	55	54	52	53	50						
Percentage difference		57	61	61	59	58	57	55	56	54						
P value		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001						

A Primary Efficacy End Point

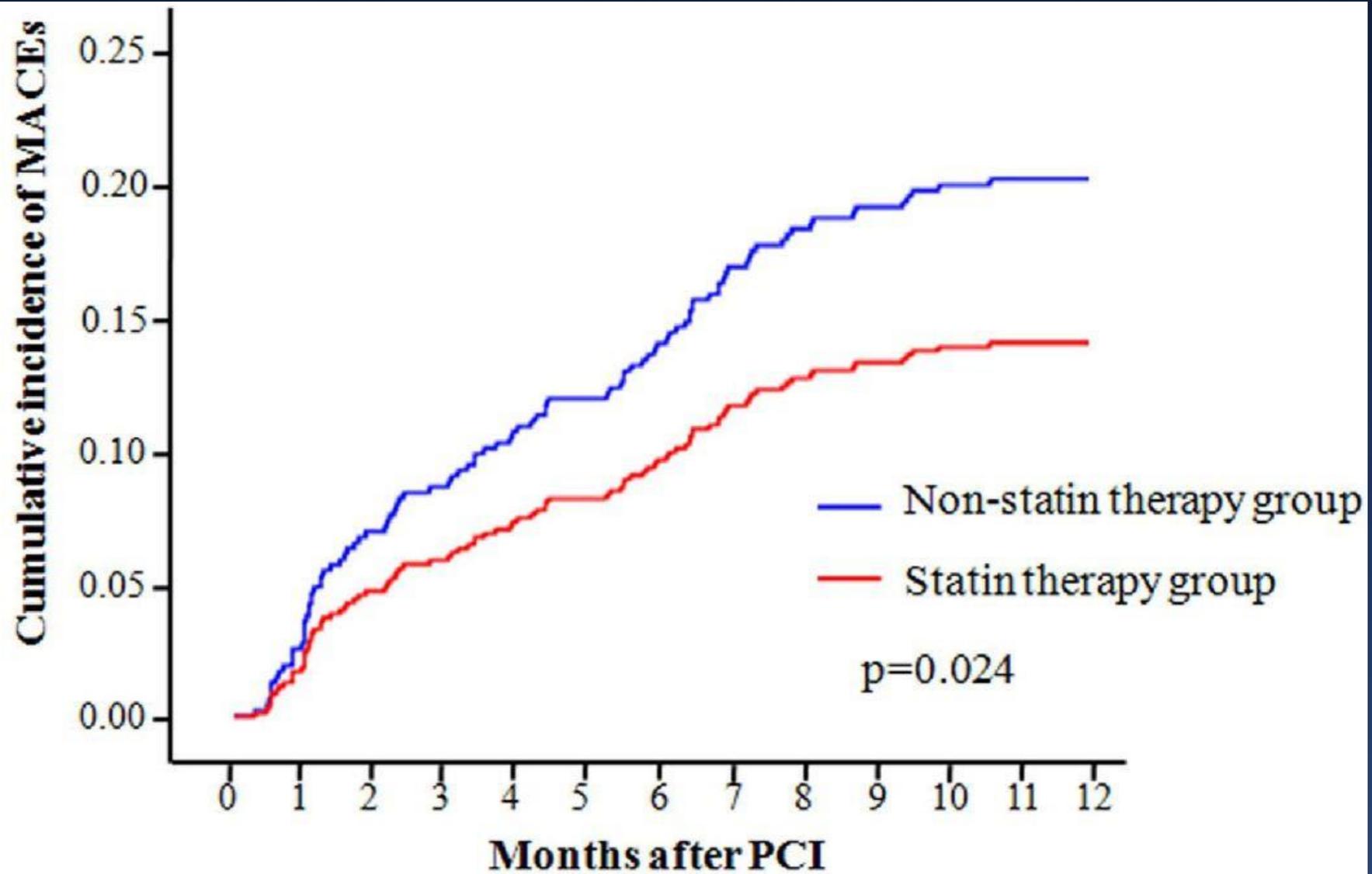


No. at Risk

No. at Risk	0	6	12	18	24	30	36
Placebo	13,780	13,278	12,825	11,871	7610	3690	686
Evolocumab	13,784	13,351	12,939	12,070	7771	3746	689

Sabatine MS et al, N Engl J Med 2017 Mar

Benefit of early statin therapy in patients wth AMI & LDL < 70 mg/dL



No.at risk	1,054	894	780	680
Statin therapy group	607	529	457	400
Non-statin therapy group	447	365	323	280

Lee KH et al, *J Am Coll Cardiol* 2011;58:1664-71

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**CLINICAL
CARDIOLOGY**

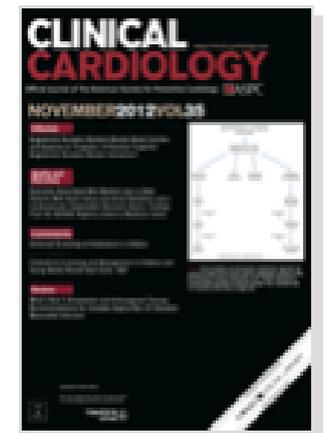
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Clinical Investigation

Current Statin Usage for Patients With Acute Coronary Syndrome Undergoing Percutaneous Coronary Intervention: Multicenter Survey in Korea

Mi-Jeong Kim MD, Doo Soo Jeon MD, Hyeon-Cheol Gwon MD, Soo-Joong Kim MD,
Kiyuk Chang MD, Hyo-Soo Kim MD, Seung-Jea Tahk MD 

for Korean MUSTANG Investigators



[View issue TOC](#)
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Kim MJ et al, Clin Cardiol 2012;35:700-6

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■ OBJECTIVES

- ✓ Examination of statin treatment patterns in acute coronary syndrome (ACS) undergoing percutaneous coronary intervention (PCI)

■ POPULATION and DATA COLLECTION

- ✓ 3362 patients registered and followed for 30 days after enrollment from 48 hospitals
- ✓ diagnosed with unstable angina, (UA) non-ST-elevated MI (NSTEMI), or ST-elevated MI (STEMI)
- ✓ High dose: atorvastatin ≥ 40 mg or rosuvastatin ≥ 20 mg per day

Kim MJ et al, Clin Cardiol 2012;35:700-6

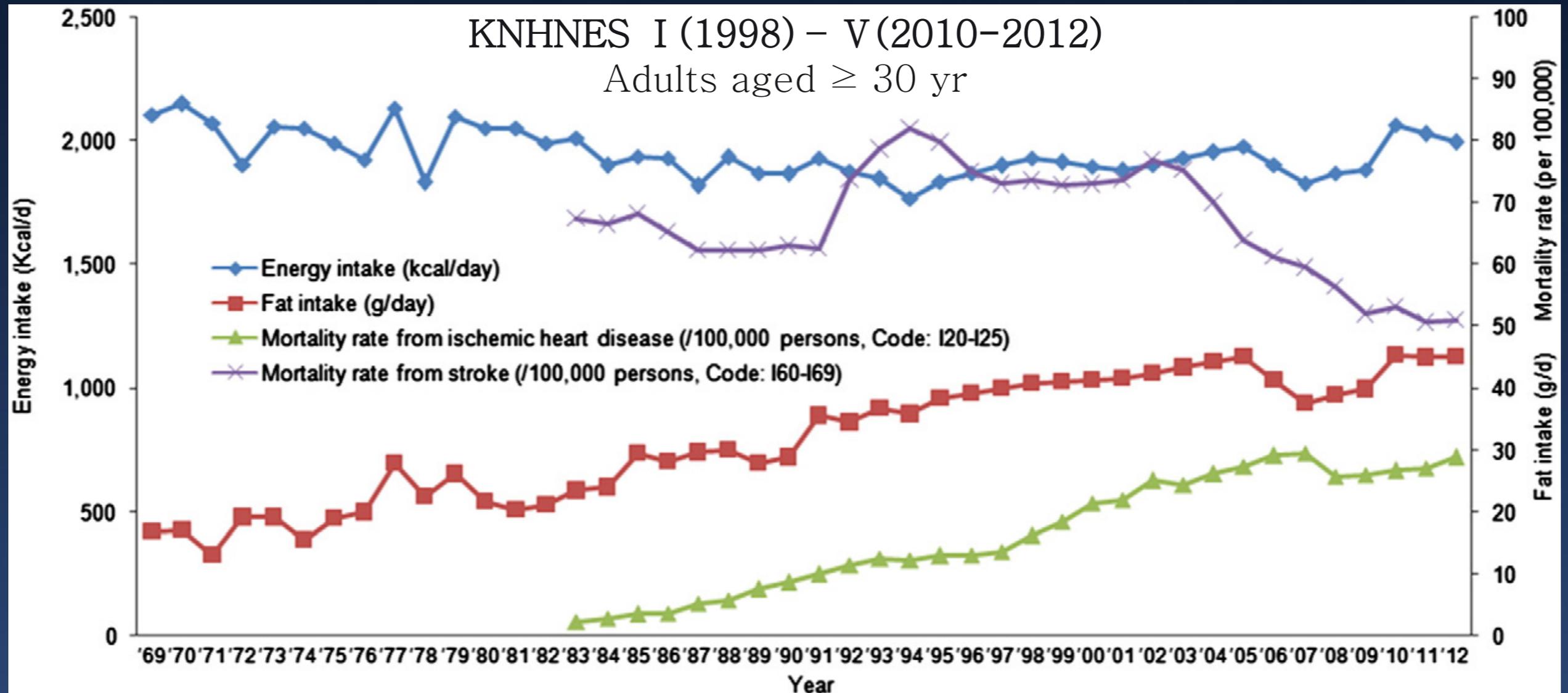
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- 4. Effect of High intensity statin therapy in ASCVD**

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Trends in mortality rate from CHD and stroke in Korea



KNHNES, Korea National Health and Nutrition Examination Survey

Kim HJ, et al. Intern J Cardiol 2014;174:64-72.

Lipid profile of general Korean population

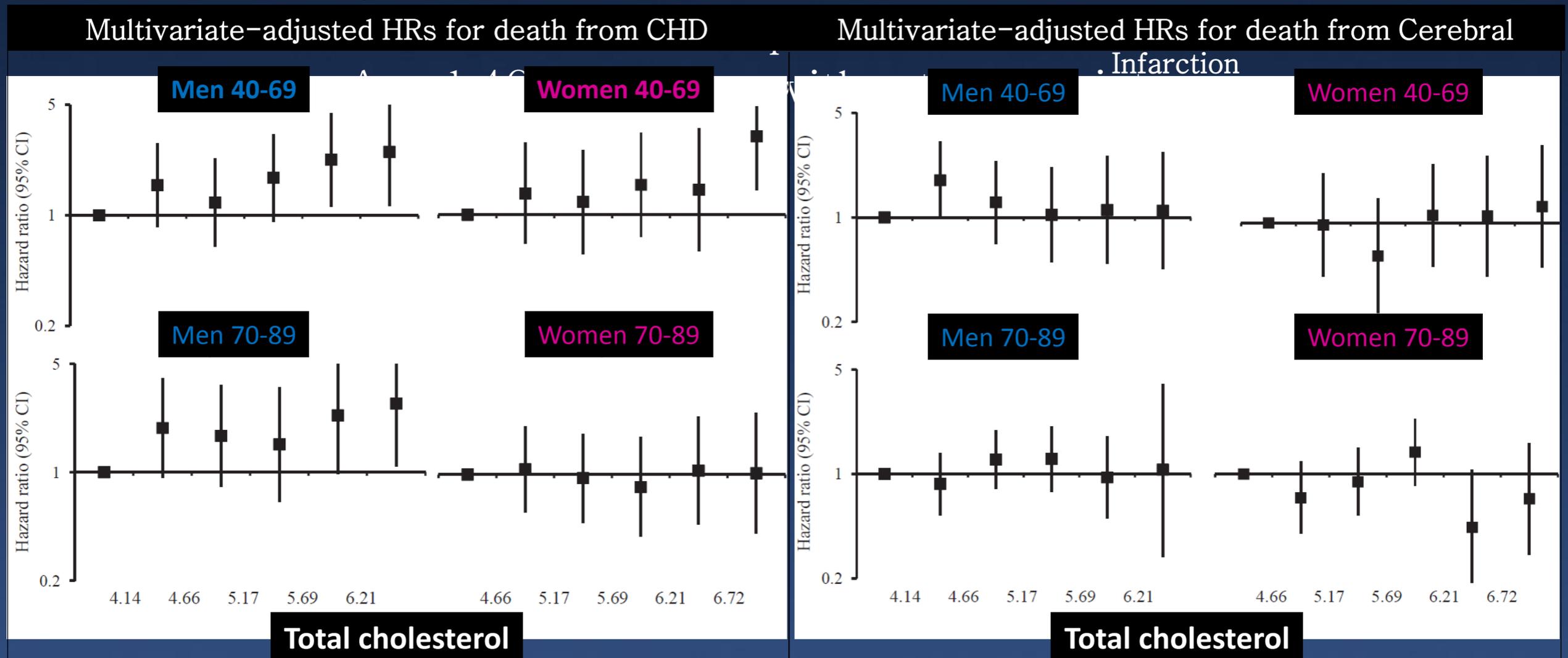
	KNHANES			P for trend ^a
	III (2005)	IV (2007–09)	V (2010–12)	
Men (no. of ≥30 yr)	1976	5878	6273	
Total cholesterol (mg/dL, mean ± SE)	186.6 ± 0.9	189.3 ± 0.5	191.2 ± 0.6	<0.0001
Total cholesterol (mg/dL, age-standardized mean ± SE)	186.4 ± 0.9	189.2 ± 0.5	191.0 ± 0.6	<0.0001
Hypercholesterolemia (% SE) ^b				
Total (≥30 yr)	7.3 (0.6)	10.1 (0.5)	12.9 (0.5)	<0.0001
Total (≥30 yr, age-standardized)	7.2 (0.6)	10.0 (0.5)	12.6 (0.5)	<0.0001
30–39 yr	5.9 (1.1)	7.9 (0.8)	10.2 (1.0)	0.0063
40–49 yr	8.7 (1.3)	10.8 (0.9)	10.9 (0.9)	0.1851
50–59 yr	7.9 (1.5)	12.2 (1.1)	16.9 (1.2)	<0.0001
60–69 yr	8.8 (1.7)	11.3 (1.2)	15.6 (1.3)	0.0027
≥70 yr	3.6 (1.3)	8.1 (1.1)	13.0 (1.3)	<0.0001
P-value ^c	0.0934	0.0046	<0.0001	
Women (no. of ≥30 yr)	2651	7992	8384	
Total cholesterol (mg/dL, mean ± SE)	187.6 ± 0.8	190.6 ± 0.5	192.9 ± 0.5	<0.0001
Total cholesterol (mg/dL, age-standardized mean ± SE)	187.1 ± 0.7	189.4 ± 0.5	191.4 ± 0.5	<0.0001
Hypercholesterolemia (% SE)				
Total (≥30 yr)	8.7 (0.7)	12.6 (0.4)	16.4 (0.5)	<0.0001
Total (≥30 yr, age-standardized)	8.4 (0.6)	11.8 (0.4)	14.9 (0.5)	<0.0001
30–39 yr	1.8 (0.5)	4.1 (0.5)	4.6 (0.6)	0.0017
40–49 yr	5.5 (1.0)	6.8 (0.6)	8.8 (0.9)	0.0226
50–59 yr	15.2 (1.9)	20.0 (1.2)	24.5 (1.2)	0.0001
60–69 yr	17.4 (2.1)	24.2 (1.3)	32.2 (1.5)	<0.0001
≥70 yr	13.2 (2.4)	19.2 (1.4)	24.5 (1.4)	0.0002
P-value ^c	<0.0001	<0.0001	<0.0001	

Relation Between Serum TC Level and CVD in Japan

EPOCH-JAPAN study

(Evidence for Cardiovascular Prevention from Observational Cohorts in Japan)

A Pooled Analysis of 65 594 Individuals From 10 Cohort Studies in



HRs, Hazard ratio was adjusted for cohort, age, systolic blood pressure, body mass index, and smoking and drinking categories.

Difference in lipid among Asians and non-Asians

An Analysis From the INTERHEART Study

4,247 cases of a first AMI and 5,452 control subjects in Asia
4,455 cases of a first AMI and 5,867 control subjects in non-Asian regions

Mean LDL-C, HDL-C in Subjects From Asia and Other Regions

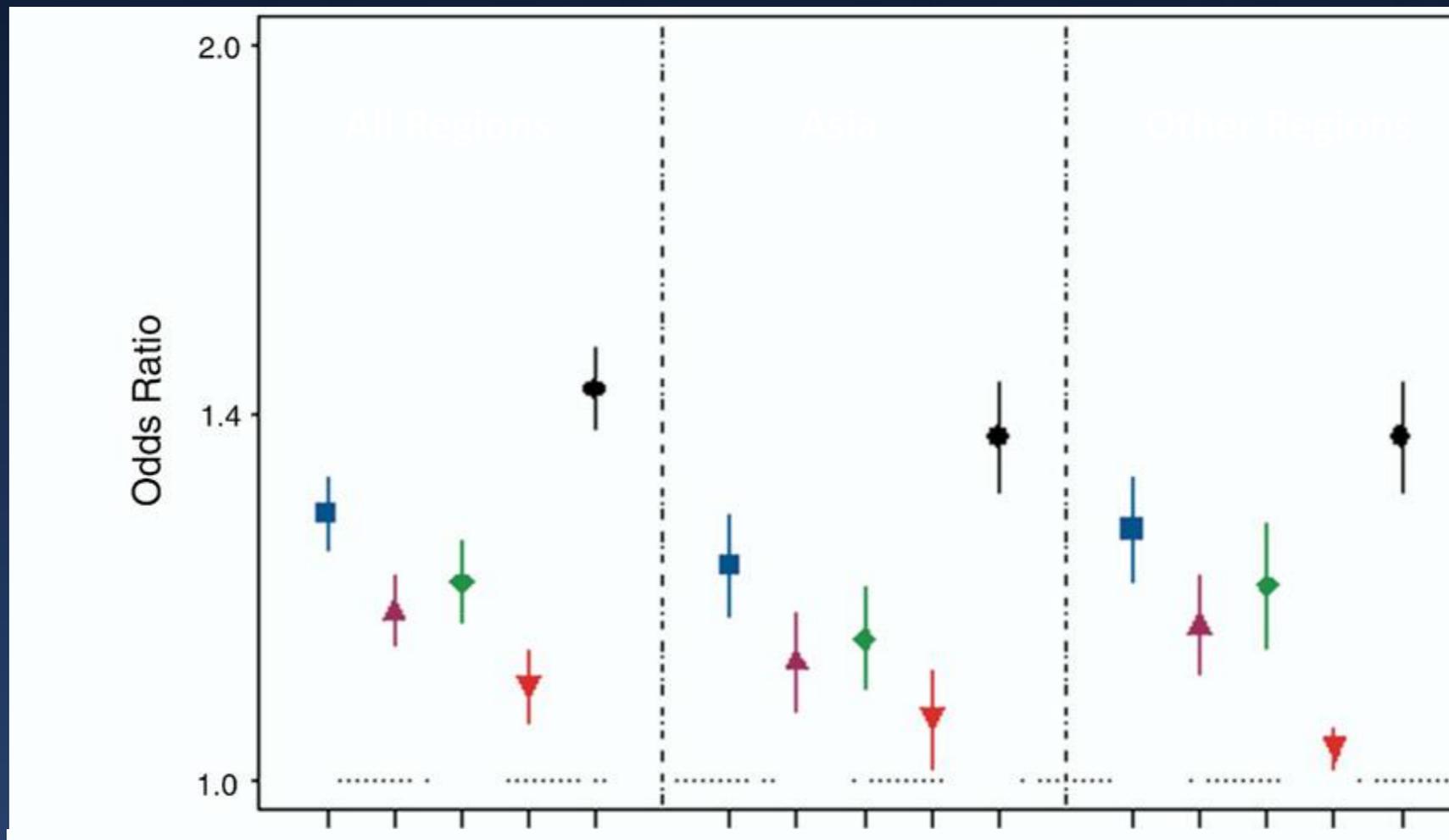
	LDL-C* (mg/dl)		HDL-C* (mg/dl)	
	Cases	Controls	Cases	Controls
Asia (n = 9,699)	126.8 (40)	118.6 (37)	39.2 (12.3)	41.2 (14.3)
Non-Asian regions (n = 10,322)	136.2 (42.4)	127.1 (39.1)	40.8 (13.2)	42.6 (15)
South Asia (n = 2,674)	125.2 (39.8)	115.4 (37.1)	32.5 (10)	33.5 (11.6)
China/Hong Kong (n = 5,232)	121.6 (36)	113.8 (33.8)	41.9 (12)	44.0 (13.3)
Southeast Asia (n = 1,546)	150.4 (47.6)	135.6 (41)	41.0 (12.5)	42.6 (15.5)
Japan (n = 247)	133.6 (34.6)	133.1 (30.9)	44.2 (12.8)	56.4 (13.2)

*p<0.0001. †p=0.01, for both between-case and between-control comparisons between Asian and non-Asian regions.

A greater proportion of Asian cases and controls had LDL-C ≤ 100 mg/dl (25.5% and 32.3% in Asians vs. 19.4% and 25.3% in non-Asians, respectively).

Impact of lipid abnormality on CVD risk In an Asian population

Risk of First AMI for 1-SD Change in the Various Lipid



	All Regions OR* (95% CI)	Asia OR* (95% CI)	Other Regions OR* (95% CI)
LDL	1.29 (1.24-1.33)	1.22 (1.17-1.28)	1.27 (1.21-1.33)
Non-HDL	1.17 (1.14-1.21)	1.12 (1.07-1.17)	1.16 (1.11-1.21)
LDL/HDL	1.21 (1.16-1.25)	1.14 (1.09-1.20)	1.20 (1.13-1.27)
Non-HDL/HDL	1.09 (1.06-1.13)	1.06 (1.01-1.11)	1.03 (1.01-1.05)
ApoB/ApoA1	1.45 (1.39-1.50)	1.38 (1.31-1.46)	1.38 (1.31-1.46)

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More than 40% of major CHD events annually occur in persons with established CHD

The average annual age-standardized prevalence of CHD in the Perth metropolitan region (population 1.6 million) was 28 373 (8.8%) in men and 14 966 (4.0%) in women

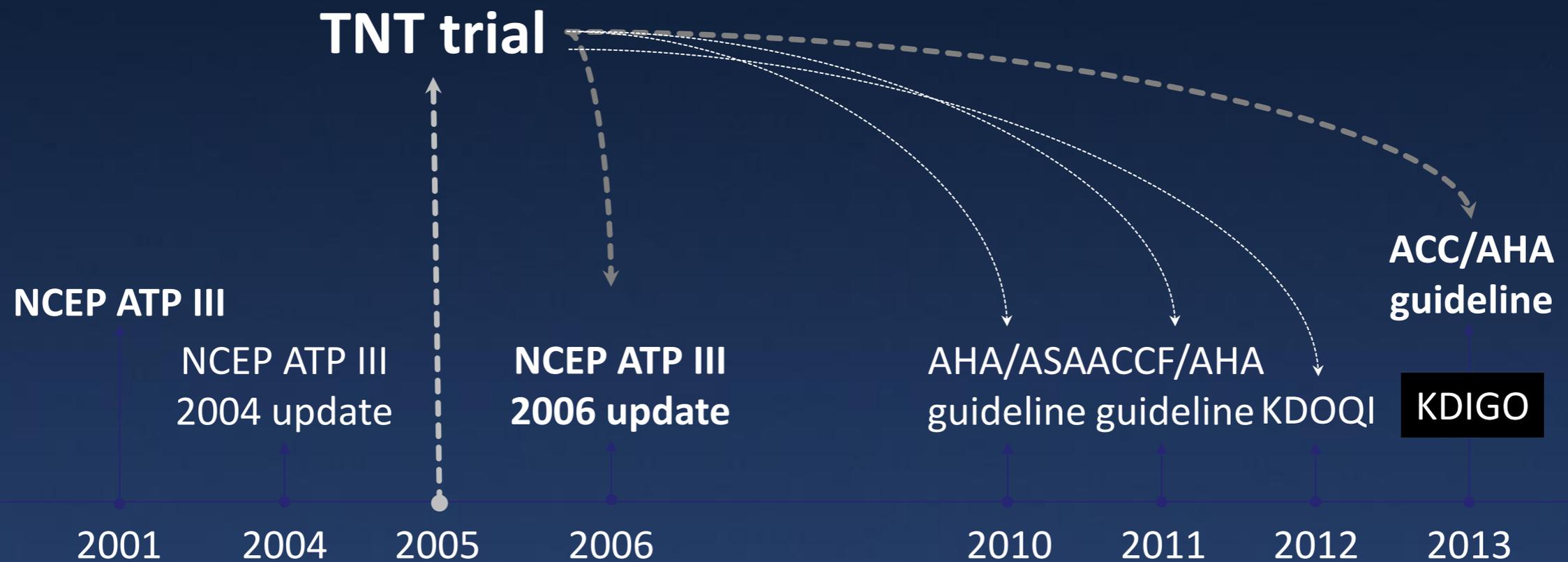
Characteristics of Men and Women Ages 35 to 84 Years With and Without Coronary Heart Disease in Perth, Western Australia, Between 1995 and 2005

	Established CHD		CHD Free	
	Men	Women	Men	Women
Average annual population, n	28 373	14 966	313 999	324 409
Average annual prevalence,*† %	8.8	4.0	91.2	96.0
Total nonfatal MI, CHD deaths, n (%)	8335 (43)	4117 (43)	11 121 (57)	5368 (57)
Total CHD deaths, n (%)	4192 (55)	2276 (51)	3470 (45)	2165 (49)
Total nonfatal MI, n (%)	4143 (35)	1841 (36)	7651 (65)	3203 (64)
Average annual crude rates per 100 000 person-years				
Total nonfatal MI+CHD deaths	2686	2513	325	144
CHD deaths	1361	1397	111	63
Nonfatal MI	1325	1116	244	93

*Average prevalence of previous admission for CHD in the past 15 years at June 30 in each calendar year 1995 to 2005.

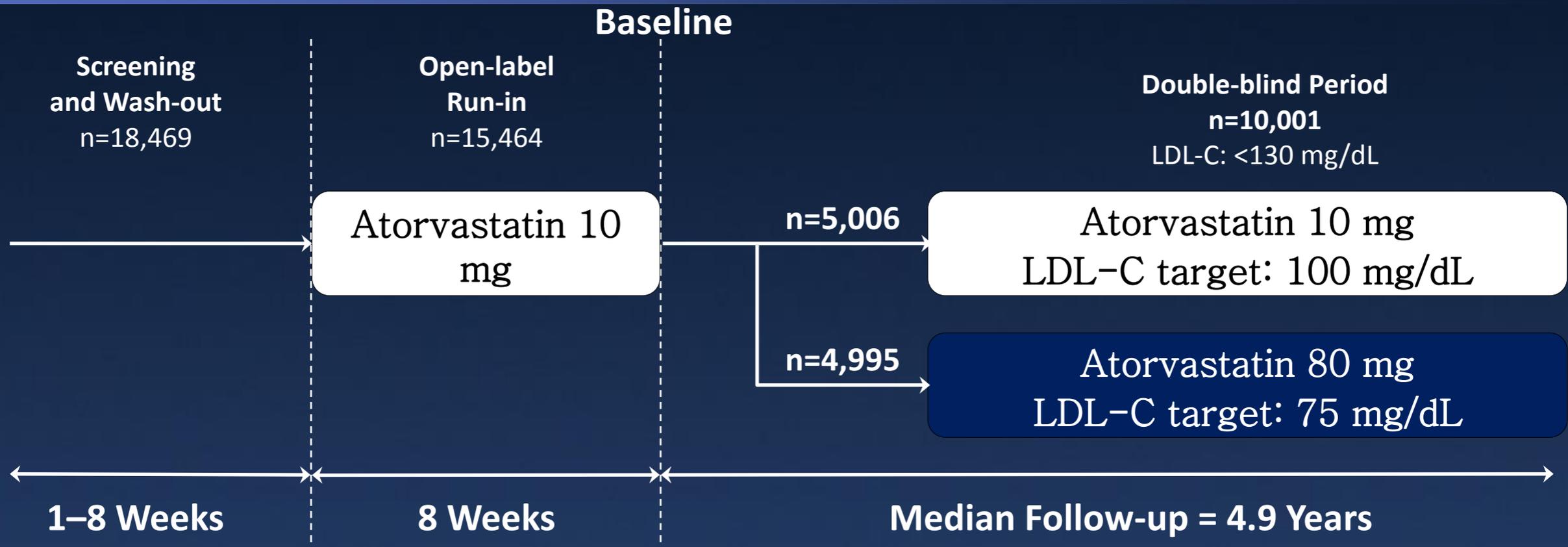
†Age-standardized.

Role of TNT Trial in Lipid Guideline Evolution



TNT was the First Randomized Clinical Trial to Prospectively Assess the Efficacy and Safety of Treating Patients with Stable CHD to LDL-C Levels Well Below 100 mg/dL

TNT : Study Design



Patient Population

- 35-75 yrs with stable CHD
- LDL-C: 130-250 mg/dL
- Triglycerides ≤600 mg/dL

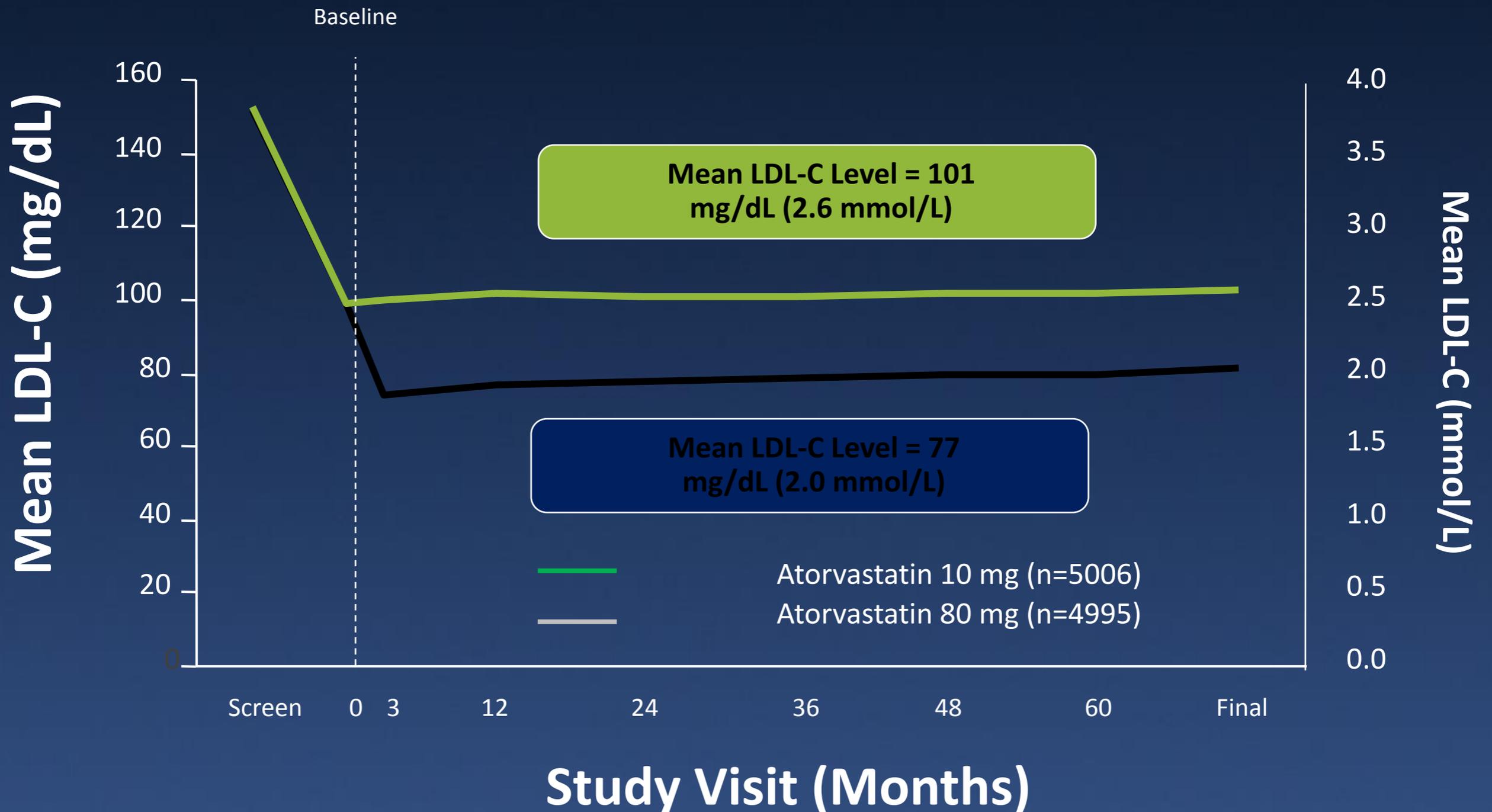
Primary Efficacy Outcome

- Time to occurrence of a major CV event:
 - CHD death
 - Nonfatal, non-procedure-related MI
 - Resuscitated cardiac arrest
 - Fatal or nonfatal stroke

TNT : Baseline Patient Characteristics

	Atorvastatin 10 mg (n=5,006)	Atorvastatin 80 mg (n=4,995)
Age (mean ± SD)	61 ± 8.8 yrs	61 ± 8.8 yrs
Men	81%	81%
White	94%	94%
Cardiovascular Risk Factors (%)		
• Current Smoker	13%	13%
• Hypertension	54%	54%
• Diabetes Mellitus	15%	15%
Cardiovascular History (%)		
• Angina	81%	82%
• Myocardial Infarction	58%	59%
• Coronary Angioplasty	54%	54%
• Coronary Bypass	47%	47%
• Cerebrovascular Accident	5%	5%

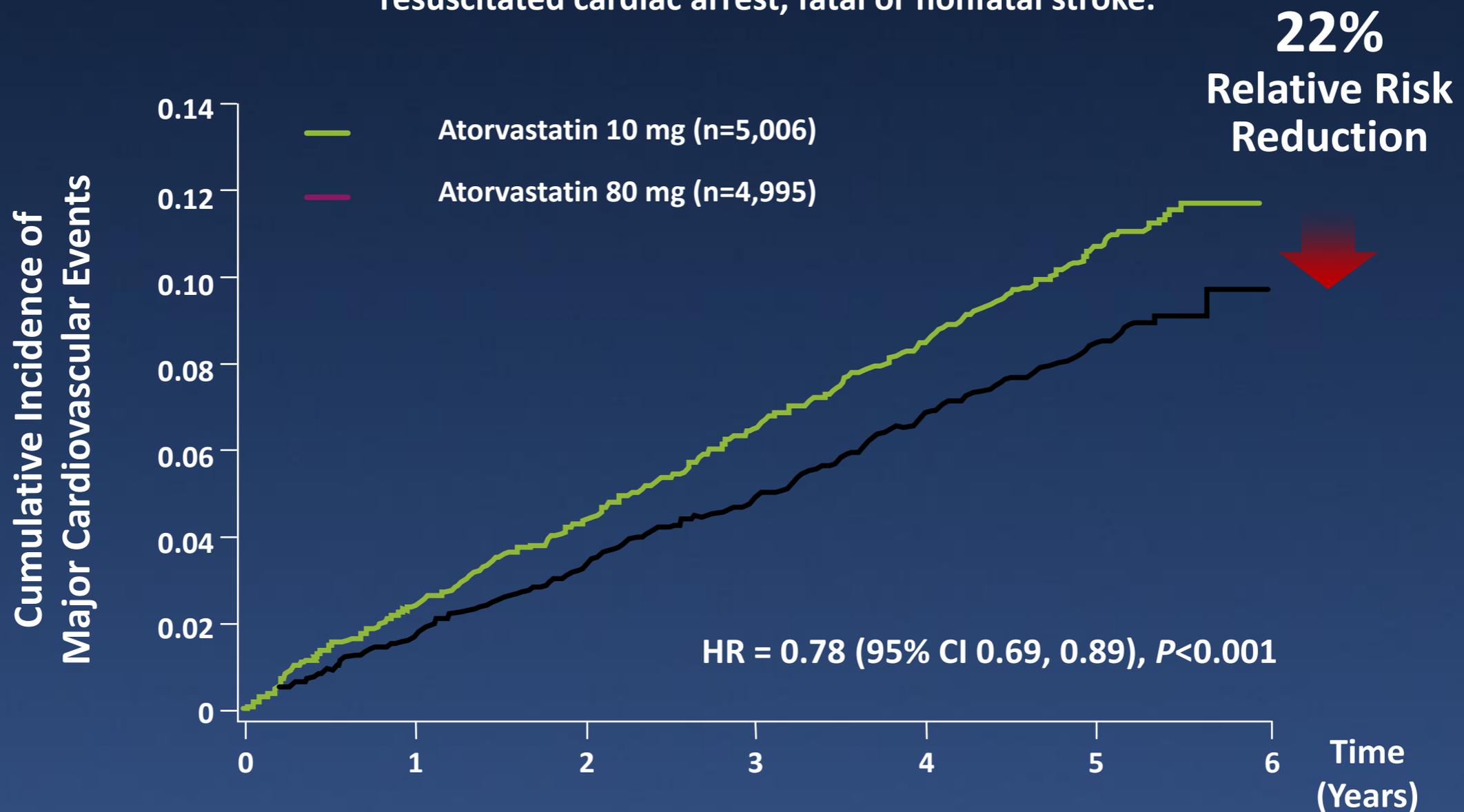
TNT : Changes in Lipid Levels



TNT : Primary Efficacy Outcome

Kaplan–Meier Estimates of the Incidence of the Primary End Point

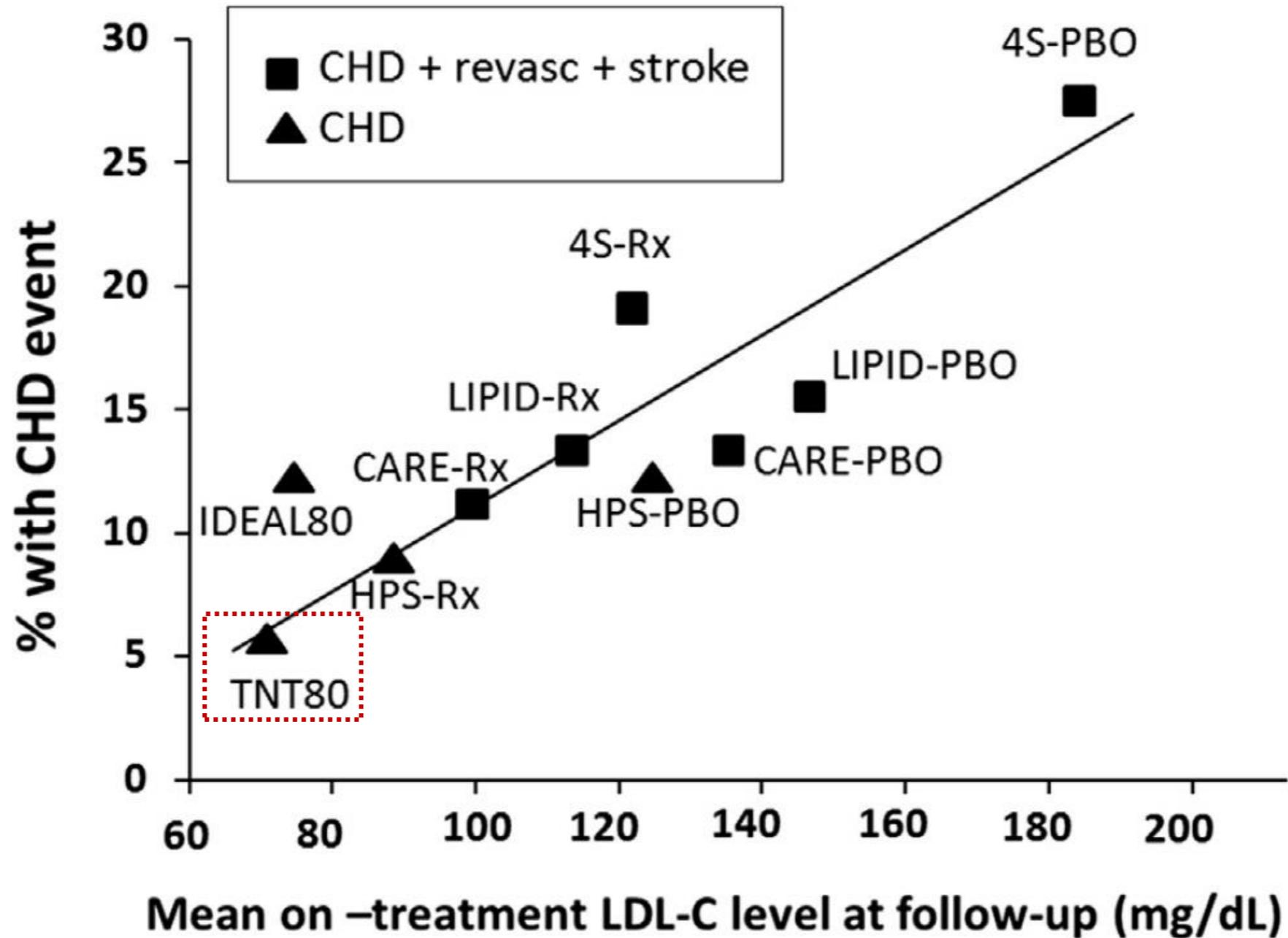
CHD death, nonfatal non–procedure-related MI, resuscitated cardiac arrest, fatal or nonfatal stroke.



TNT: Safety Profile

	No. of Patients (%)	
	Atorvastatin 10 mg (n=5,006)	Atorvastatin 80 mg (n=4,995)
Treatment discontinuation due to treatment-related AEs	264 (5.3)	359 (7.2)
Myalgia (treatment-related)	234 (4.7)	241 (4.8)
Rhabdomyolysis*	3 (0.06)	2 (0.04)
AST/ALT elevation >3 x ULN [†]	9 (0.2)	60 (1.2)

TNT: LDL < 100 mg/dL



ATP III Guideline vs ACC/AHA Guideline

	ATP III Guideline	ACC/AHA Guideline
Year	2001 (updated in 2005)	2013
Focus	Reducing CHD risk	Reducing risk of ASCVD*
Risk assessment	Framingham 10 yr risk score (CHD death + non fatal MI)	Pooled cohort equations [†] (fatal & nonfatal CHD + fatal & nonfatal stroke)

*ASCVD: ACS, a history of MI, stable or unstable angina, coronary or other arterial revascularization, stroke, TIA, or PAD presumed to be of atherosclerotic origin

†Developed by the Risk Assessment Work Group to estimate the 10-year ASCVD risk for the identification of candidates for statin therapy

ATP III Guideline vs ACC/AHA Guideline

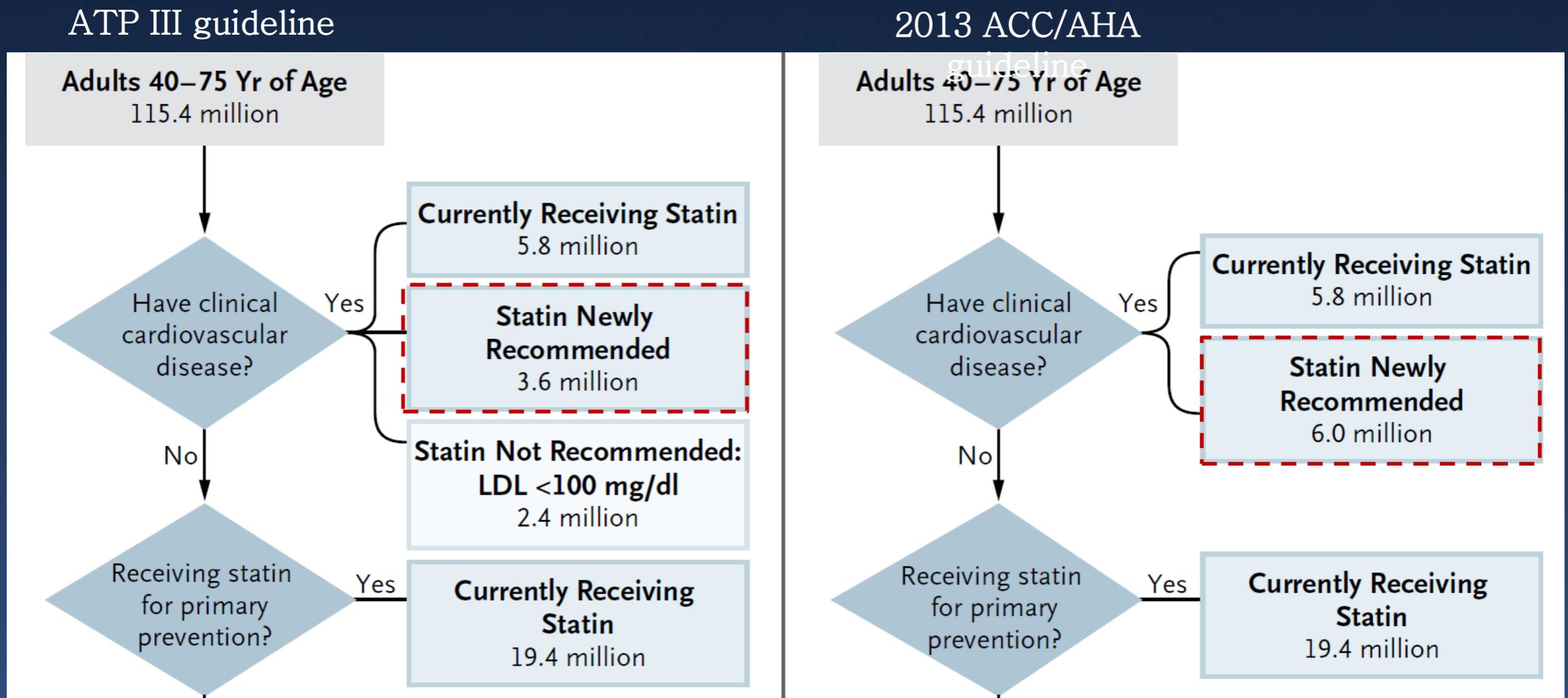
	ATP III Guideline	ACC/AHA Guideline
Risk Categories	<p>3 main risk categories:</p> <ul style="list-style-type: none"> • CHD / CHD risk equivalent* • 2+ risk factors & 10-yr risk \leq 20% • 0-1 risk factors & 10-yr risk $<$ 10% 	<p>4 statin benefit groups:</p> <ul style="list-style-type: none"> • Clinical ASCVD • Primary LDL-C \geq 190 mg/dl • DM without clinical ASCVD • No DM/CVD with 10-yr ASCVD risk \geq 7.5%
Rx targets	<p>LDL-C primary target</p> <ul style="list-style-type: none"> • $<$ 70mg/dl • $<$ 130mg/dl ($<$ 100 if risk 10-20%) • $<$ 160mg/dl 	<p>Intensity of statin therapy</p> <p>High or moderate intensity</p>
Rx recommendations	<p>Statin (or bile acid sequestrants or nicotinic acid) to achieve LDL-C goal</p>	<p>Maximally tolerated statin first-line to reduce risk of ASCVD events</p>

*DM, Clinical CHD, symptomatic CAD, PAD

Estimated numbers of adults eligible for statin therapy by ATP III and ACC/AHA guideline in US

Ages of 40 and 75 Years in National Health and Nutrition Examination Surveys 2005–2010

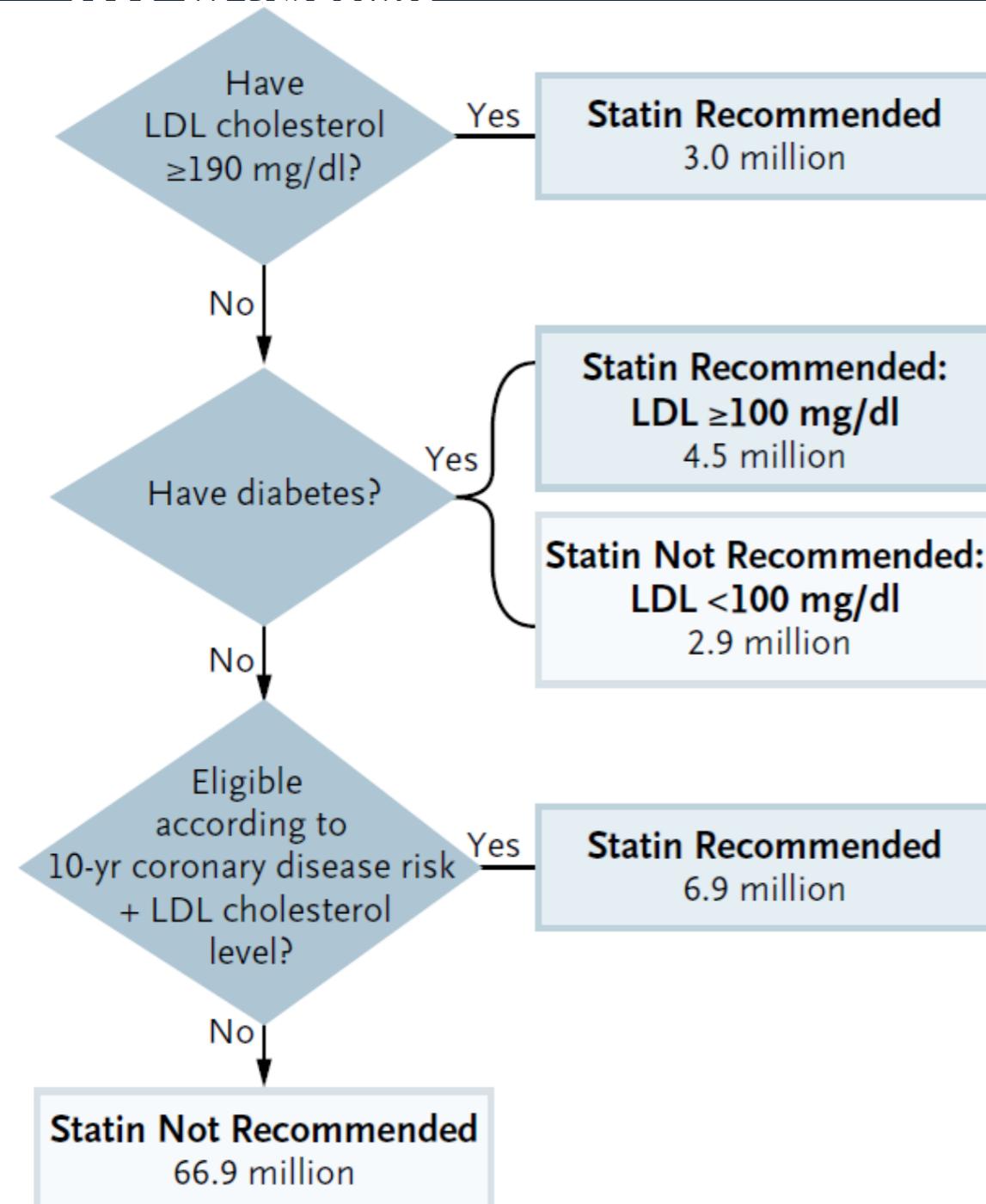
Secondary prevention for adults with CVD



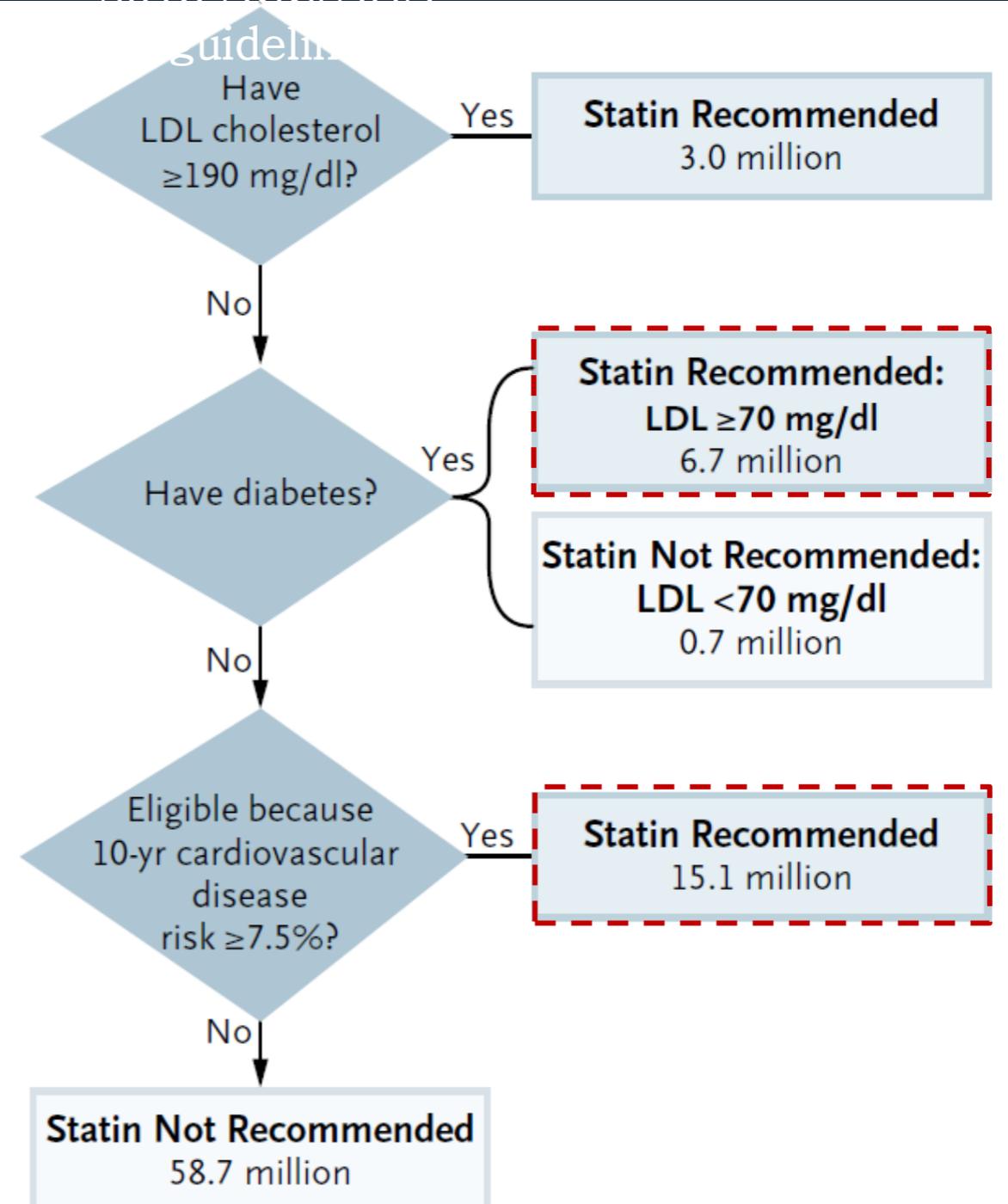
Estimated numbers of adults eligible for statin therapy by ATP III and ACC/AHA guideline in US

Primary prevention for adults receiving no statin

ATP III guideline

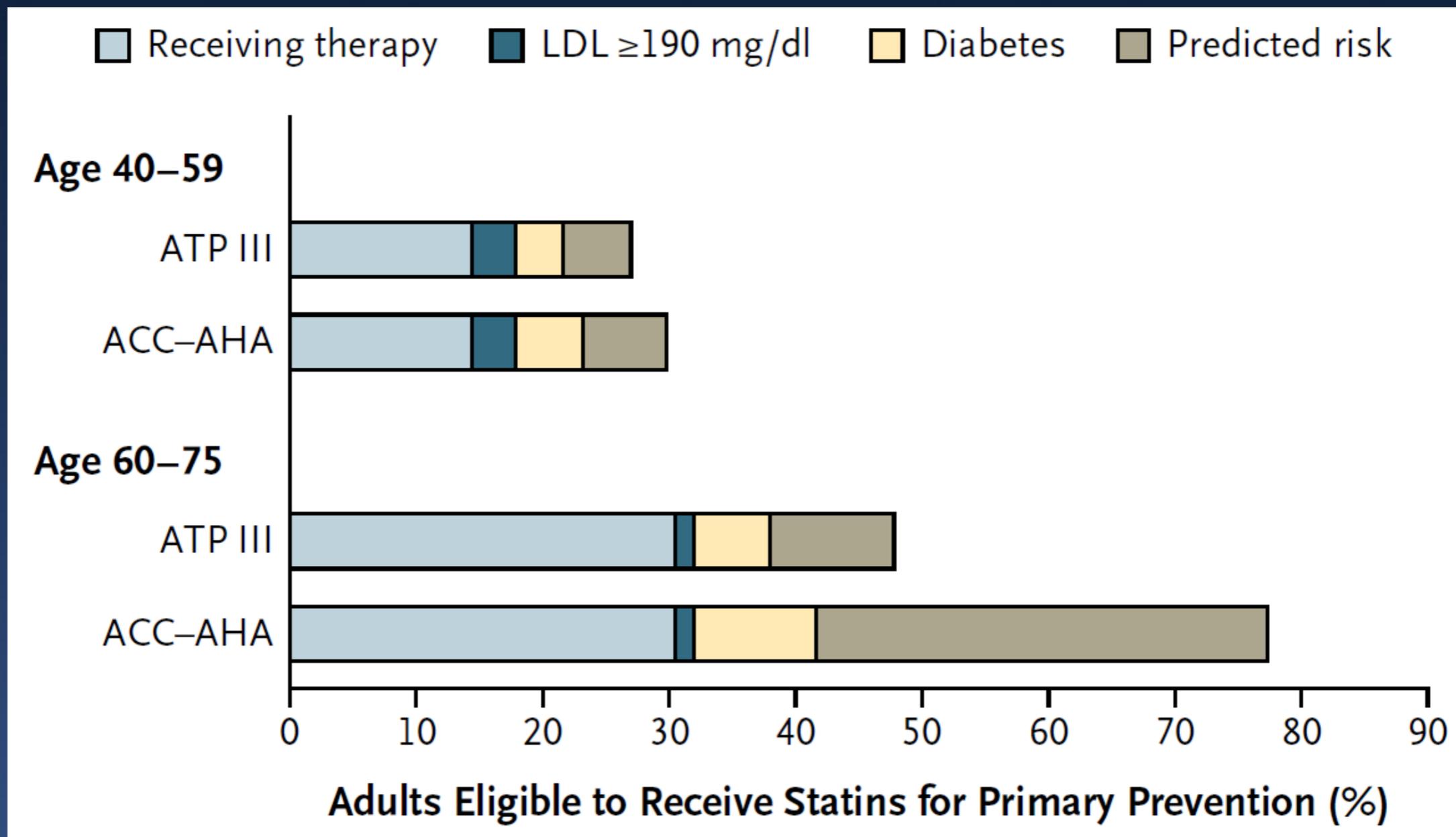


2013 ACC/AHA guideline



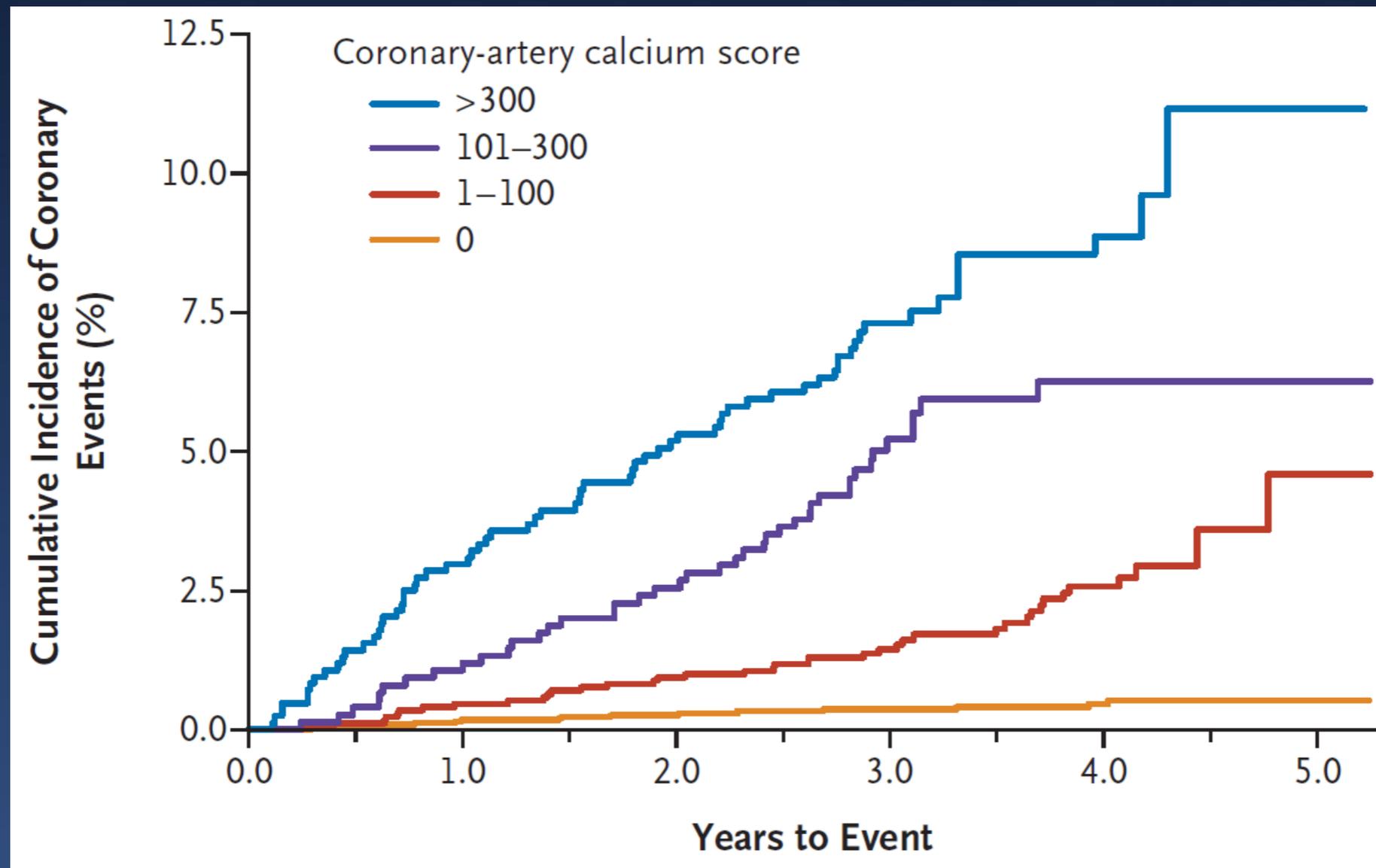
ACC/AHA guideline substantially increased the number of older adults without CVD compared with ATP III

Primary prevention for adults receiving no statin



CAC (Coronary calcium score) is a strong predictor of incident coronary heart disease

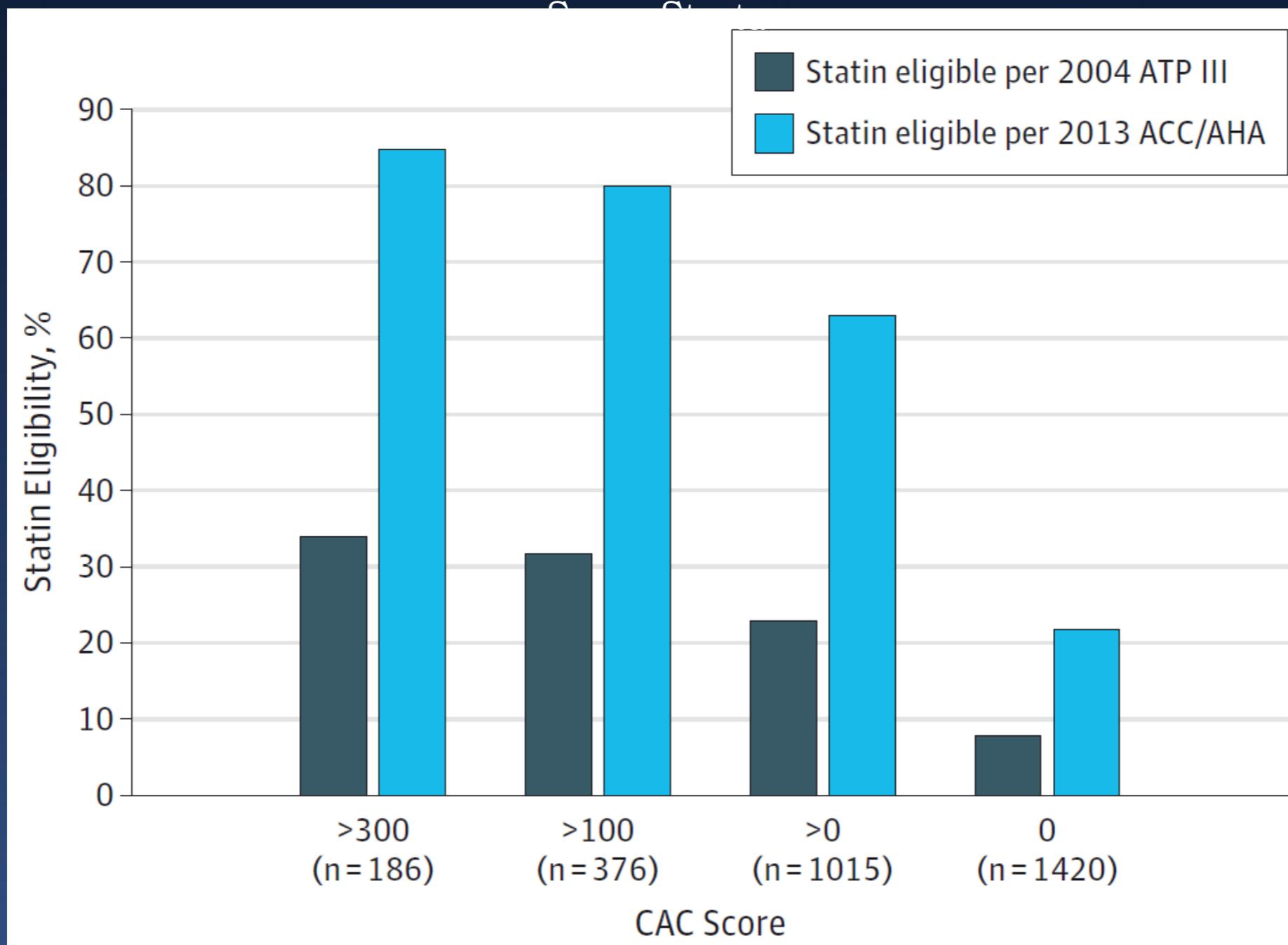
MESA, Multi-Ethnic Study of Atherosclerosis
6,722 men and women without clinical CVD
3.8 years follow up



P<0.001
for differences
among all curves

Participants with CAC were more likely to be statin eligible by ACC/AHA than by ATP III

Comparison of Statin Eligibility by 2004 ATP III vs 2013 ACC/AHA Guidelines Across CAC



*CAC, Coronary calcium score as measured by the Agatston score

Estimated numbers of adults eligible for statin therapy by ATP III and ACC/AHA guideline in a Korean population

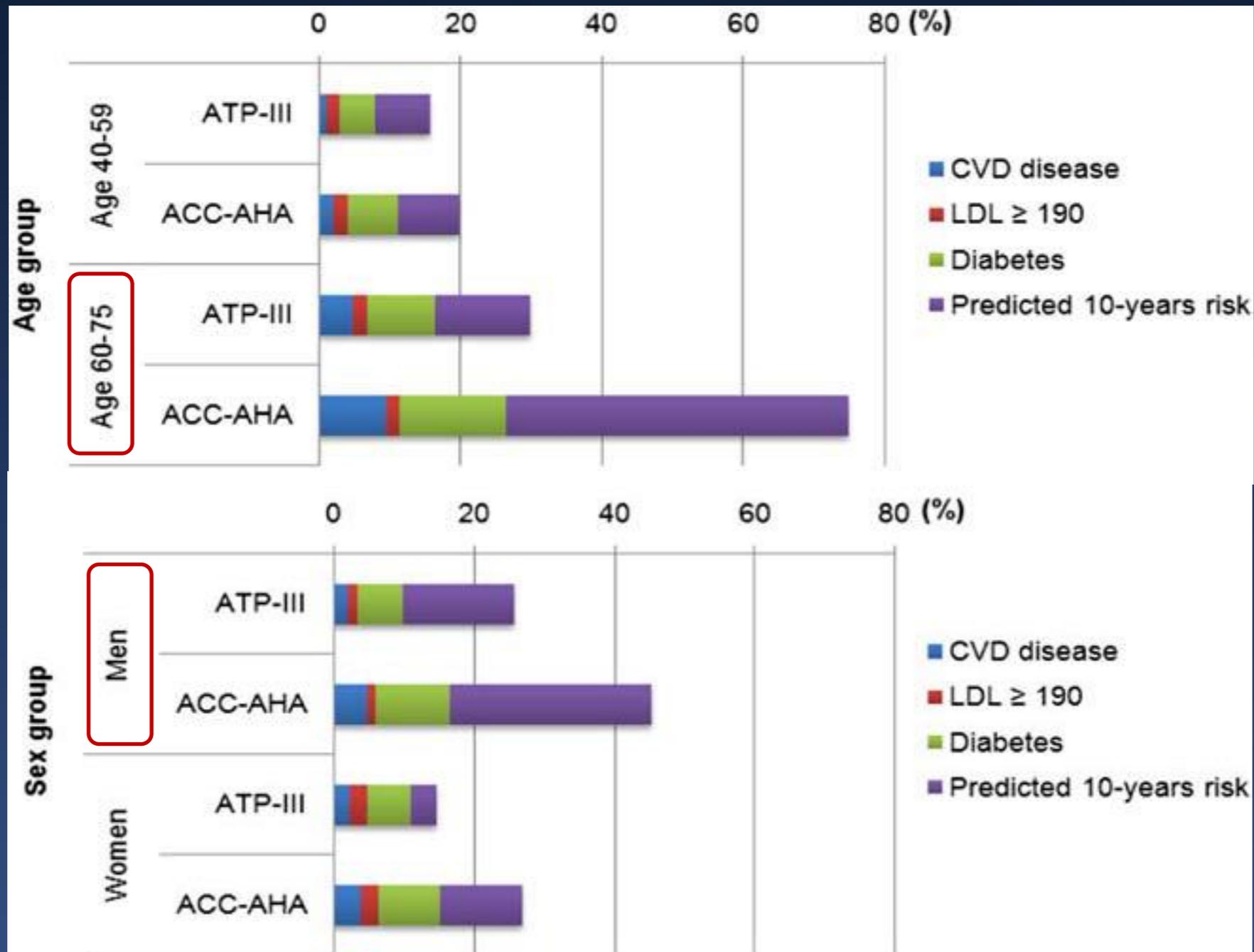
18,573 participants aged 40– 75 yr in KNHNES 2008–2012

Statin eligible by ATP III vs Statin eligible by ACC/AHA
18.6% vs 35.1%

	ATP-III guidelines (N = 3730)	ACC/AHA guidelines (n = 7766)	New candidates for statin therapy† (n = 4397)
Prevalent CVD, no (%)	514 (11.4)	982 (11.7)	468 (10.5)
LDL \geq 190 mg/dL, no. (%)	388 (10.3)	388 (5.4)	0
Predicted 10-y risk, no. (%)	1561 (45.1)	4526 (56.3)	3326 (72.9)

Statin candidates by ACC/AHA guideline substantially increased among older adults and men

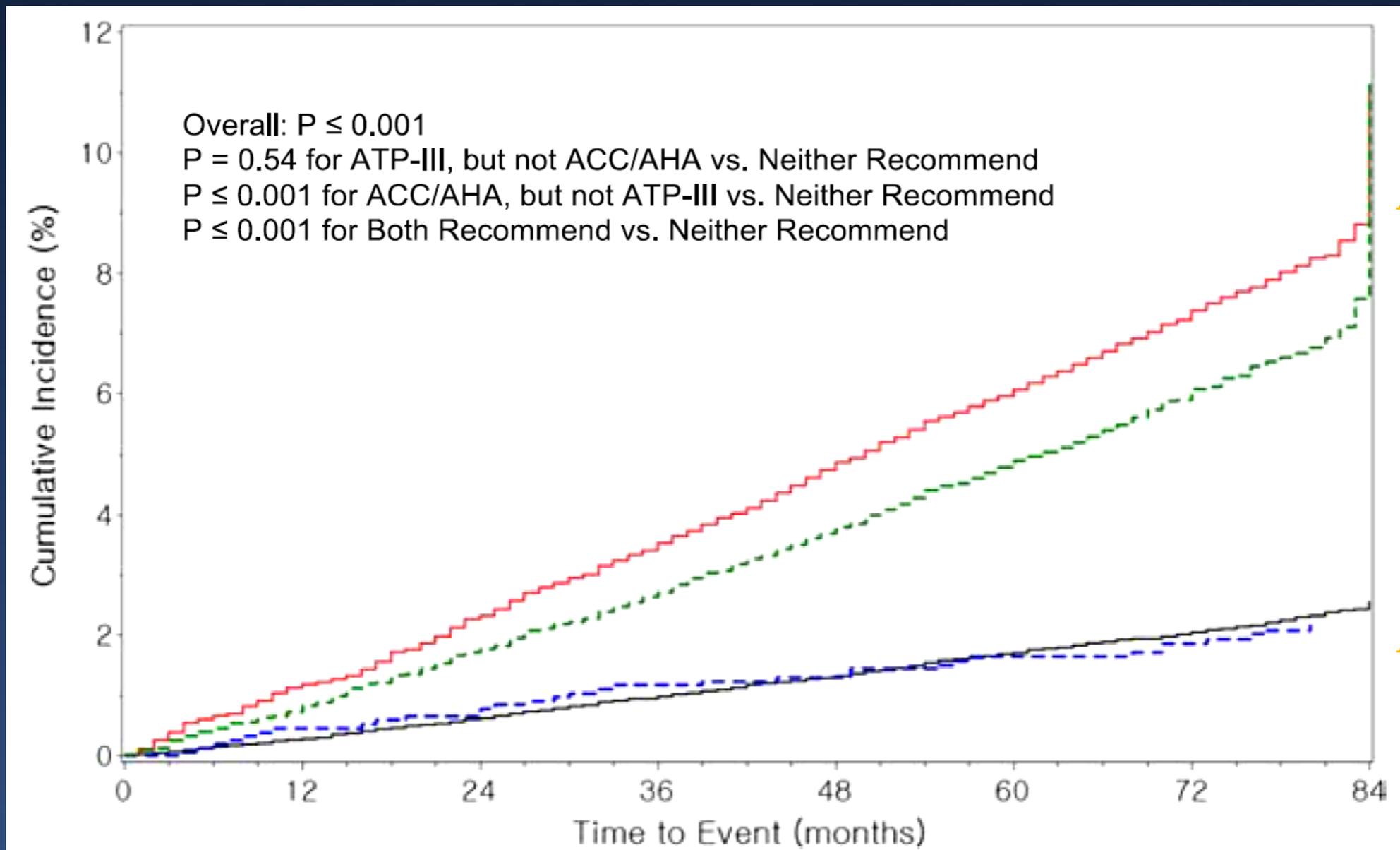
18,573 participants aged 40–75 yr in KNHNES 2009–2012



Identification of adults at higher ASCVD risk by ATP III and ACC/AHA guideline in a Korea population

18,573 participants aged 40–75 yr in KNHNES 2008–2012
External cohort (n = 63,329) from the 2003 National Health Examination

Seven-year observed ASCVD events among Korean adults



ACC/AHA, but not ATP-III
HR 3.98(3.64–4.35)*

Both
HR 3.65(3.33–4.02)*

Neither
ATP-III, but not ACC/AHA

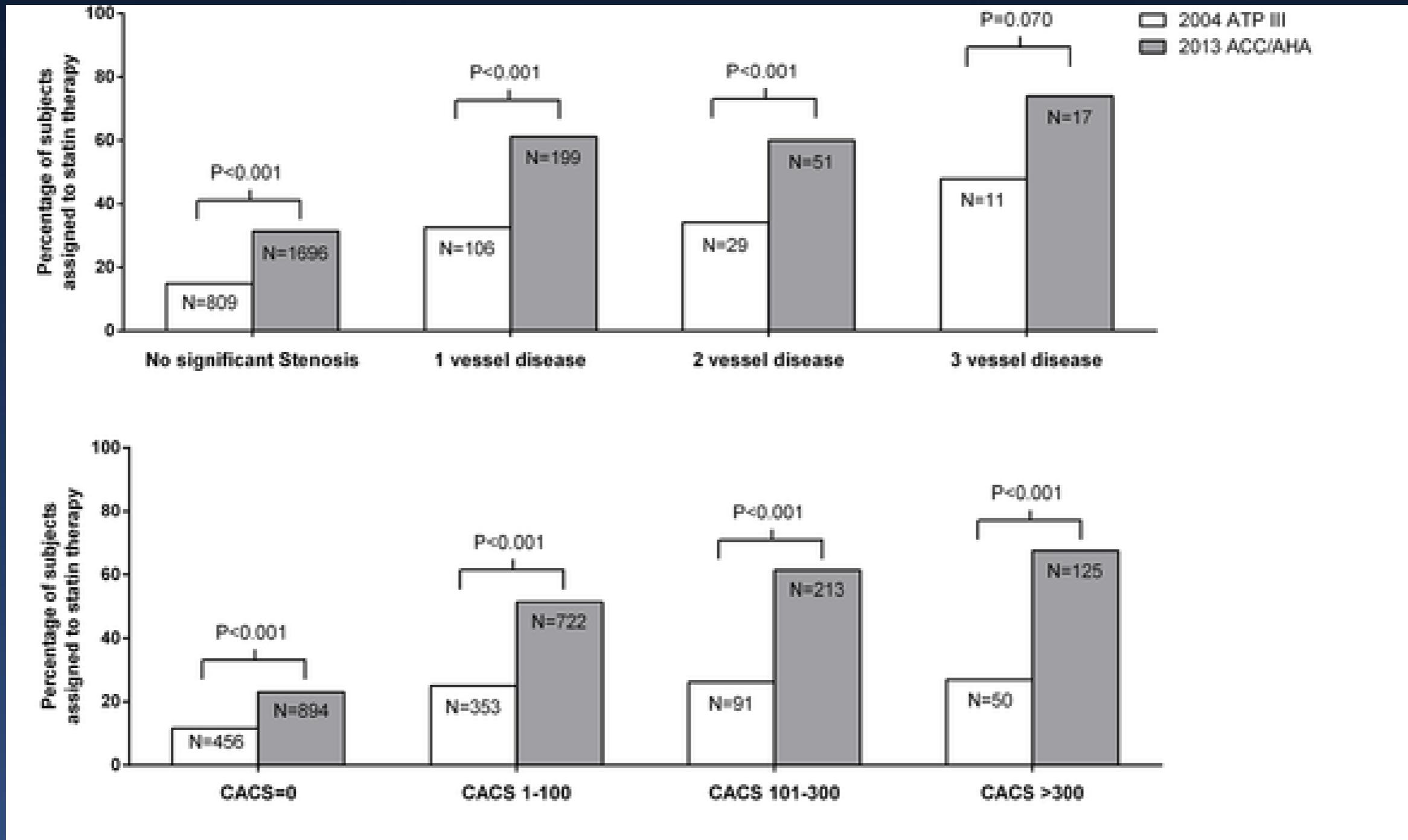
*Compared with neither recommended statin therapy.

2013 ACC/AHA guidelines is better in identifying subjects with subclinical coronary atherosclerosis

5,837 without CVD and asymptomatic subjects who underwent CCTA
(mean age 53.5, men 72.1%)
at Asan Medical Center between January 2007 and June 2011.

2013 ACC/AHA guideline	
LDL-C \geq 190 mg/dl	90 (1.5)
Diabetes & 40–75 & LDL 70–189 mg/dL	663 (11.4)
No Diabetes & 40–75 & LDL 70–189 mg/dL & ASCVD \geq 7.5%	1210 (20.7)
Total candidates	1963 (33.6)
2004 ATP III guideline	
CHD risk equivalents* & LDL-C \geq 100 mg/dl	597 (10.2)
No Diabetes & CHD risk factor \geq 2	
CHD risk 10–20% & LDL-C \geq 130 mg/dl	263 (4.5)
CHD risk <10% & LDL-C \geq 160 mg/dl	49 (0.8)
No CHD & no Diabetes & CHD risk factor 0–1	
LDL-C \geq 190 mg/dl	46 (0.8)
Total candidates	955 (16.4)
Subjects eligible for statins by 2013 ACC/AHA guideline only	1110 (19.0)
Subjects eligible for statins by 2004 ATP III guideline only	102 (1.7)
Subjects eligible for statins by both guidelines	853 (14.6)

2013 ACC/AHA guidelines is better in identifying subjects with subclinical coronary atherosclerosis



2013 ACC/AHA guidelines is better in identifying subjects with subclinical coronary atherosclerosis

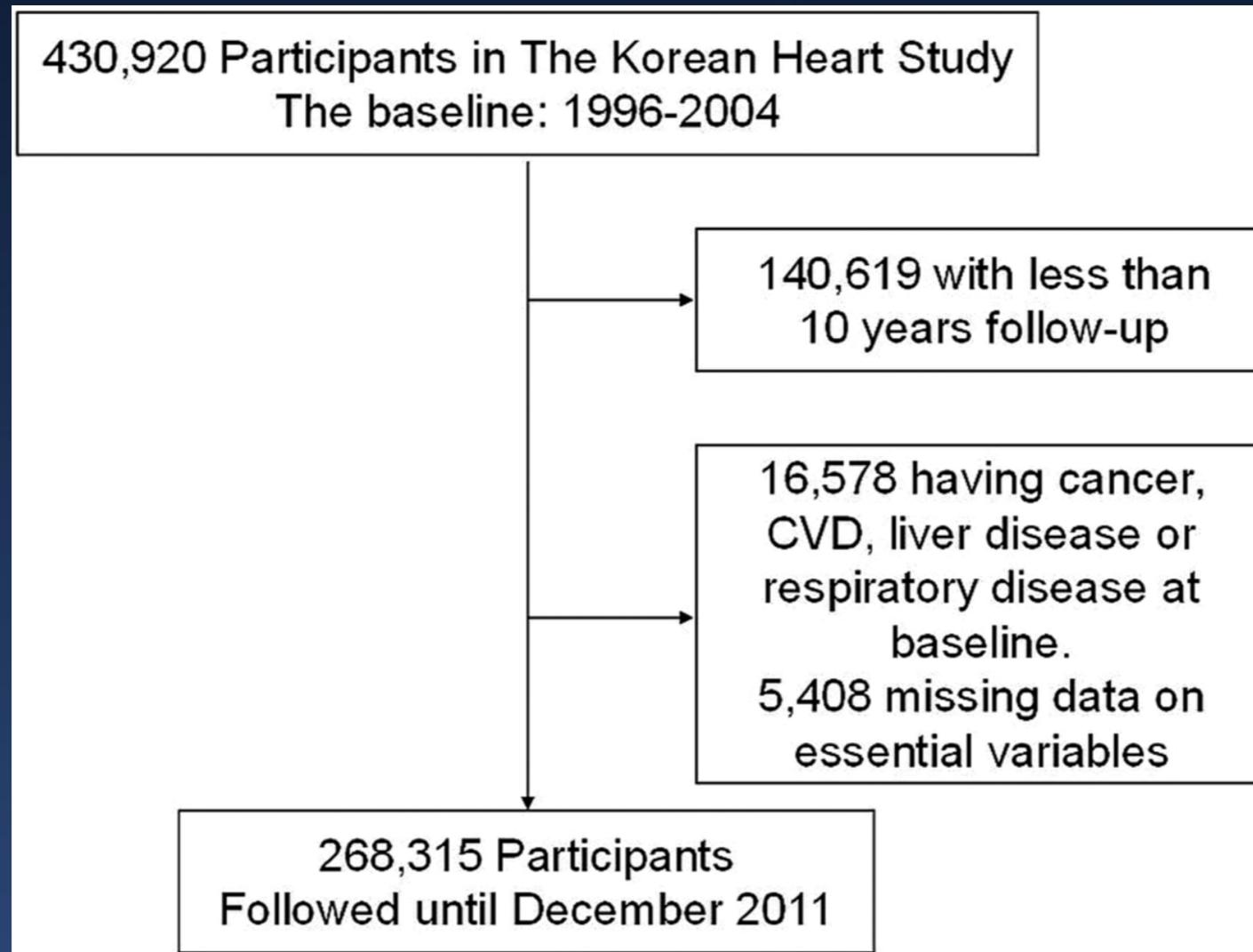
MDCT findings	N (%)	2004 ATP III		2013 ACC/AHA		P value*	P value [†]
		Sensitivity	Specificity	Sensitivity	Specificity		
Significant stenosis	432 (7.4%)	33.8 (29.5–38.4)	85.0 (84.1–86.0)	61.8 (57.1–66.3)	68.6 (67.4–69.9)	< .001	< .001
CACS>0	1945 (33.4%)	25.5 (23.6–27.5)	88.3 (87.2–89.3)	54.7 (52.5–56.9)	77.0 (75.7–78.3)	< .001	< .001
CACS>100	533 (9.2%)	26.5 (22.9–30.4)	84.7 (83.7–85.6)	63.6 (59.4–67.6)	69.4 (68.2–70.7)	< .001	< .001
Any plaque	2330 (39.9%)	24.7 (23.0–26.5)	89.2 (88.1–90.2)	52.3 (50.2–54.3)	78.8 (77.4–80.1)	< .001	< .001

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A coronary heart disease prediction model : the Korean Heart Study

Study population



Aged 30-74 yr
No CHD

Variable & Outcome

Variable : Age, BP, total and high-density lipoprotein-cholesterol (HDL-C), diabetes smoking

Outcome : Non-fatal or fatal CHD

Hard CHD events : AMI, sudden death and other coronary de

HRs for CHD risk factors in men in the Korean Heart Study

	Basic model HR (95% CI)	Model 1 HR (95% CI)	Model 2 HR (95% CI)	Model 3 HR (95% CI)
Age	1.13 (1.09 to 1.18)	1.13 (1.08 to 1.18)	1.13 (1.08 to 1.18)	1.13 (1.08 to 1.18)
Blood pressure				
Normal	1.00	1.00	1.00	1.00
Prehypertension	1.30 (1.16 to 1.46)	1.29 (1.15 to 1.45)	1.32 (1.17 to 1.48)	1.28 (1.14 to 1.43)
Stage-1 hypertension	1.74 (1.53 to 1.97)	1.72 (1.52 to 1.96)	1.78 (1.57 to 2.02)	1.68 (1.48 to 1.91)
Stage-2 hypertension	2.22 (1.91 to 2.57)	2.20 (1.90 to 2.56)	2.28 (1.97 to 2.65)	2.13 (1.84 to 2.48)
Total cholesterol, mg/dL				
<160	1.00	1.00	1.00	1.00
160–199	1.26 (1.07 to 1.49)	1.34 (1.14 to 1.59)	1.09 (0.90 to 1.32)	1.21 (1.02 to 1.43)
200–239	1.81 (1.53 to 2.13)	2.02 (1.71 to 2.38)	1.23 (0.99 to 1.53)	1.67 (1.42 to 1.98)
240–279	2.42 (2.01 to 2.92)	2.77 (2.30 to 3.34)	1.34 (1.04 to 1.73)	2.19 (1.81 to 2.65)
≥280	3.79 (2.93 to 4.91)	4.45 (3.44 to 5.76)	2.02 (1.47 to 2.77)	3.37 (2.59 to 4.38)
Smoking				
Never	1.00	1.00	1.00	1.00
Former	1.01 (0.88 to 1.16)	1.02 (0.89 to 1.17)	1.02 (0.89 to 1.17)	1.00 (0.87 to 1.15)
Current	1.93 (1.72 to 2.17)	1.86 (1.65 to 2.09)	1.96 (1.75 to 2.21)	1.87 (1.66 to 2.11)
Diabetes				
No	1.00	1.00	1.00	1.00
Yes	1.69 (1.51 to 1.89)	1.63 (1.46 to 1.82)	1.72 (1.53 to 1.92)	1.65 (1.48 to 1.85)
HDL-cholesterol, mg/dL				
<35		1.00		
35–44		0.66 (0.57 to 0.75)		
45–49		0.56 (0.48 to 0.65)		
50–59		0.45 (0.39 to 0.52)		
≥60		0.34 (0.28 to 0.41)		
LDL-cholesterol, mg/dL				
<100			1.00	
100–129			1.23 (1.06 to 1.43)	
130–149			1.50 (1.25 to 1.80)	
≥150			1.97 (1.61 to 2.40)	
Triglycerides, mg/dL				
<100				1.00
100–149				1.21 (1.07 to 1.37)
150–199				1.35 (1.18 to 1.54)
200–249				1.39 (1.19 to 1.63)
≥250				1.30 (1.11 to 1.52)
ROC (95% CI)	0.756 (0.745 to 0.766)	0.764 (0.752 to 0.774)	0.758 (0.747 to 0.769)	0.757 (0.746 to 0.768)
Continuous NRI (95% CI)	Referent model	0.284 (0.231 to 0.339)	0.185 (0.124 to 0.246)	0.109 (0.051 to 0.162)

HDL-C



관상동맥질환 위험 예측모형

<http://cmerc.yuhs.ac/mobileweb/>

성별
 여자 남자

나이

수축기 혈압 mmHg
 119 이하 (정상)
 120 ~ 139 (고혈압 전단계)
 140 ~ 159 (고혈압 1기)
 160 이상 (고혈압 2기)
 모름

이완기 혈압 mmHg
 79 이하 (정상)
 80 ~ 89 (고혈압 전단계)
 90 ~ 99 (고혈압 1기)
 100 이상 (고혈압 2기)
 모름

총 콜레스테롤 mg/dl
 159 이하 (정상 1)
 160 ~ 199 (정상 2)
 200 ~ 239 (고지혈증 전단계)
 240 ~ 279 (고지혈증 1)
 280 이상 (고지혈증 2)
 모름

HDL 콜레스테롤 mg/dl
 높을수록 좋은 콜레스테롤입니다.
 34 이하
 35 ~ 44
 45 ~ 49
 50 ~ 59
 60 이상
 모름

흡연여부
 흡연 금연 비흡연

당뇨병을 진단받은 적이 있습니까?
 예 아니오



10년 내에 관상동맥질환이 발생할 확률이 **1% 미만**입니다.
 적극적 건강 관리가 필요합니다.

✓ 콜레스테롤 관리가 필요합니다.

주의사항

- 30세 미만, 75세 이상인 분들은 테스트 결과가 부정확할 수 있습니다.
- 암, 간질환, 뇌졸중, 호흡기 질환이 있는 분들은 테스트 결과가 부정확할 수 있습니다.
- '모름'을 선택할 경우 성별에 따라 가장 빈도가 많은 값으로 계산하게 되어 테스트 결과가 부정확 할 수 있습니다.

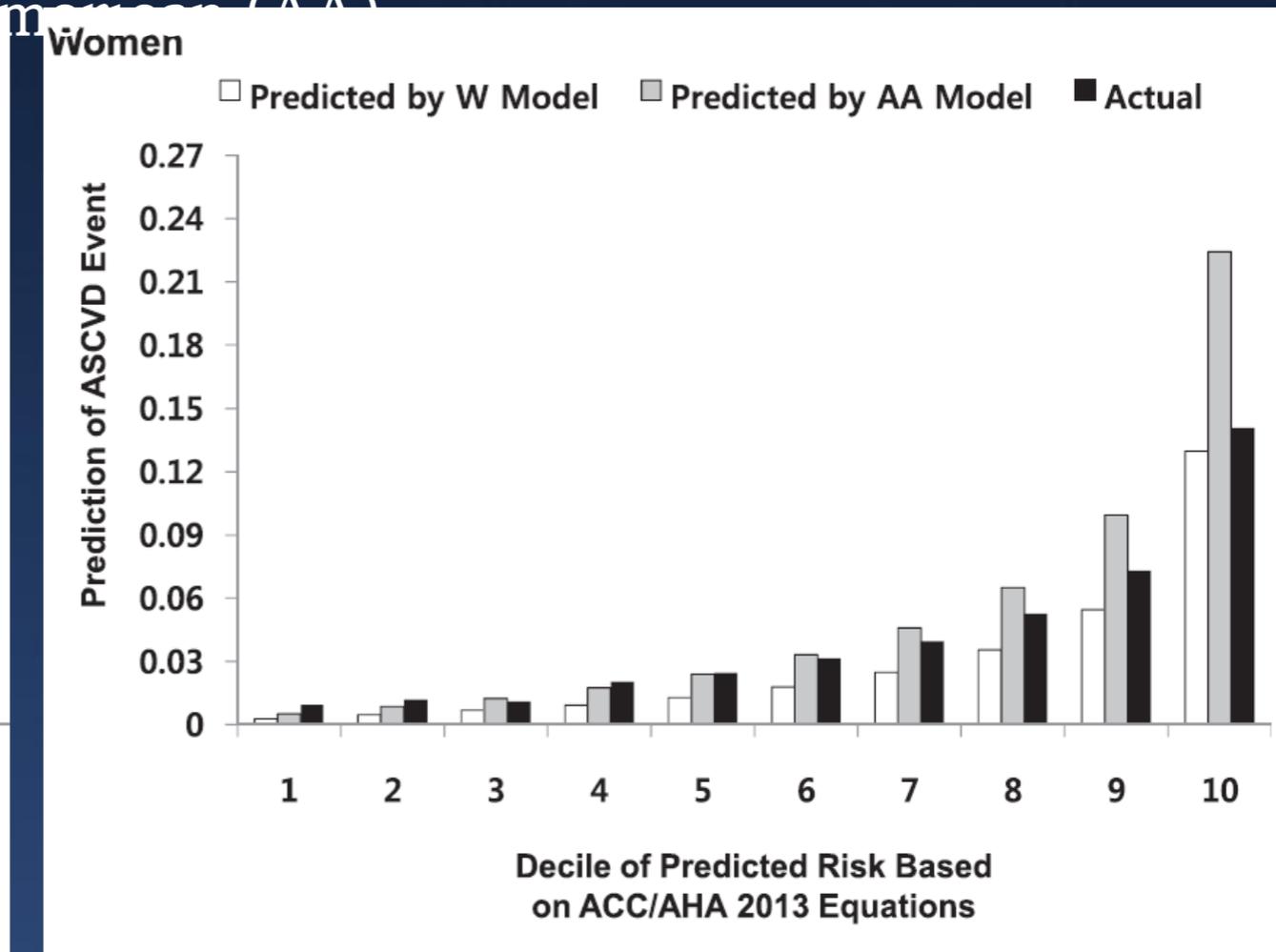
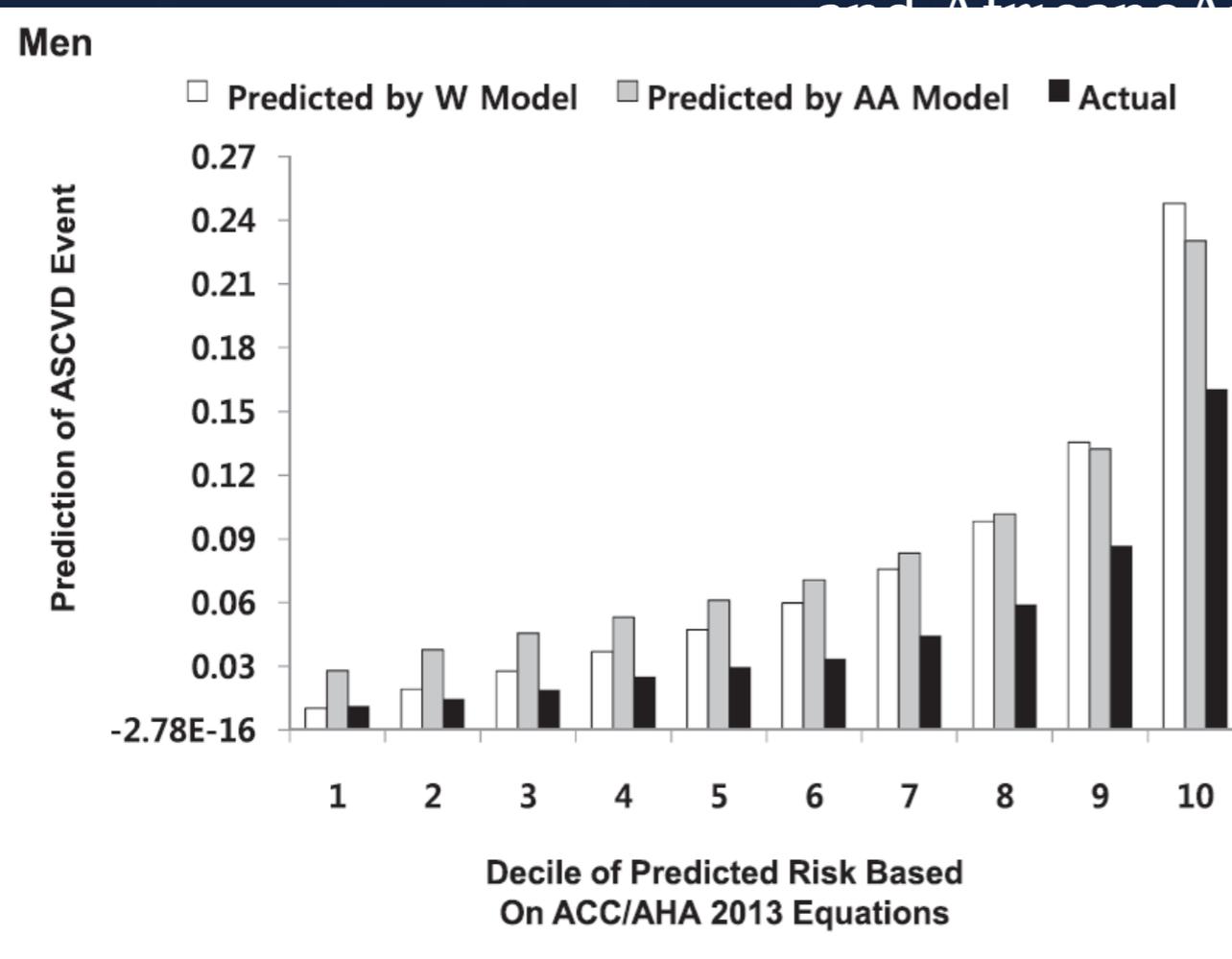
근거 논문 [논문 바로가기](#)

Jee SH, et al. A coronary heart disease prediction model: the Korean Heart Study. BMJ Open 2014;4: e005025

[뒤로가기](#)

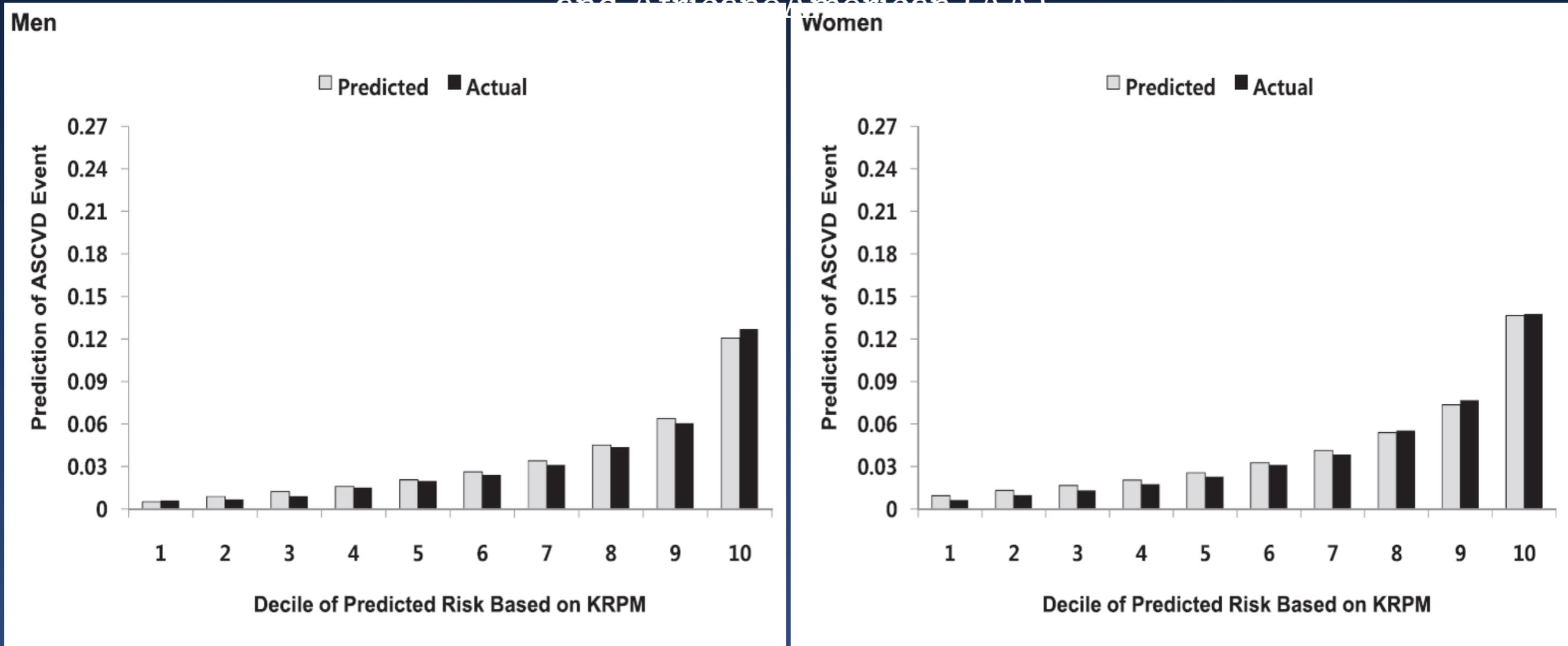
Evaluation of predictive ability of the ACC/AHA 2013 Pooled Cohort Equations for the KHS population

Ten-Year Probability of Predicted and Actual ASCVD Events in Men and Women from the KHS using the ACC/AHA 2013 Pooled Cohort Equations for White (W) and African American (AA)



10-Year Probability of Predicted and Actual ASCVD Events by Korean Risk Prediction Model

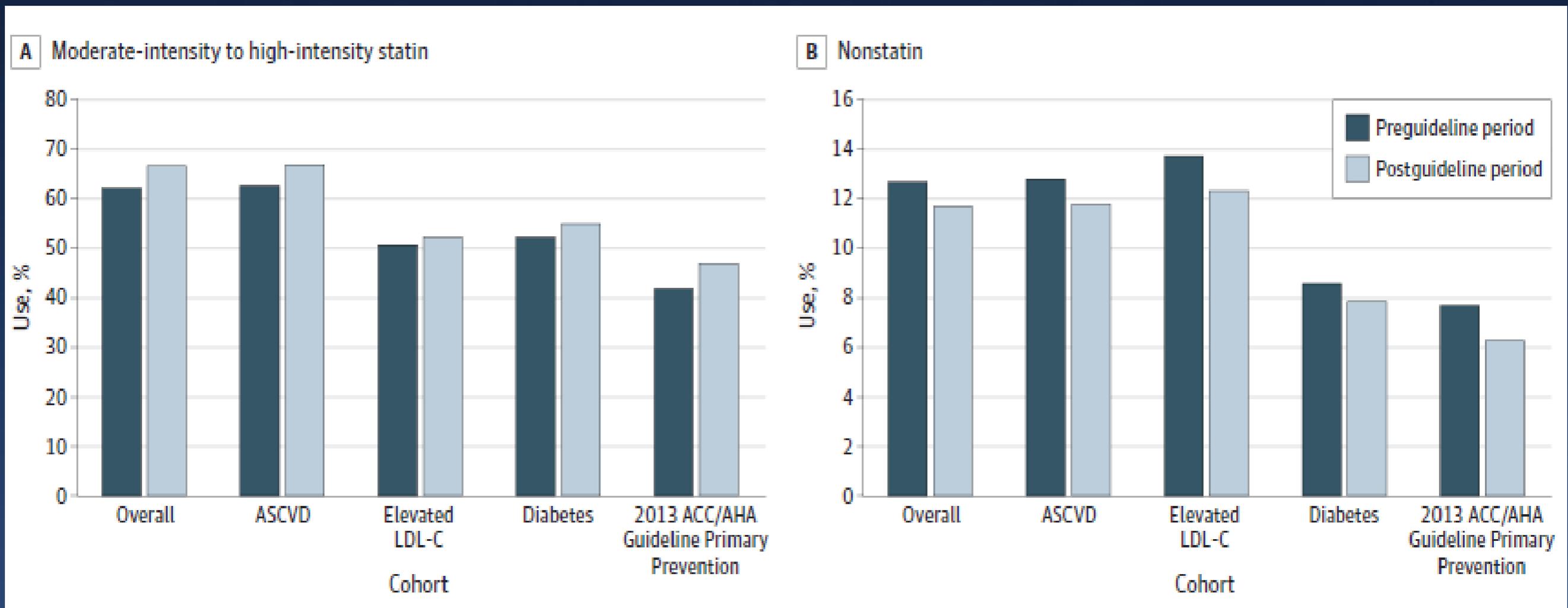
Ten-Year Probability of Predicted and Actual ASCVD Events in Men and Women from the KHS using the ACC/AHA 2013 Pooled Cohort Equations for White (W) and African American (AA)



Calibration for χ^2 : 25.90, $P = 0.002$ for men; 14.69, $P = 0.100$ for women

A trend toward increasing use of moderate-intensity to high intensity statins overall and in the ASCVD cohort

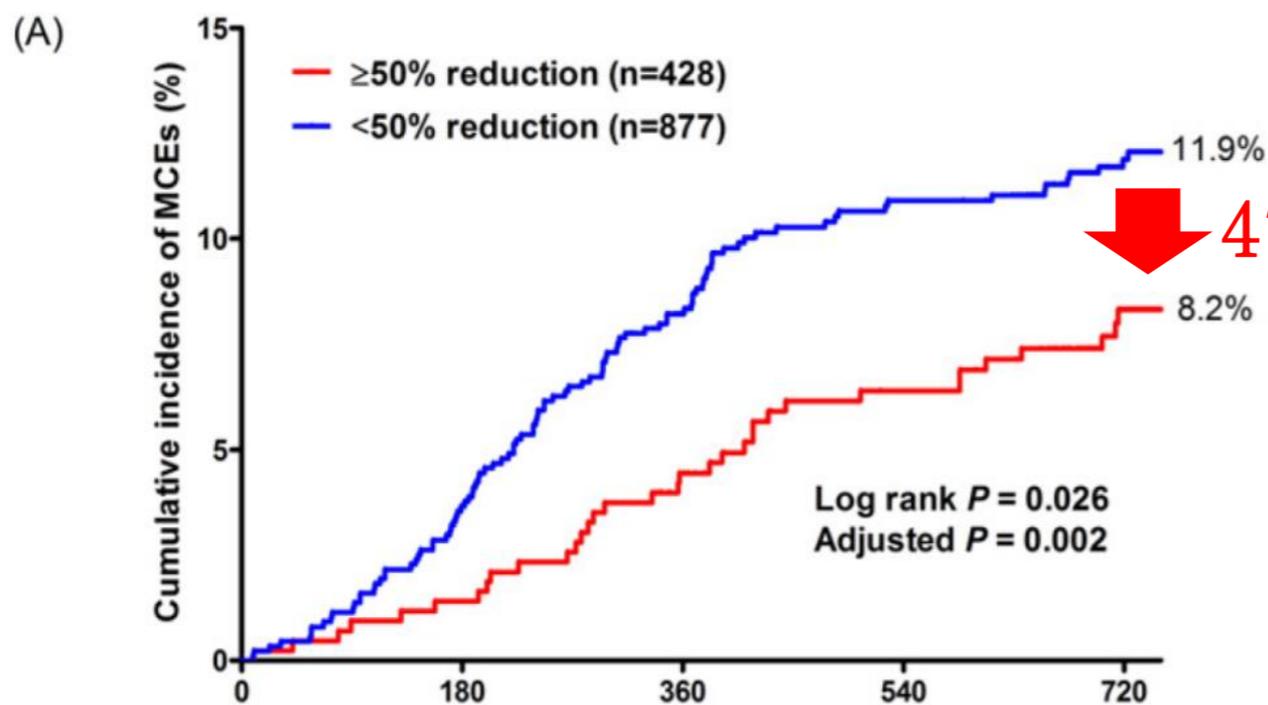
Overall Use for the Pre-guideline and Post-guideline Periods



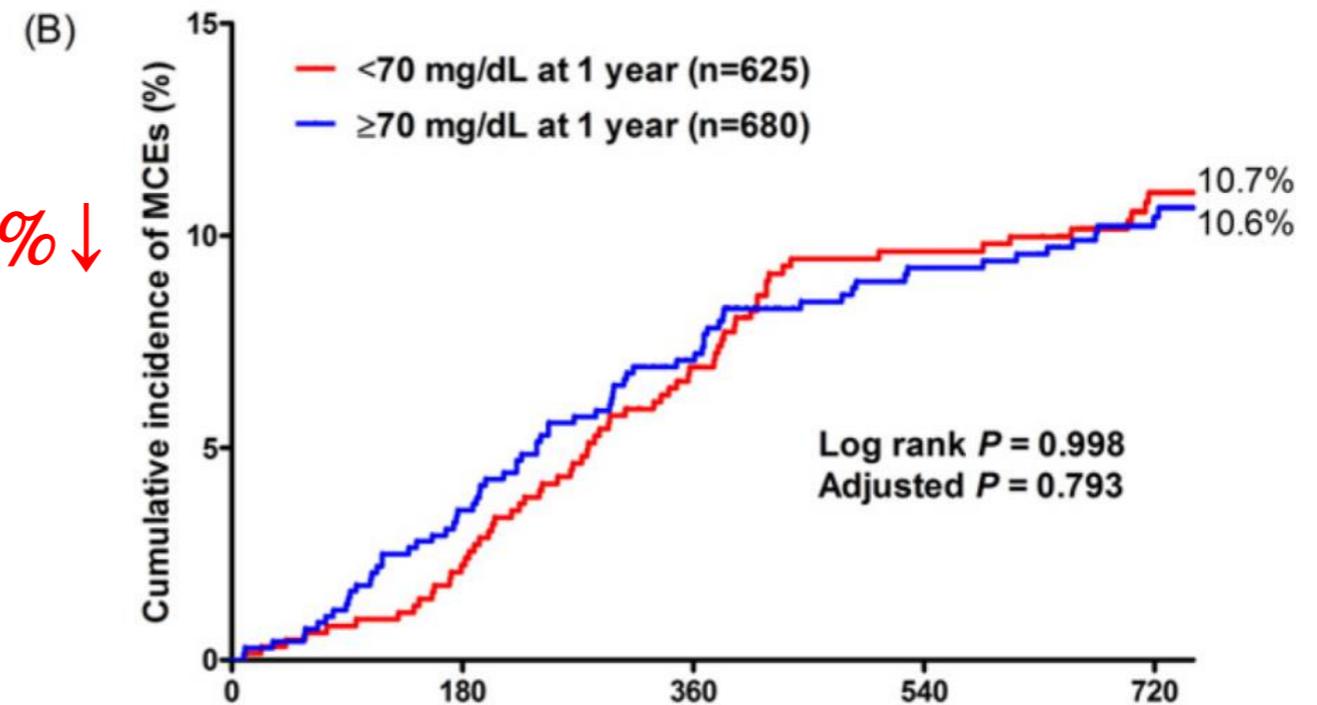
Adoption of the 2013 ACC/AHA Cholesterol Management Guideline in cardiology practices

50% Reduction vs. LDL Target 70 mg/dL in AMI pts.

Primary endpoint: 2 year major cardiac event including cardiac death, non-fatal myocardial infarction, percutaneous coronary intervention, and coronary artery by bypass grafting after hospital discharge
 KAMIR: n=1305
 mean LDL-C: 126mg/dL



No. at risk	0	180	360	540	720				
≥50% reduction	428	425	423	417	403	382	379	374	274
<50% reduction	877	868	845	821	782	716	709	705	508



No. at risk	0	180	360	540	720				
<70 mg/dL at 1 year	625	621	612	597	569	522	521	517	360
≥70 mg/dL at 1 year	680	672	657	647	618	576	568	564	415

Korean Data : MUSTANG Study

Clinical Investigations



Current Statin Usage for Patients With Acute Coronary Syndrome Undergoing Percutaneous Coronary Intervention: Multicenter Survey in Korea

Mi-Jeong Kim, MD; Doo Soo Jeon, MD; Hyeon-Cheol Gwon, MD; Soo-Joong Kim, MD; Kiyuk Chang, MD; Hyo-Soo Kim, MD; Seung-Jea Tahk, MD; for Korean MUSTANG Investigators

Cardiovascular Center (M.-J. Kim, Jeon), Incheon St. Mary's Hospital, The Catholic University, Incheon, Republic of Korea; Cardiac and Vascular Center (Gwon), Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Republic of Korea; Division of Cardiology (S.-J. Kim), College of Medicine, Kyung Hee University, Seoul, Republic of Korea; Cardiovascular Center (Chang), Seoul St. Mary's Hospital, The Catholic University, Seoul, Republic of Korea; Cardiac Catheterization Laboratory and Coronary Intervention (H.-S. Kim), Department of Internal Medicine, Seoul National University Hospital, Seoul, Republic of Korea; Department of Cardiology (Tahk), Ajou University Hospital, Suwon, Republic of Korea

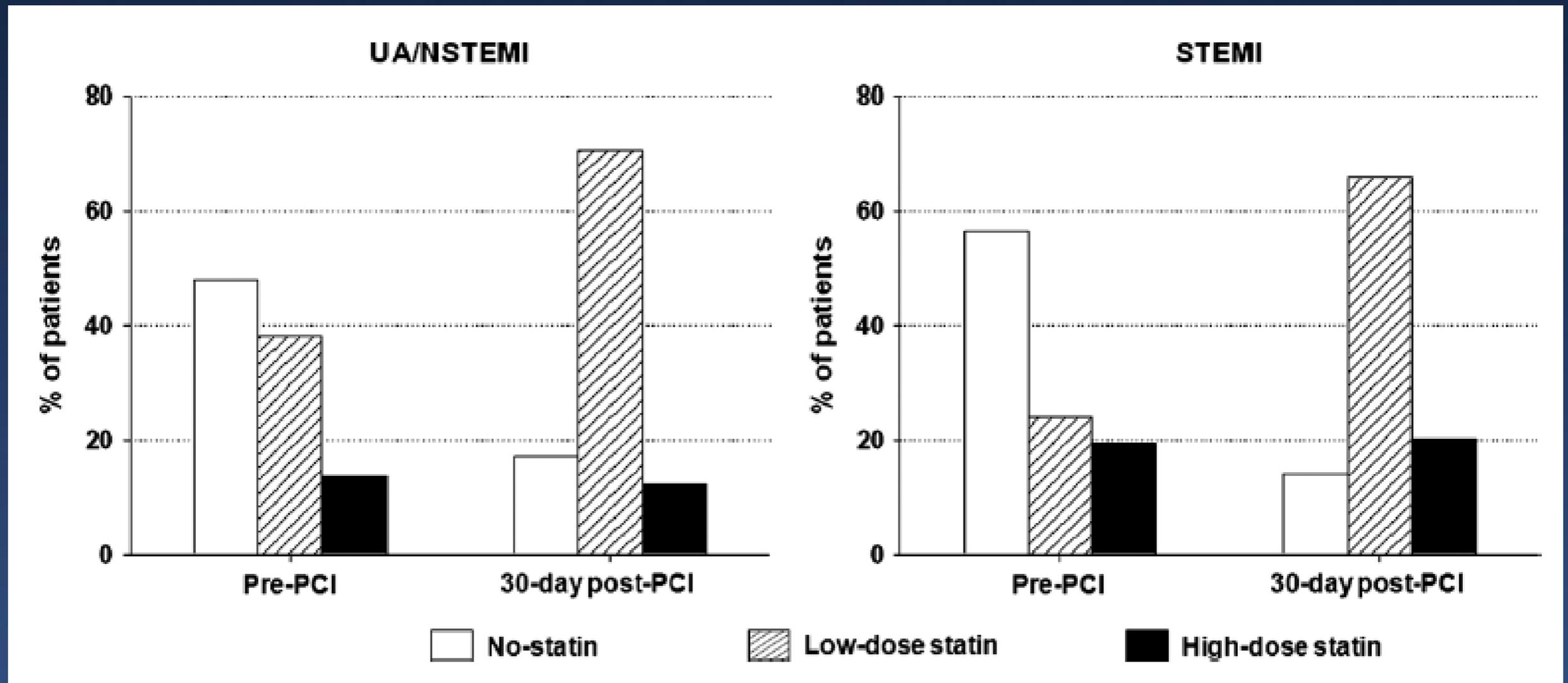
3362 patients with ACS underwent PCI

- diagnosed with unstable angina,(UA) non-ST-elevated MI(NSTEMI), or ST-elevated MI(STEMI)
- High-dose statin treatment was defined as atorvastatin ≥ 40 mg or rosuvastatin ≥ 20 mg/day.
- The patterns of statin usage were investigated for 30 days after the index PCI.

About half were never treated with statin prior to PCI

Statin dosage used in pre-PCI and post-PCI period in patients with UA/NSTEMI and STEMI

The usage of low-dose statin sharply increased after PCI compared with pre-PCI, but that of high-dose remained similar between the pre-PCI and post-PCI period



Conclusion

- 2013 ACC/AHA guideline substantially increased the number of statin Tx candidates, esp. the number of a predicted 10 year risk group
- 2013 ACC/AHA guideline has good performance for identifying subjects with subclinical coronary atherosclerosis
- Korean risk prediction model has superiority in predicting CVD risks in Korean general population.
- High intensity statin therapy in patients with ACS is less prescribed than we imagine.

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Thank you for your attention

