Challenges in secondary prevention after acute myocardial infarction

What do we tell our post-MI patients at discharge?

Stephan Gielen, MD, FESC
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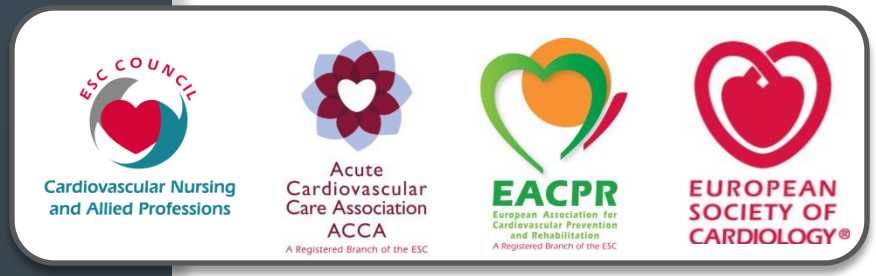
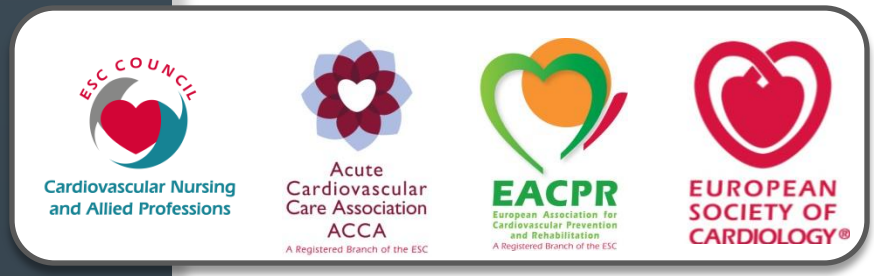


0. What are the long-term consequences of an ACS?



Mortality Rates for ACS

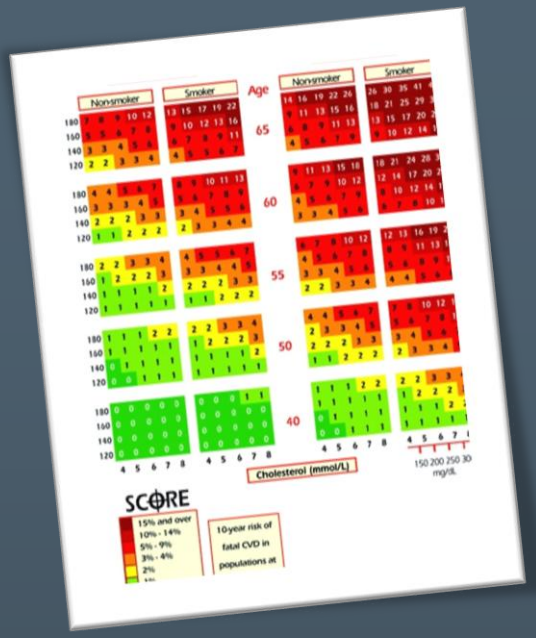
Condition	Studies	Registries
ACS – all patients	2-3%	2-3%
NSTEMI-patients	2%	3-14%
STEMI-patients	13% - Medical Therapy 6-7% - Thrombolysis 3-5% - primary PCI	11-14%

30-day rehospitalization rate of 17-25%.

1-year mortality approximately 5-9%.

Secondary Prevention Strategies

1. **ACS-Patients in the 6th JTF Prevention Guideline Risk Assessment**
2. **Lifestyle Intervention**
   - 2.1 Nutrition & Weight-Reduction
   - 2.2 Physical Activity
   - 2.3 Smoking Cessation
3. **Pharmacological Secondary Prevention**
   - 3.1 Antiplatelet Therapy – Beyond 1 year?
   - 3.2 Betablockade – Facts or Fiction?
   - 3.3 ACE-inhibition – For everyone or just for reduced EF?
   - 3.4 Lipid lowering – How low should LDL-C be?



1. ACS-Patients in the 2016 Prevention Guideline Risk Assessment

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The post-ACS-Patients in the ESC Risk Categories

Very high-risk	Subjects with any of the following: • Documented CVD, clinical or unequivocal on imaging. Documented clinical CVD includes previous AMI, ACS, coronary revascularization and other arterial revascularization procedures, stroke and TIA, aortic aneurysm and PAD. Unequivocally documented CVD on imaging includes significant plaque on coronary angiography or carotid ultrasound. It does NOT include some increase in continuous imaging parameters such as intima–media thickness of the carotid artery. • DM with target organ damage such as proteinuria or with a major risk factor such as smoking or marked hypercholesterolaemia or marked hypertension. • Severe CKD (GFR <30 mL/min/1.73 m2). • A calculated SCORE ≥10%.

ESC Prevention Guidelines 2016, Eur Heart J 2016
doi:10.1093/eurheartj/ehw106

2. Lifestyle Modification

- **Healthy Diet**
- **Exercise**
- **Smoking Cessation**

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Design der Lyon Heart Study

- ✓ More bread
- ✓ More root and green vegetables
- ✓ More fish, less meat
- ✓ No day without fruit
- ✓ Butter and cream replaced by margerine with a composition similar to olive oil
- ✓ For food preparation and salads exclusively rapeseed and olive oil
- ✓ Moderate alcohol consumption (wine during meals)

Western Diet (usual French diet)

Mediterranean Diet

De Lorgeril et al Circulation 99:779-785;1999

Key Endpoints

	Control		Experimental			
	Number	Rate*	Number	Rate	Risk Ratio† (95% CI)	*P*
Major primary end points						
Cardiac deaths	19	1.37	6	0.41	0.35 (0.15–0.83)	0.01
Nonfatal AMI	25	2.70	8	0.83		
Total primary end points (composite outcome 1)	44	4.07	14	1.24	0.28 (0.15–0.53)	0.0001
Noncardiac deaths	5	0.36	8	0.54		
All-cause deaths	24	1.74	14	0.95	0.44 (0.21–0.94)	0.03

- **65% Reduction of cardiac mortality**
- **72% Reduction of cardiac mortality + non-fatal MIs**
- **56% Reduction of total mortality**

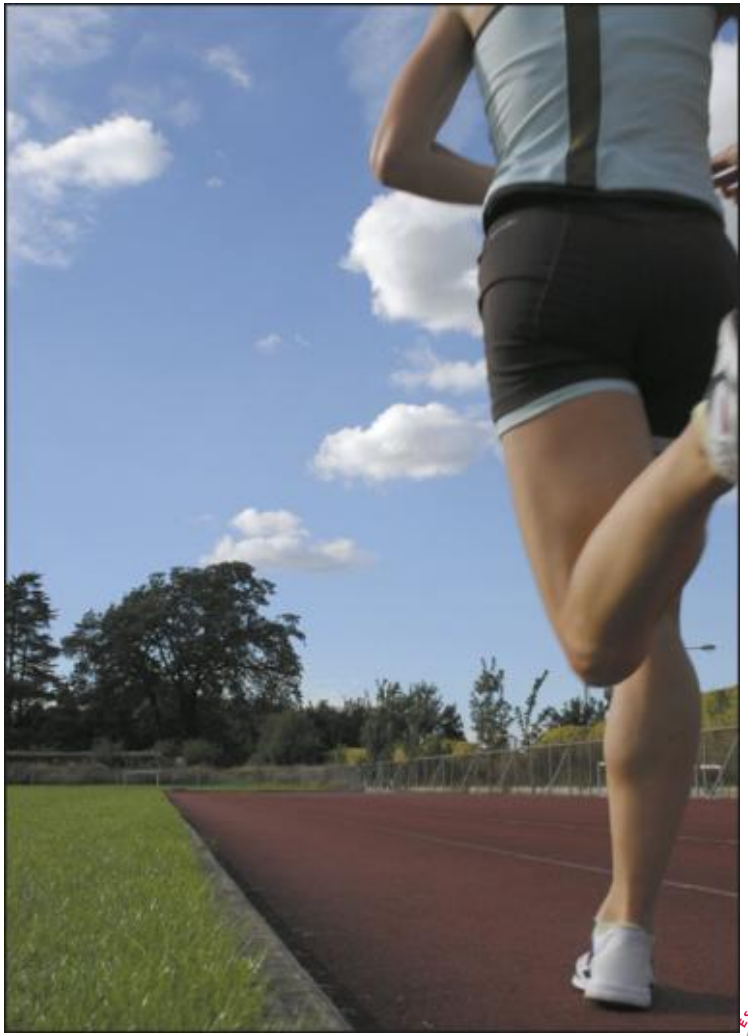
De Lorgeril et al Circulation 99:779-785;1999

Nutrition Recommendations in the 2016 ESC Prevention Guideline

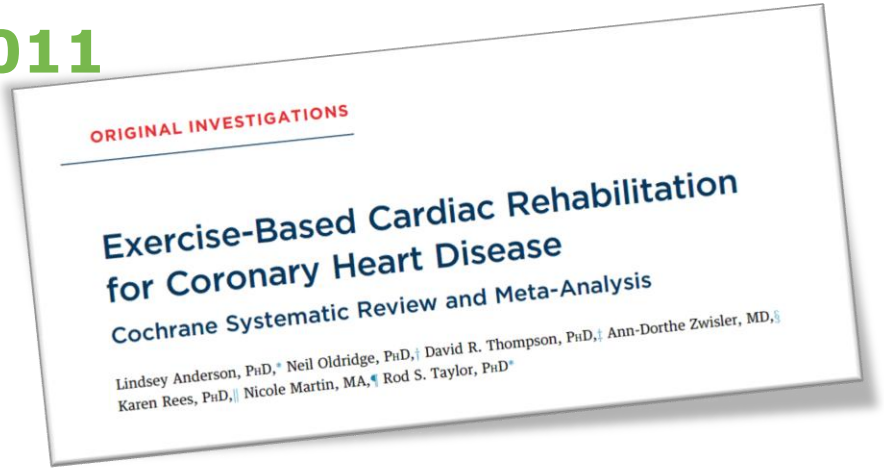
• Saturated fatty acids to account for <10% of total energy intake, through replacement by polyunsaturated fatty acids.
• Trans unsaturated fatty acids: as little as possible, preferably no intake from processed food, and <1% of total energy intake from natural origin.
• <5 g of salt per day.
• 30–45 g of fibre per day, preferably from wholegrain products.
• ≥200 g of fruit per day (2–3 servings).
• ≥200 g of vegetables per day (2–3 servings).
• Fish 1–2 times per week, one of which to be oily fish.
• 30 grams unsalted nuts per day.
• Consumption of alcoholic beverages should be limited to 2 glasses per day (20 g/d of alcohol) for men and 1 glass per day (10 g/d of alcohol) for women.
• Sugar-sweetened soft drinks and alcoholic beverages consumption must be discouraged.

ESC Prevention Guidelines 2016, Eur Heart J 2016
doi:10.1093/eurheartj/ehw106

Exercise-based Rehabilitation/Physical Activity



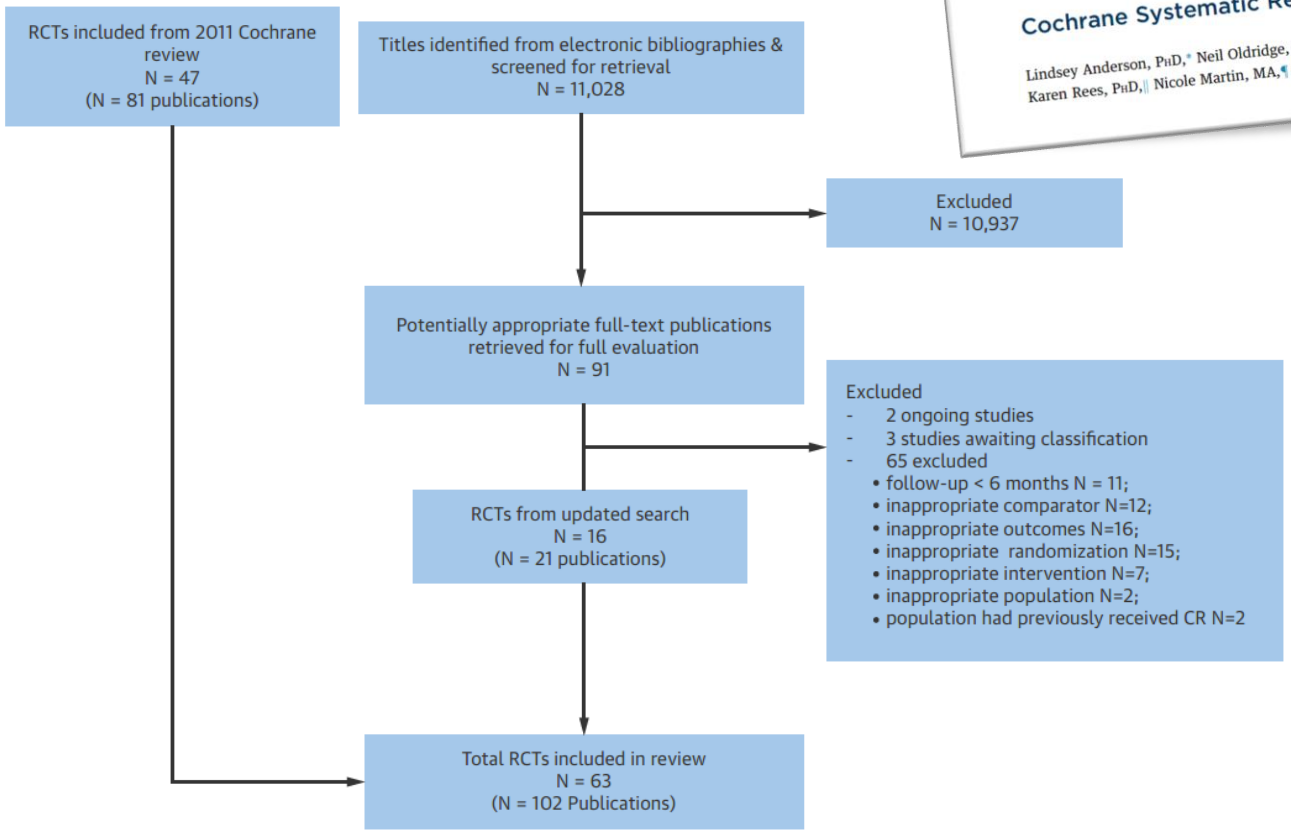
Cochrane Library Report 2011
Physical Activity in CAD


ORIGINAL INVESTIGATIONS

Exercise-Based Cardiac Rehabilitation for Coronary Heart Disease

Cochrane Systematic Review and Meta-Analysis

Lindsey Anderson, PhD,* Neil Oldridge, PhD,† David R. Thompson, PhD,‡ Ann-Dorthe Zwisler, MD,§ Karen Rees, PhD,‖ Nicole Martin, MA,¶ Rod S. Taylor, PhD*



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www.escardio.org/EACPR

Anderson L, J Am Coll Cardiol 2016;67:1–12

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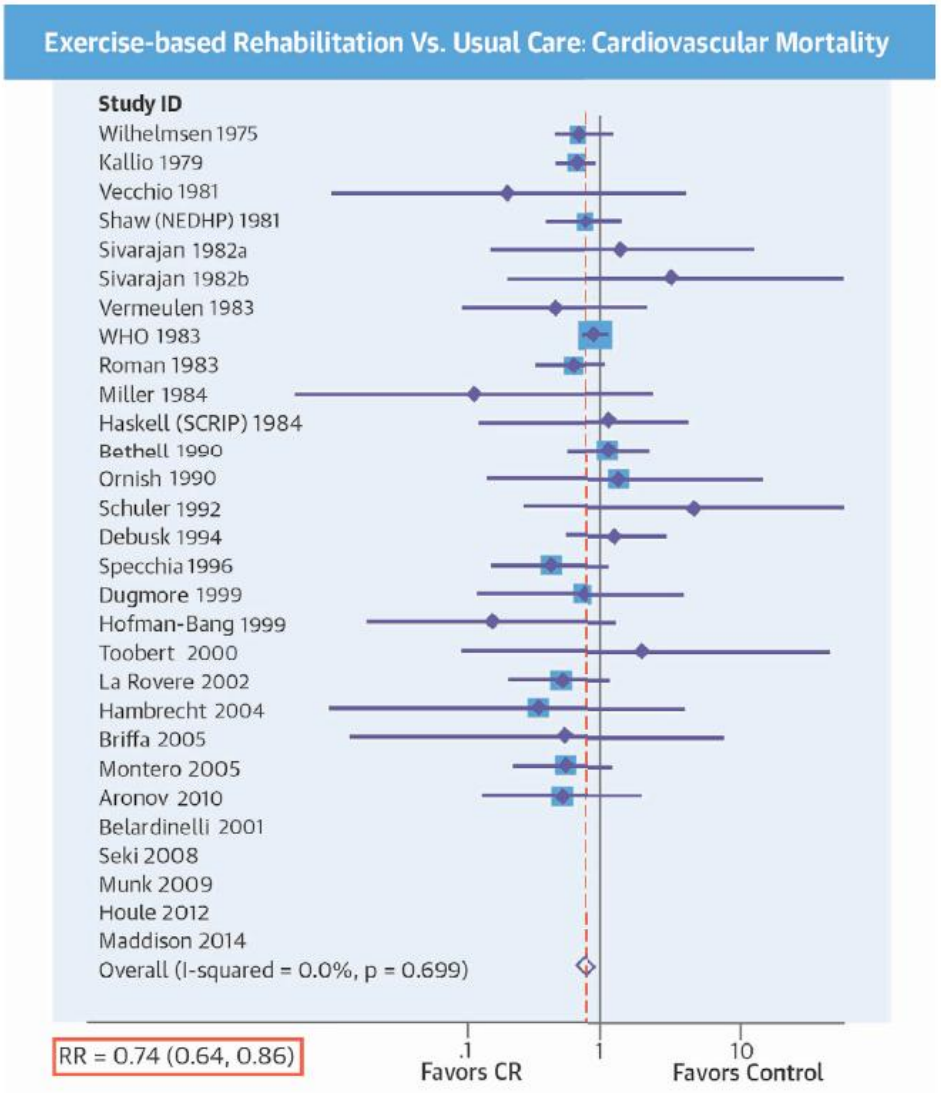
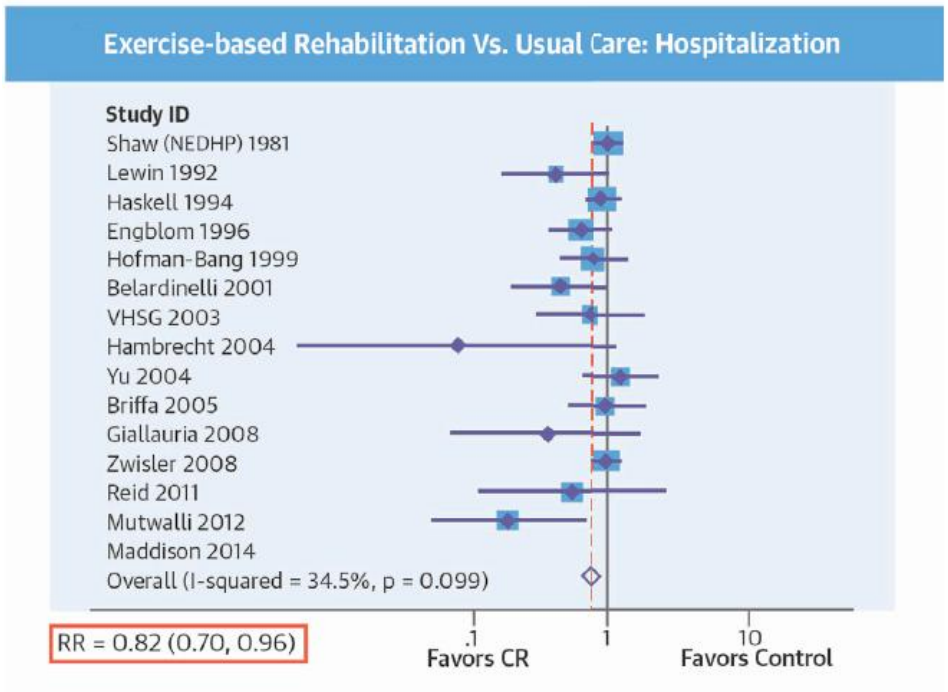
Clinical Effects of Exercise-based Cardiac Rehabilitation in CAD





Exercise-training based cardiac rehabilitation reduces cardiovascular mortality by 26% and hospitalisation by 18%.

The combination of in-hospital and subsequent outpatient rehabilitation is most effective.

Anderson L, J Am Coll Cardiol 2016;67:1–12

2016 Prevention Guidelines Recommendations

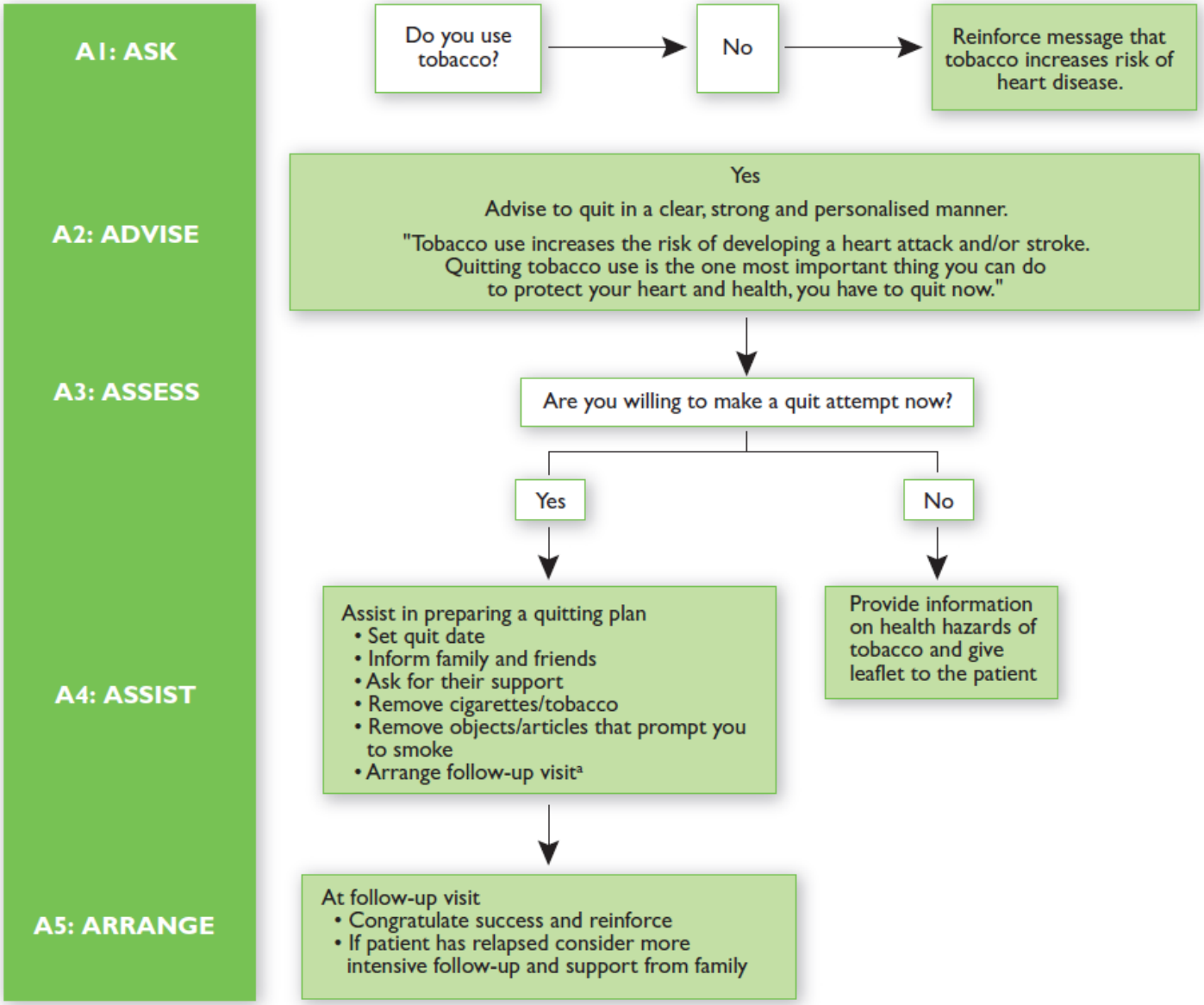
Recommendations	Class[a]	Level[b]	Ref[c]
It is recommended for healthy adults of all ages to perform at least 150 minutes a week of moderate intensity or 75 minutes a week of vigorous intensity aerobic PA or an equivalent combination thereof.	I	A	258–261
For additional benefits in healthy adults, a gradual increase in aerobic PA to 300 minutes a week of moderate intensity, or 150 minutes a week of vigorous intensity aerobic PA, or an equivalent combination thereof is recommended.	I	A	259, 260
Regular assessment and counselling on PA is recommended to promote the engagement and, if necessary, to support an increase in PA volume over time.[d]	I	B	262–264
PA is recommended in low-risk individuals without further assessment.	I	C	265, 266
Multiple sessions of PA should be considered, each lasting ≥10 minutes and evenly spread throughout the week, i.e. on 4–5 days a week and preferably every day of the week.	IIa	B	267, 268
Clinical evaluation, including exercise testing, should be considered for sedentary people with CV risk factors who intend to engage in vigorous PAs or sports.	IIa	C	265

Smoking Cessation

Recommendations for Smoking Cessation

Recommendations	Class [a]	Level [b]	Ref [c]
It is recommended to identify smokers and provide repeated advice on stopping with offers to help, by the use of follow up support, nicotine replacement therapies, varenicline, and bupropion individually or in combination.	I	A	283–286
It is recommended to stop all smoking of tobacco or herbal products, as this is strongly and independently causal of CVD.	I	B	287–291
It is recommended to avoid passive smoking.	I	B	292, 293

Smoking Cessation



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3. Pharmacological Secondary Prevention

3.1 Antiplatelet Therapy – DAPT beyond 1 year?

3.3 ACE-inhibition – For everyone or just for patients with reduced EF?

3.4 Lipid-lowering Therapy – How low shall we go?

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Factors Influencing the Duration of DAPT

Ischemic risk

Table 1 Long-term risk factors for stent thrombosis after percutaneous coronary intervention

Procedural factors	Patient characteristics	Pharmacological factors
Stent type	Diabetes	Premature discontinuation of dual antiplatelet therapy
Stent undersizing	Acute coronary syndrome	Slow metabolizers of the antiplatelet pro-drug
Incomplete stent expansion	Left ventricular dysfunction	
Incomplete apposition	Malignancy	
Greater stent length		
Side branch stenting		
Overlapping stents		
Small vessel calibre		

Bleeding risk

Table 2 Long-term risk factors for bleeding after percutaneous coronary intervention

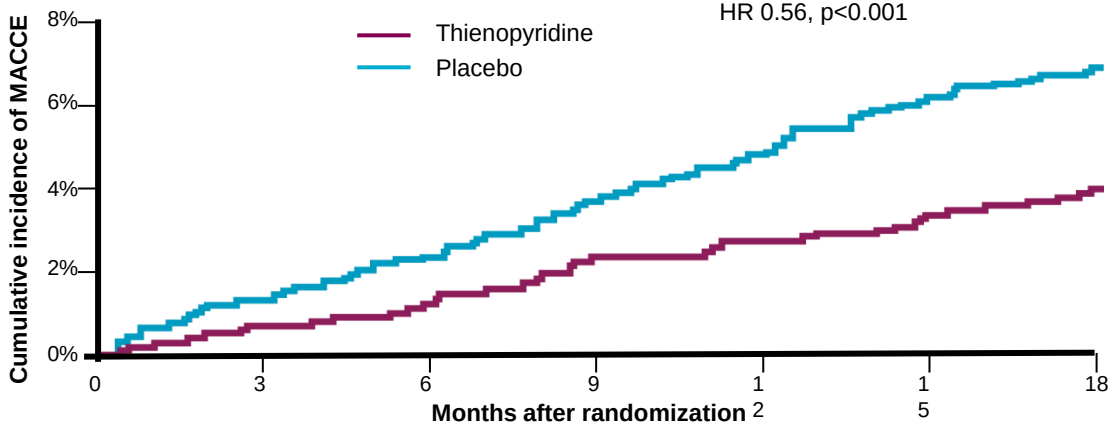
Procedural factors	Patient characteristics	Pharmacological factors
Short-term risk factors:	Age	Prolonged dual antiplatelet therapy
Femoral access,	History of bleeding	Concomitant use of oral anticoagulation
Large sheath size	Low body weight	
No vascular closure device	Acute coronary syndrome	
Long-term risk factors:	Thrombocytopenia	
Unknown	Gastro-intestinal disease	
	Impaired kidney function	
	Liver disease	
	Cerebrovascular accident	
	Malignancy	

Binder R, Eur Heart J 2015

DAPT-Study: DAPT for 30 Months vs. 12 Months: Longer DAPT is better in ACS-Patients

Patients presenting with myocardial infarction

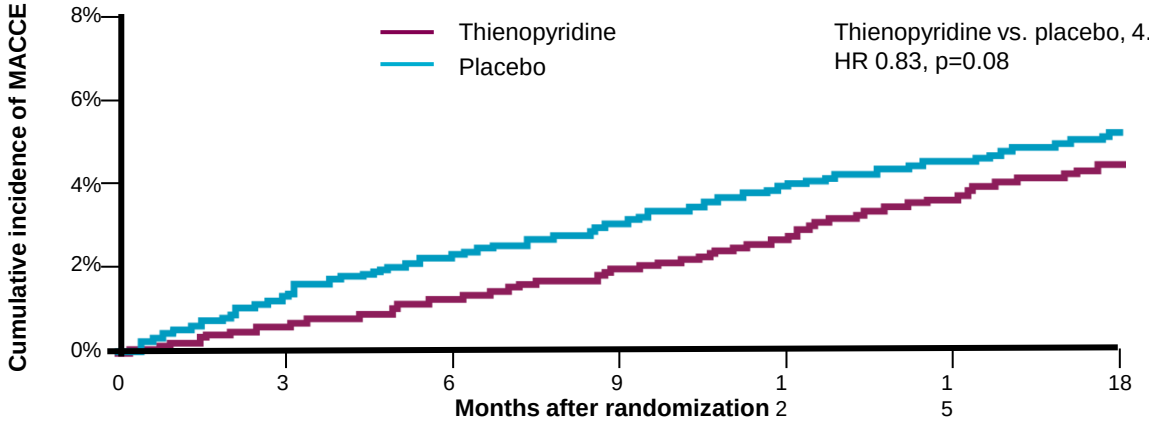
Thienopyridine vs. placebo, 3.9% vs. 6.8%;
HR 0.56, p<0.001



Thienopyridine	1802	1791	1761	1737	1704	1676	1649
Placebo	1766	1749	1706	1676	1632	1592	1553

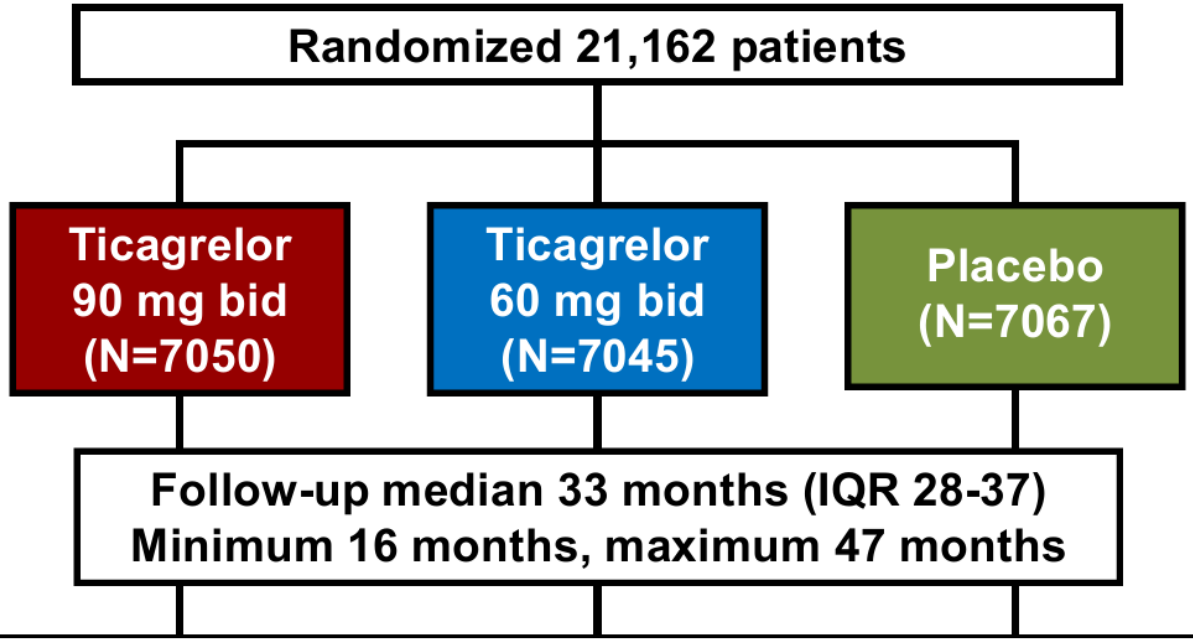
Patients presenting without myocardial infarction

Thienopyridine vs. placebo, 4.4% vs. 5.3%;
HR 0.83, p=0.08



Thienopyridine	4050	4020	3951	3900	3851	3786	3718
Placebo	4008	3982	3893	3830	3772	3705	3660

PEGASUS-Study: Design and Follow-up



Premature perm. drug discontinuation	12%/yr	11%/yr	8%/yr
Withdrew consent	0.7% total	0.7% total	0.7% total
Lost to follow-up	3 patients	6 patients	1 patient

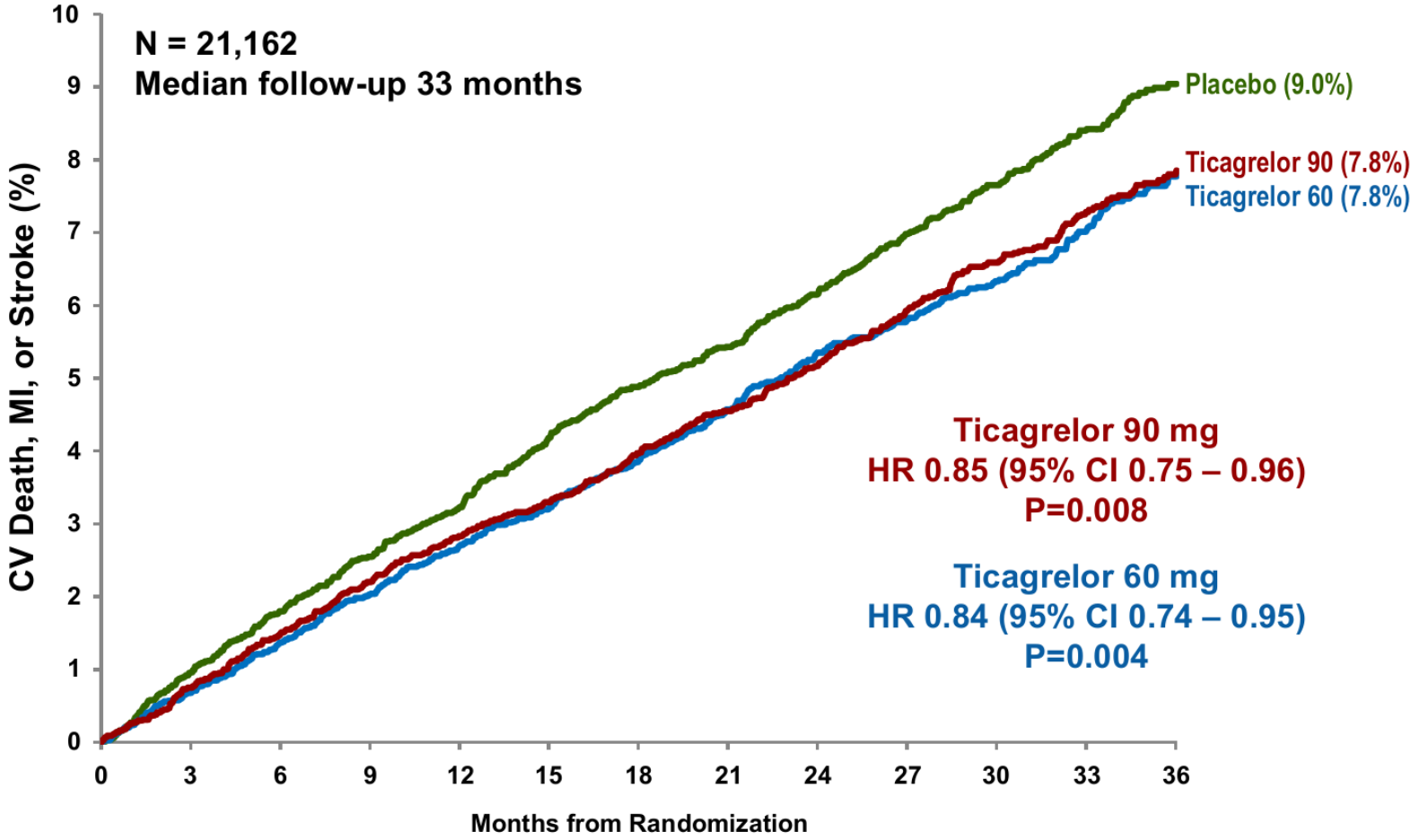
Bonaca MP, N Engl J Med. 2015;372(19):1791-1800

Inclusion Criteria

- ≥50 years of age
- MI 1–3 years past + one additional risk factor:
  - Age ≥ 65 Jahre
  - Diabetes mellitus on medical treatment
  - Recurrent MI >1 year in the past
  - Angiographically proven multi vessel CAD
  - Chronic, non-terminal kidney disease (CrCl after Cockcroft Gault <60 mL/min)
- Basal therapy with ASS 75-150 mg once daily

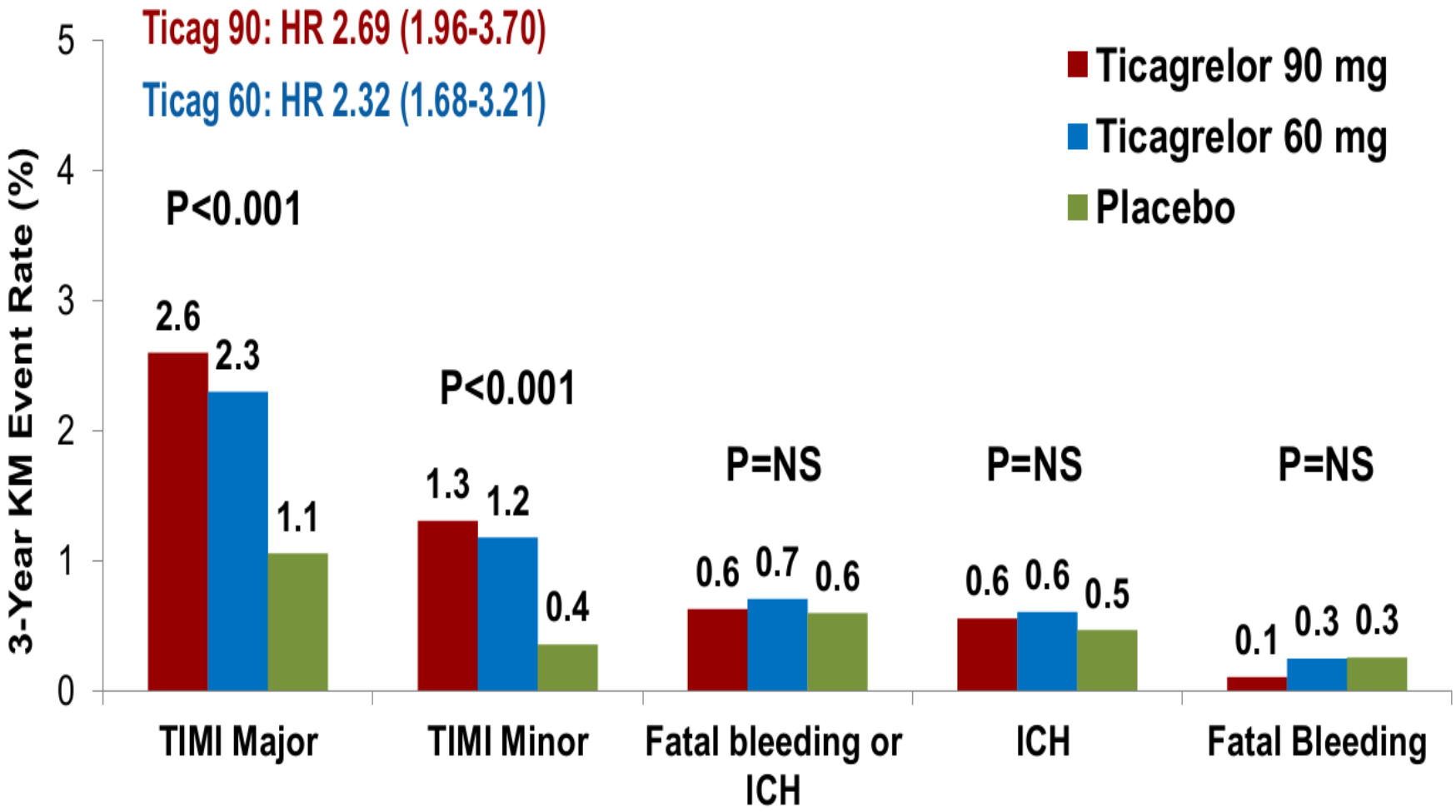
Bonaca MP, N Engl J Med. 2015;372(19):1791-1800

Primary End-Point: CV Death, MI or Stroke



Bonaca MP, N Engl J Med. 2015;372(19):1791-1800

Bleeding Events in PEGASUS

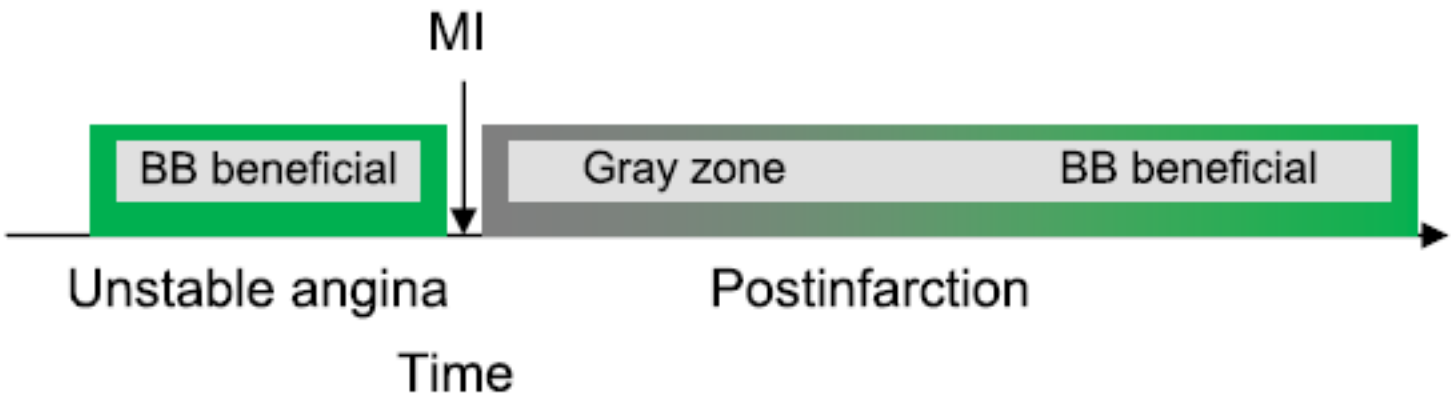


Bonaca MP, N Engl J Med. 2015;372(19):1791-1800

Beta-Blockers in Secondary Prevention post ACS

COMMENTARY

How Little We Know: The Search for a Simple Answer on Acute Beta-blocker Use in the Management of Acute Coronary Syndrome



Miller CD, Academ Emerg Med 2010(17)1: 93-95

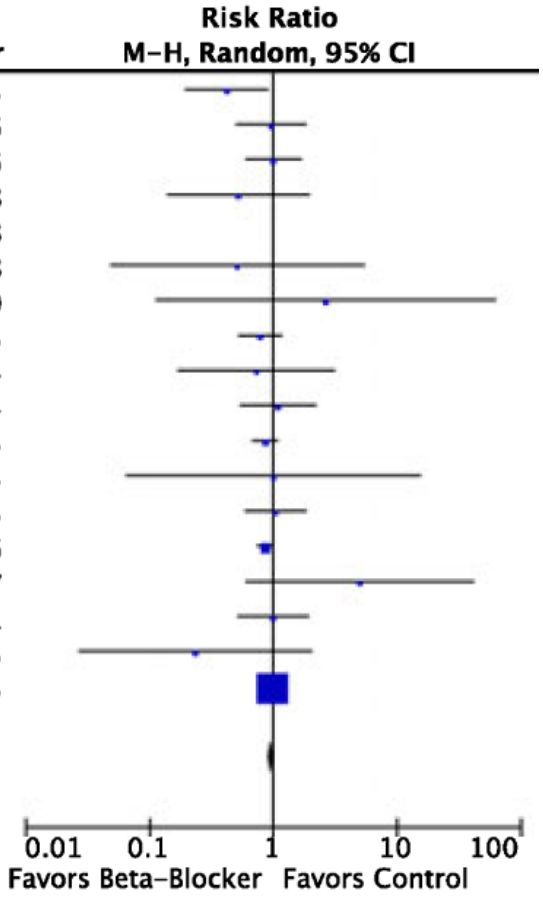
Metaanalysis of Beta-Blockers immediately post ACS (within 8 hours)

Study or Subgroup	Beta–Blocker Events	Beta–Blocker Total	no Beta–Blocker Events	no Beta–Blocker Total	Weight	Risk Ratio M–H, Random, 95% CI	Year
Snow 1965	7	45	17	46	0.5%	0.42 [0.19, 0.92]	1965
Balcon 1966	13	56	14	58	0.7%	0.96 [0.50, 1.86]	1966
Clausen 1966	18	53	19	56	1.1%	1.00 [0.59, 1.69]	1966
Evenmy 1978	3	46	6	48	0.2%	0.52 [0.14, 1.96]	1978
Norris 1978	0	20	0	23		Not estimable	1978
Peter 1978	1	47	2	48	0.1%	0.51 [0.05, 5.44]	1978
Norris 1980	1	33	0	29	0.0%	2.65 [0.11, 62.56]	1980
Yusuf 1983	36	244	44	233	1.8%	0.78 [0.52, 1.17]	1983
ICSG 1984	3	73	4	71	0.1%	0.73 [0.17, 3.14]	1984
Norris 1984	15	364	14	371	0.6%	1.09 [0.53, 2.23]	1984
MIAMI 1985	118	2877	138	2901	5.1%	0.86 [0.68, 1.10]	1985
Owensby 1985	1	50	1	50	0.0%	1.00 [0.06, 15.55]	1985
Salathia 1985 (1)	25	416	20	348	0.9%	1.05 [0.59, 1.85]	1985
ISIS–1 1986	317	8017	367	7980	13.7%	0.86 [0.74, 1.00]	1986
Heber 1987	5	83	1	83	0.1%	5.00 [0.60, 41.88]	1987
Roberts TIMI II–B 1991	17	720	17	714	0.7%	0.99 [0.51, 1.93]	1991
Van de Werf 1993	1	100	4	94	0.1%	0.23 [0.03, 2.06]	1993
COMMIT 2005	1774	22929	1797	22923	74.4%	0.99 [0.93, 1.05]	2005
Total (95% CI)		**36173**		**36076**	**100.0%**	**0.95 [0.90, 1.01]**	
Total events	2355		2465				

Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 14.72$, df = 16 (P = 0.55); $I^2 = 0\%$

Test for overall effect: Z = 1.72 (P = 0.09)

(1) M–H = Mantel–Haenszel

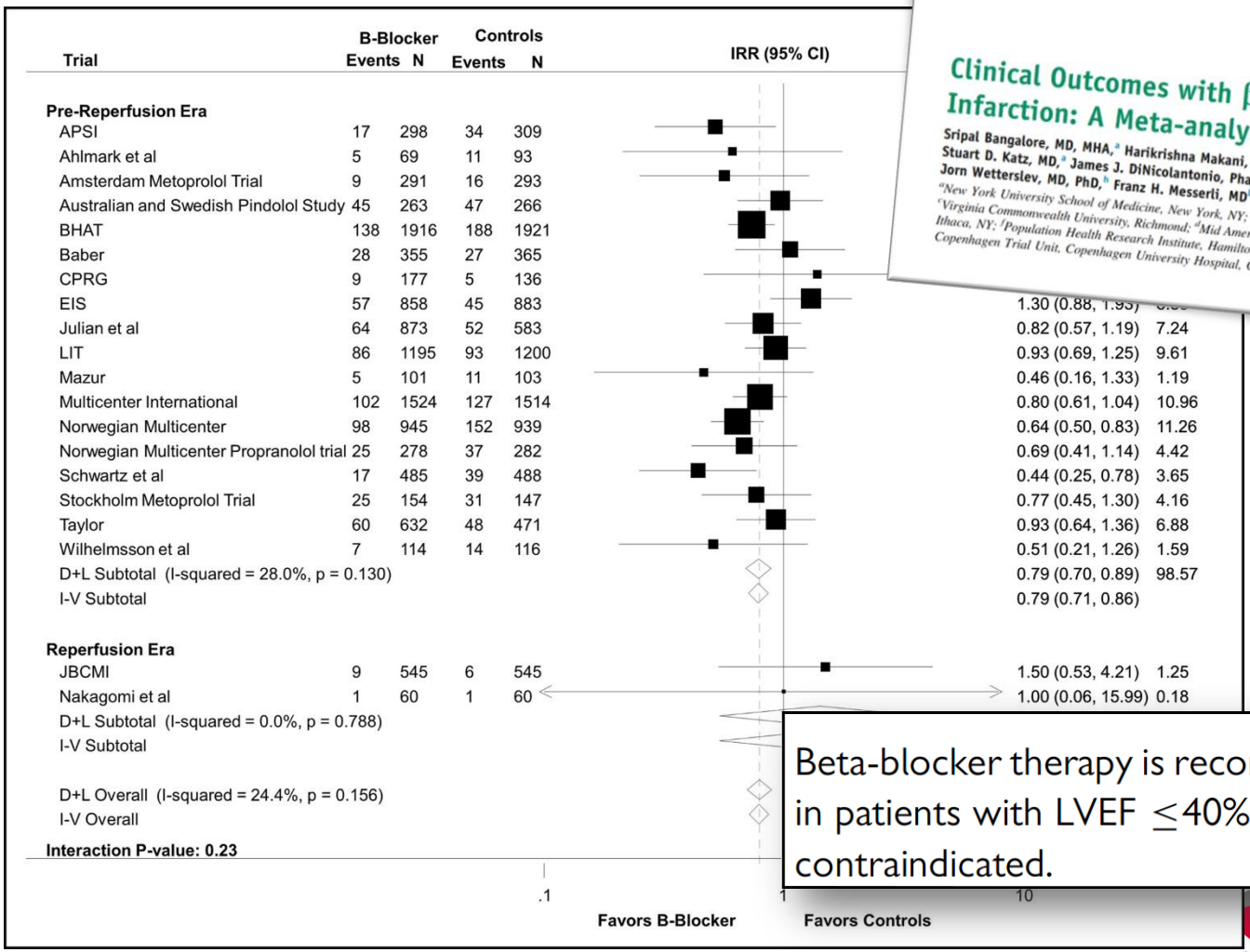


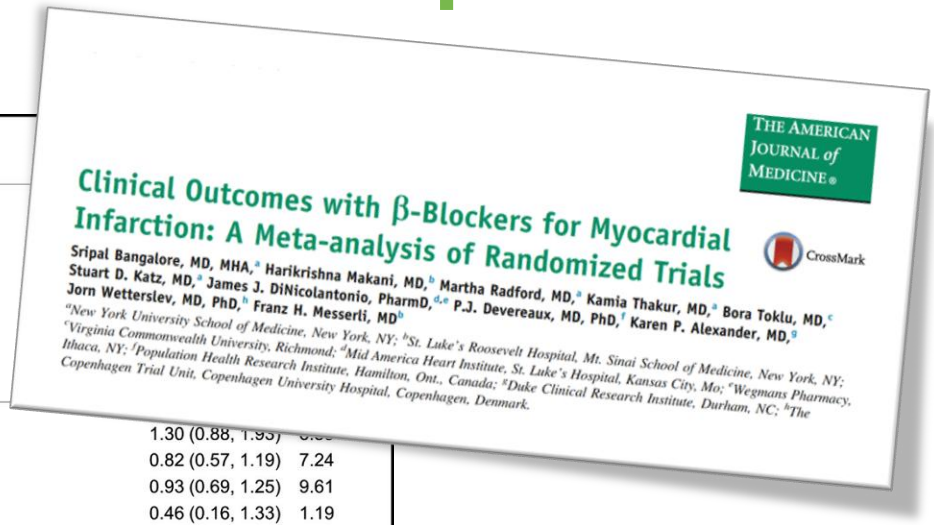
24 Hours 8 Hours

Brandler E, Academ Emerg Med 2010(17)1: 1-10

Betablockers in all ACS-Cases post PCI?

All-cause Mortality




THE AMERICAN JOURNAL of MEDICINE®

Clinical Outcomes with β-Blockers for Myocardial Infarction: A Meta-analysis of Randomized Trials

CrossMark

Sripal Bangalore, MD, MHA,[a] Harikrishna Makani, MD,[b] Martha Radford, MD,[a] Kamia Thakur, MD,[a] Bora Toklu, MD,[c] Stuart D. Katz, MD,[a] James J. DiNicolantonio, PharmD,[d,e] P.J. Devereaux, MD, PhD,[f] Karen P. Alexander, MD,[g] Jorn Wetterslev, MD, PhD,[h] Franz H. Messerli, MD[b]

[a]New York University School of Medicine, New York, NY; [b]St. Luke's Roosevelt Hospital, Mt. Sinai School of Medicine, New York, NY; [c]Virginia Commonwealth University, Richmond; [d]Mid America Heart Institute, St. Luke's Hospital, Kansas City, Mo; [e]Wegmans Pharmacy, Ithaca, NY; [f]Population Health Research Institute, Hamilton, Ont., Canada; [g]Duke Clinical Research Institute, Durham, NC; [h]The Copenhagen Trial Unit, Copenhagen University Hospital, Copenhagen, Denmark.

"In this analysis …beta- blockers reduced the risk of events, including mortality in the pre-reperfusion-era trial, but not in the reperfusion-era trials."

Beta-blocker therapy is recommended in patients with LVEF ≤40%, unless contraindicated.	I	A

Bangalore S, Am J Med (2014) 127, 939-953

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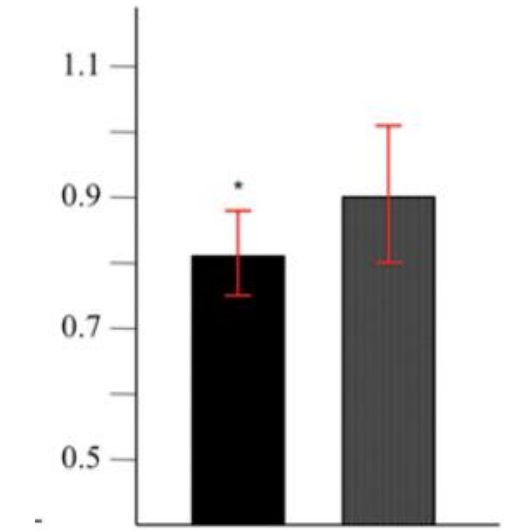
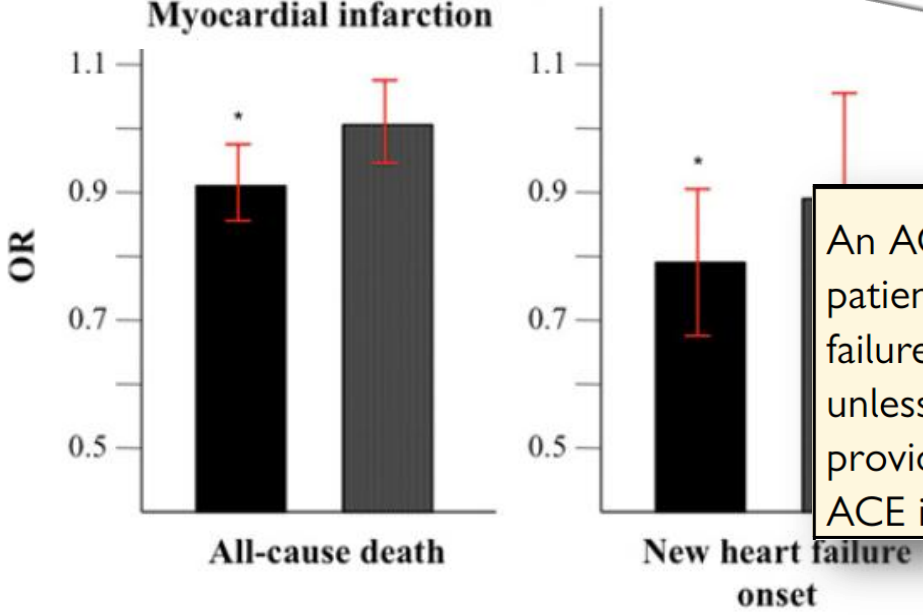
ACE-Inhibitor also in normal LV-EF?





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CLINICAL RESEARCH

Cardiovascular Risk

A Meta-Analysis Reporting Effects of Angiotensin-Converting Enzyme Inhibitors and Angiotensin Receptor Blockers in Patients Without Heart Failure

Gianluigi Savarese, MD,* Pierluigi Costanzo, MD,*† John George Franklin Cleland, MD,† Enrico Vassallo, MD,* Donatella Ruggiero, MD,* Giuseppe Rosano, MD, PHD,‡ Pasquale Perrone-Filardi, MD, PHD*

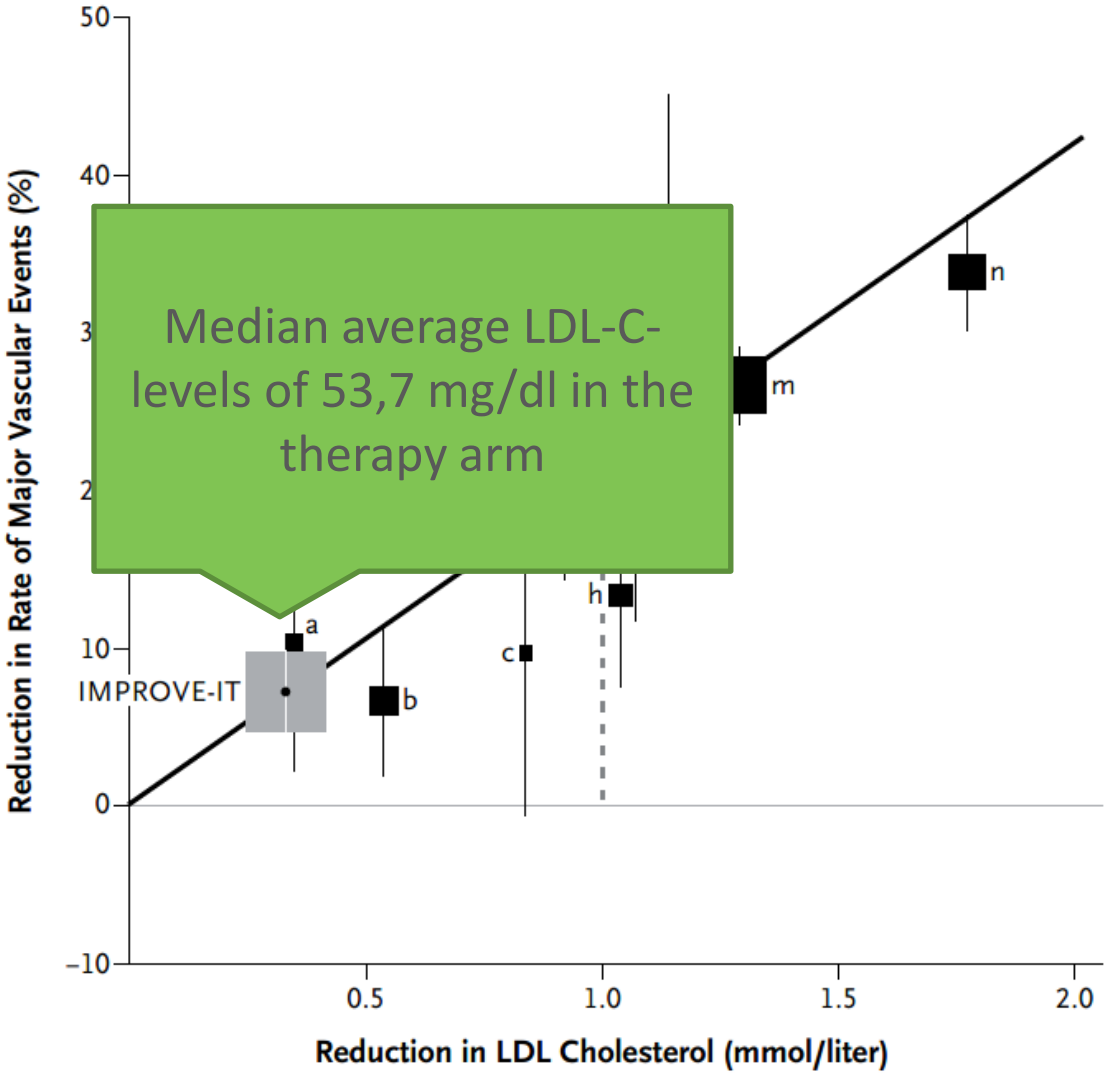
Naples and Rome, Italy; and Cottingham, United Kingdom

An ACE inhibitor is recommended in patients with LVEF ≤40% or heart failure, hypertension or diabetes, unless contraindicated. An ARB provides an alternative, particularly if ACE inhibitors are not tolerated.

I	A

Savarese G, J Am Coll Cardiol 2013(61):131-42

The Concept of More Aggressive LDL-Reduction after IMPROVE-IT



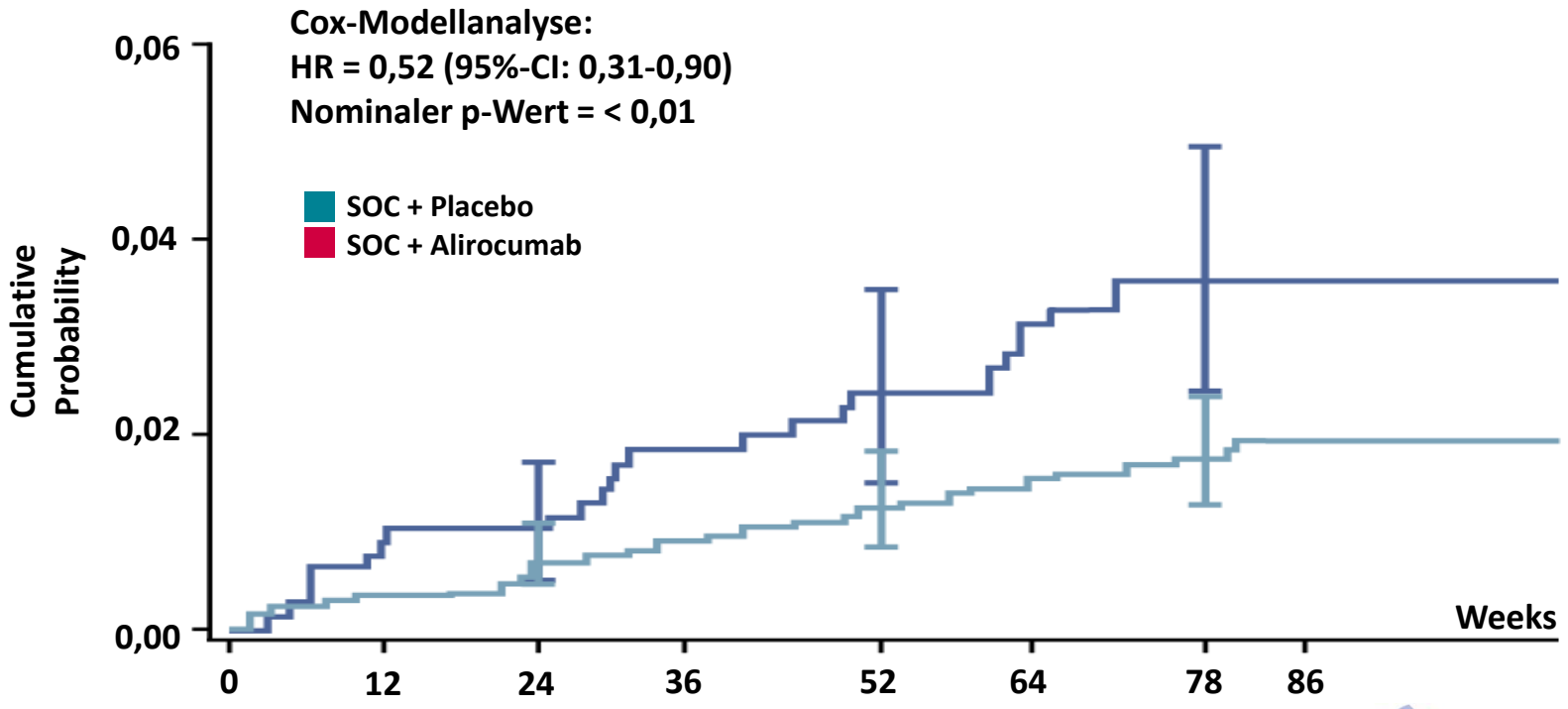
Cannon C, N Engl J Med 2015 (372):2387-97

Results from recent PCSK9 Trials

Robinson et al. (2015): ODYSSEY LONG TERM

Post-hoc adjudicated cardiovascular TEAE

Kaplan-Meier-estimation for the time to the first adjudicated SAE



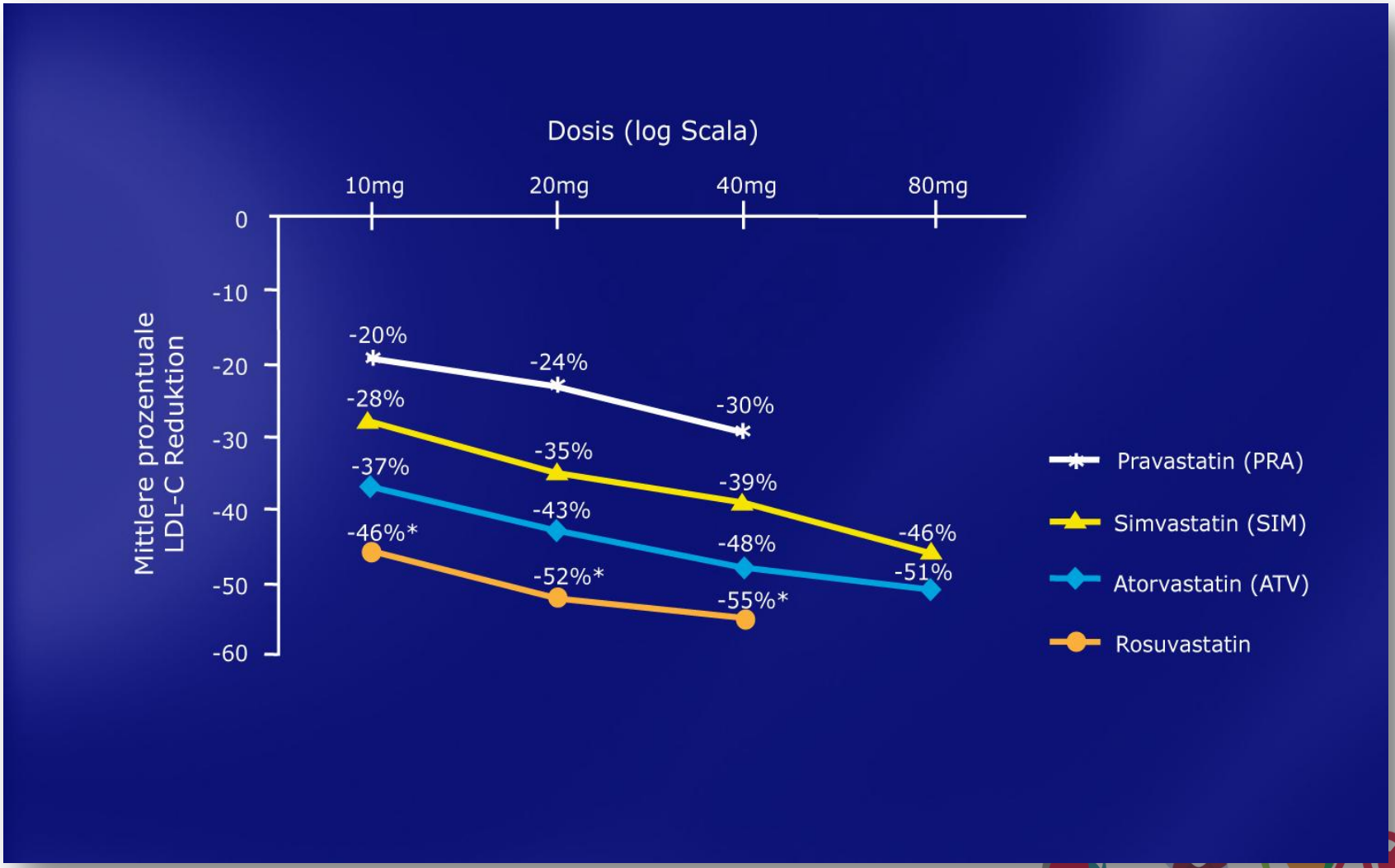
J. G. Robinson et al., N. Engl. J. Med. (2015), Efficacy and Safety of Alirocumab in Reducing Lipids and Cardiovascular Events

Recommendations for LDL-C-Lowering

Recommendations[d e]	Class[a]	Level[b]	Ref[c]
In patients at VERY HIGH CV risk, an LDL-C goal <1.8 mmol/L (<70 mg/dL), or a reduction of at least 50% if the baseline is between 1.8 and 3.5 mmol/L (70 and 135 mg/dL) is recommended.[f]	I	B	350–353
In patients at HIGH CV risk, an LDL-C goal <2.6 mmol/L (<100 mg/dL), or a reduction of at least 50% if the baseline is between 2.6 and 5.1 mmol/L (100 and 200 mg/dL) is recommended.	I	B	350–353
In the remaining patients on LDL-C lowering treatment, an LDL-C goal <3.0 mmol/L (<115 mg/dL) should be considered.	IIa	C	350–353

ESC Prevention Guidelines 2016, Eur Heart J 2016
doi:10.1093/eurheartj/ehw106

Different Statins and Their Efficacy in LDL-Lowering



After Jones-PH et al. Am J Cardiol 2003; 93:152-160

5. Summary

Summary

Drug	Recommendation
Aspirin	Lifelong Therapy
P_2Y_{12} Inhibitor	For 12 Months (except in high bleeding risk) Extend for up to 4 years in patients with high thrombotic and low bleeding risk.
Beta Blocker	With reduced LV-function.
ACE-Inhibitor AT-Antagonists	Clear indication in reduced and preserved LV-function.
Statin	Target LDL-C <70 mg/dl
Lifestyle	Regular physical activity, smoking cessation, mediterranean diet

EACPR Webinar July 4th, 2016
Secondary Prevention after Myocardial Infarction

The gap between Guidelines and reality

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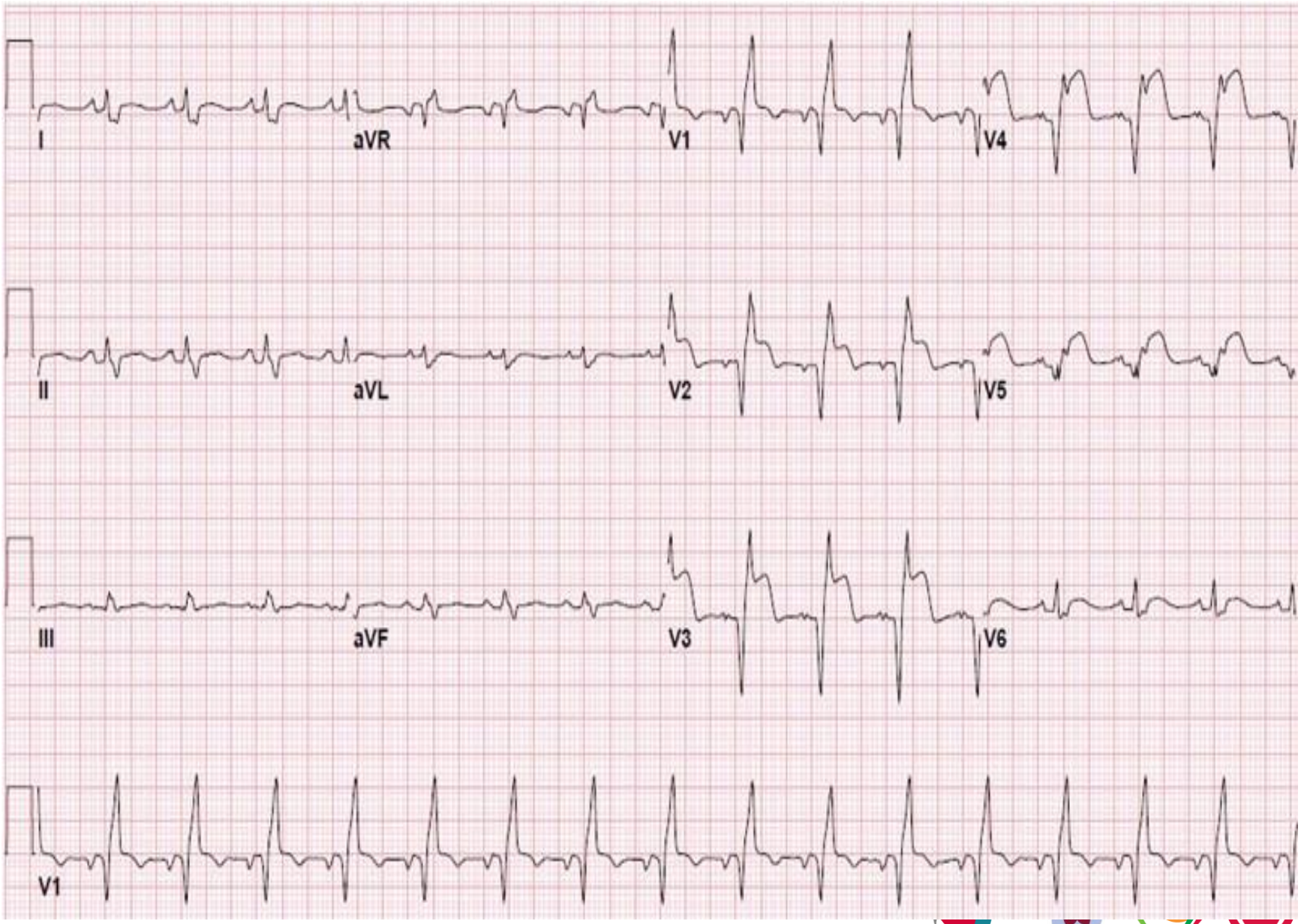
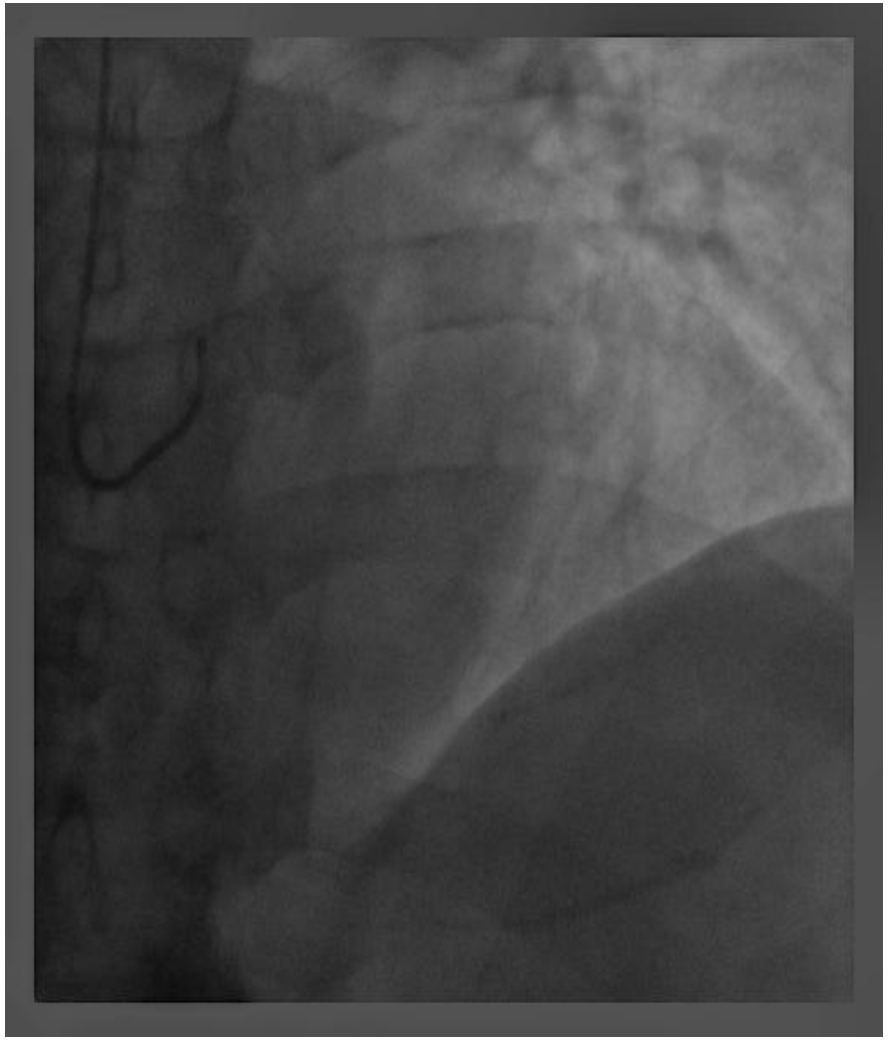
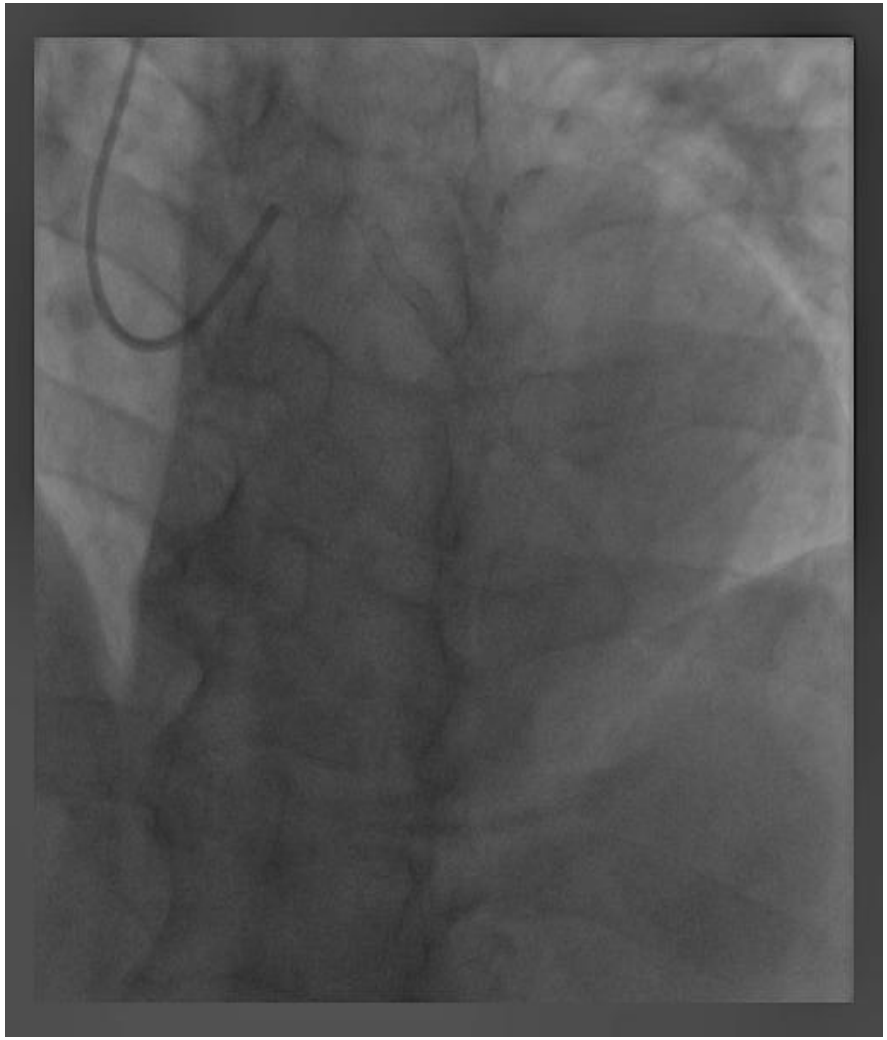
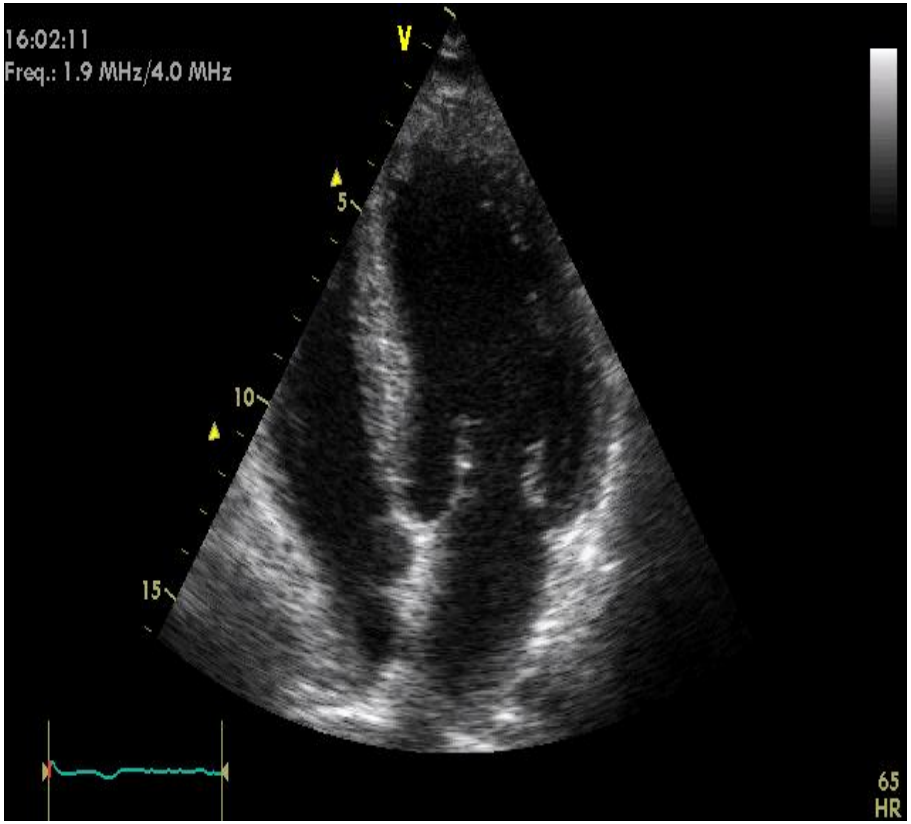
Mrs AB

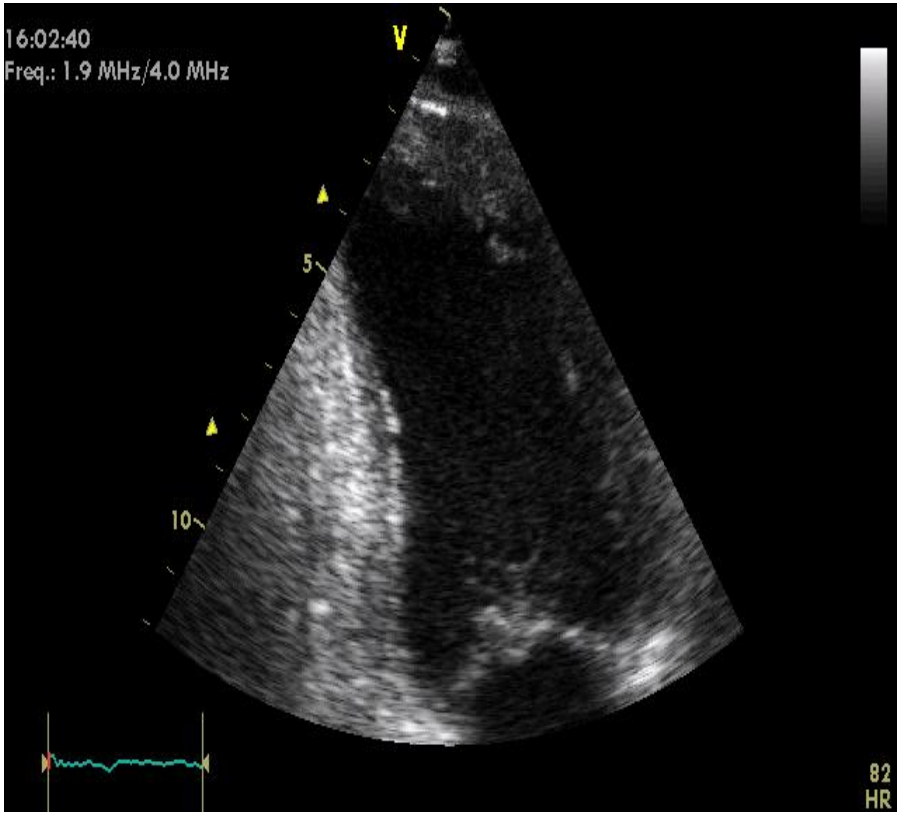

I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
V1



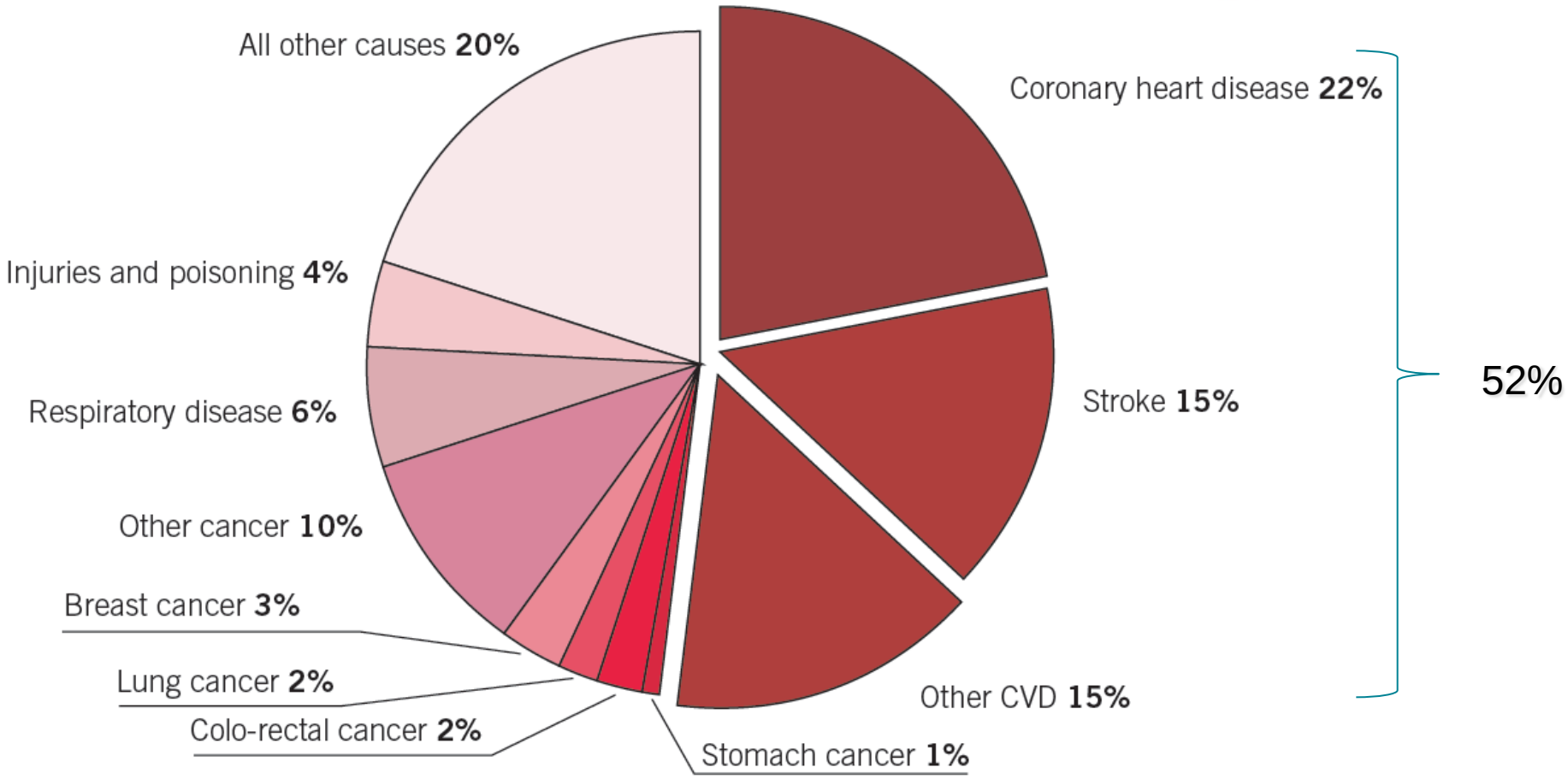


Primary angioplasty



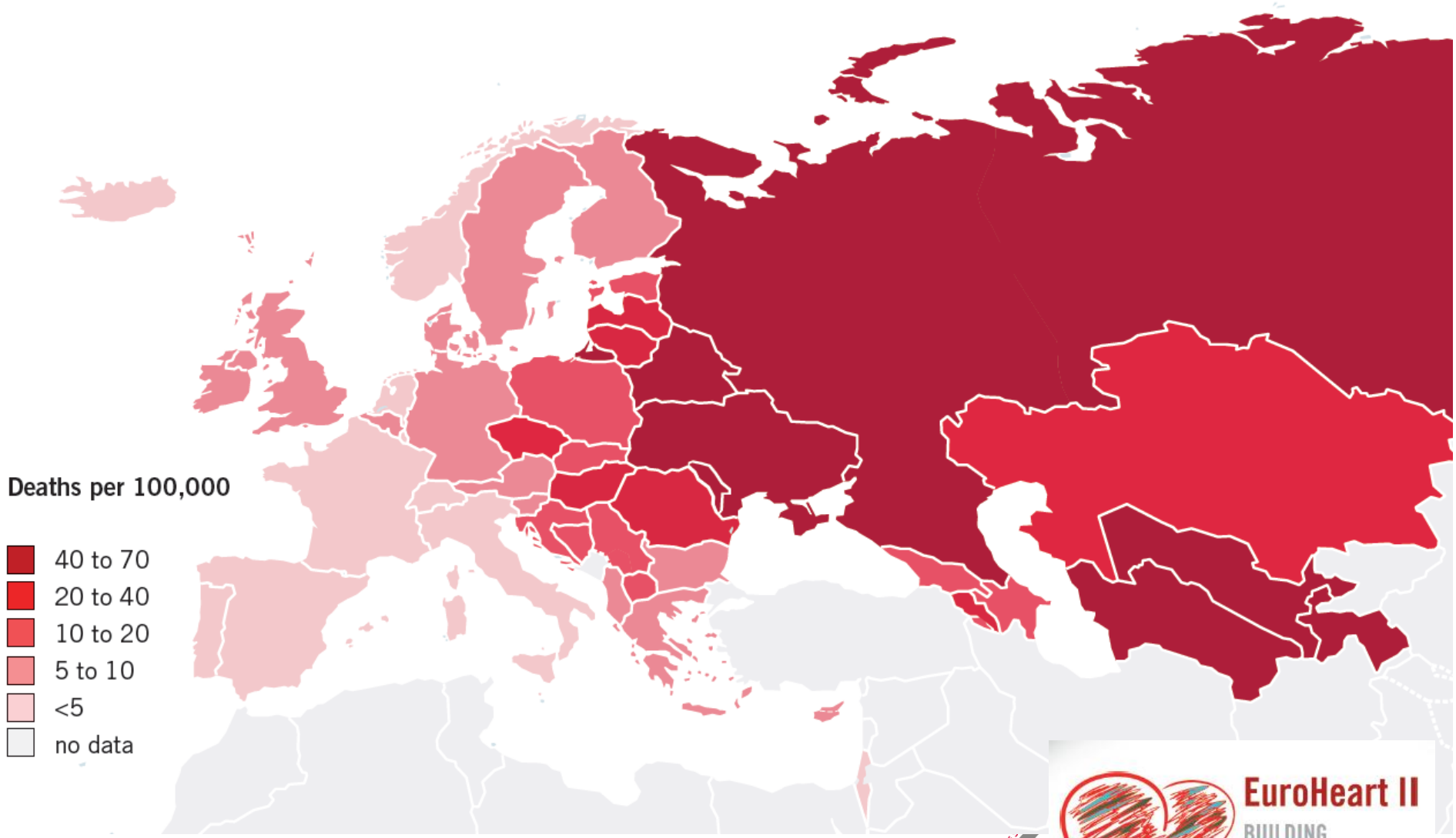


Death by causes, women in Europe

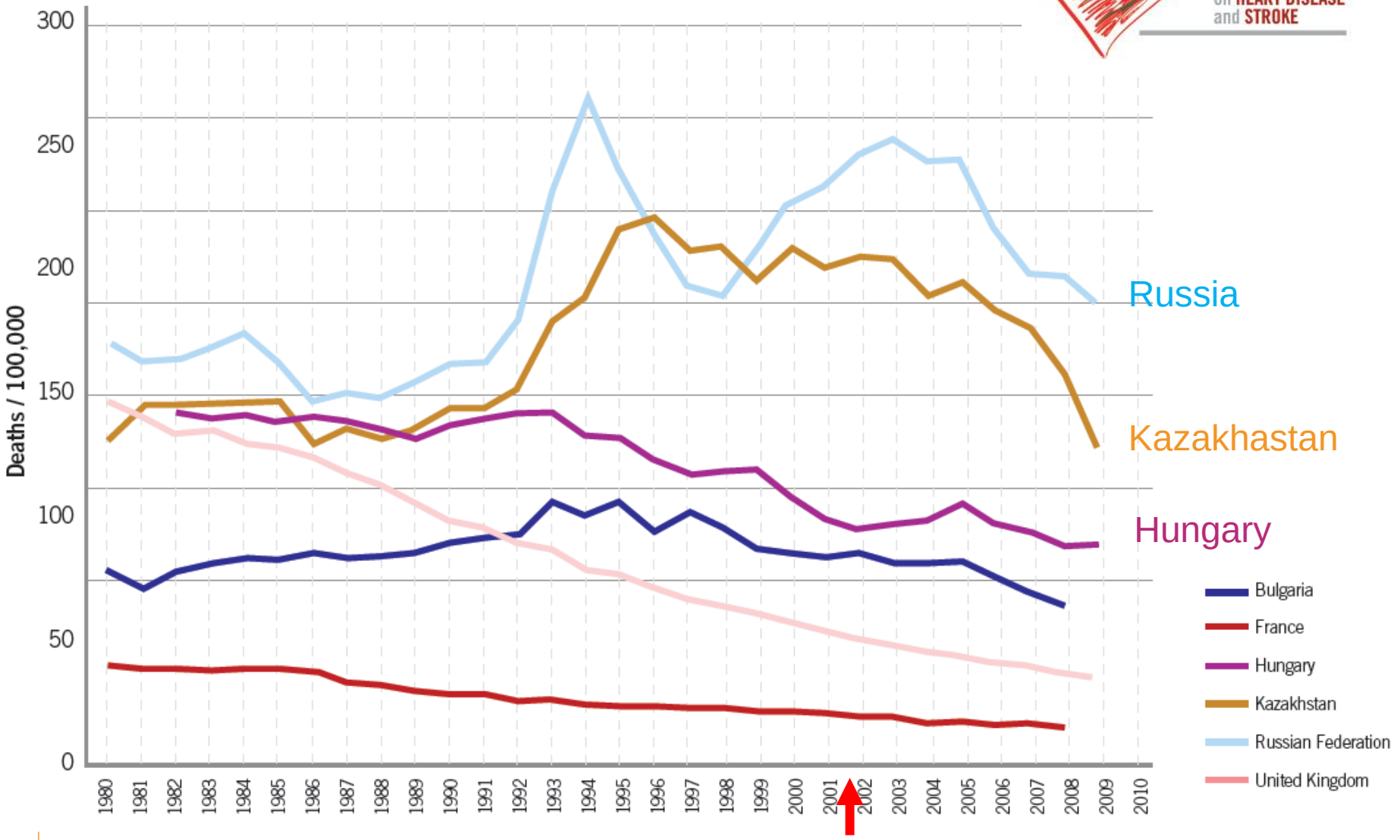


European CVD Statistics 2012

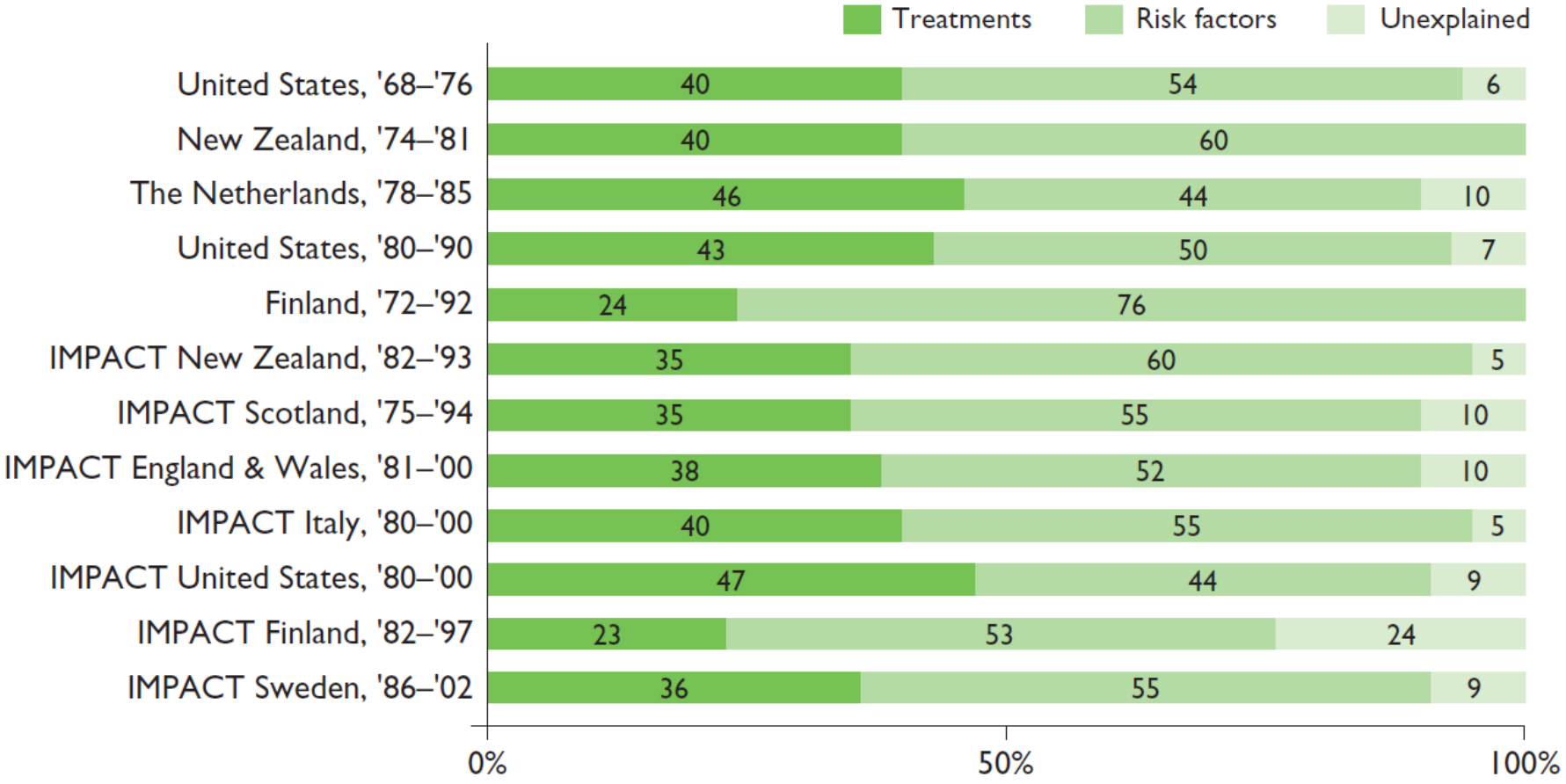
Age-standardised death rate, women from CAD



Death-rate changes from CAD in selected European countries

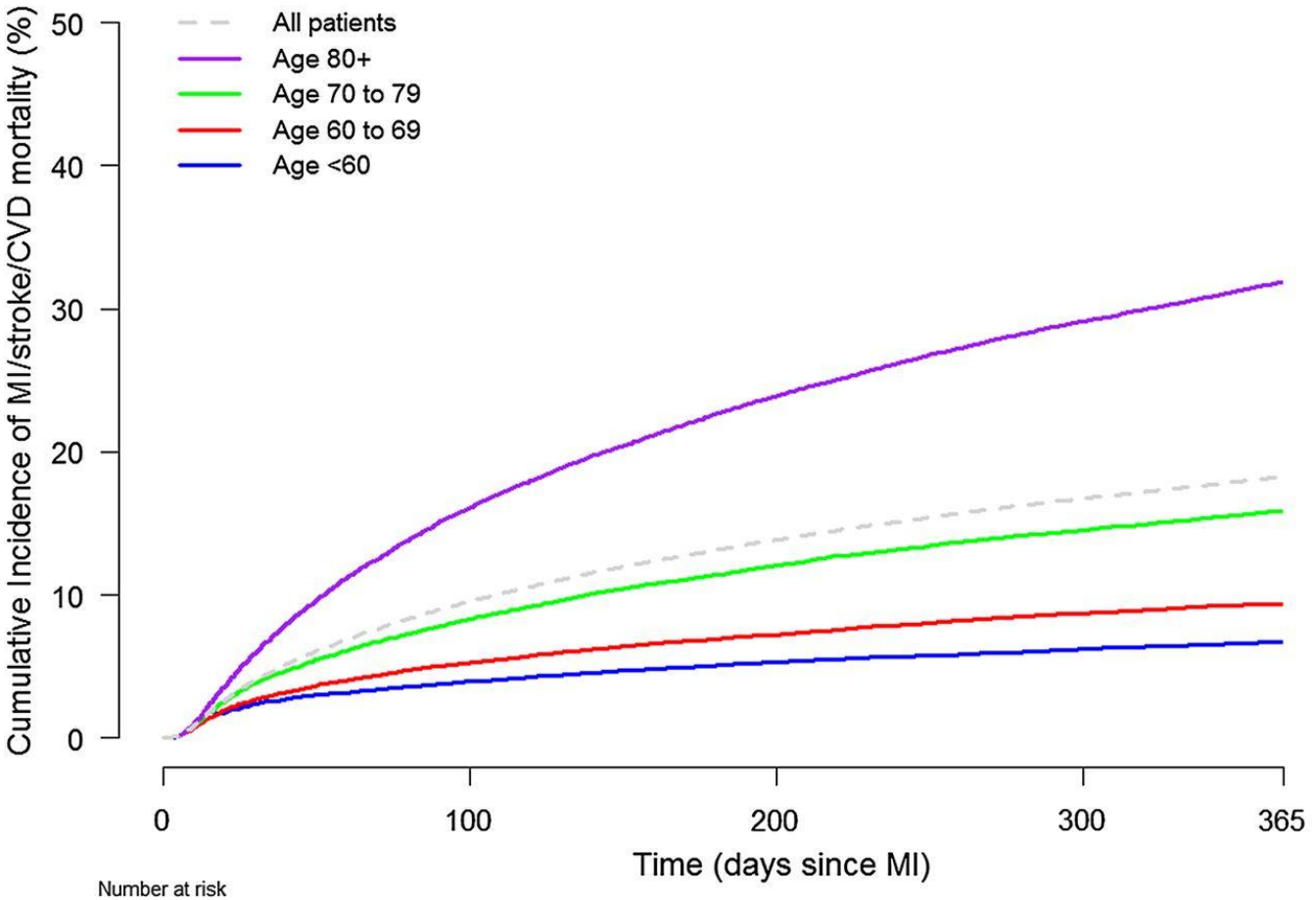


Decrease in CV death due to treatment or risk factor changes in different population



Di Chiara et al, 2009

Kaplan–Meier estimate of the risk of the combined endpoint (MI, ischaemic stroke, or CV death) during the first 365 days after the index MI, stratified by age.



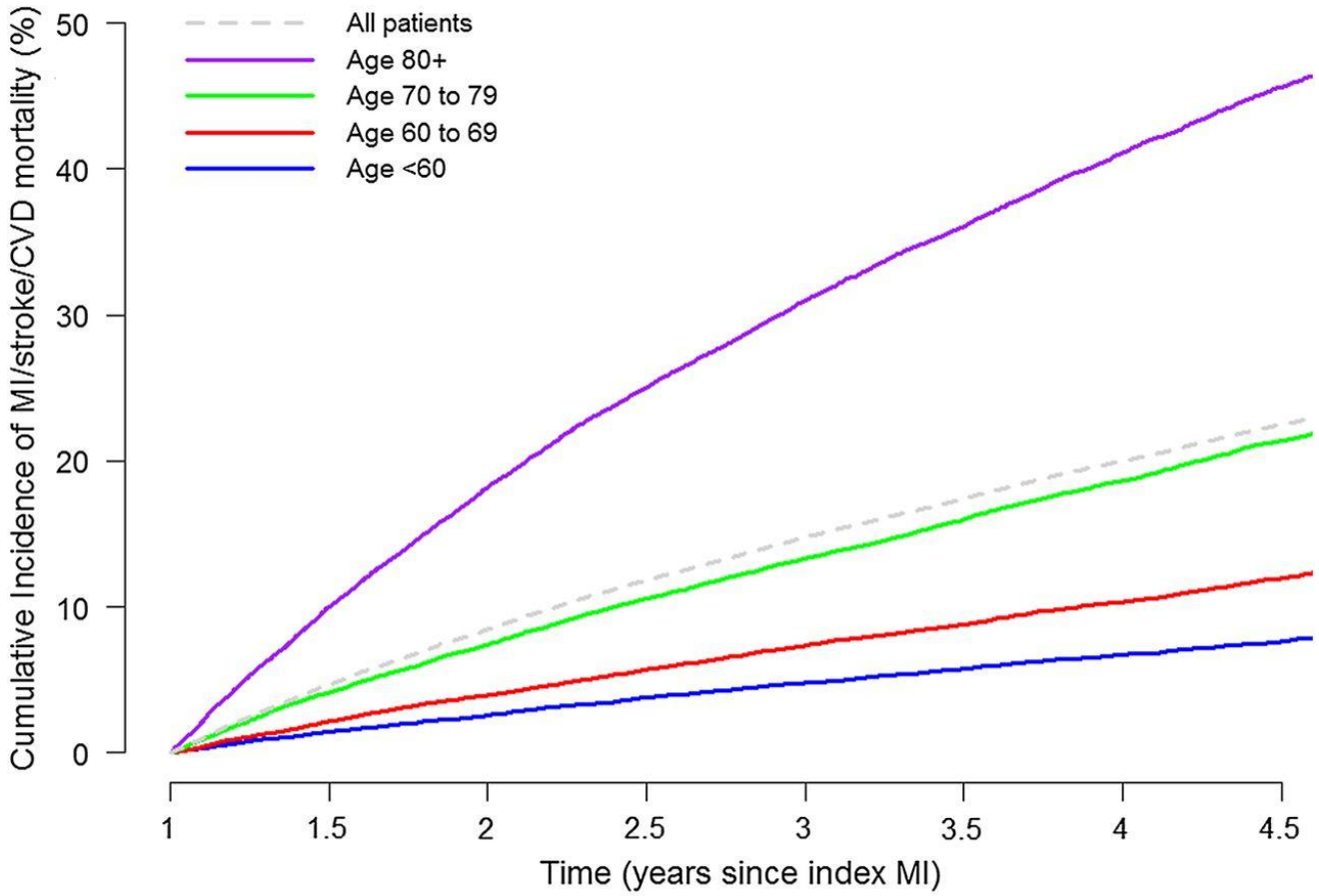
Number at risk

<60	16545	15858	15609	15434	15334
60-69	21957	20700	20170	19753	19567
70-79	25149	22788	21619	20817	20372
80+	33603	27474	24328	22206	21094

Tomas Jernberg et al. Eur Heart J 2015;36:1163-1170

European Heart Journal

Kaplan–Meier estimate of the risk of the combined endpoint (MI, ischaemic stroke, or CV death) after 365 days after index MI until end of study, stratified by age.



Number at risk

<60	15359	15102	13433	11862	10249	8794	7356	5882
60-69	19667	19108	16796	14656	12545	10636	8688	6815
70-79	20501	19357	16755	14300	12023	10030	8055	6260
80+	21160	18414	14793	11770	9375	7345	5480	3949

Tomas Jernberg et al. Eur Heart J 2015;36:1163-1170

European Heart Journal

When is the optimal time to start secondary prevention in post-MI patients

1. One month after event, after a stabilisation phase
2. As soon as the patient has returned to his/her usual residence before restarting the daily activity
3. Immediately after hospital discharge
4. During the acute hospital admission

2016 European Guidelines on cardiovascular disease prevention in clinical practice

Recommendation for CVD prevention strategies in the acute hospital admission setting

Recommendation	Class[a]	Level[b]	Ref[c]
It is recommended to implement strategies for prevention in CVD patients, including lifestyle changes, risk factor management and pharmacological optimization, after an acute event before hospital discharge to lower risk of mortality and morbidity.	I	A	300, 553

European Heart Journal 2016 - doi:10.1093/eurheartj/ehw106

What would you want to see included in your patient hospital discharge summary?

1. Diagnosis, investigations and results, prescribed medication
2. Significant past medical history, CV risk profiles, diagnosis, investigations, prescribed medication
3. Significant past medical history, CV risk profiles, diagnosis, investigations, procedures and any complications, prescribed medication
4. Diagnosis, significant past medical history, CV risk profiles, investigations, procedures and any complications, medication prescribed and guidance on up titration, planned follow up

An example of structured discharge letter

DATE OF ADMISSION: **DATE OF DISCHARGE:**

DIAGNOSIS

1. MAIN DIAGNOSIS: _____
2. SECONDARY DIAGNOSES: _____

PATIENT MEDICAL HISTORY.

- ☐ Family History: _____
- ☐ Social History: _____
- ☐ Allergies: _____
- ☐ Brief Medical History: _____
- ☐ History of Present Illness: _____

HOSPITAL STAY.

- ☐ Physical Examination at Admission: _____
- ☐ Diagnostic Procedures Performed: _____
- ☐ Consults Obtained: _____
- ☐ Hospital Course and Treatment: _____
- ☐ Counselling/Advising _____

DISCHARGE

- Condition on Discharge and remaining active Problems (If appropriate): _____
- Functional Status At Discharge: _____
- Discharge Medications: _____
- Discharge Instructions: _____
- Discharge Diet (If appropriate): _____
- Discharge Physical Activity Recommendation: _____

Preventive goals

- ☐ Stop smoking
- ☐ Total cholesterol < 175 mg/dl
- ☐ LDL cholesterol < 100 mg/dl
- ☐ Blood pressure 140/80 mmHg (<130/80 mmHg in diabetic)
- ☐ Ideal body weight: ____Kg
- ☐ Waist circumference < 102 cm (male) < 88 cm (female)
- ☐ Glycated haemoglobin< 7%

REFERRAL TO SECONDARY PREVENTION AND CARDIAC REHABILITATION STRUCTURE

Discharge check list. (Check every item before discharge)

Pharmacological therapy:

- ☐ Optimal
- ☐ Suboptimal

Cardiovascular risk profile:

- ☐ Smoking habits
- ☐ Overweight
- ☐ Dyslipidemia
- ☐ Hypertension
- ☐ Diabetes
- ☐ Sedentary
- ☐ Stress

Remaining active cardiovascular problems (please specify if treatable o permanent)

- ☐ Treatable _____
- ☐ Permanent _____

Remaining active concomitant disease:

- ☐ Treatable _____
- ☐ Permanent _____

Functional concomitant drawbacks:

- ☐ Treatable _____
- ☐ Permanent _____

Barthel score (0-100)_____

NYHA class (1-4) _____

CCS class (1-4) _____

Notes_____

Referral to SP/CR programmes

- ☐ no if no, reasons: _____
- ☐ yes, if yes, specify

In patient, phase II cardiac rehabilitation: o why_____
o when_____
o where_____

Out patient, phase II cardiac rehabilitation: o why_____
o when_____
o where_____

Inter J Cardiol 2015; 80: 114-9

2016 CV Prevention Guideline 6th JTF

Risk factor targets for important CV risk factors

Smoking	No exposure to tobacco in any form.
Diet	Low in saturated fat with a focus on wholegrain products, vegetables, fruit and fish.
Physical activity	At least 150 min a week of moderate aerobic PA (30 min for 5 days/week) or 75 min a week of vigorous aerobic PA (15 min for 5 days/week) or a combination thereof.
Body weight	BMI 20–25 kg/m^2. Waist circumference < 94 cm (men) or < 80 cm (women).
Blood pressure	< 140/90 mmHg.[a]
Lipids LDL is the primary target	**Very high risk: < 1.8 mmol/L (< 70 mg/dL**), or a reduction of at least 50% if the baseline is between 1.8 and 3.5 mmol/L (70 and 135 mg/dL).[d] **High risk**: **< 2.6 mmol/L (< 100 mg/dL),** or a reduction of at least 50% if the baseline is between 2.6 and 5.1 mmol/L (100 and 200 mg/dL). **Low to moderate risk**: **< 3.0 mmol/L (< 115 mg/dL).**
HDL-C	No target but > 1.0 mmol/L (> 40 mg/dL) in men and > 1.2 mmol/L (> 45 mg/dL) in women indicate lower risk.
Triglycerides	No target but < 1.7 mmol/L (< 150 mg/dL) indicates lower risk and higher levels indicate a need to look for other risk factors.
Diabetes	HbA1c < 7% (< 53 mmol/mol).

European Heart Journal 2016 - doi:10.1093/eurheartj/ehw106

What is the rate of patients who are on optimal blood pressure and lipid control after ACS?

1. 90%
2. 80%
3. 70%
4. <60%

EUROASPIRE IV Countries

7998 coronary patients 2012-2013

- A cross sectional survey of 7998 CAD patients (<80 yo)
- Standardised interview
- Physical measurements: height, weight, waist circumference, blood pressure

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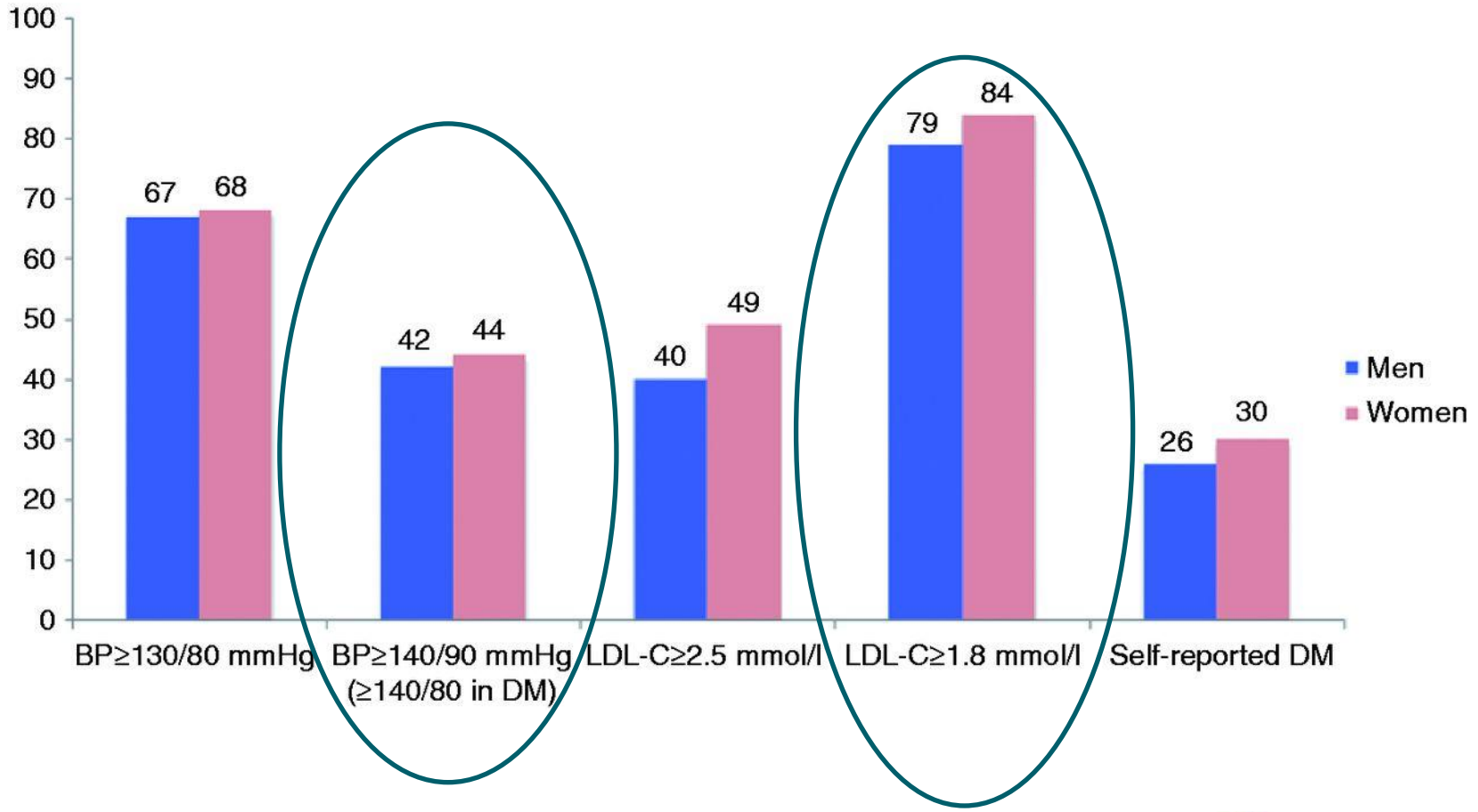
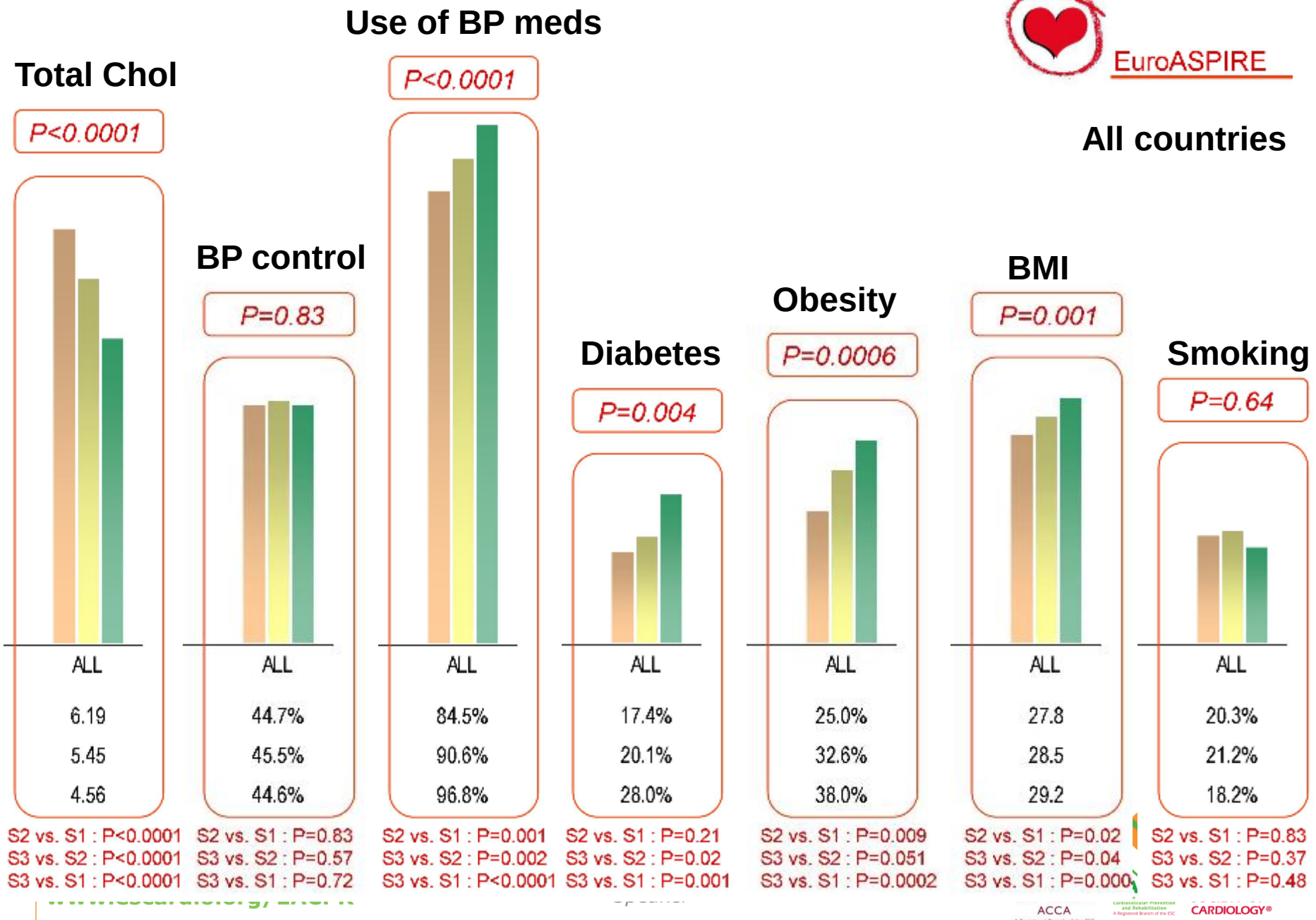
Figure 2. Prevalence (%) of elevated blood pressure (BP), raised low-density lipoprotein cholesterol (LDL-C) and self-reported diabetes mellitus (DM) by sex at interview.



Kornelia Kotseva et al. European Journal of Preventive Cardiology 2015;23:636-648

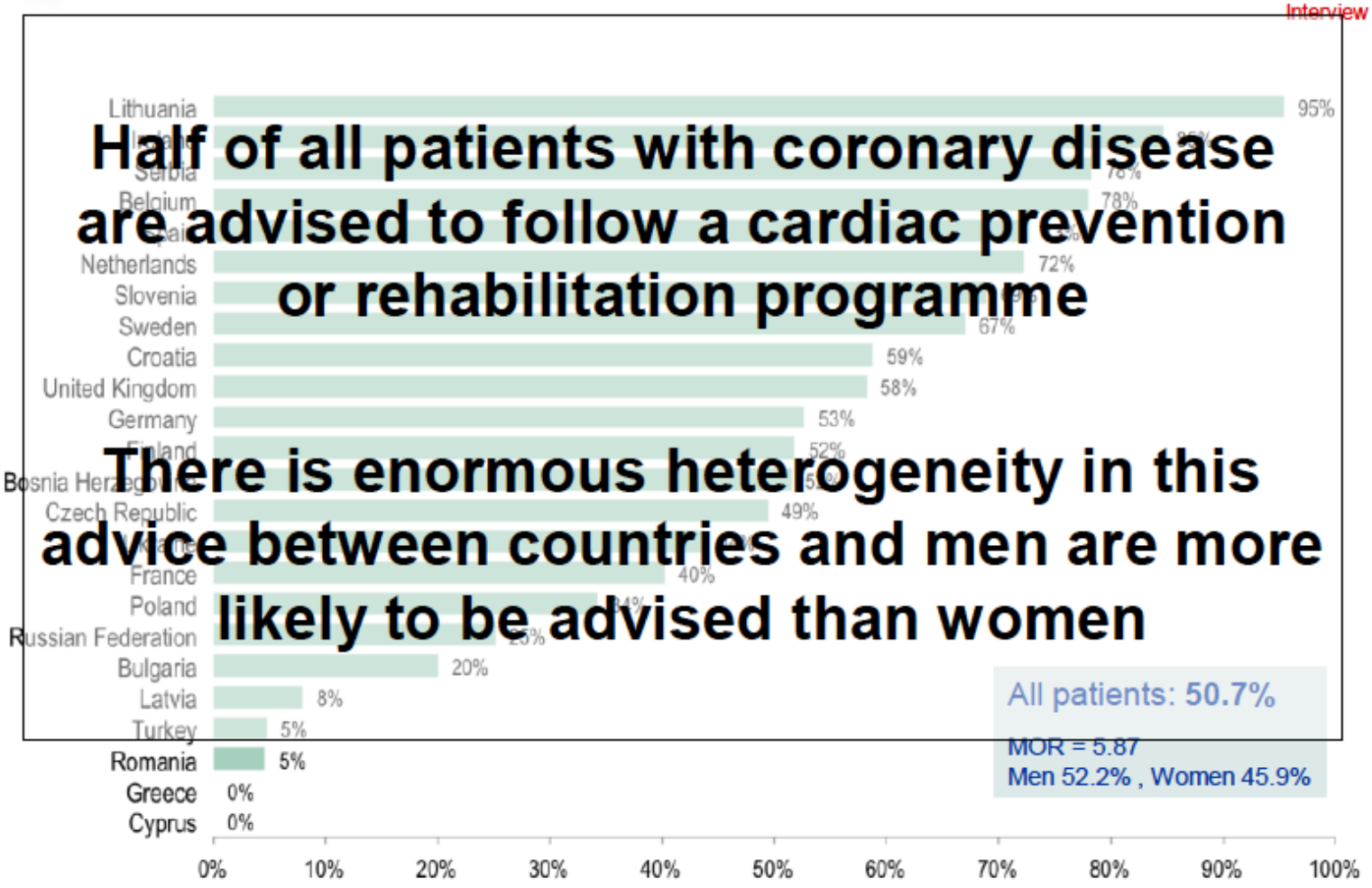
EuroASPIRE

All countries



EUROASPIRE IV

Advise to follow cardiac prevention or rehabilitation programme*



Half of all patients with coronary disease are advised to follow a cardiac prevention or rehabilitation programme

There is enormous heterogeneity in this advice between countries and men are more likely to be advised than women

* Within 3 months of discharge following the index event or procedure

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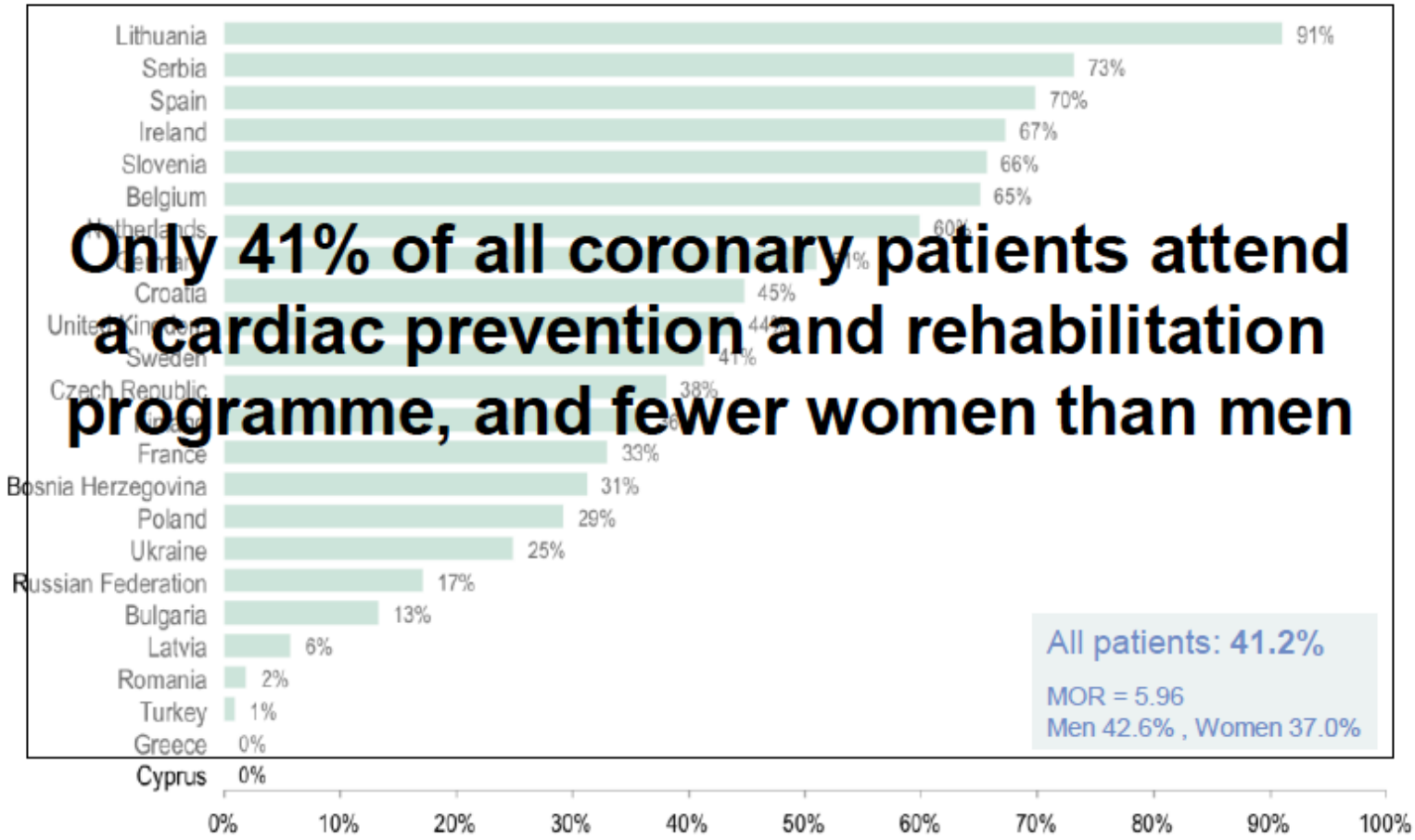
EUROASPIRE IV

Attendance to CPR programme among all patients*

Interview



Only 41% of all coronary patients attend a cardiac prevention and rehabilitation programme, and fewer women than men

* Attending at least half of the sessions

Note: CPR attendance rate if advised to follow = 81.3%

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2016 European Guidelines on cardiovascular disease prevention in clinical practice

Recommendations for specialized preventive programmes

Recommendations	Class[a]	Level[b]
Participation in a CR programme for patients hospitalized for an acute coronary event or revascularization, and for patients with HF, is recommended to improve patient outcomes.	I	A
Preventive programmes for therapy optimisation, adherence and risk factor management are recommended for stable patients with CVD to reduce disease recurrence.	I	B
Methods to increase referral to and uptake of CR should be considered such as electronic prompts or automatic referrals, referral and liaison visits, structured follow-up by physicians, nurses or therapists, and early starts to programmes after discharge.	IIa	B
Nurses and allied health professional led programmes should be considered to deliver CVD prevention across healthcare settings.	IIa	B

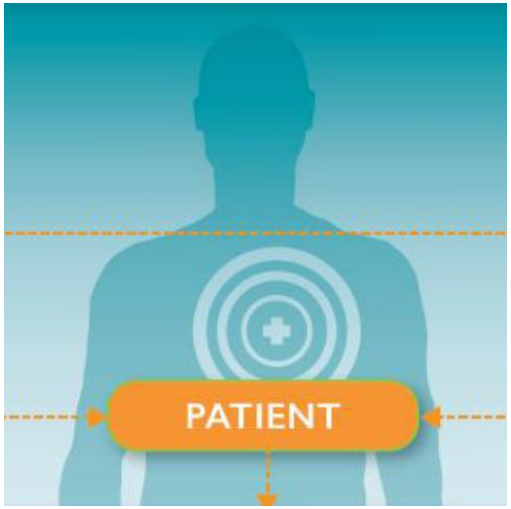
European Heart Journal 2016 - doi:10.1093/eurheartj/ehw106

What are the main barriers to implement secondary prevention programmes?

1. Patients' related
2. Physicians/health care provider related
3. Health Care System related
4. All of them

Factor leading to therapeutic inertia in CV prevention

Patient
Medication side effects
Too many medications
Cost of medications
Denial of disease
Denial of disease severity
Forgetfulness
Perception of low susceptibility
Absence of disease symptoms
Poor communication with physician
Mistrust of physician
Depression, mental disease, substance abuse
Low health literacy / Poor awareness on value of preventive measure



Factor leading to therapeutic inertia in CV prevention

	Clinician/ Healthcare provider
	Failure to initiate treatment
	Failure to titrate to goal
	Failure to set clear goals
	Underestimation of patient need
	Failure to identify and manage comorbid conditions
	Insufficient time
	Insufficient focus of emphasis on goal attainment
	Reactive rather than proactive
	Poor communication skills
	Shortage of time
	Poor awareness on value of preventive measure

Factor leading to therapeutic inertia in CV prevention

Healthcare system
Lack of clinical guideline
Lack of care coordination
No visit planning
Lack of decision support
Poor communication between physician and others involved in a patient's healthcare provision
No disease registry
No active outreach
Perverse incentives
Pressure to short length of hospital stay
Health care systems focused on acute care (hospital-based Health systems)
Lack of preventive structure
Poorly designed preventive programs / Lack of quality control

ESC Secondary Prevention after Myocardial Infarction Programme

Together **we can** go further

Visit **www.escardio.org** for more information

The ESC Secondary Prevention after Myocardial Infarction programme is supported by AstraZeneca in the form of an unrestricted educational grant

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STRATEGIES TO IMPLEMENT PREVENTION PROGRAMMES IN POST MI PATIENTS

- Knowledge & motivation
- Patient Risk stratification
- Post discharge plan with referral
- Communication among health care providers in acute and primary settings
- Communication with the patient

HEALTH CARE PROVIDER

- Availability of and referral to structured programmes
- Performance indicators, audit and feedback
- Insurance coverage and financial incentives

HEALTH CARE SYSTEM

PATIENT

UPTAKE OF SECONDARY PREVENTION PROGRAM

- Early intervention in the acute setting
- Adequate risk stratification
- Patient's tailored programme with focus on frailty and high risk patients
- Organisation of prevention uptake and network
- Optimised communication and information transfer with patient and among health care providers

EDUCATION AND EMPOWERMENT

- Clinician - patient interaction
- Information about preventive measures and healthy lifestyle

ADHERENCE

- Inclusion of friends or family members to promote adherence
- Individualised approach
- Self management

LONG-TERM MAINTENANCE

- Telecommunication technlogies
- Adapted programmes and community services
- New pharmachological long-term strategies

Thank you.

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