# JAKÁ JE NEJEFEKTIVNĚJŠÍ PREVENCE REINFARKTU?

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*ČKS, Brno, 5/2023*

# Opakovaný IM

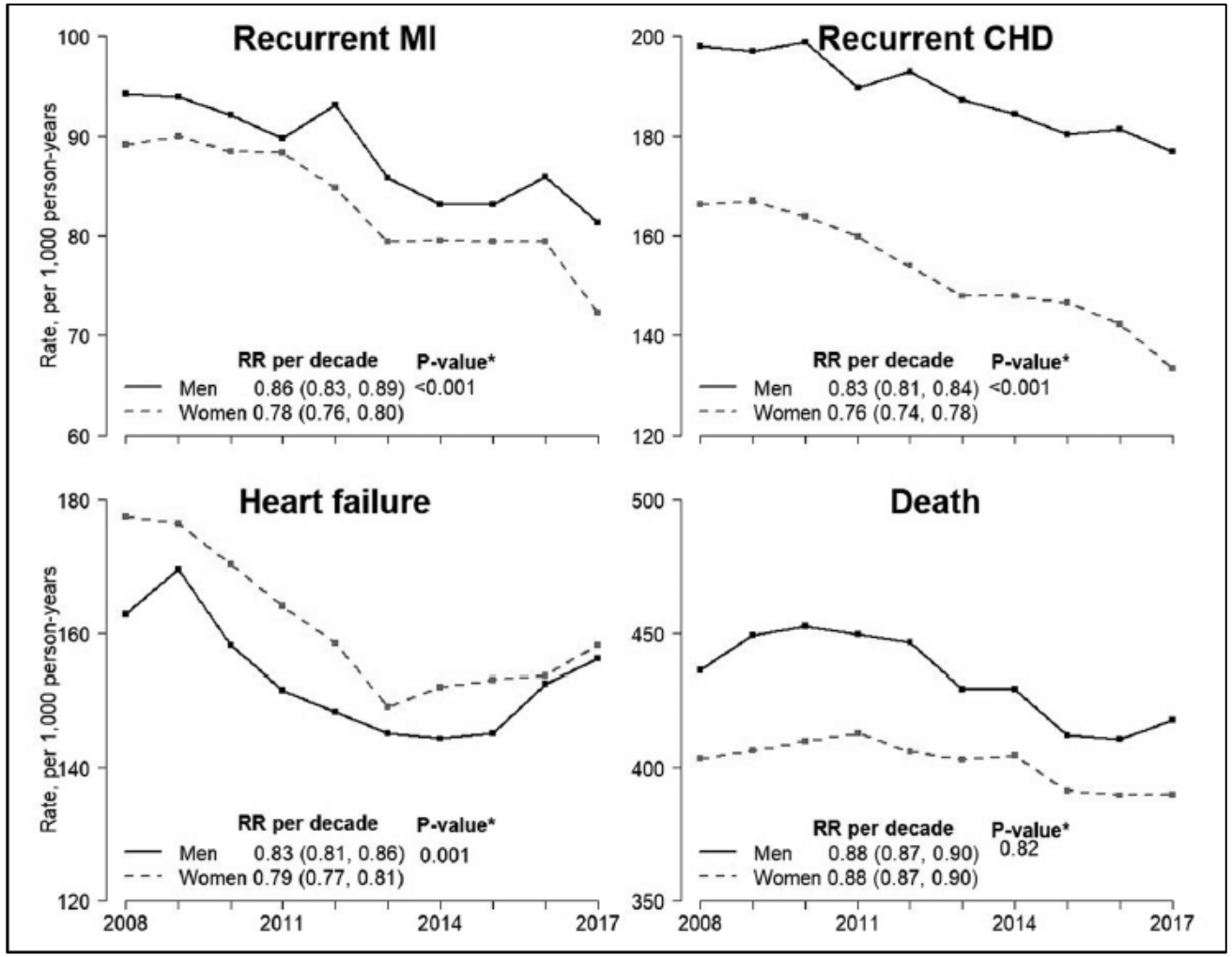
je jednou z nejčastějších nežádoucích KV příhod po AKS,

Rekurentní IM > 28 dnech po index IM,

**Reinfarkt - IM ≤ 28 dnů od index IM**.

*European Heart Journal. 2019; 40: 237–269.*

# Trends in Recurrent Coronary Heart Disease After Myocardial Infarction Among US Women and Men Between 2008 and 2017




- Frekvence recidivujícího IM, recidivující ICHS, SS v prvním roce po IM v letech 2008 až 2017 **významně poklesla u obou pohlaví** (výrazněji u žen),
- **Počty příhod ale zůstávají velmi vysoké**.

*Circulation 2021;143:650–660*

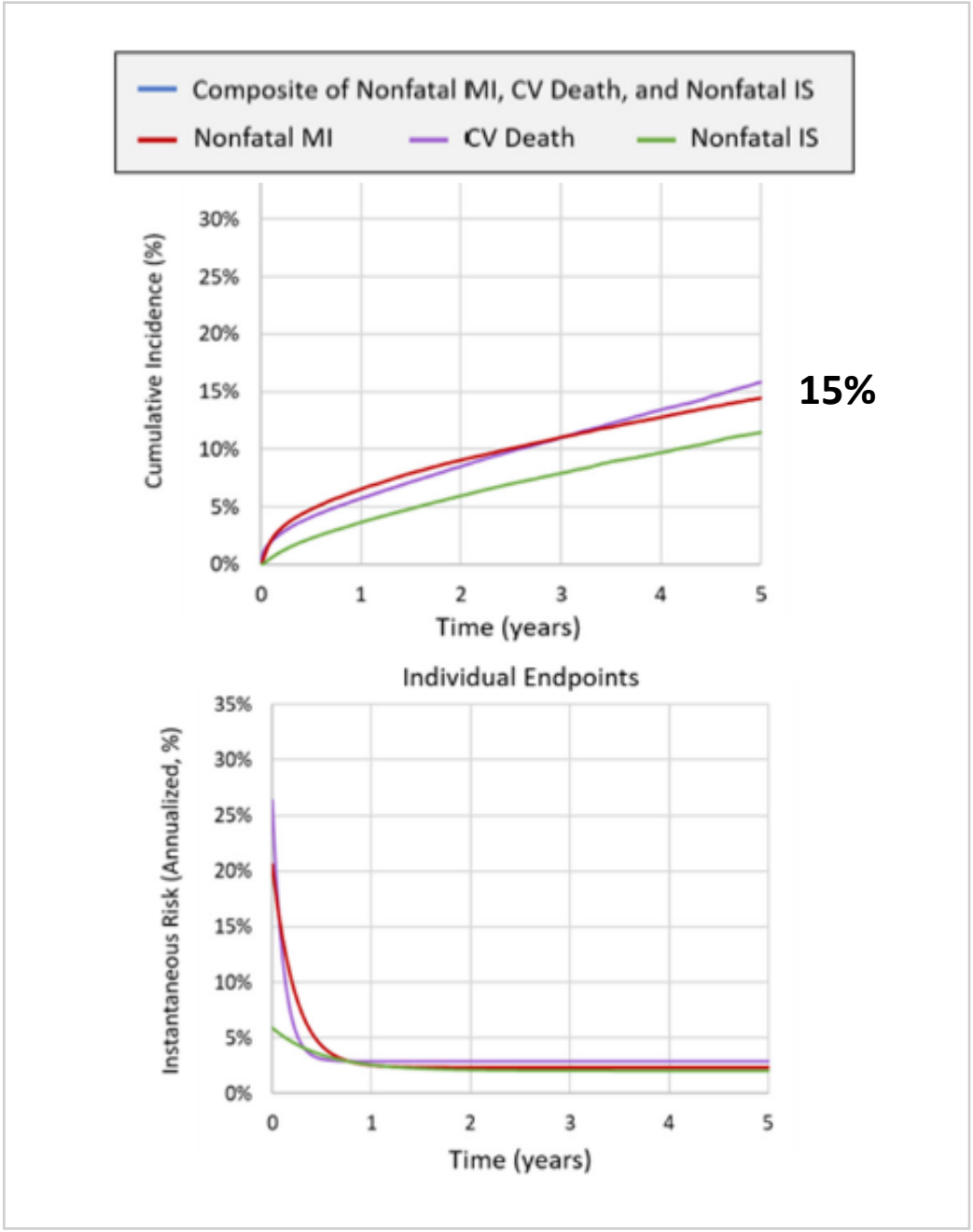
ORIGINAL RESEARCH

# Event Rates and Risk Factors for Recurrent Cardiovascular Events and Mortality in a Contemporary Post Acute Coronary Syndrome Population Representing 239 234 Patients During 2005 to 2018 in the United States

Dylan L. Steen, MD, MS; Irfan Khan, PhD; Katherine Andrade, MPH; Alexandra Koumas, BS; Robert P. Giugliano, MD, SM

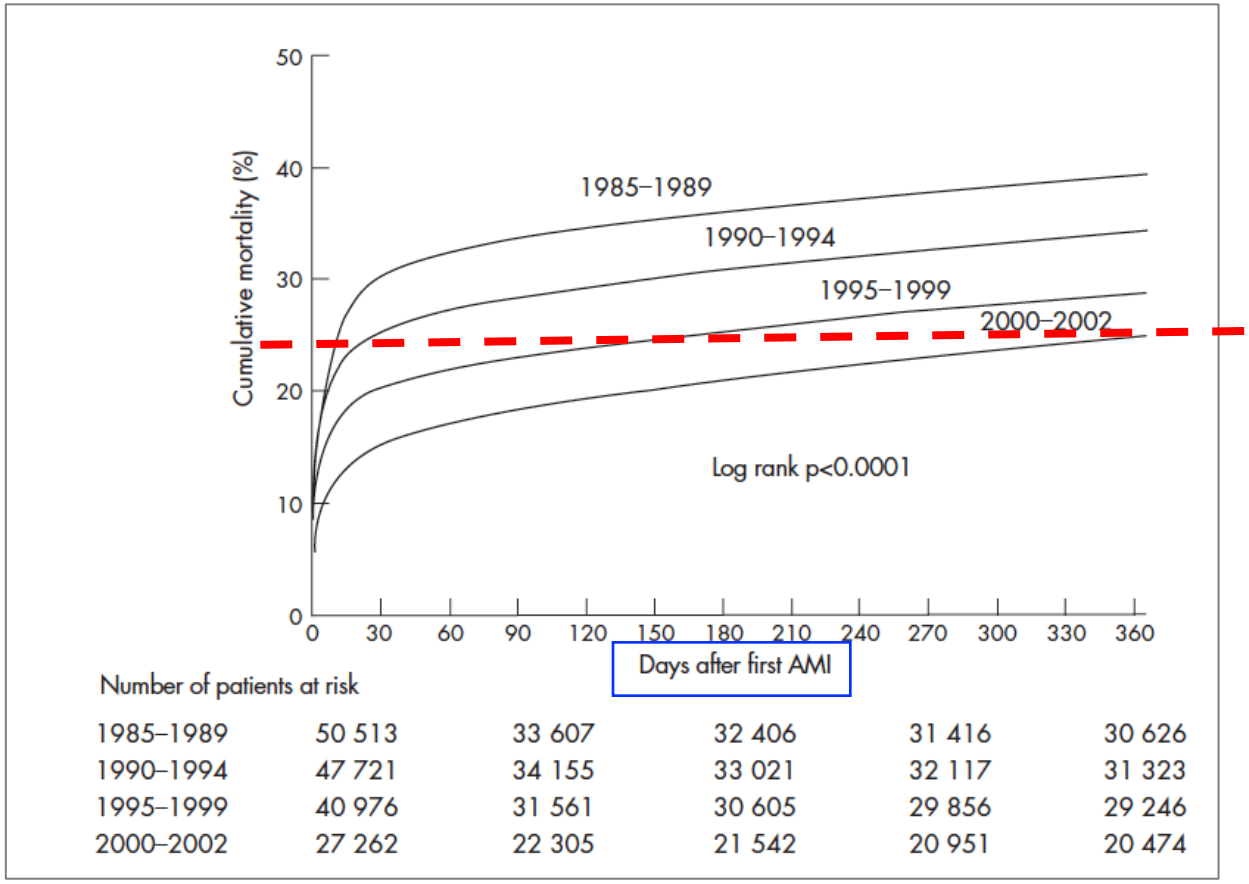
CONCLUSIONS: Patients with ACS remain at very high risk of experiencing recurrent cardiovascular events, particularly early after discharge, with identifiable subgroups at multifold higher risk of specific clinical end points.

*J Am Heart Assoc. 2022;11:e022198.*



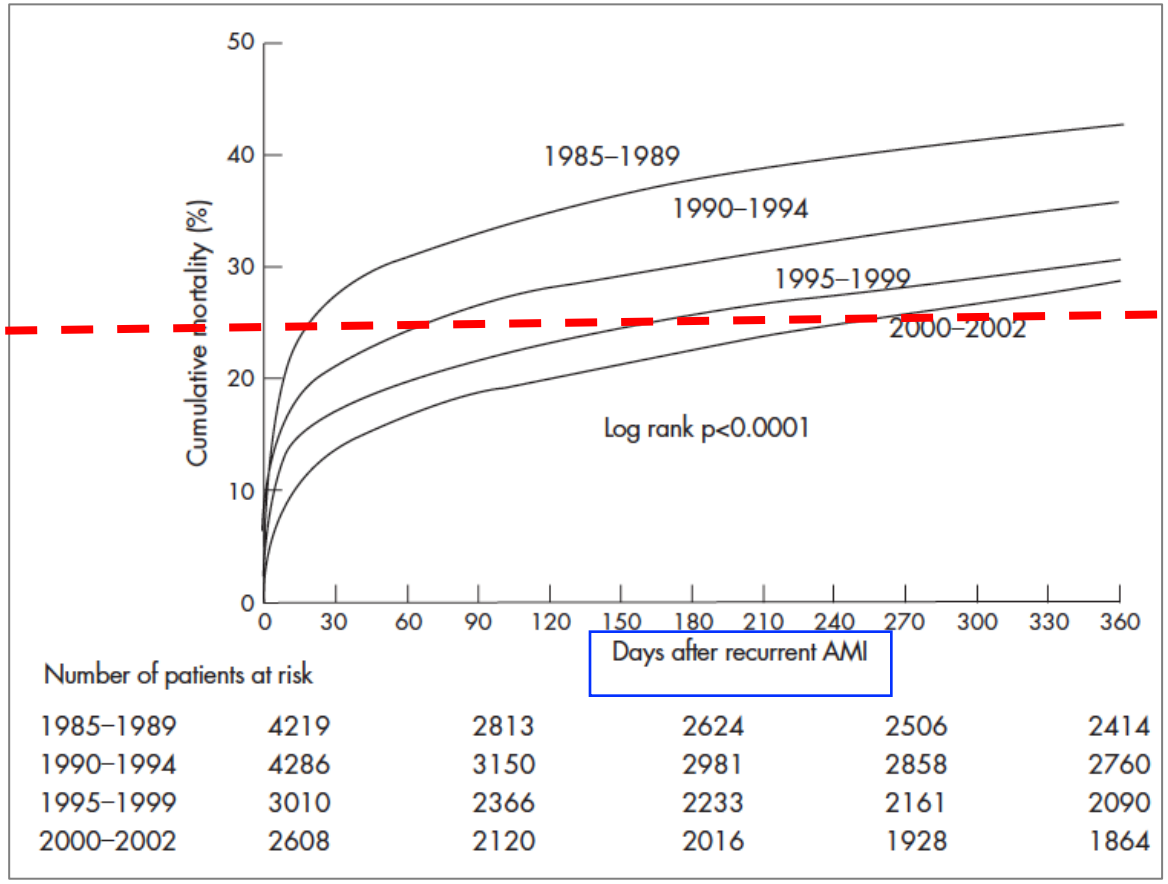

**15%**

# Unadjusted cumulative 1-year case-fatality after admission from first and re - AMI stratified by period




Number of patients at risk

| | | | | | |
|---|---|---|---|---|---|
| 1985–1989 | 50 513 | 33 607 | 32 406 | 31 416 | 30 626 |
| 1990–1994 | 47 721 | 34 155 | 33 021 | 32 117 | 31 323 |
| 1995–1999 | 40 976 | 31 561 | 30 605 | 29 856 | 29 246 |
| 2000–2002 | 27 262 | 22 305 | 21 542 | 20 951 | 20 474 |




Number of patients at risk

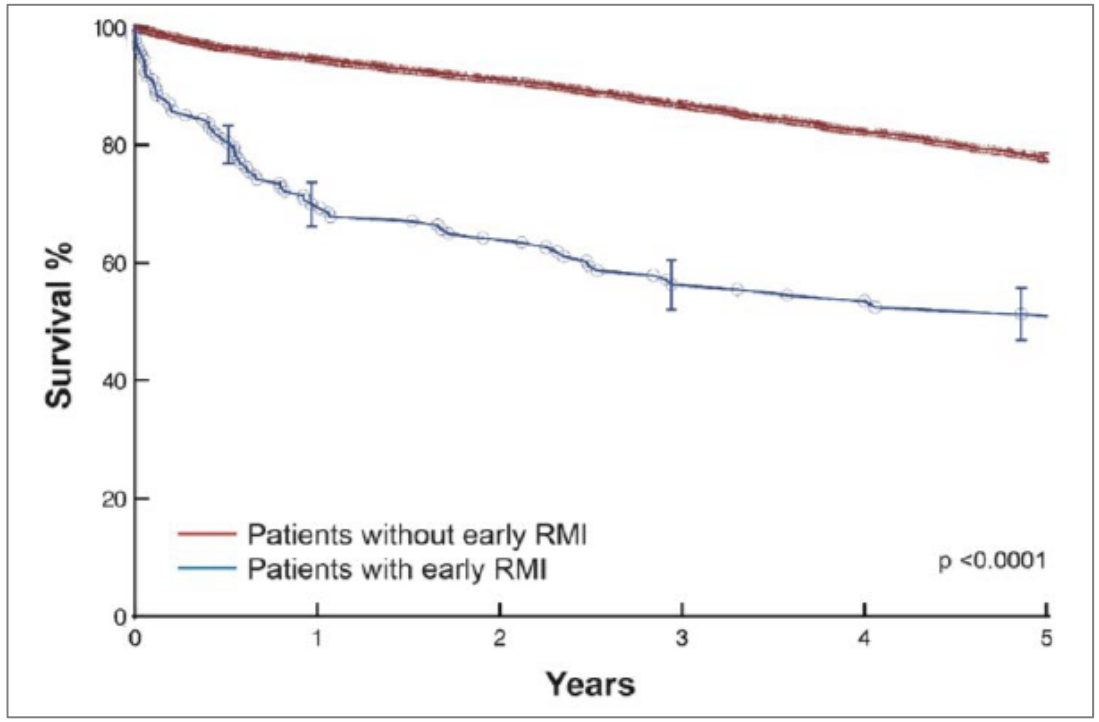
| | | | | | |
|---|---|---|---|---|---|
| 1985–1989 | 4219 | 2813 | 2624 | 2506 | 2414 |
| 1990–1994 | 4286 | 3150 | 2981 | 2858 | 2760 |
| 1995–1999 | 3010 | 2366 | 2233 | 2161 | 2090 |
| 2000–2002 | 2608 | 2120 | 2016 | 1928 | 1864 |

The cumulative 1-year case-fatality following a first AMI decreased from 39% in 1985–1989 to **25% in 2000–2002**

*Heart 2007;93:210–215*

# THE TIMING, ETIOLOGY, AND OUTCOME FOR PATIENTS WITH AN **EARLY (WITHIN 90 DAYS) RE-MI**

| | |
|---|---|
| Stent thrombosis | 29 (17%) |
| Disease progression | 21 (12%) |
| Unchanged CAD | 19 (11%) |
| New vessel obstruction | 16 (10%) |
| Multivessel disease | 16 (10%) |
| Type 2 MI | 12 (7%) |
| In-stent restenosis | 11 (7%) |
| Planned procedure | 3 (2%) |
| Non-obstructive CAD | 5 (3%) |
| Etiology unknown as patient did not undergo LHC | 36 (21%) |




*J Am Heart Assoc. 2021;10:e019270*

Journal of the American Heart Association

EDITORIAL

# Recurrent Stent Thrombosis: An Interventionalist's Nightmare

patients because of a high clot burden. Consequently, the 30- day mortality following ST is high (10%–25%).[2,3] Nearly 1 in 5 patients with ST are likely to experience a recurrent episode.[2]

*J Am Heart Assoc. 2021;10:e020728*

# Stent Thrombosis After ACS-PCI: Does Adherence to Antiplatelet Therapy Involve More Than Its Intensity?

| | Publication year | Indication | N | Drug | Occurrence of ST 12-15 mo after PCI |
|---|---|---|---|---|---|
| *Randomized studies* | | | | | |
| TRITON[12] | 2007 | Primary PCI | 1188 | Clopidogrel | Definite NA<br>Definite/probable 2.7% |
| PLATO[13] | 2009 | Primary PCI | 2486 | Clopidogrel | Definite 2.3%<br>Definite/probable 3.4% |
| TRITON[12] | 2007 | Primary PCI | 1152 | Prasugrel | Definite NA<br>Definite/probable 1.5% |
| PLATO[13] | 2009 | Primary PCI | 2463 | Ticagrelor ± clopidogrel pretreatment | Definite 1.4%<br>Definite/probable 2.3% |
| ATLANTIC[14] | 2014 | Primary PCI | 953<br>909 | In hospital ticagrelor<br>Prehospital ticagrelor | Definite 1.2% (at 30 d)<br>Definite 0.2% (at 30 d) |
| PRAGUE -18[15] | 2017 | Primary PCI | 596 | Ticagrelor ± selective switch to clopidogrel | Definite 1.5%<br>Definite/probable NA |
| | | | 634 | Prasugrel ± selective switch to clopidogrel | Definite 1.1%<br>Definite/probable NA |
| *Registries (no adjustment for baseline differences)* | | | | | |
| Sheffield, UK[16] | 2017 | Primary PCI | 1654<br>1136 | Ticagrelor<br>Prasugrel | Definite 1.0%<br>Definite 1.6% |
| SWEDEHEART[17] | 2018 | Primary PCI | 1995<br>5438 | Ticagrelor in hospital<br>Ticagrelor pretreatment | Definite 0.4% at 30 d<br>Definite 0.5% at 30 d |
| RENAMY[4] | 2018 | ACS-PCI | 2604 | Ticagrelor | Definite 1.2% |
| | | | 1519 | Prasugrel | Definite 0.9% |

*Z. Motovska, Rev Esp Cardiol. 2019;72(4):282–284*

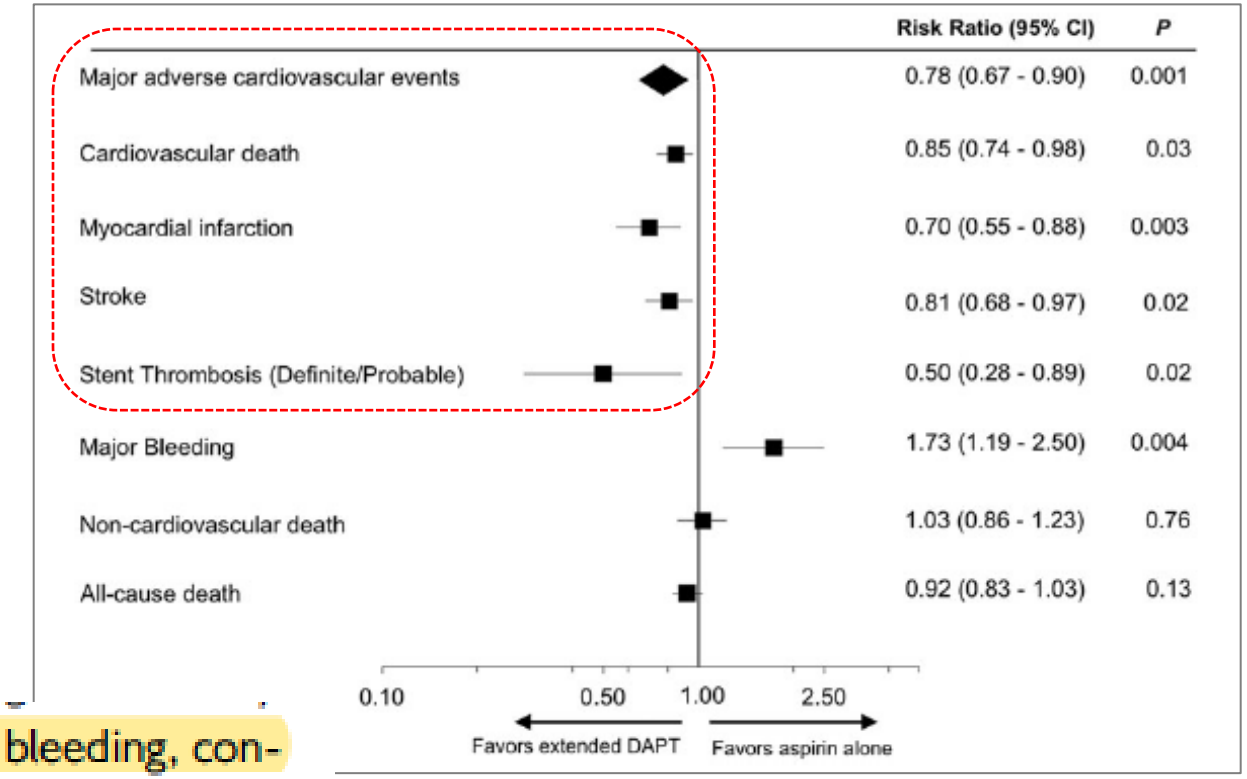
# Rizikové faktory Re-IM

- → Věk,
- → Ženské pohlaví,
- → Předchozí IM,
- → Předchozí CMP, PAD
- → DM
- → Dysfunkce LK,
- → Neúspěšná nebo neprovedená revaskularizace,
- → Vysoká třída Killip,
- → Renální selhání

*Eur Heart J. 2015; 36: 1163–1170*
*JAHA. 2019; 8: e012433*
*Cureus. 2019; 11: e6063*
*Circulation Journal. 2013; 77: 439–446*

# Long-term dual antiplatelet therapy for secondary prevention of cardiovascular events in the subgroup of patients with previous myocardial infarction: a collaborative meta-analysis of randomized trials

Jacob A. Udell[1,2*], Marc P. Bonaca[3], Jean-Philippe Collet[4], A. Michael Lincoff[5], Dean J. Kereiakes[6], Francesco Costa[7], Cheol Whan Lee[8], Laura Mauri[9], Marco Valgimigli[7,10], Seung-Jung Park[8], Gilles Montalescot[4], Marc S. Sabatine[3], Eugene Braunwald[3], and Deepak L. Bhatt[3*]




that in patients with prior MI who are at low risk of bleeding, continuation of DAPT beyond a year offers a substantial reduction in important cardiovascular outcomes and should be considered.

*Eur Heart J 2016; 37, 390–399*

# Culprit and Nonculprit Recurrent Ischemic Events in Patients With Myocardial Infarction: Data From SWEDEHEART (Swedish Web System for Enhancement and Development of Evidence-Based Care in Heart Disease Evaluated According to Recommended Therapies)

***N ~ 44 000***

***Index MI - všichni SKG***

***Follow-up ~ 3 roky***

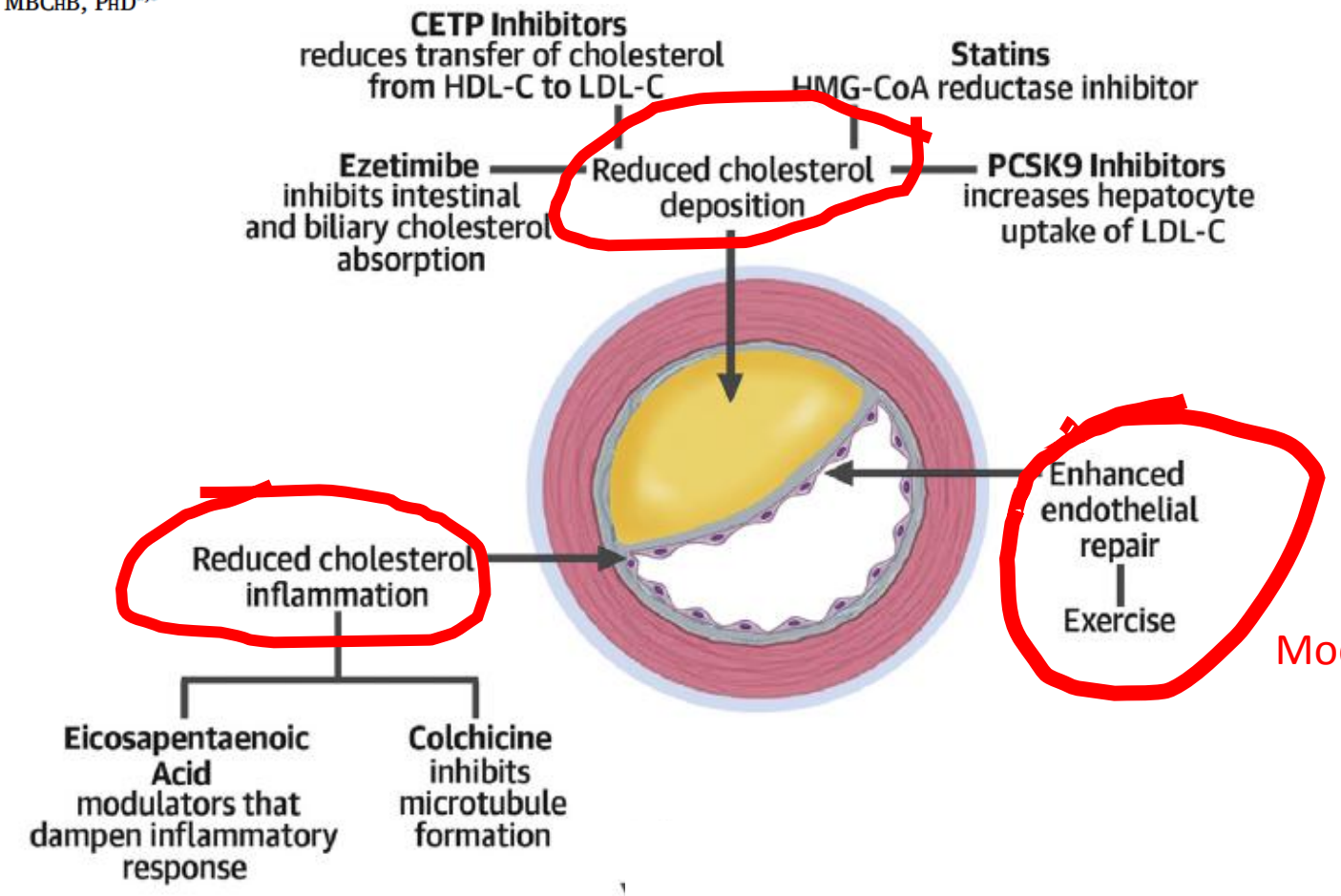
...**riziko re-MI pocházejícího z dříve neléčené léze** bylo dvakrát **vyšší** než riziko léze pocházející z dříve stentované léze."

*Varenhorst et el., JAHA 2018*

# Coronary Atherosclerotic Plaque Regression

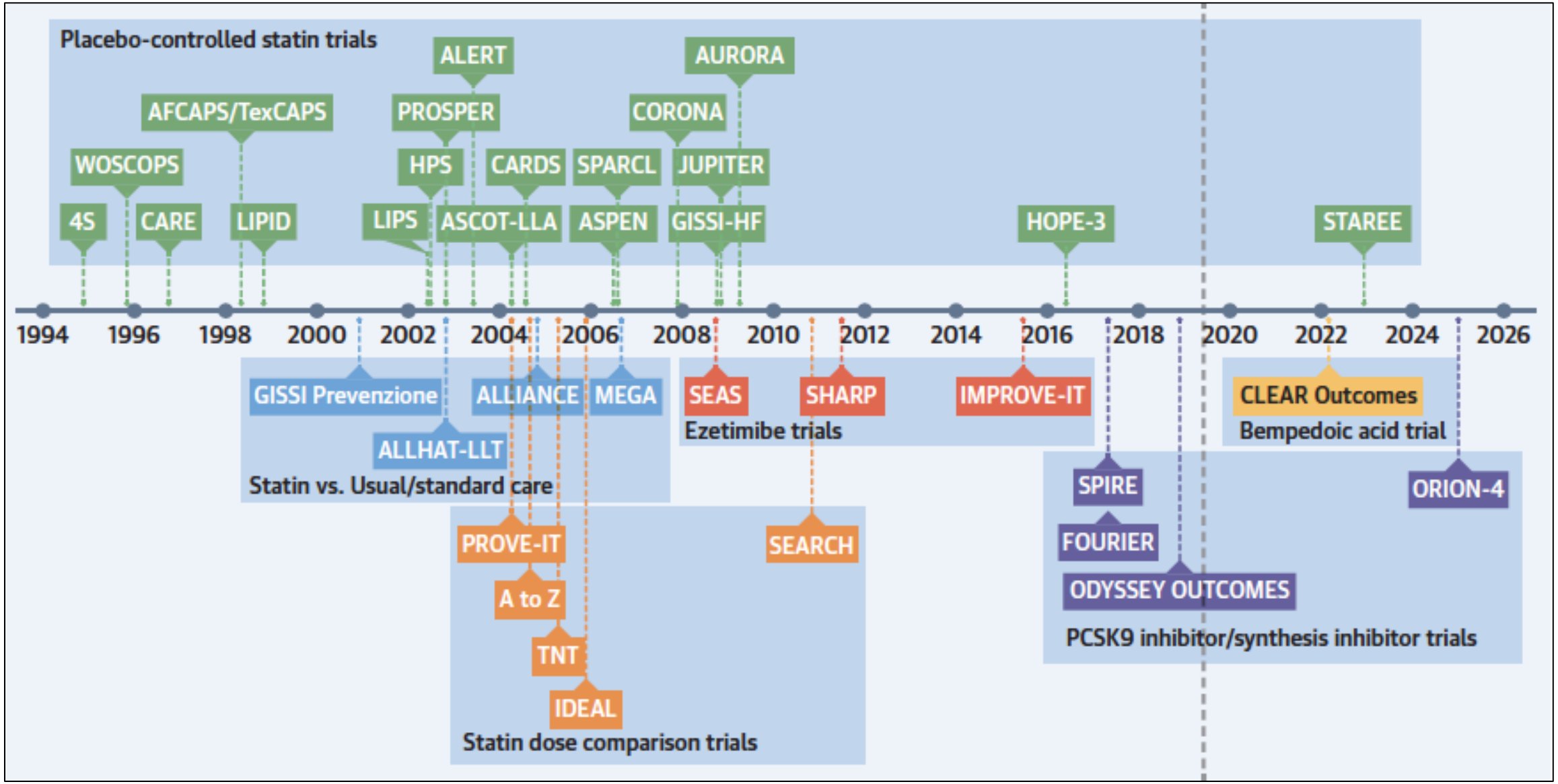
## *JACC* State-of-the-Art Review

Luke P. Dawson, MBBS, MPH,[a,b,c,d] Mark Lum, MBBS,[b] Nitesh Nerleker, MBBS, PhD,[b,e,f] Stephen J. Nicholls, MBBS, PhD,[b,e] Jamie Layland, MBChB, PhD[a,b]




Modifikace životního stylu

*J Am Coll Cardiol 2022;79:66–82*




*J Am Coll Cardiol 2020;75:1945–55*

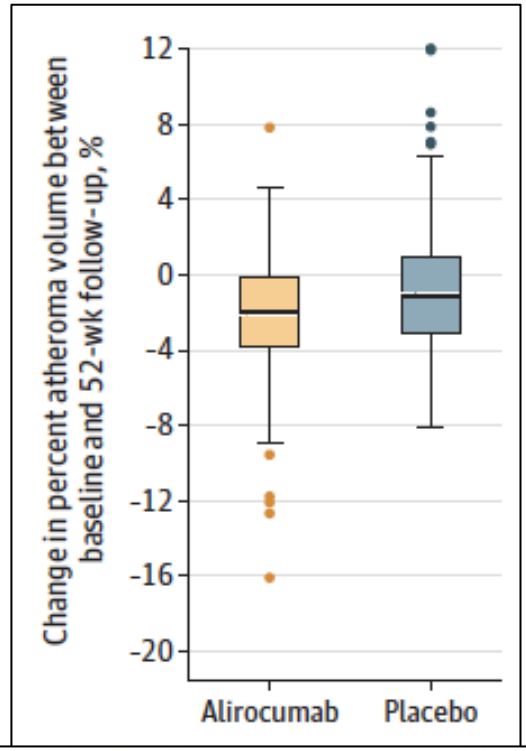
JAMA | Original Investigation

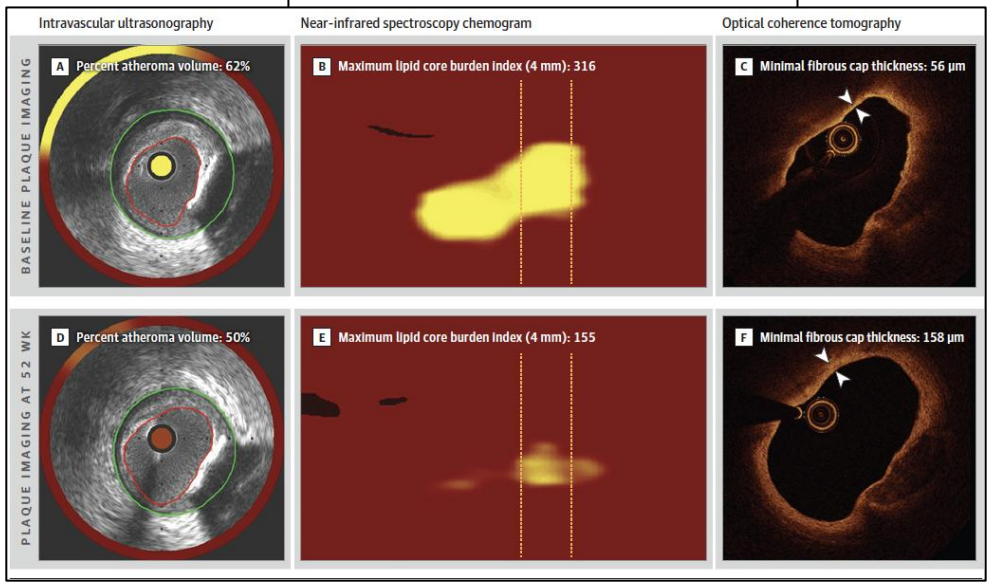
# Effect of Alirocumab Added to High-Intensity Statin Therapy on Coronary Atherosclerosis in Patients With Acute Myocardial Infarction

## The PACMAN-AMI Randomized Clinical Trial

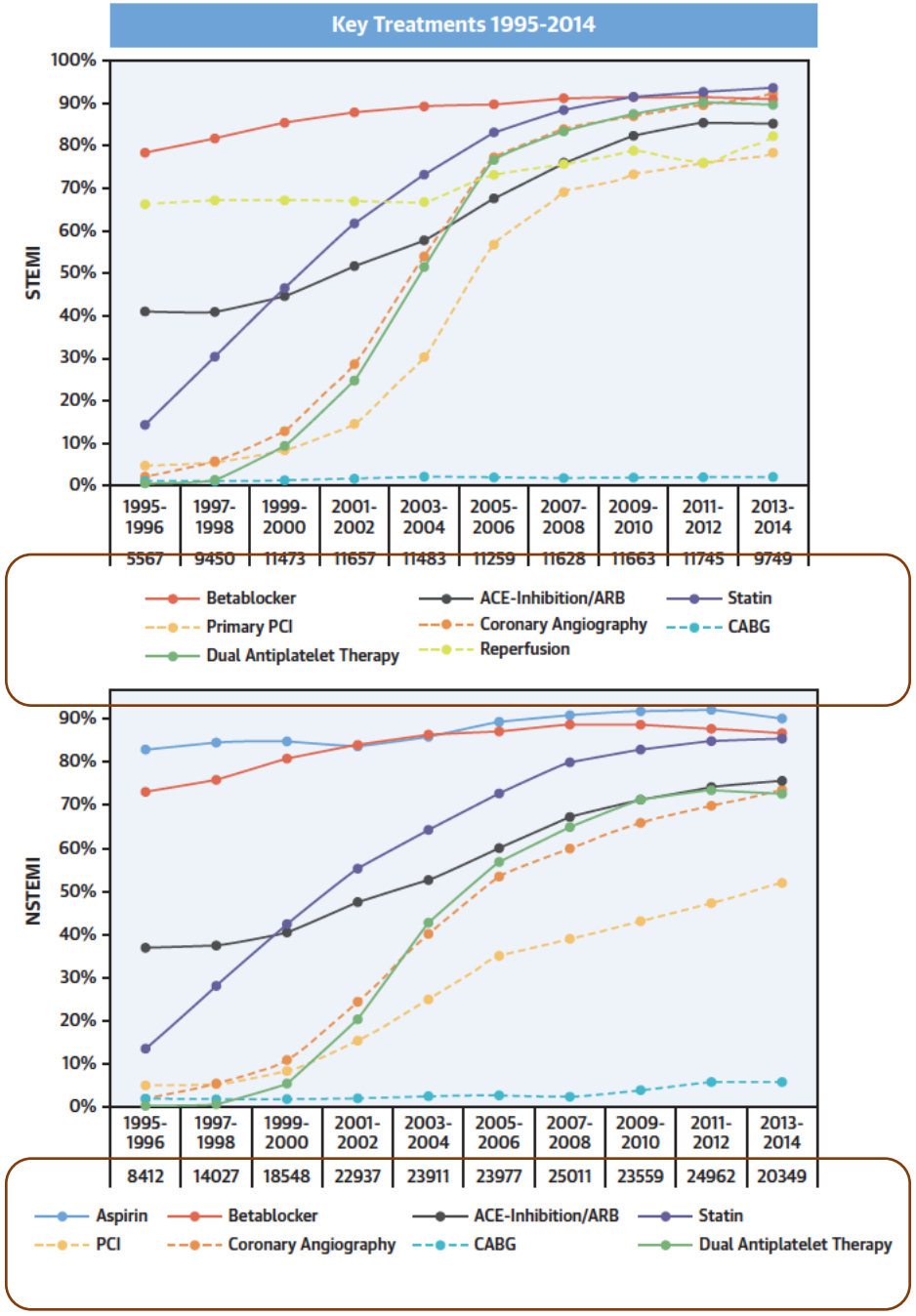
Lorenz Räber, MD, PhD; Yasushi Ueki, MD, PhD; Tatsuhiko Otsuka, MD; Sylvain Losdat, PhD; Jonas D. Häner, MD; Jacob Lonborg, MD; Gregor Fahrni, MD; Juan F. Iglesias, MD; Robert-Jan van Geuns, MD, PhD; Anna S. Ondracek, MSc; Maria D. Radu Juul Jensen, MD, PhD; Christian Zanchin, MD, PhD; Stefan Stortecky, MD; David Spirk, MD; George C. M. Siontis, MD, PhD; Lanja Saleh, PhD; Christian M. Matter, MD; Joost Daemen, MD, PhD; François Mach, MD; Dik Heg, PhD; Stephan Windecker, MD; Thomas Engstrøm, MD, PhD; Irene M. Lang, MD; Konstantinos C. Koskinas, MD, MSc; for the PACMAN-AMI collaborators

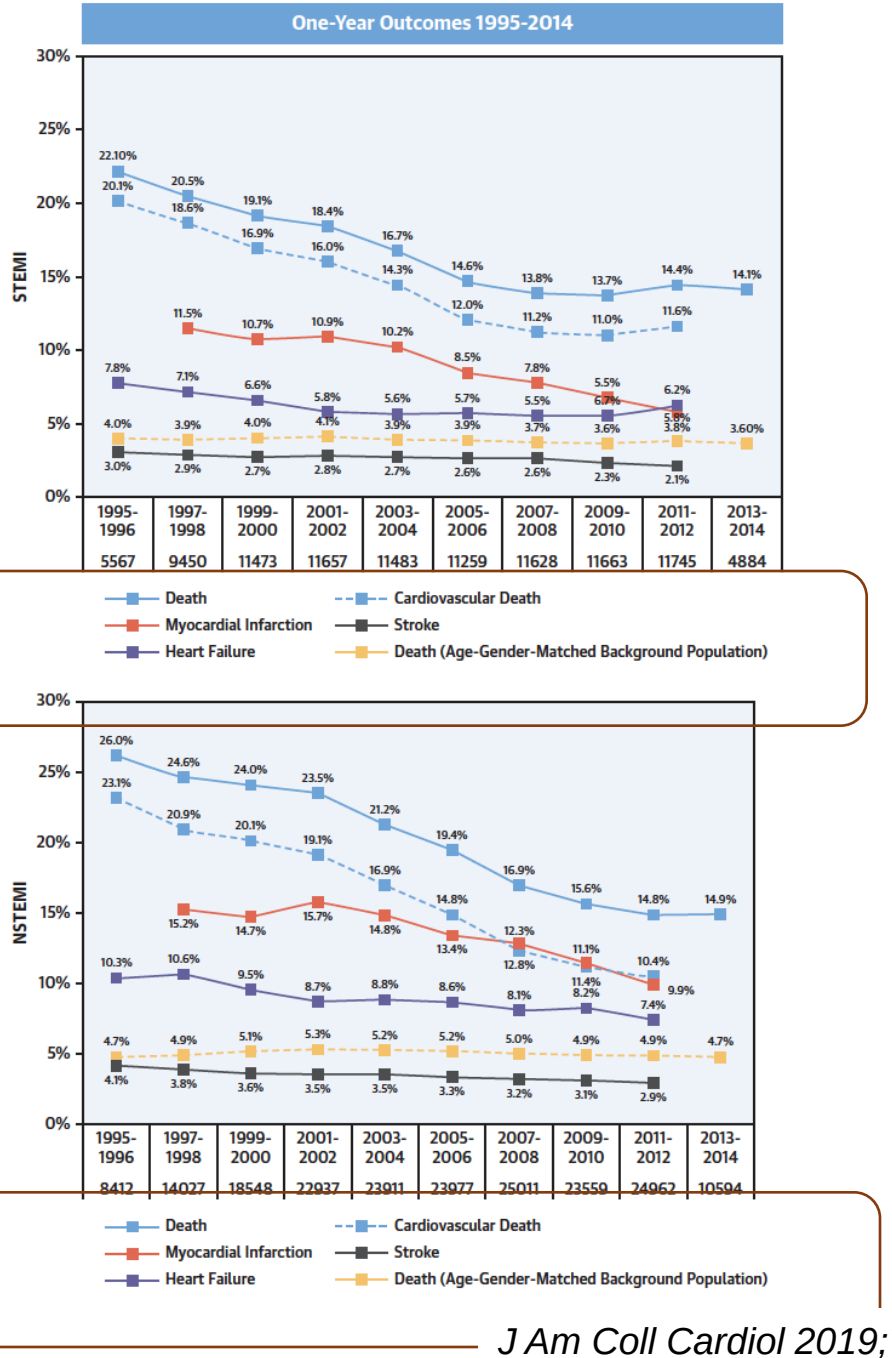
- Double-blind, placebo-controlled, randomized clinical trial,
- 300 patients undergoing PCI for AMI
- Alirocumab (150mg; n = 148) or placebo (n = 152), initiated less than 24 hours after PCI-AMI, for 52 weeks in addition to high-intensity statin therapy (rosuvastatin, 20mg). *Resulted in significantly greater coronary plaque regression in non–infarct-related arteries after 52 weeks.*




*JAMA. 2022;327(18):1771-1781.*




*J Am Coll Cardiol 2019;74:1618–36*

# Polypill Strategy in Secondary Cardiovascular Prevention

J.M. Castellano, S.J. Pocock, D.L. Bhatt, A.J. Quesada, R. Owen, A. Fernandez-Ortiz, P.L. Sanchez, F. Mar
J.M. Vazquez Rodriguez, A. Domingo-Fernández, I. Lozano, M.C. Roncaglioni, M. Baviera, A. Fo
L. Ojeda-Fernandez, F. Colivicchi, S.A. Di Fusco, W. Doehner, A. Meyer, F. Schiele, F. Ecarnot, A. Linhart, J.
G. Barczi, B. Merkely, P. Ponikowski, M. Kasprzak, J.M. Fernandez Alvira, V. Andres, H. Bueno, T. Collier, F.
P. Perel, M. Rodriguez-Manero, A. Alonso Garcia, M. Proietti, M.M. Schoos, T. Simon, J. Fernandez Ferro
E. Beghi, Y. Bejot, D. Vivas, A. Cordero, B. Ibañez, and V. Fuster, for the SECURE Investigator

- *2499 patients with MI within the previous 6 months,*
- ***polypill** treatment consisted of*

  ***aspirin (100 mg), ramipril (2.5, 5, or 10 mg), and atorvastatin (20 or 40 mg)***

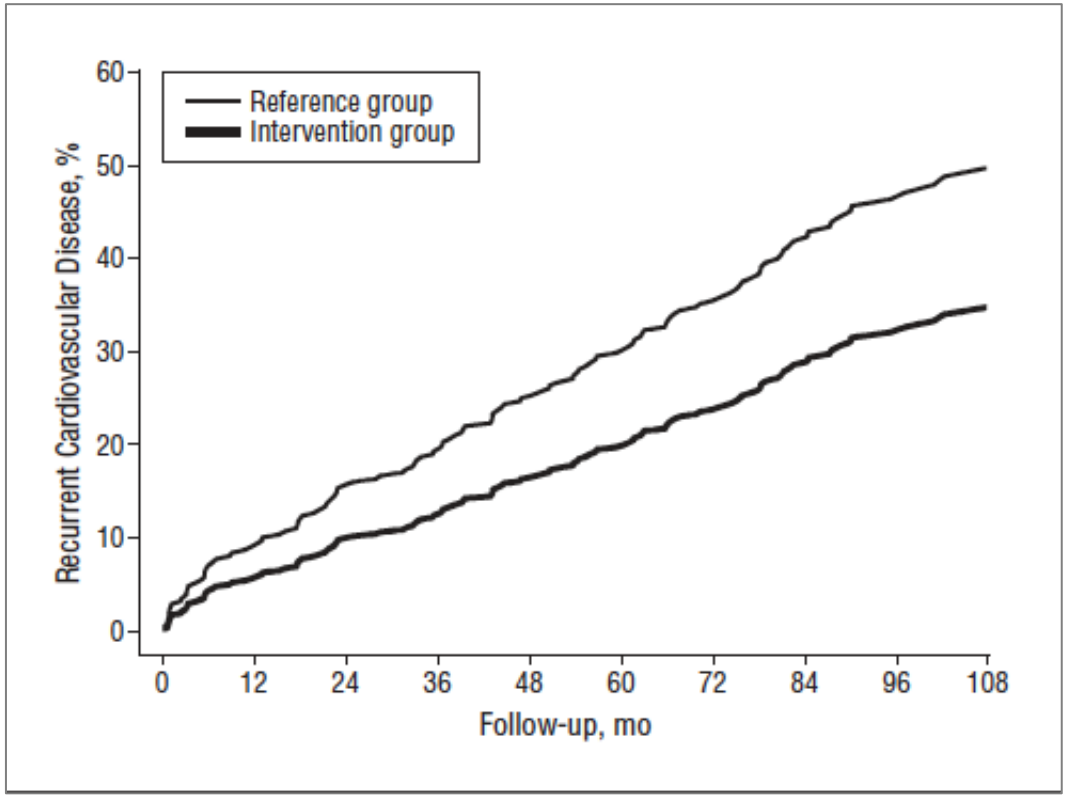
| Outcome | Polypill (N=1237) | Usual Care (N=1229) | Hazard Ratio (95% CI)* | P Value |
|---|---|---|---|---|
| | *number of patients (percent)* | | | |
| **Primary outcome†** | 118 (9.5) | 156 (12.7) | 0.76 (0.60–0.96) | <0.001 for noninferiority; 0.02 for superiority |
| **Key secondary outcome** | | | | |
| Composite of cardiovascular death, nonfatal type 1 myocardial infarction, or nonfatal ischemic stroke | 101 (8.2) | 144 (11.7) | 0.70 (0.54–0.90) | 0.005 |
| **Components of primary outcome** | | | | |
| Cardiovascular death | 48 (3.9) | 71 (5.8) | 0.67 (0.47–0.97) | |
| Nonfatal type 1 myocardial infarction | 44 (3.6) | 62 (5.0) | 0.71 (0.48–1.05) | |
| Nonfatal ischemic stroke | 19 (1.5) | 27 (2.2) | 0.70 (0.39–1.26) | |
| Urgent revascularization | 27 (2.2) | 28 (2.3) | 0.96 (0.57–1.63) | |

*N Engl J Med 2022;387:967-77.*

# Randomized Controlled Trial of Cognitive Behavioral Therapy vs Standard Treatment to Prevent Recurrent Cardiovascular Events in Patients With Coronary Heart Disease

**Methods:** The study included 362 women and men 75 years or younger who were discharged from the hospital after a coronary heart disease event within the past 12 months. Patients were randomized to receive traditional care (reference group, 170 patients) or traditional care plus a CBT program (intervention group, 192 patients), focused on stress management, with 20 two-hour sessions during 1 year. Median attendance at each CBT session was 85%. Outcome variables were all-cause mortality, hospital admission for recurrent CVD, and recurrent acute myocardial infarction.

**Results:** During a mean 94 months of follow-up, the intervention group had a 41% lower rate of fatal and nonfatal first recurrent CVD events (hazard ratio [95% confidence interval], 0.59 [0.42-0.83]; $P=.002$), **45% fewer recurrent acute myocardial infarctions (0.55 [0.36-0.85]; $P=.007$)**, and a nonsignificant 28% lower all-cause mortality (0.72 [0.40-1.30]; $P=.28$) than the reference group after adjustment for other outcome-affecting variables. In the CBT group there was a strong dose-response effect between intervention group attendance and outcome. During the first 2 years of follow-up, there were no significant group differences in traditional risk factors.




Cumulative first recurrent fatal and nonfatal cardiovascular events during 9 years

*Arch Intern Med. 2011;171(2):134-140*

# Characteristics and Outcomes of Early Recurrent Myocardial Infarction After Acute Myocardial Infarction

## CONCLUSIONS

Early RMI after an AMI is a life-threatening condition with poor outcomes. The majority of these reinfarctions occur within the initial 2 weeks after discharge indicating that preventive efforts should be initiated during hospitalization and continued upon discharge. Aggressive risk factor management, medication compliance, and effective transition of care may serve as the vital processes in improving the care of patients with MI.

*J Am Heart Assoc. 2021;10:e019270*