IL DECLINO DELLA FUNZIONE RENALE

COME FATTORE DI RISCHIO CARDIOVASCOLARE

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Ospedale 'Santa Maria' BorgoTaro

Screening, Monitoring, and Treatment of Stage 1 to 3 Chronic Kidney Disease: A Clinical Practice Guideline From the Clinical Guidelines Committee of the American College of Physicians

Table 1. Definition of CKD Stages Based on GFR*

CKD Stage	Definition
1	Kidney damage with GFR ≥90 mL/min/1.73 m^2
2	Kidney damage with GFR 60–89 mL/min/1.73 m^2
3	GFR 30–59 mL/min/1.73 m^2
4	GFR 15–29 mL/min/1.73 m^2
5	GFR <15 mL/min/1.73 m^2, or kidney failure treated by dialysis or transplantation

CKD = chronic kidney disease; GFR = glomerular filtration rate.

* Adapted from reference 3. The Kidney Disease: Improving Global Outcomes Work Group recently updated its definition of CKD progression to include consideration of both GFR and albuminuria stages (2).

Ann Intern Med. 2013;159.

For author affiliations, see end of text.

Chronic Kidney Disease and the Risks of Death, Cardiovascular Events, and Hospitalization

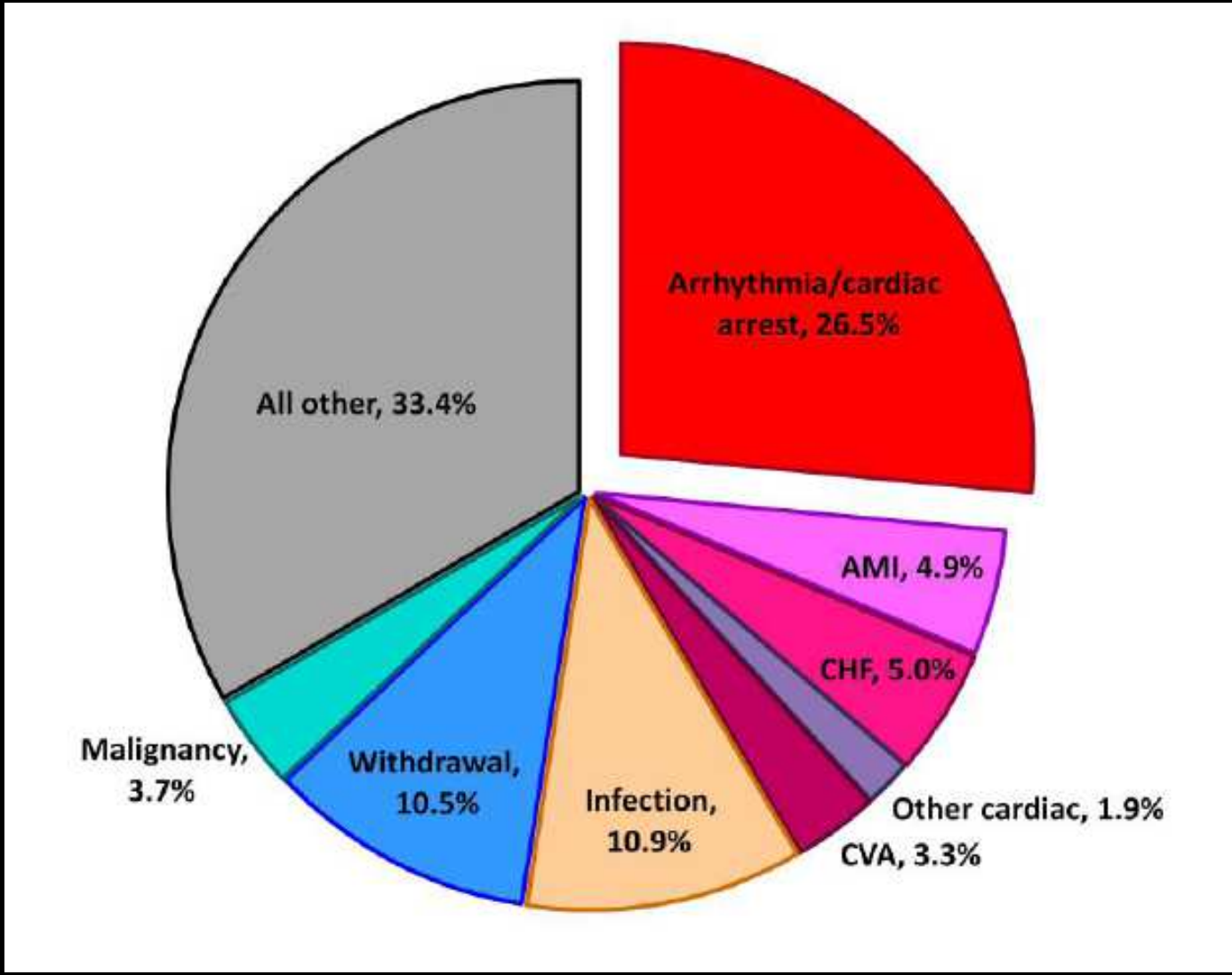
The NEW ENGLAND JOURNAL of MEDICINE

Table 2. Adjusted Hazard Ratio for Death from Any Cause, Cardiovascular Events, and Hospitalization among 1,120,295 Ambulatory Adults, According to the Estimated GFR.*

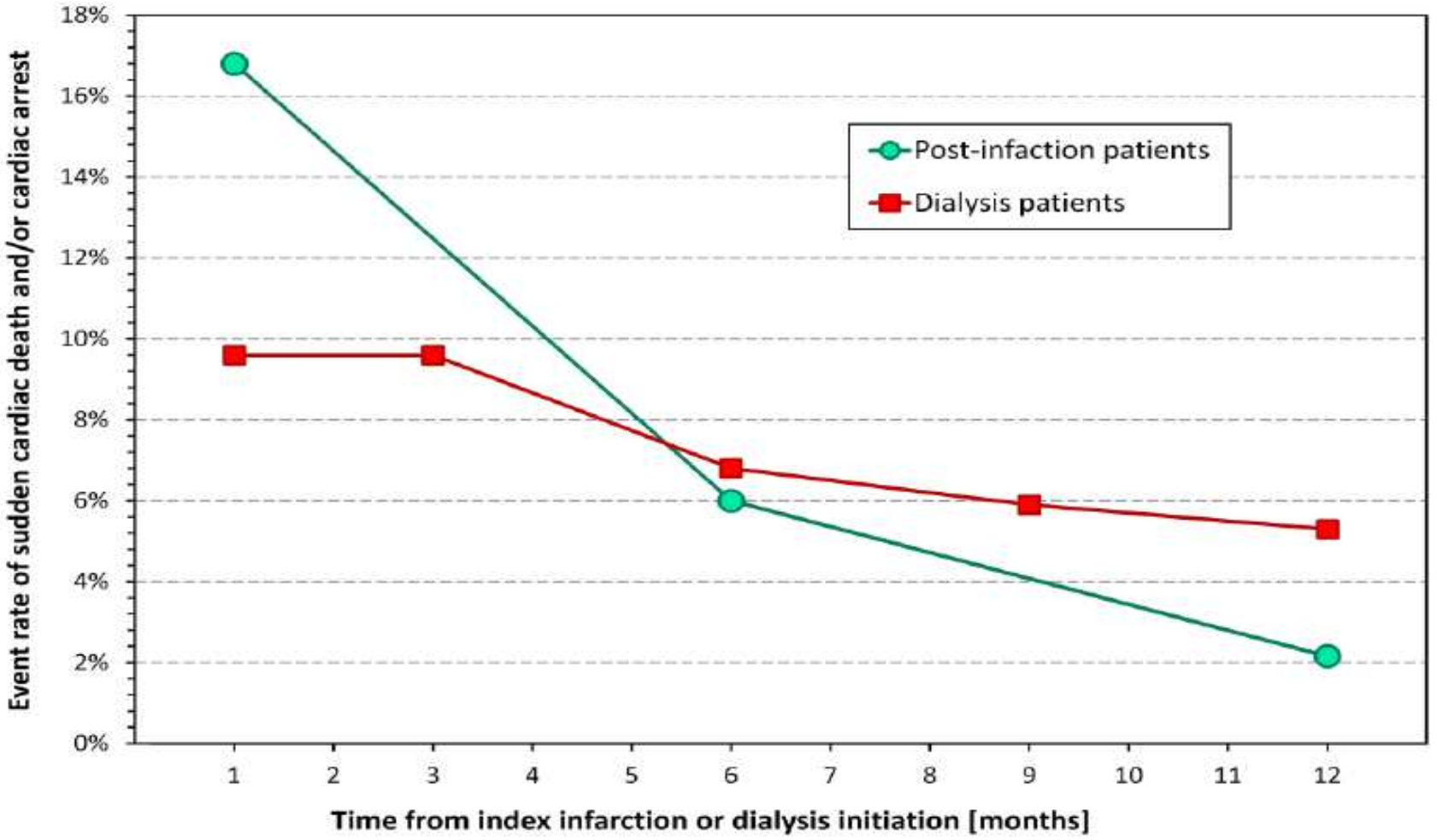
Estimated GFR	Death from Any Cause	Any Cardiovascular Event	Any Hospitalization
	adjusted hazard ratio (95 percent confidence interval)		
≥60 ml/min/1.73 m²†	1.00	1.00	1.00
45–59 ml/min/1.73 m²	1.2 (1.1–1.2)	1.4 (1.4–1.5)	1.1 (1.1–1.1)
30–44 ml/min/1.73 m²	1.8 (1.7–1.9)	2.0 (1.9–2.1)	1.5 (1.5–1.5)
15–29 ml/min/1.73 m²	3.2 (3.1–3.4)	2.8 (2.6–2.9)	2.1 (2.0–2.2)
<15 ml/min/1.73 m²	5.9 (5.4–6.5)	3.4 (3.1–3.8)	3.1 (3.0–3.3)

N Engl J Med 2004;351:1296-305.

Cause di mortalità nei pazienti con IRC e in trattamento dialitico



Cause di mortalità nei pazienti con IRC e in trattamento dialitico

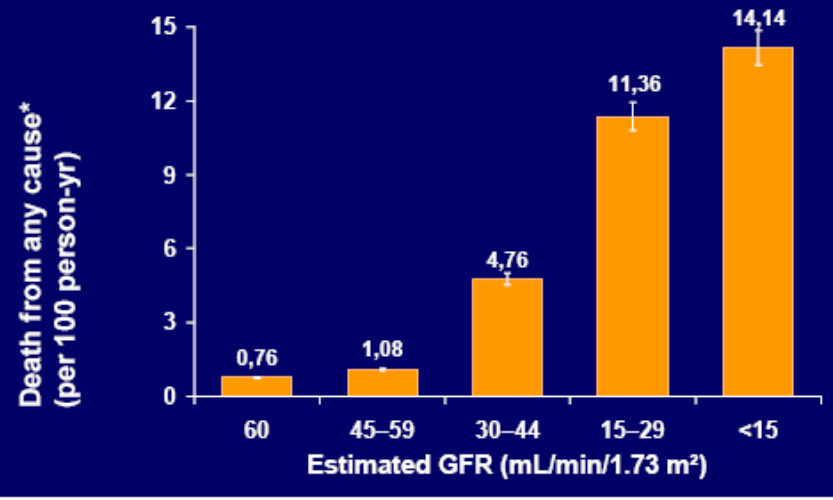


J Cardiovasc Electrophysiol. 2013 Nov 20. doi: 10.1111/jce.12328. [Epub ahead of print]

Risk of Sudden Cardiac Death in Chronic Kidney Disease.

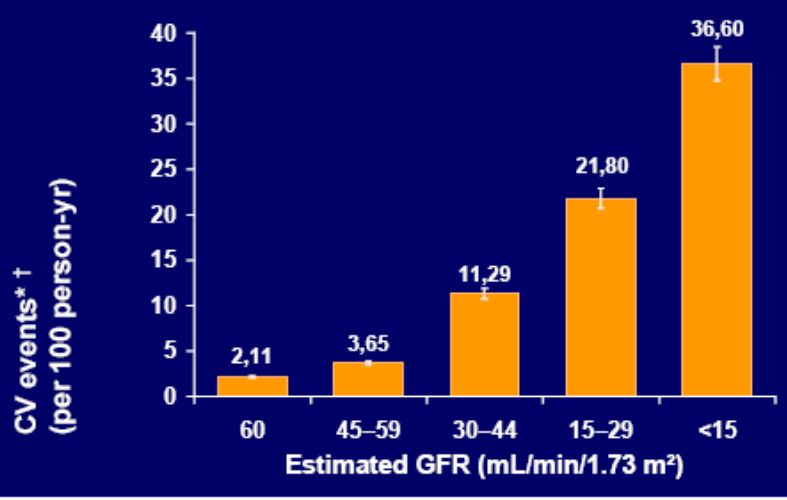
Independent Effect of CKD on CVD Mortality

Deaths from any cause



No. of Events	25,803	11,569	7,802	4,408	1,842

CV events



No. of Events	73,108	34,690	18,580	8,809	3,824

N=1,120,295 adults Kaiser Permanent Register

*Age-standardized rates

†Cardiovascular event defined as hospitalization for coronary heart disease, heart failure, ischemic stroke, and peripheral arterial disease per 100 person-years

Go AS et al. N Engl J Med 2004;351:1296–305

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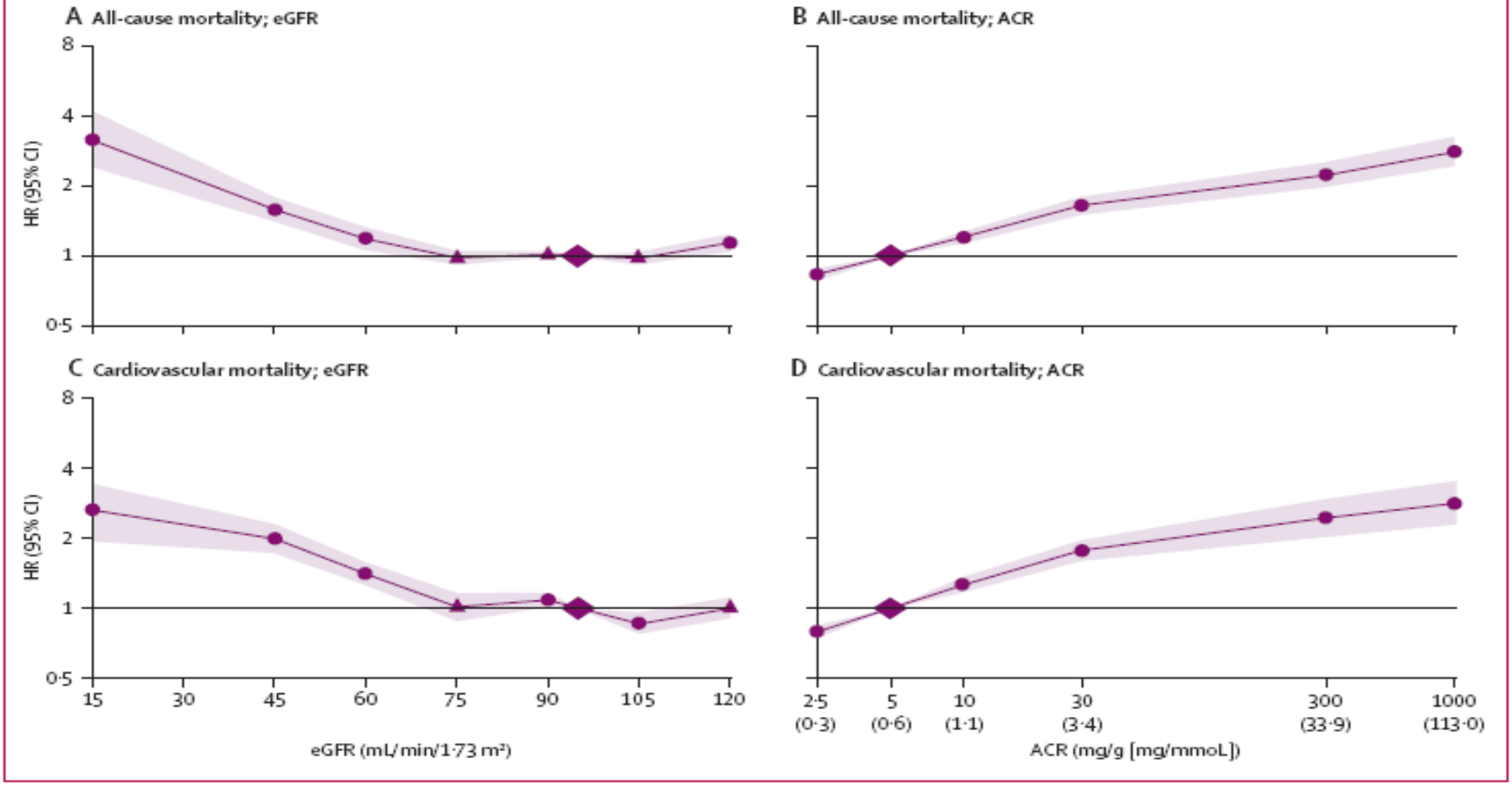
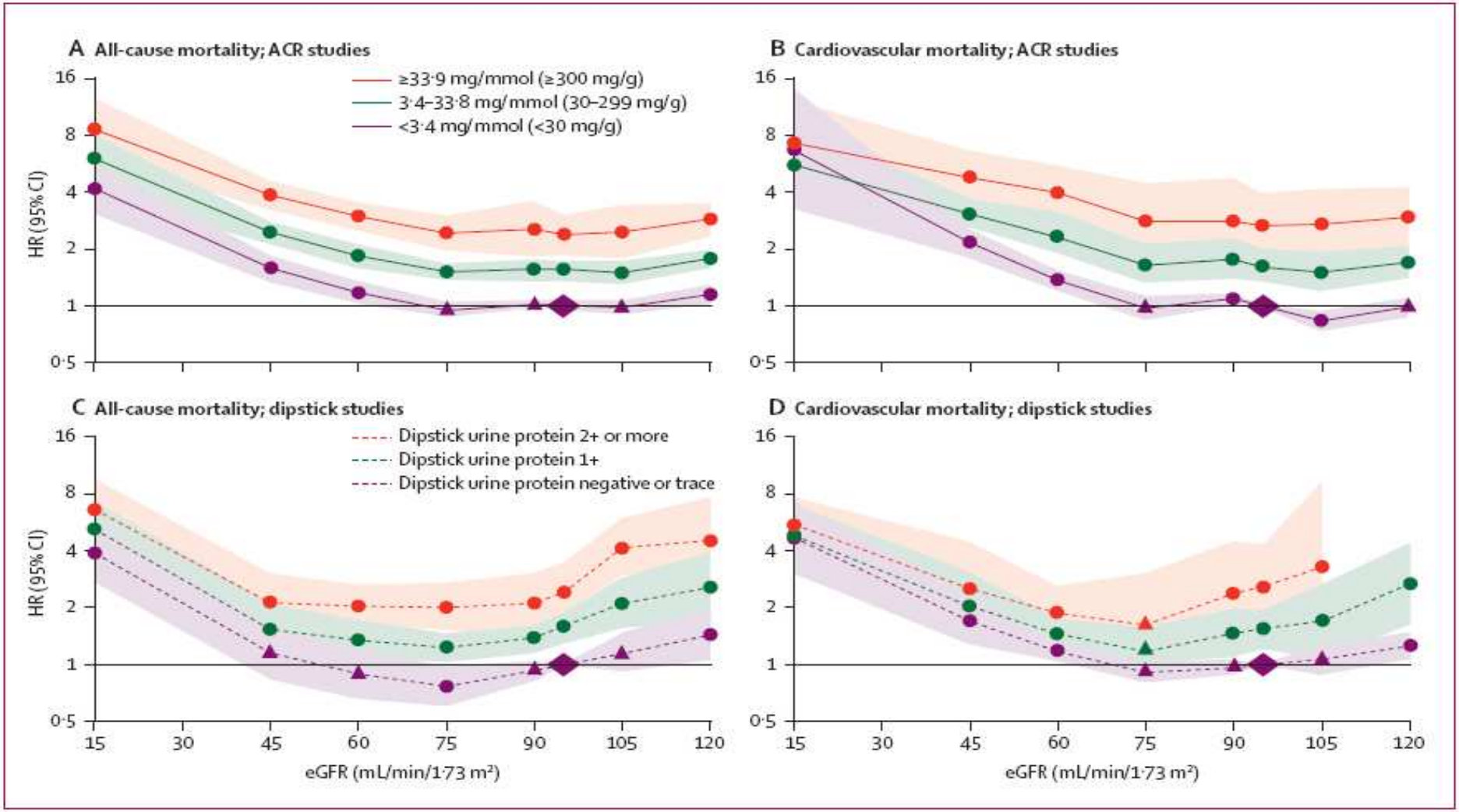
Association of estimated glomerular filtration rate and albuminuria with all-cause and cardiovascular mortality in general population cohorts: a collaborative meta-analysis



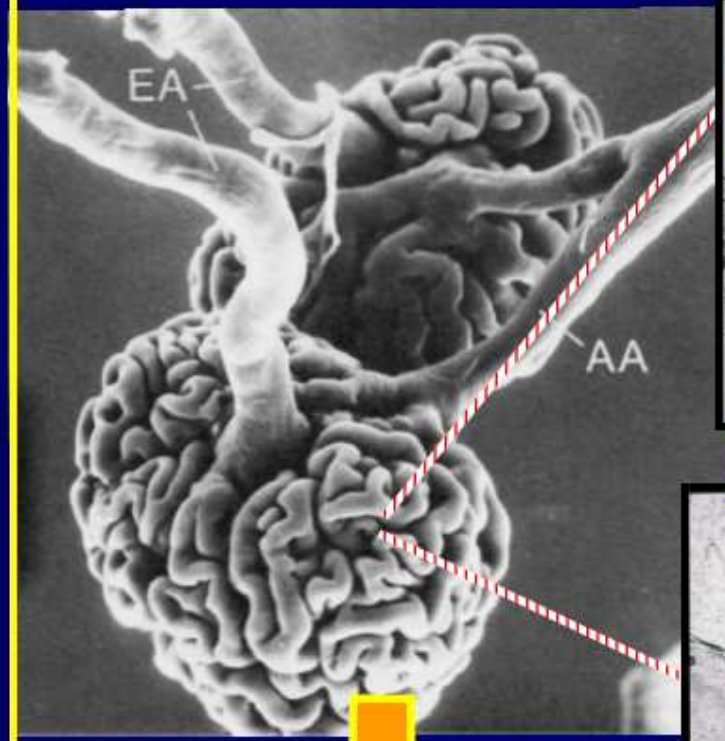
Lancet 2010; 375: 2073–81

Association of estimated glomerular filtration rate and albuminuria with all-cause and cardiovascular mortality in general population cohorts: a collaborative meta-analysis



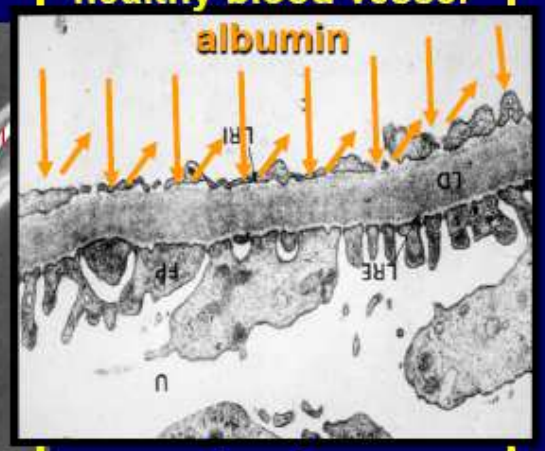
Lancet 2010; 375: 2073–81

Albuminuria - an early sign of glomerular, but also generalised vascular damage

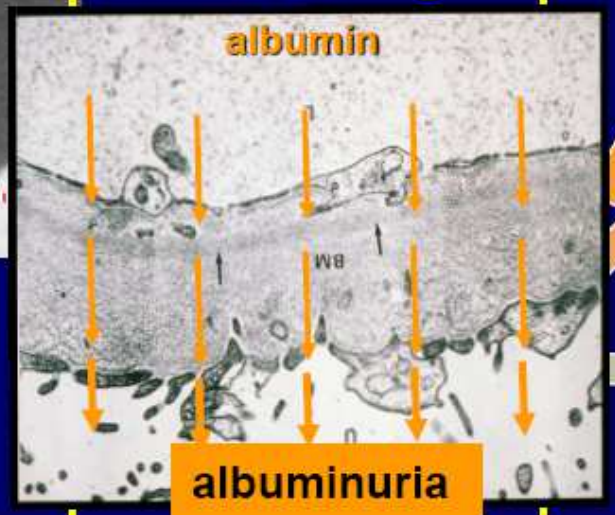


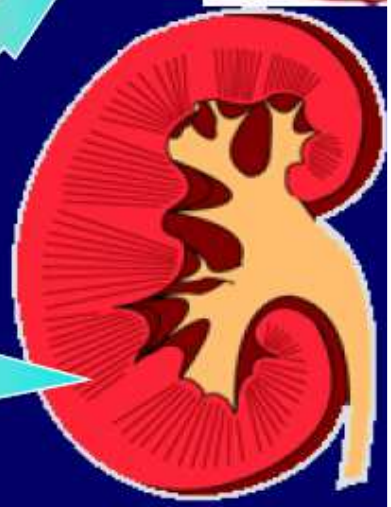
albuminuria

healthy blood vessel

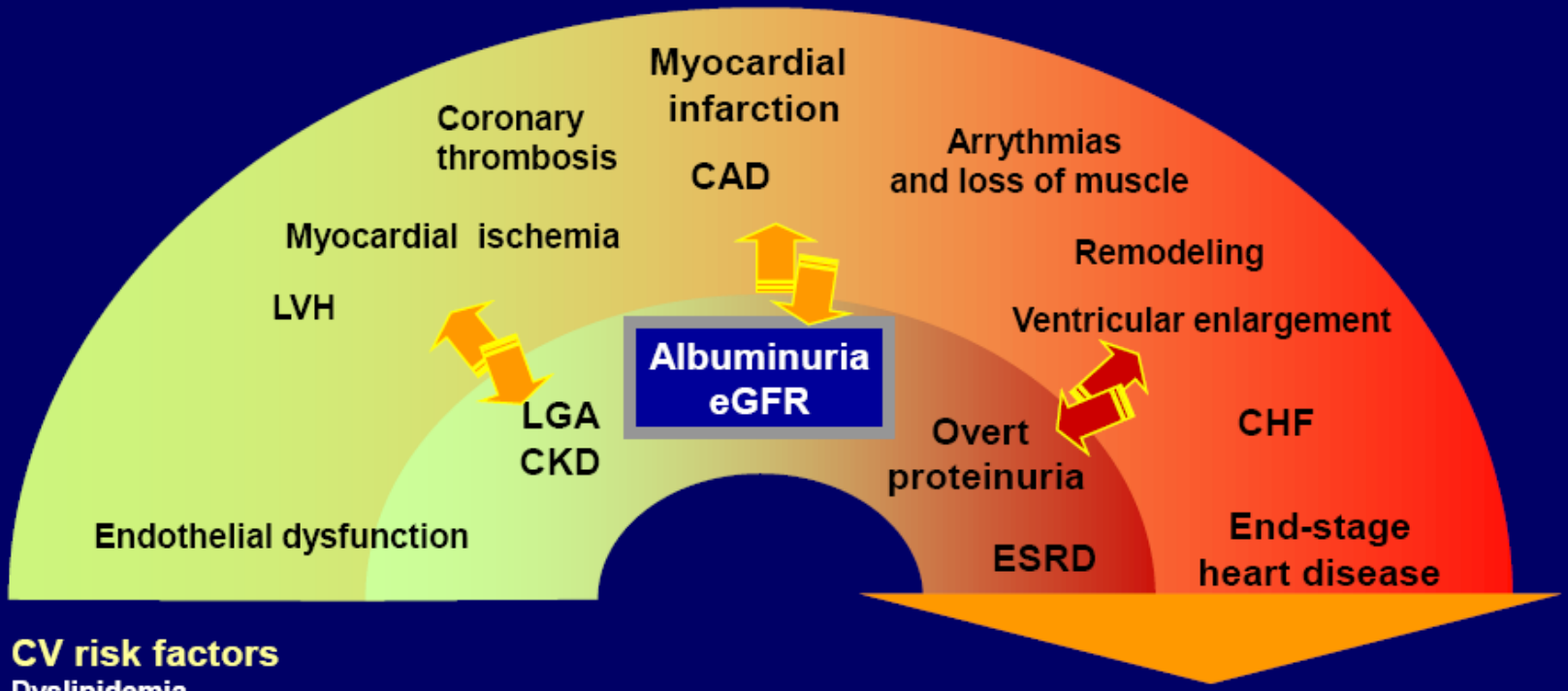


vascular damage





Cardiovascular and renal continuum



CV risk factors
Dyslipidemia
Hypertension
Diabetes
Smoking
Obesity (visceral adiposity)

Modified from Dzau et al. *Circulation* 2006; 114: 2871–2891

FATTORI DI RISCHIO CARDIOVASCOLARE NELL'INSUFFICIENZA RENALE

Tradizionali	Non tradizionali
Età avanzata	Albuminuria
Sesso maschile o menopausa	Anemia
Ipertensione	Sovraccarico volemico
Dislipidemia (LDL elevate, HDL ridotte)	Isoforme di lipoproteina (a), apolipoproteina (a) ed iperomocisteinemia
Diabete	Alterato metabolismo Ca/P e disordini elettrolitici
Familiarità per cardiopatia	Malnutrizione
Fumo e sedentarietà	Fattori trombogenici (fibrinogeno, D-dimero, complesso trombina-antitrombina III)
Ipertrofia ventricolare sinistra	Stress ossidativo, alterato rapporto ossido nitrico/endotelina ed infiammazione (PCR)

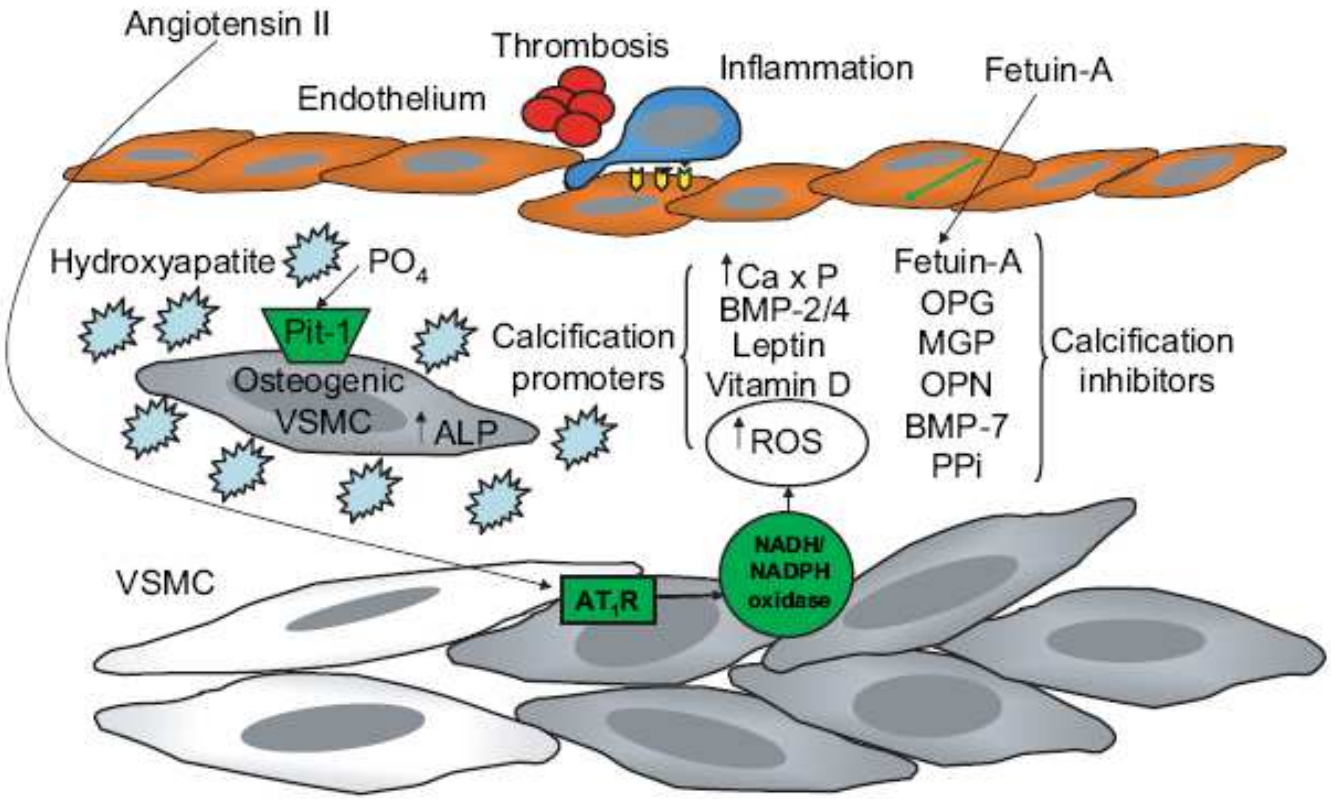
Circulation
JOURNAL OF THE AMERICAN HEART ASSOCIATION

American Heart Association®

Chronic Kidney Disease: Effects on the Cardiovascular System

Ernesto L. Schiffrin, Mark L. Lipman and Johannes F.E. Mann

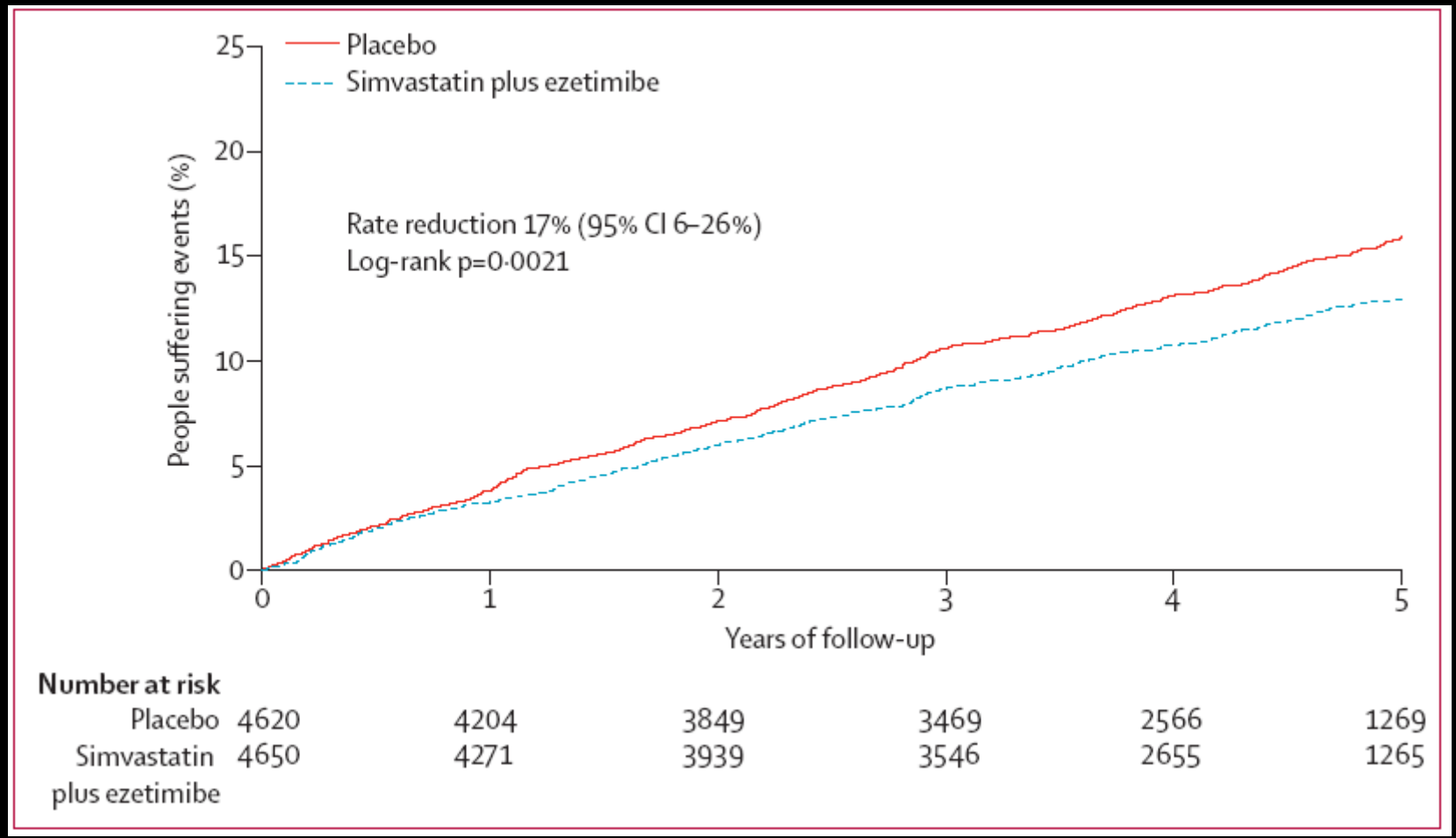
Circulation. 2007;116:85-97



MODIFICAZIONI DELL'ASSETTO LIPIDICO NELL'INSUFFICIENZA RENALE

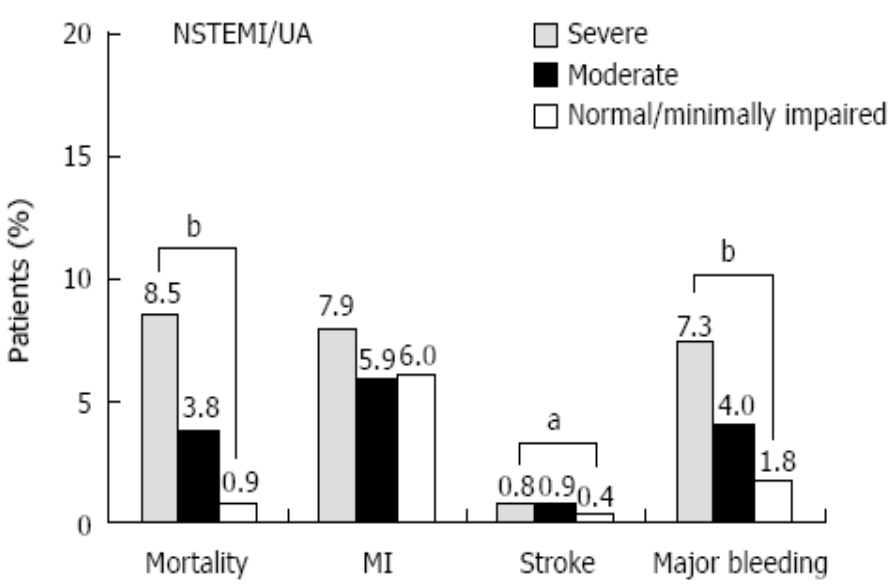
	Stadi 2-3	Stadi 4-5	Emodialisi
Colesterolo totale	Normale	Normale	Normale
HDL	Normale o ↓	↓	↓
LDL	Normale o ↑	Normale o ↓	Normale o ↓
Trigliceridi	Normale o ↑	↑	↑

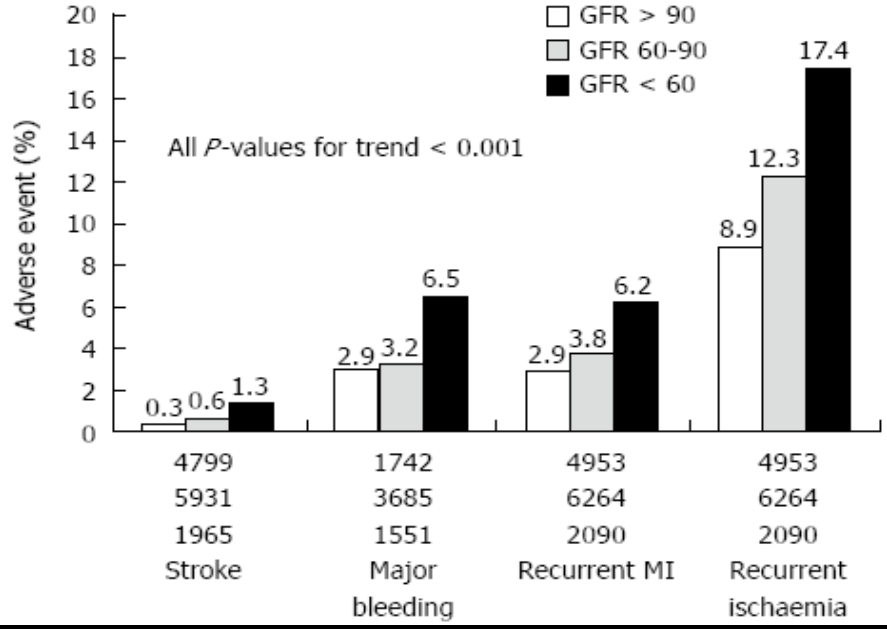
The effects of lowering LDL cholesterol with simvastatin plus ezetimibe in patients with chronic kidney disease (Study of Heart and Renal Protection): a randomised placebo-controlled trial



Lancet 2011; 377: 2181–92

Chronic kidney disease in acute coronary syndromes





World J Nephrol 2012 October 6; 1(5): 134-145
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European Heart Journal (2012) **33**, 1635–1701
doi:10.1093/eurheartj/ehs092

JOINT ESC GUIDELINES

European Guidelines on cardiovascular disease prevention in clinical practice (version 2012)

The Fifth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of nine societies and by invited experts)

Developed with the special contribution of the European Association for Cardiovascular Prevention & Rehabilitation (EACPR)†

Authors/Task Force Members: Joep Perk (Chairperson) (Sweden)*, Guy De Backer[1] (Belgium), Helmut Gohlke[1] (Germany), Ian Graham[1] (Ireland), Željko Reiner[2] (Croatia), W.M. Monique Verschuren[1] (The Netherlands), Christian Albus[3] (Germany), Pascale Benlian[1] (France), Gudrun Boysen[4] (Denmark), Renata Cifkova[5] (Czech Republic), Christi Deaton[1] (UK), Shah Ebrahim[1] (UK), Miles Fisher[6] (UK), Giuseppe Germano[1] (Italy), Richard Hobbs[1,7] (UK), Arno Hoes[7] (The Netherlands), Sehnaz Karadeniz[8] (Turkey), Alessandro Mezzani[1] (Italy), Eva Prescott[1] (Denmark), Lars Ryden[1] (Sweden), Martin Scherer[7] (Germany), Mikko Syvänne[9] (Finland), Wilma J.M. Scholte Op Reimer[1] (The Netherlands), Christiaan Vrints[1] (Belgium), David Wood[1] (UK), Jose Luis Zamorano[1] (Spain), Faiez Zannad[1] (France).

Rischio veramente alto

1. Very high risk

Subjects with any of the following:

- Documented CVD by invasive or non-invasive testing (such as coronary angiography, nuclear imaging, stress echocardiography, carotid plaque on ultrasound), previous myocardial infarction, ACS, coronary revascularization (PCI, CABG), and other arterial revascularization procedures, ischaemic stroke, peripheral artery disease (PAD).
- Diabetes mellitus (type 1 or type 2) with one or more CV risk factors and/or target organ damage (such as microalbuminuria: 30–300 mg/24 h).
- Severe chronic kidney disease (CKD) (GFR <30 mL/min/1.73 m^2).
- A calculated SCORE $\geq 10\%$.

Alto rischio

2. High risk

Subjects with any of the following:

- Markedly elevated single risk factors such as familial dyslipidaemias and severe hypertension.
- Diabetes mellitus (type 1 or type 2) but without CV risk factors or target organ damage.
- Moderate chronic kidney disease (GFR 30–59 mL/min/1.73 m^2).
- A calculated SCORE of $\geq$5% and $<$10% for 10-year risk of fatal CVD.

Rischio moderato e rischio basso

3. Moderate risk

Subjects are considered to be at moderate risk when their SCORE is ≥1 and <5% at 10 years. Many middle-aged subjects belong to this category. This risk is further modulated by factors mentioned above.

4. Low risk

The low-risk category applies to individuals with a SCORE <1% and free of qualifiers that would put them at moderate risk.

These risk categories are compatible with the joint European Atherosclerosis Society/ESC lipid guidelines.[70] The joint guidelines offer further advice on lipid intervention based on these risk categories.

RICERCA DI DANNO D'ORGANO PER LA CORRETTA STRATIFICAZIONE DEL RISCHIO CARDIOVASCOLARE

TOD	Availability	Cost	Sensitivity	Time to change	Prognostic value
ECG	High	Low	Low	Slow (months)	Yes
eGFR	High	Low	Low	Very slow (yr)	Yes
UAlb	High	Low	high	Fast (weeks)	Yes
Echo-LV	Middle	High	High	Middle (months)	Yes
IMT	Middle	High	low	Slow (yr)	No
PWV	Low	Medium	High	Fast (weeks)	Uncertain

Grazie per
l'attenzione