Coronary Heart Disease Risk Assessment in Asymptomatic Patients: Selective Use of Noninvasive Testing following Office-Based Risk Assessment

STEP 1

Initial Office-Based Assessment in all Asymptomatic adults using Multiple Coronary Disease Risk Factors / Global Risk Assessment

	Low-Risk (~35% of Patients)	Intermediate Risk (~40% of Patients)	High Risk (~25% of Patients)
STEP 2	Low-risk patients have a low-risk Framingham Risk Score and no major CHD risk factors (see text)	Intermediate risk patients have at least one major risk factor outside the desirable range or a positive family history of CHD (see text). Global risk estimate is 0.6 - 2.0 percent per year.	High risk patients are those with established CHD; other forms of atherosclerotic disease including peripheral arterial disease, abdominal aortic aneurysm, carotid artery TIA or stroke; and middle-aged or older patients with type 2 diabetes or multiple other CHD risk factors (hard CHD risk > 20 % in 10 years).
STEP 3	Based on low risk status, provide reassurance and retest in about 5 years.	Intermediate risk patients may benefit from non-invasive testing for further risk assessment (see text for test choices).	High risk patients are candidates for intensive risk factor intervention. Non-invasive testing of asymptomatic patients is not required to determine treatment goals.

Greenland. Circulation 2001

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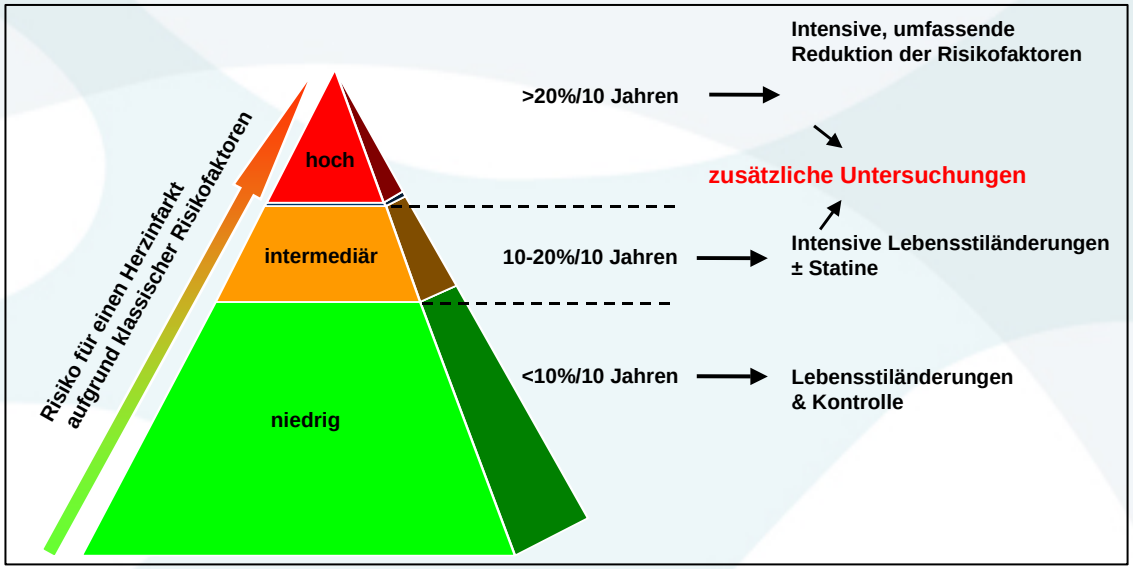
Implikationen von TNT, PROVE-IT, HPS

Grundy SM, et al. Implications of the recent trials for the NCEP ATP III guidelines. Circulation 2004;110:227-39

International Task Force for the Prevention of Coronary Heart Disease:



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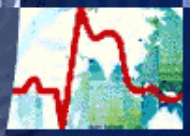
Welcome to the official website of the **International Task Force for Prevention of Coronary Heart Disease**



- WELCOME
- Coronary Risk Assessment
  - PROCAM Risk Calculator
  - PROCAM Risk Score
  - PROCAM Neural Network Analysis
  - Framingham Risk Assessment

(Deutsch)

Emerging risk factors for coronary artery disease	
A	Evidence of atherosclerosis on non-invasive imaging, i.e. an age- and sex-adjusted calcium score of the coronary arteries above the 75th percentile or an increased intima-media thickness ratio.
B	Lipoprotein (a) ≥ 30 mg/dL.
C	C-reactive peptide > 3 mg/L in the absence of acute inflammation.
D	Homocysteine ≥ 12 µmol/L.
E	≥ 4 of the 10 genetic risk factors in Table 3, particularly in patients with a positive family history[2] of coronary heart disease.

	Polymorphism and gene	Frequency of rare allele/haplotype in general population	Odds ratio for atherosclerosis in carriers of rare allele or haplotype
1.	G20210A polymorphism in the factor II (prothrombin) gene (29,30)	0.02	1.3
2.	gly460trp polymorphism in the alpha adducin (*ADD1*) gene (31)	0.19	2.3¶
3.	glu298asp (G894T) polymorphism in the endothelial nitric oxide synthase (*NOS3*) gene (32)	0.35	1.3
4.	cys112arg, arg158cys polymorphisms in the apolipoprotein E (*APOE*) gene (33,34)	112arg, 158arg (E4): 0.17 s3/4: 0.24; s4/4: 0.02	presence of s4: 1.4
5.	leu33pro polymorphism in β3 integrin subunit (platelet glycoprotein IIIa, *ITGB3*) gene (35,36)	0.15	1.2
6.	4G/5G polymorphism in the plasminogen activator inhibitor 1 (*PAI1*) gene (37,38)	0.47	1.3
7.	val640leu polymorphism the p-selectin (*SELP*) gene (39)	0.11	1.6*
8.	C582T polymorphism in the interleukin 4 (*IL4*) gene (39)	0.17	1.4*
9.	Haplotype A in the 5-lipoxygenase-activating protein (*ALOX5AP*) gene (40)	0.10	1.8
10.	C677T polymorphism in the gene for methylene tetrahydrofolate reductase (*MTHFR*) (30,41,42)	0.35	1.2†

Pocket Guide to Prevention of Coronary Heart Disease

http://www.chd-taskforce.com/

www.leitlinien.dgk.org

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Lebenstilmodifikation

Fitness

Ernährung

Balance

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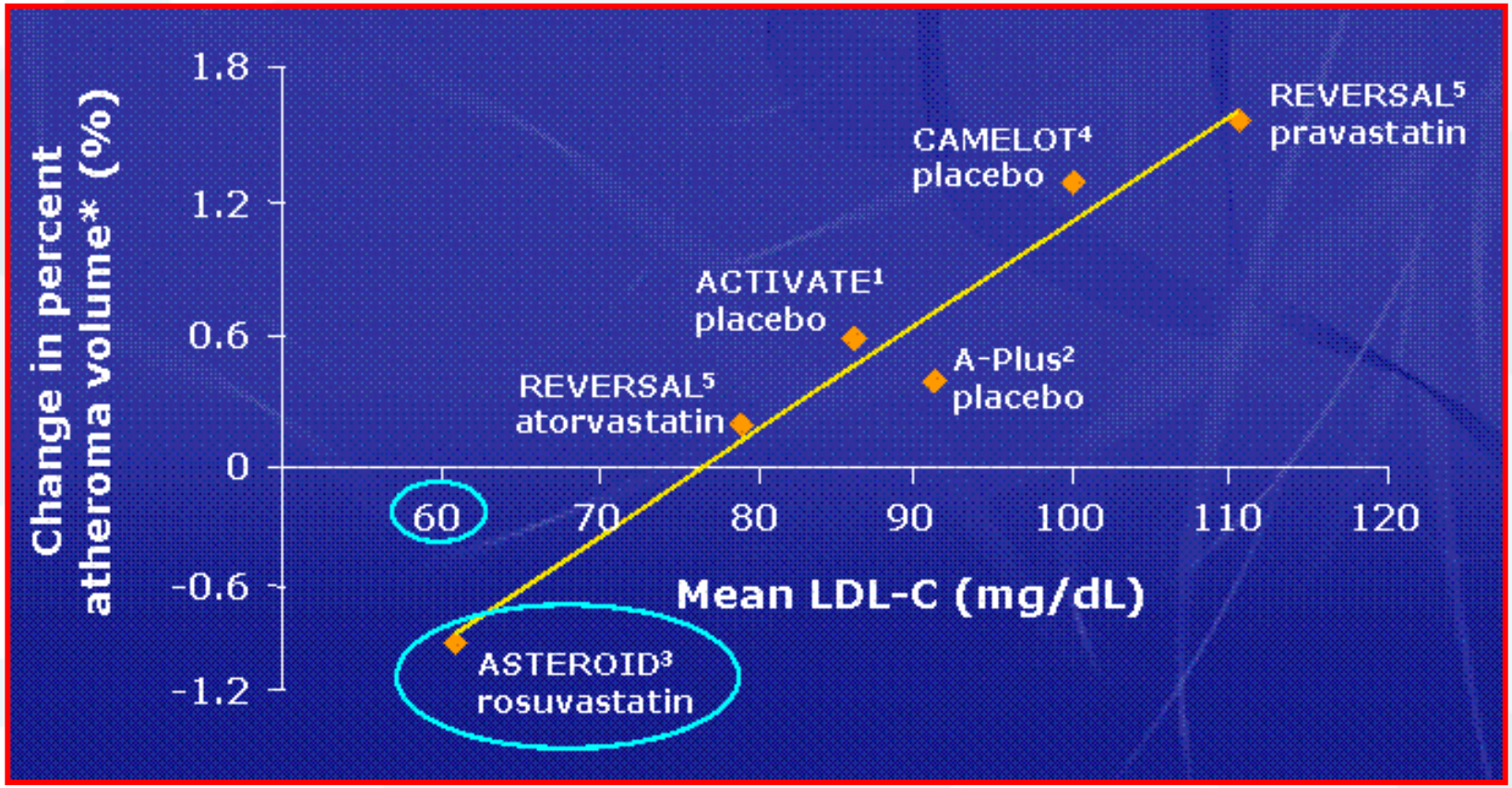
How to achieve intensive lifestyle change in patients with disease and in high risk people

Strategies to make behavioural counselling more effective include:

- Develop a therapeutic alliance with the patient
- Gain commitments from the patient to achieve lifestyle change
- Ensure the patient understands the relationship between lifestyle and disease
- Help the patient overcome barriers to lifestyle change
- Involve the patient in identifying the risk factor(s) to change
- Design a lifestyle modification plan
- Use strategies to reinforce the patient's own capacity to change
- Monitor progress of lifestyle change through follow-up contacts
- Involve other health care staff wherever possible.

Mittleres LDL-Cholesterin und Atheromvolumen (IVUS-Studien)



1 Nissen S, et al. NEJM 2006;354:1253-63; 2 Tardif J, et al. Circulation 2004;110:3372-7;
3 Nissen S, et al. JAMA 2006;295:1556-65; 4 Nissen S, et al. JAMA 2004;292:2217-25;
5 Nissen S, et al. JAMA 2004;291:1071-90

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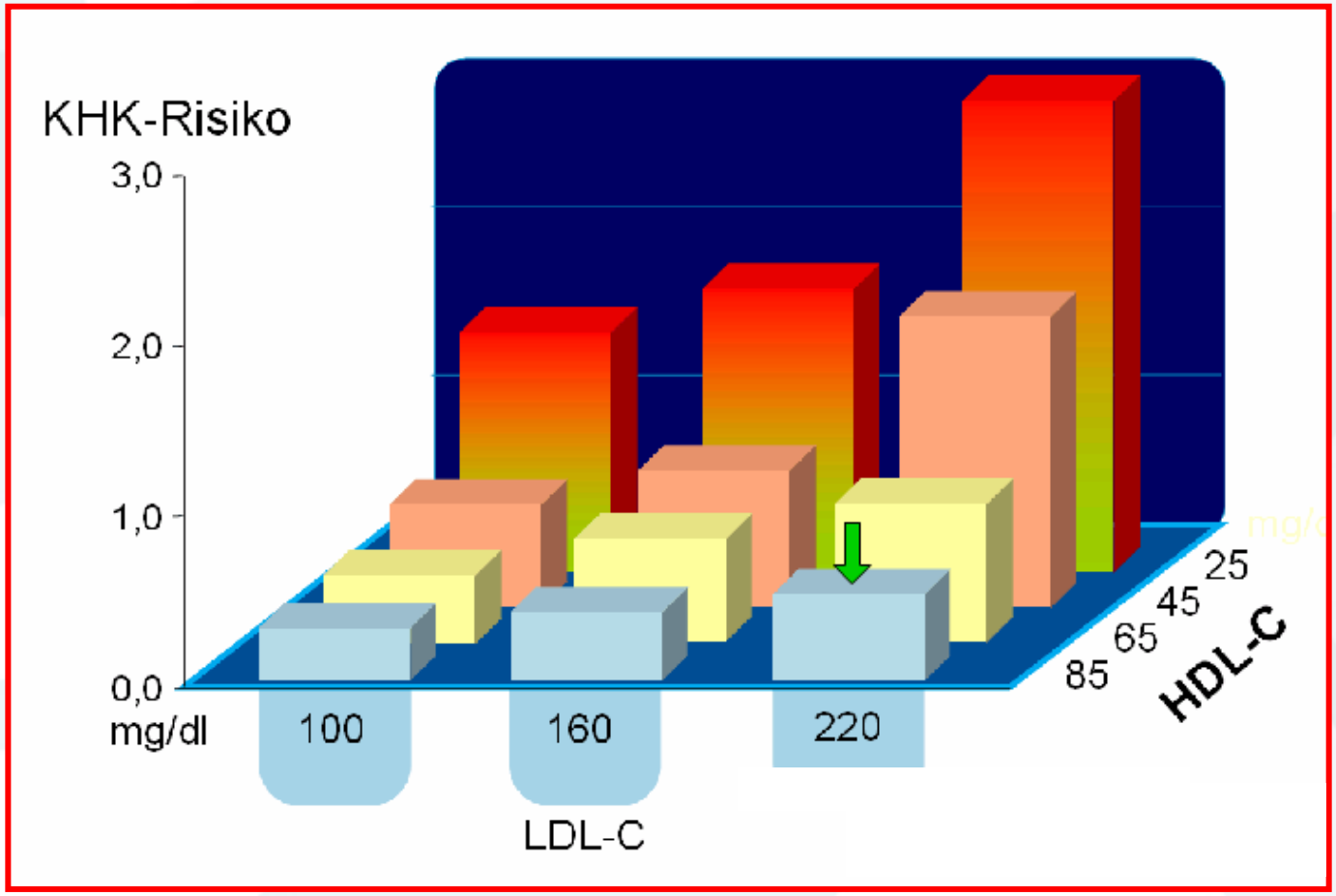
Framingham Heart Study:
HDL- und LDL-Cholesterin



Gordon T, et al. Am J Med 1977;62:707-712

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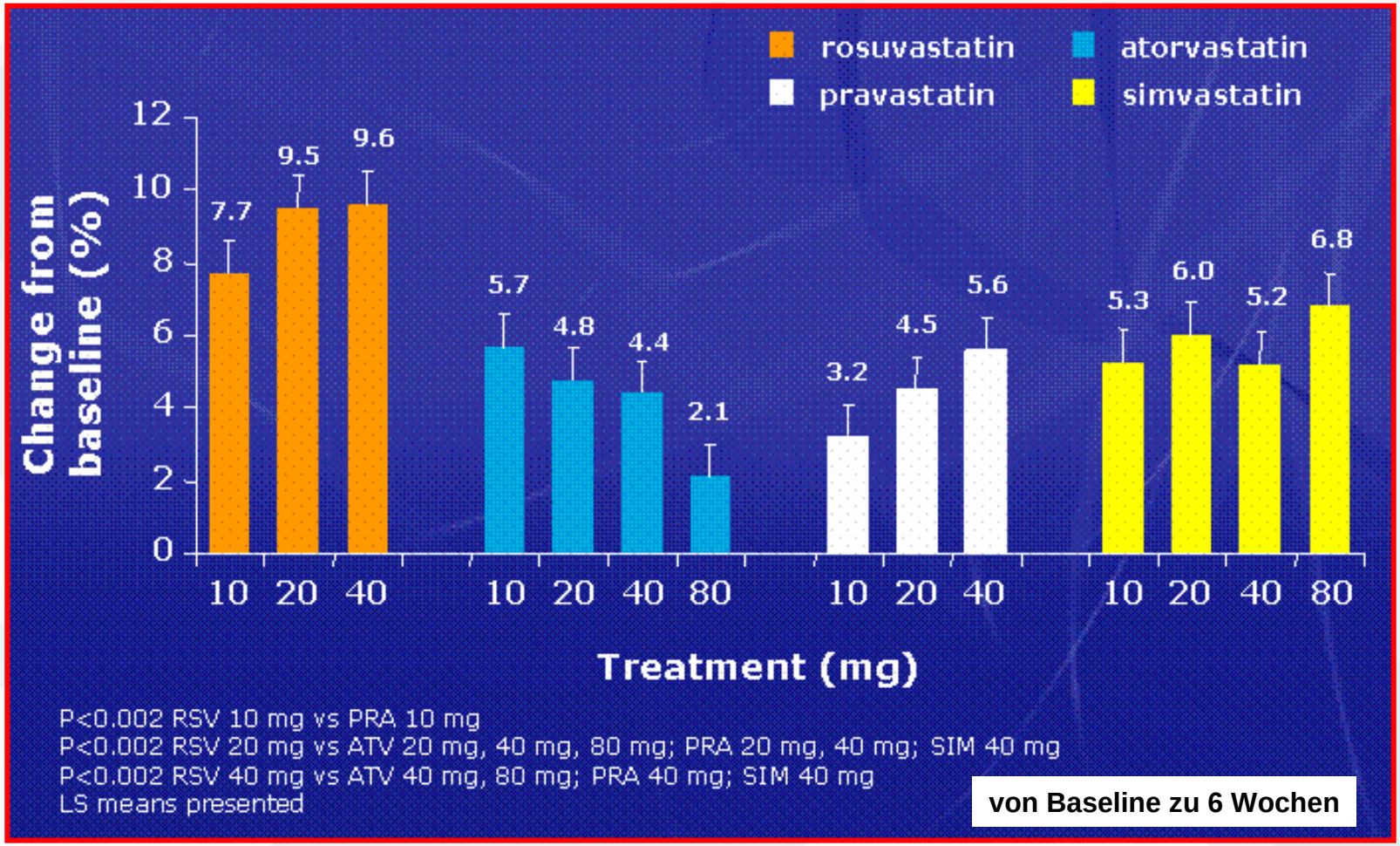
STELLAR: HDL-Cholesterin Änderung durch Statine



nach Jones PH, et al. AJC 2003;92:152-63

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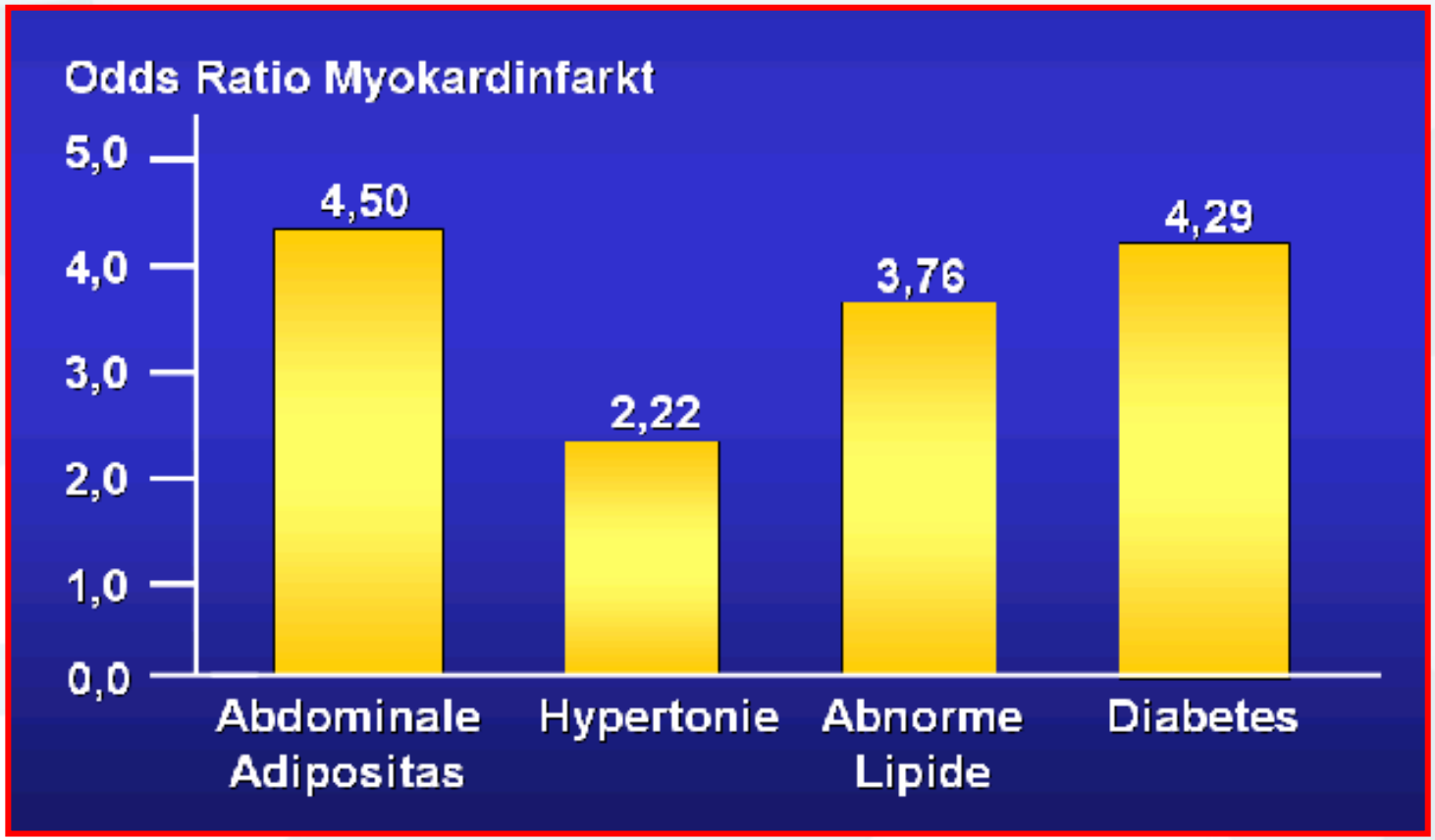
Kardiometabolische Risikofaktoren für Westeuropa

INTERHEART Study



Yusuf, et al. The Interheart Study. Lancet 2004;364:337-52

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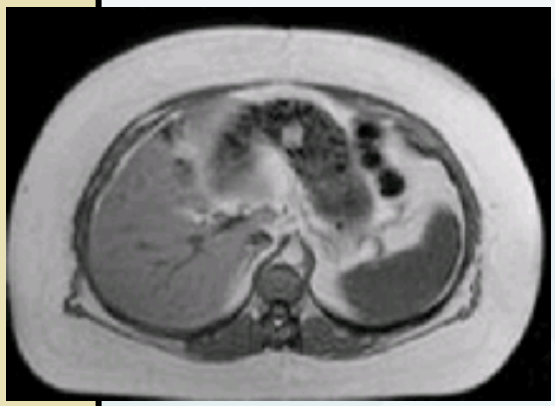
IDF-Kriterien des Metabolischen Syndroms

- **Erhöhter Taillenumfang**

  Plus zwei der folgenden Kriterien:

- **↑ Triglyzeride (< 150 mg/dl)‡**
- **↓ HDL-Cholesterin‡**
  - **Männer < 40 mg/dl**
  - **Frauen < 50 mg/dl**
- **↑ Blutdruck ≥ 130 / ≥ 85 mm Hg‡**
- **↑ Nüchternblutzucker (>100 mg/dl) oder Diabetes**



‡oder spezifische Behandlung für diese Indikationen

Internationale Diabetes Föderation (2005)
http://www.idf.org/webdata/docs/Metabolic_syndrome_definition.pdf

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Homozystein-Senkung?

Studiendesign:

- n = 5.522 Pts mit bekannter CVD oder D.M. + weitere(n) RF
- Th.: Folsäure 2,5 mg + Vit. B6 50 mg + Vit. B12 1 mg vs Plazebo
- Homozystein 12.2 µmol/L
  → 9.7 µmol/L Verum
  → 12.9 µmol/L Plazebo

Hope-2

Primary Outcome and All-Cause Death

	Active N=2758	Placebo N=2764	RR (95% C)	P
CV Death, MI, Stroke	519 (18.8%)	547 (19.8%)	0.95 (0.84-1.07)	0.41
CV Death*	276 (10.0%)	291 (10.5%)	0.96 (0.81-1.12)	0.59
MI*	341 (12.4%)	349 (12.6%)	0.98 (0.85-1.14)	0.82
Stroke*	111 (4.0%)	147 (5.3%)	0.75 (0.59-0.97)	0.03
All Death	470 (17.0%)	475 (17.2%)	0.99 (0.88-1.13)	0.94

* All patients with this outcome are included

Evidence from Randomized Controlled Trials

ALL-CAUSE DEATH	Active	Control	OR (95% CI)	P
HOPE-2	17.0%	17.2%	0.99 (0.86-1.14)	0.89
NORVIT	9.8%	9.6%	1.02 (0.82-1.27)	0.85
VISP	5.5%	6.4%	0.85 (0.64-1.12)	0.24
Total	753/6444 11.7%	773/ 6476 11.9%	0.97 (0.87-1.09)	0.63
			P heterogeneity=	0.48
PRIMARY or COMPOSITE ENDPOINT				
HOPE-2	18.8%	19.8%	0.94 (0.82-1.07)	0.36
NORVIT	19.7%	18.5%	1.08 (0.92-1.27)	0.34
VISP	16.7%	17.2%	0.96 (0.81-1.15)	0.67
Total	1191/6444 18.5%	1210/ 6476 18.7%	0.99 (0.90-1.08)	0.76
			P heterogeneity=	0.76

- Lonn E: Vorstellung auf World Congress of Cardiology, Barcelona, 2.-6.11.06
- HOPE-2 Investigators. NEJM 2006;354:157:1567-77

Late-Breaking Clinical Trials News Release 1

Vitamins don't slow development of cardiovascular disease in high-risk women

Christine M. Albert, Brigham and Women´s Hospital, Boston:

Women´s Antioxidant and Folic Acid Cardiovascular Study (WAFACS)

- Randomisierte, plazebo-kontrollierte Studie
- n = 5.442 Frauen mit bekannter CVD oder High Risk mit ≥ 3 RF
- *Folsäure 2,5 mg + Vit. B6 50 mg + Vit. B12 1 mg vs Plazebo*
- FU = 7,3 Jahre
- Ergebnis: Kein Unterschied in MACE (MI, Apoplex, PCI/ACVB, kardialer Tod; p=0.65)

JoAnn Manson, Brigham and Women´s Hospital, Boston:

Women´s Antioxidant Cardiovascular Sudy (WACS)

- Randomisierte, plazebo-kontrollierte Studie (s.o.)
- n = 8.171 Frauen mit bekannter CVD oder High Risk mit ≥ 3 RF
- *Vit. C, Vit. E, Beta-Caroten*
- FU = 9,4 Jahre
- Ergebnis: Kein Unterschied in MACE (MI, Apoplex, PCI/ACVB, kardialer Tod)

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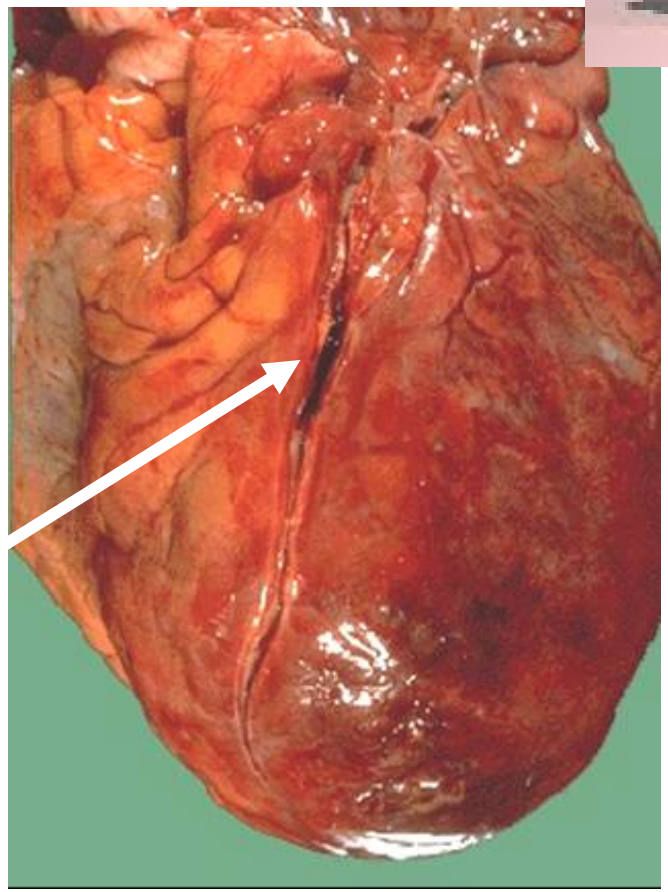
Herzinfarkt



<u>Tertiär-</u>

prävention