

Excess cardiovascular mortality in patients with peripheral arterial disease in primary care: 5-year results of the getABI Study

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Acknowledgement

getABI is supported by an Unrestricted Educational Grant by Sanofi-Aventis, Berlin (since 2001) and by the German Ministry of Health (from 2008 onwards)

Conflict of interest

For the getABI Study we got an unrestricted grant by Sanofi - Aventis.

This study includes no marketing strategies.

Apart of this I have no potential conflict of interest to report.

Background: rationale

- Peripheral arterial disease (PAD)
 - **outdated view:**
important as **local** vascular event (amputation)
 - **current view:**
indicator disease for **generalised** atherothrombosis
predicts myocardial infarction and stroke
- **Key questions**
 - Frequency of **asymptomatic** and **symptomatic** PAD
in primary care
 - Feasibility of the Ankle Brachial Index
 - for PAD diagnosis
 - for cardiovascular risk stratification
- Epidemiological studies in primary care needed

Background: Ankle Brachial Index

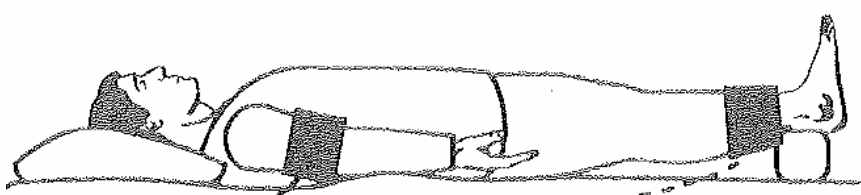


Systolic blood pressure at ankle should be at least as high as pressure in the arm, i.e. ankle brachial index > 1.0



If ankle pressure is **lower** than brachial pressure, **stenosis** is likely

i.e. ankle brachial index $< 0.9 = \text{PAD}$



To date, the ABI is the **most effective, accurate and practical** method of PAD detection (quick, easy, non invasive, cost effective)

ABI: highly specific for leg artery stenosis $> 50\%$, highly sensitive (95 %), takes 10 minutes, recommended in important guidelines (AHA/ACC¹, TASC II² etc.)

¹ Hirsch AT Circulation 2006;113:463-654. ² Norgren et al. Eur J Vasc Endovasc Surg 2007;33(Suppl. 1):S1-S75.

Study aims

- Prevalence and incidence of PAD
- to quantify the **risk of death and severe vascular events** of patients with (asymptomatic or symptomatic) PAD vs. those without PAD
- to investigate the risk increase according to **different ABI categories** including the 0.9–1.1 category, which is conventionally regarded as ‘no disease’,
- to assess the **contributions of known risk factors** including PAD to the overall risk of death and severe events.

Methods

- **Patients:** 6,880 unselected patients ≥ 65 years in 344 representative German practices
- **Visits:** at baseline and 6, 12, 36, 60 months (study ongoing).
- **Severe vascular events:** death, myocardial infarction (MI), coronary/carotid/ peripheral revascularisation, stroke, amputation due to PAD.

All events reported by GPs.

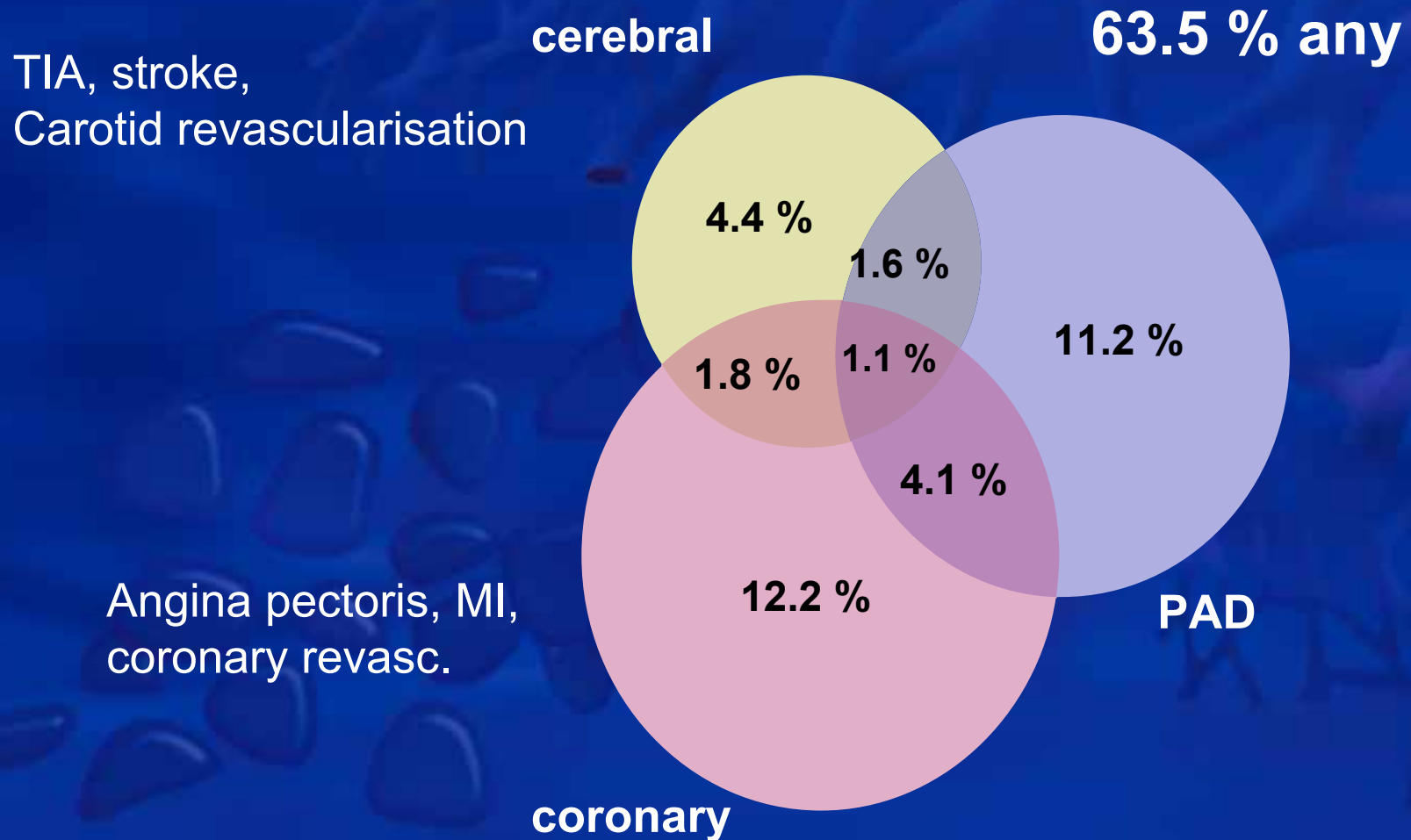
Cardio-/cerebrovascular deaths were verified by hospital data or GP records.

- **Asymptomatic PAD:**
ABI < 0.9 determined with standard Doppler sonography (excluding claudication), using the higher of the two systolic pressures in the leg (posterior tibial or anterior tibial) was used. ABI training and supervision of GPs by vascular experts.
- **Symptomatic PAD:**
comprised intermittent claudication, or PAD - related amputation or revascularisation.

Background characteristics (baseline)

No. of patients	6,880
Ankle-brachial index (mean \pm SD)	1.03 \pm 0.17
PAD overall (%)	20.8
Aymptomatic PAD (%)	12.1
Symptomatic PAD (%)	8.7
History of amputation or peripheral revascularization due to PAD (%)	2.3
Age, mean \pm SD (years)	72.5 \pm 5.3
Female / male (%)	57.8 / 42.2
Body mass index (kg/m ²)	27.3 \pm 4.1
Syst./diast. blood pressure (mmHg)	144 \pm 19 / 81 \pm 10
Smoking status (%)	
Never	54.1
Previous	36.7
Current	9.3
Diabetes mellitus (%)	25.3
Hypertension (%)	64.6
Lipid disorders (%)	51.7
History of cardiac or cerebral event (%)	16.0
Homocysteine (μ mol/L; median [1 st and 3 rd quartile])	14.1 [11.2, 18.0]

Atherothrombotic co-manifestations



Prevalence of PAD* **

(ABI < 0,9)



women: 16,8 % (34,8)

men: 19,8 %
(34,0)

total: 18,0 %
(35,5)



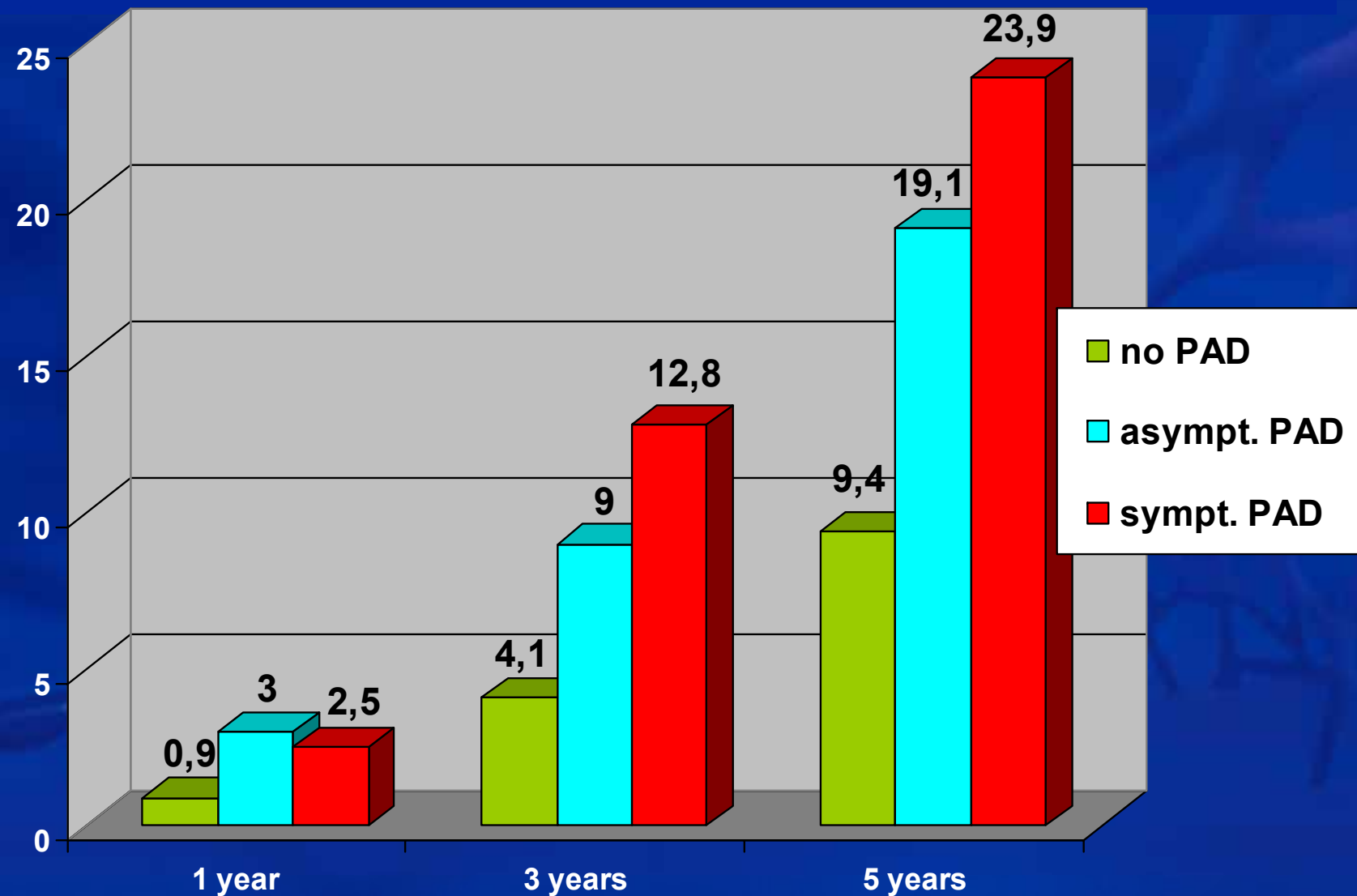
* Distal calf occlusions/stenoses not included (left)

** Distal calf occlusions/stenoses included ()

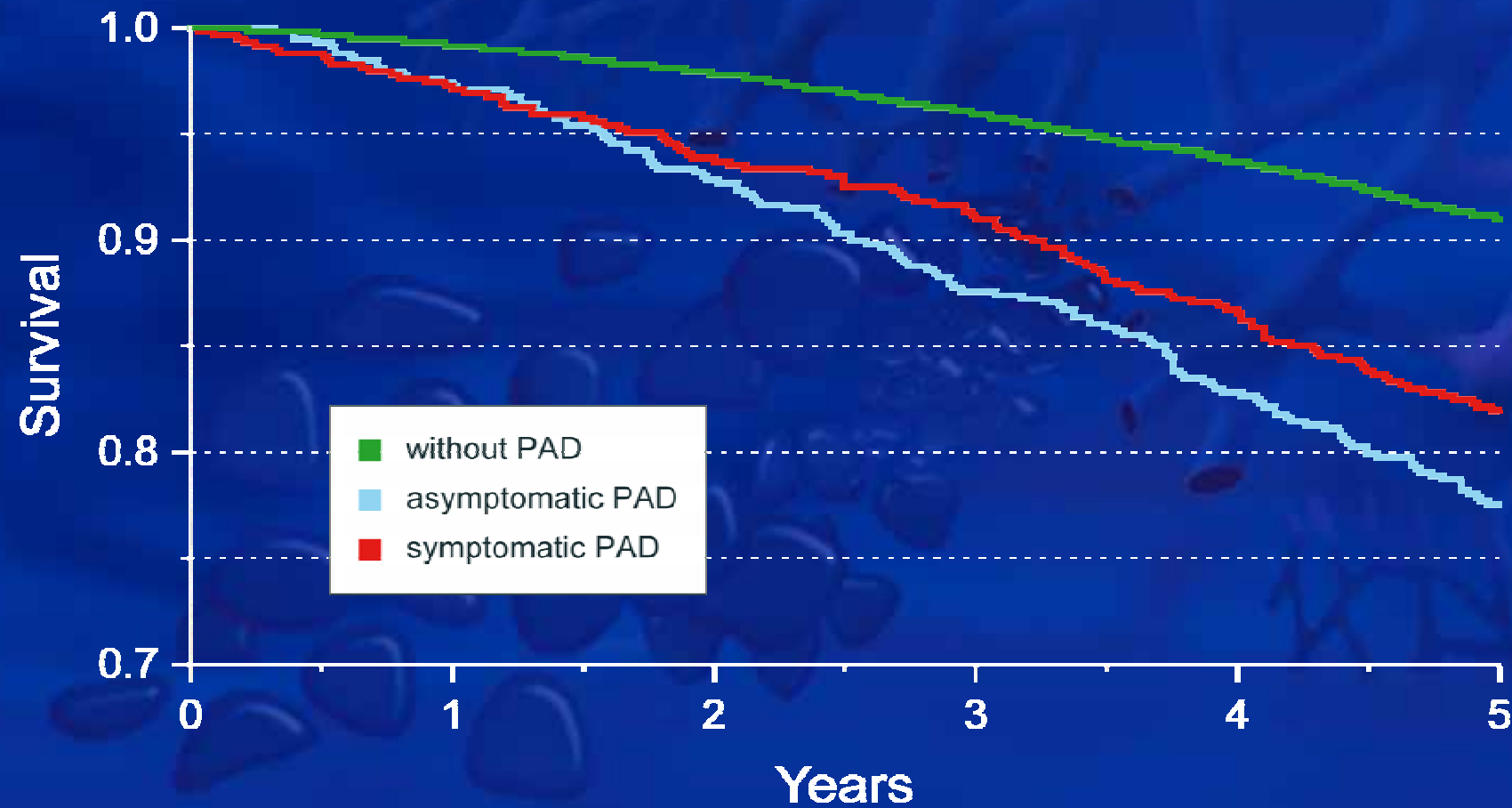
Mortality (all-cause), by PAD category, at 5 yrs

	No. of	No. of	PY	Events per 1000 PY (95% CI)	HR (univariate, 95% CI)	HR	p value
All	6,880	821	33,025	24.9 (23.2 - 26.6)	-	-	-
ABI > 1.5	59	14	274	51.1 (24.3 - 77.9)	-	-	-
PAD no	5,390	506	26,187	19.3 (17.6 - 21.0)	vs. no PAD:	-	-
PAD asymptomatic	835	159	3,865	41.1 (34.7 - 47.5)	2.2 (1.8 - 2.6)	1.6 (1.3 - 2.0)	< 0.001
PAD symptomatic	596	142	2,699	52.6 (44.0 - 61.3)	2.8 (2.3 - 3.3)	1.8 (1.5 - 2.2)	< 0.001
Symptomatic vs asymptomatic:					1.3 (1.0 - 1.6)	1.1 (0.9 - 1.2)	0.5

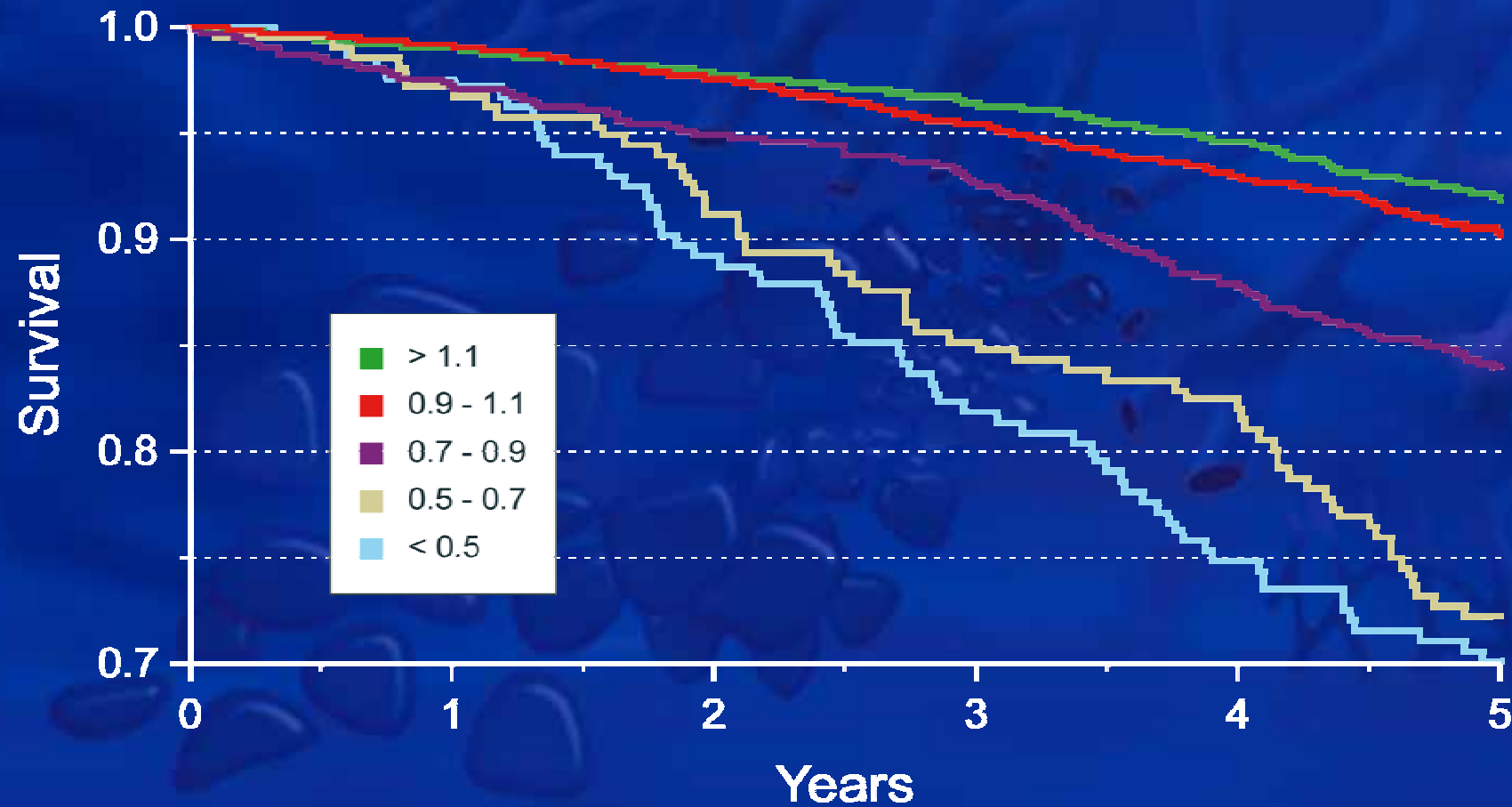
Mortality (all-cause, by PAD status) at 5 yrs



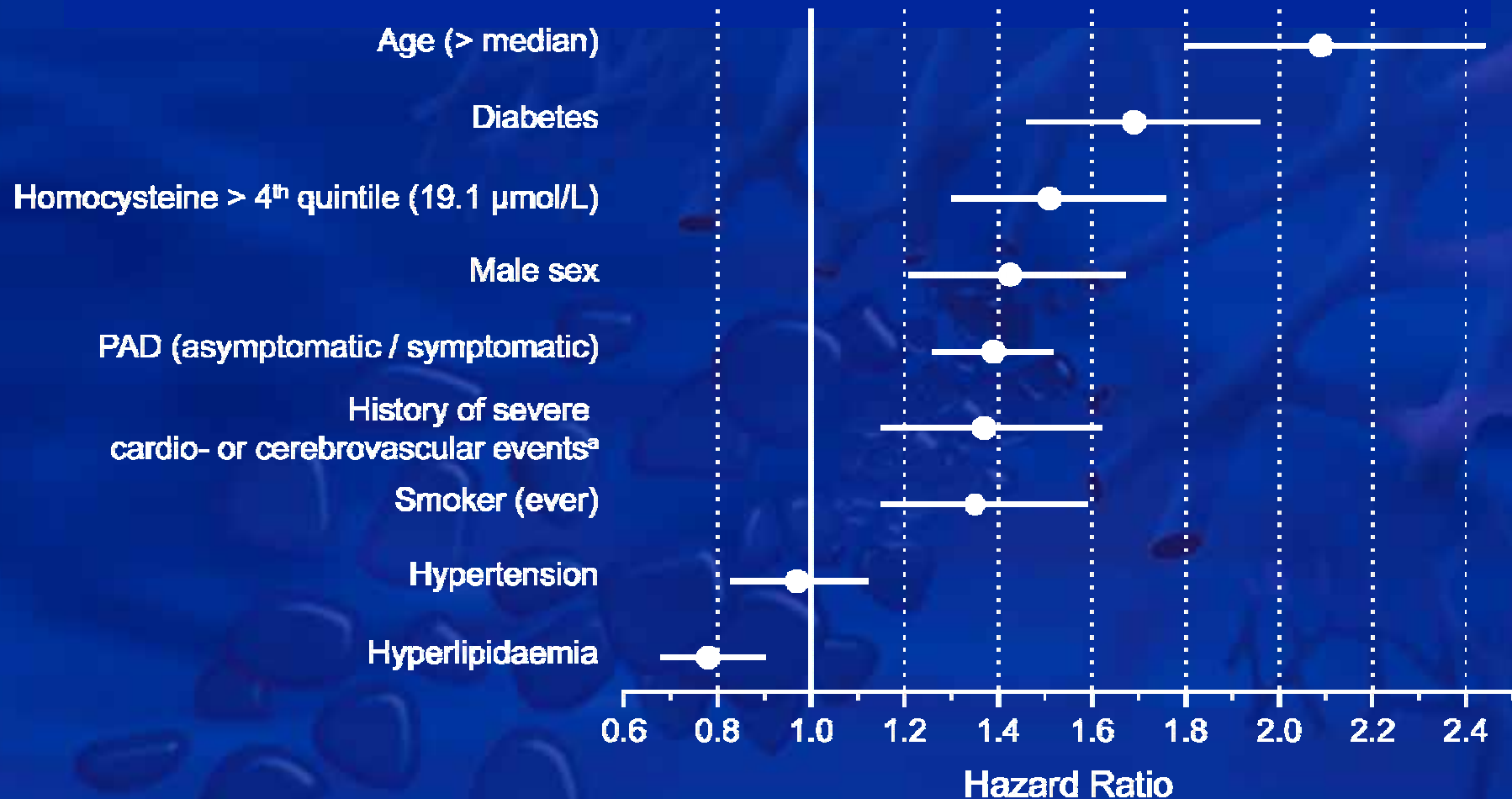
Survival (all-cause, by PAD status) at 5 yrs



Mortality (all-cause, by ABI category) at 5 years



Association between PAD (and other known vascular risk factors) and death of any cause



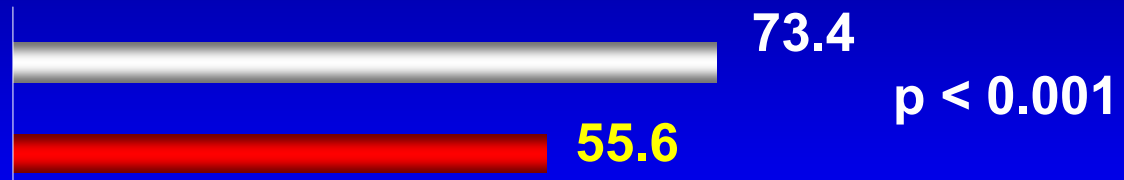
With the exception of hypertension and hyperlipidemia, a significant association was observed between all cardiovascular risk factors investigated

CI = confidence interval; PAD = peripheral arterial disease (symptomatic: history of peripheral revascularization or amputation or claudicatio intermittens, asymptomatic: ABI < 0.9 and no symptomatic PAD at baseline); ^a = myocardial infarction, cardiac revascularization, stroke, revascularization at carotids

PAD patients are undertreated



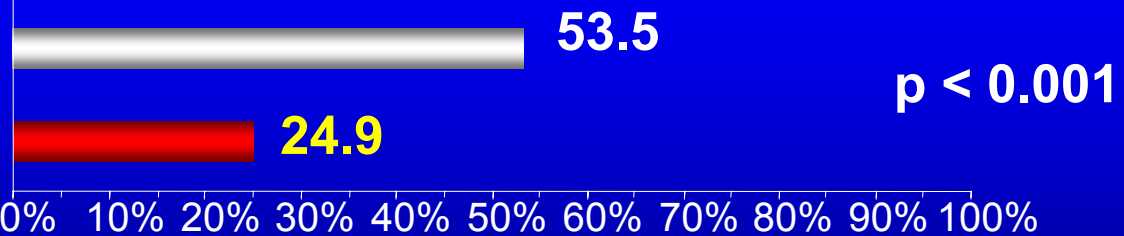
Platelet inhibiting
drugs *



statins



betablockers



* ASS, Ticlopidin
Or Clopidogrel

— Only CVD / CHD (Stroke, MI
Or coronary revascularisation)

— PAD only

Conclusions

- PAD is common in primary care
- PAD patients have a substantially increased risk of death
- Asymptomatic and symptomatic PAD do not significantly differ in terms of risk
- PAD is a strong and independent risk predictor compared to conventional risk factors
- ABI category counts!
- Detecting PAD is important to aid in the management of these patients to reduce the risk of cardiovascular events.

Conclusions (ABI)

- ABI is feasible in primary care
- The ABI is sensitive, specific and reliable for the detection of PAD
- The ABI is a good predictor of risk for future cardiovascular events and mortality
- These data support existing guidelines that PAD should be routinely employed in primary care

CALL TO ACTION

- Implement ABI as screening tool in general practice to identify high - risk patients
PAD is too important to leave it to specialists alone...
- Screen elderly patients (and those with additional risk factors) systematically for PAD
- Initiate treatment in PAD along the standards of coronary artery disease
- PAD patients are no longer second - class atherothrombotic patients

Possible slides for discussion

How to measure ABI



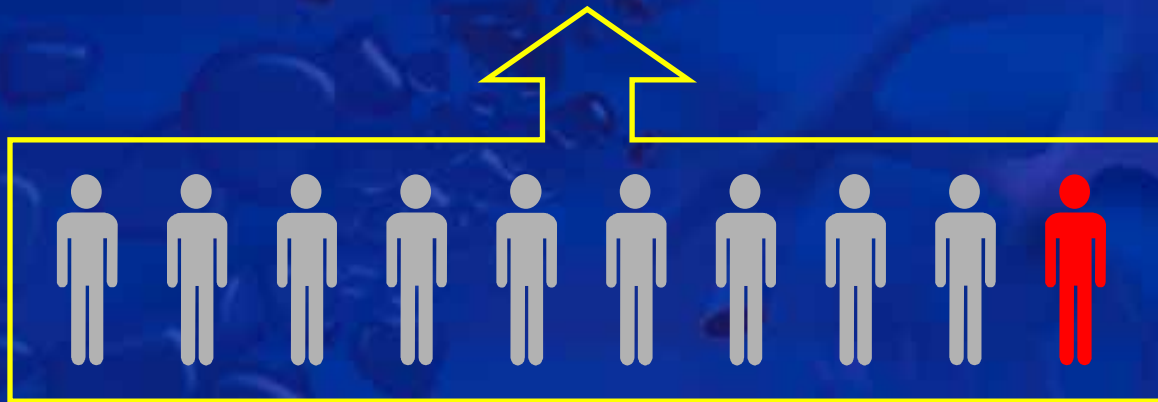
- Systolic blood pressure in the brachial artery is measured in both arms using a Doppler detector in the antecubital fossa
- The blood pressure cuff is then applied to the ankle, and the Doppler used to determine systolic pressure at the left and right posterior tibial arteries and dorsalis pedis arteries.
- The ABI for each leg is the ratio of the higher of the 2 systolic pressures (posterior tibial or dorsalis pedis) in the leg and the average of the right and left brachial artery pressures, unless there is a discrepancy > 10 mmHg in blood pressure values between the 2 arms. In such cases, the higher reading is used for the ABI. Recent data have indicated that use of the **lower** 2 ankle systolic pressures may improve the diagnostic yield.
- Pressures in each leg should also be measured and ABI calculated separately for each leg.
- An ABI < 0.90 in either leg is generally considered indicative of PAD, and progressively lower ABI values indicate more severe disease.

PAD is usually asymptomatic

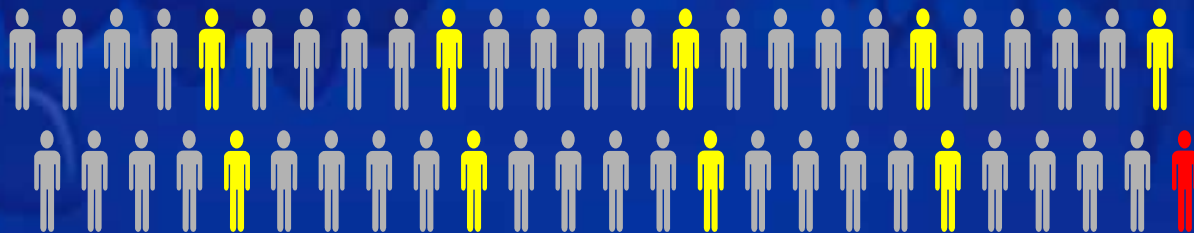
1 in 5 elderly people
(aged ≥ 65 years)
visiting the GP has PAD
(defined as ABI < 0.9)



Only 1 in 10 of these PAD
patients will have classical
symptoms of intermittent
claudication



If one relies solely on
classical symptoms of
intermittent
claudication you will
not 'see' much PAD



Undertreatment of PAD patients

Tabelle 2

Studien zur Therapieintensität bei Patienten mit PAVK vs. Patienten mit KHK

Autor, Jahr	Land (Akronym)	Setting	n (mit PAVK)	PAVK allein						KHK (± PAVK)								
				TFH	Lipidsenker	Antihypertensiva		Antidiabetika		TFH	Lipidsenker	Antihypertensiva		Antidiabetika				
				Insges.	Statin	Insges.	Beta-Blocker	ACE-Inhib.	Alle	Insges.	Statin	Insges.	Beta-Blocker	ACE-Inhib.	Alle			
Dumas, 2007 ²⁸	Frankreich	Kliniken (Register)	262	82	....	25,8	....	....	22,5	....	83,7	....	45	....	....	37,5	....	[3]
Bhatt, 2006 ¹⁸	International (REACH)	Hausärzte, Ambulanzen, Kliniken	8273	81,7	70,0	64,2	92,4	42,9	47,2	85,6	85,6	80,9	76,2	97,4	48,5	48,2	82,5	[1]; [2]
Ness, 2005 ²⁹	USA	Univ., Intern. Ambulanz	209	85	67	....	....	60	62	....	....	....	....	....	....	....	....	....
Youssef, 2005 ²⁵	England (UK)	Angiologische Ambulanz	200	31,5	....	....	....	....	....	....	....	....	....	....	....	....	....	[4]
Rehring, 2005 ⁴²	USA	Kliniken (Register)	1733	....	....	31,3	....	33,1	28,9	....	....	....	....	....	....	....	....	....
Bongard, 2004	Frankreich (ECLAT1, PRISMA, APRES)	Hausärzte, Kardiologen	3998	78,7	40,4	40,4	25,8	15,7	26,8	17,0	82,7	....	61,7	24,5	60,0	38,0	13,6	....
Diehm, 2004 ^{14,16}	Deutschland (getABI)	Hausärzte	1230	53	40,0	35,2	93,3	24,4	....	74,4	64,8	62,9	57,4	96,3	46,4	....	65,4	[1]
Brown, 2004	Kanada	Hausärzte (Reg.)	281	44	....	23	....	....	62	....	37	....	29	....	....	60	....	[5]
McDermott, 2003	USA (WALKS)	Hausärzte, angiol. Ambulanzen	136	64,8	36	....	....	....	....	....	63,5	51,4	....	....	....	....	....	[6]
Hirsch, 2001 ¹⁹	USA (PARTNERS)	Hausärzte, Screening-Aktion	1865	54	56	....	88	....	....	85	74	76	....	96	....	....	85	....
Hirsch, 2001 ⁴³	USA (Minnesota)	Hausärzte, Screening-Aktion	92	64,1	22,8	....	44,6	....	....	....	....	....	....	....	....	....	....	....
McDermott, 1997 ²⁴	USA	Angiol./Kardiologische Klinik	202	47	46	....	81	....	....	....	76	58	....	79	....	....	....	....

Angaben in %; insges.: irgendein Medikament aus dieser Gruppe; [1] % bei Antihypertensiva, Lipidsenker, Antidiabetika beziehen sich nur auf Patienten mit genannten Begleiterkrankungen; [2] z.T. Koprävalenz verschiedener Atherothrombosemanifestationen; [3] Werte bei Entlassung; [4] nur Patienten mit Claudicatio (Werte bei stationärer Aufnahme); [5] alle Patienten hatten auch Typ-2-Diabetes; [6] 81% der Patienten hatten symptomatische PAVK.
 Werte wurden nicht erhoben oder nicht explizit berichtet