

8. KARDIOLOGIE-SYMPOSIUM DES HERZZENTRUM HIRSLANDEN, ZENTRALSCHWEIZ

Zuckerherzen und die kardiologische Abklärung bei Diabetes



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Thematik

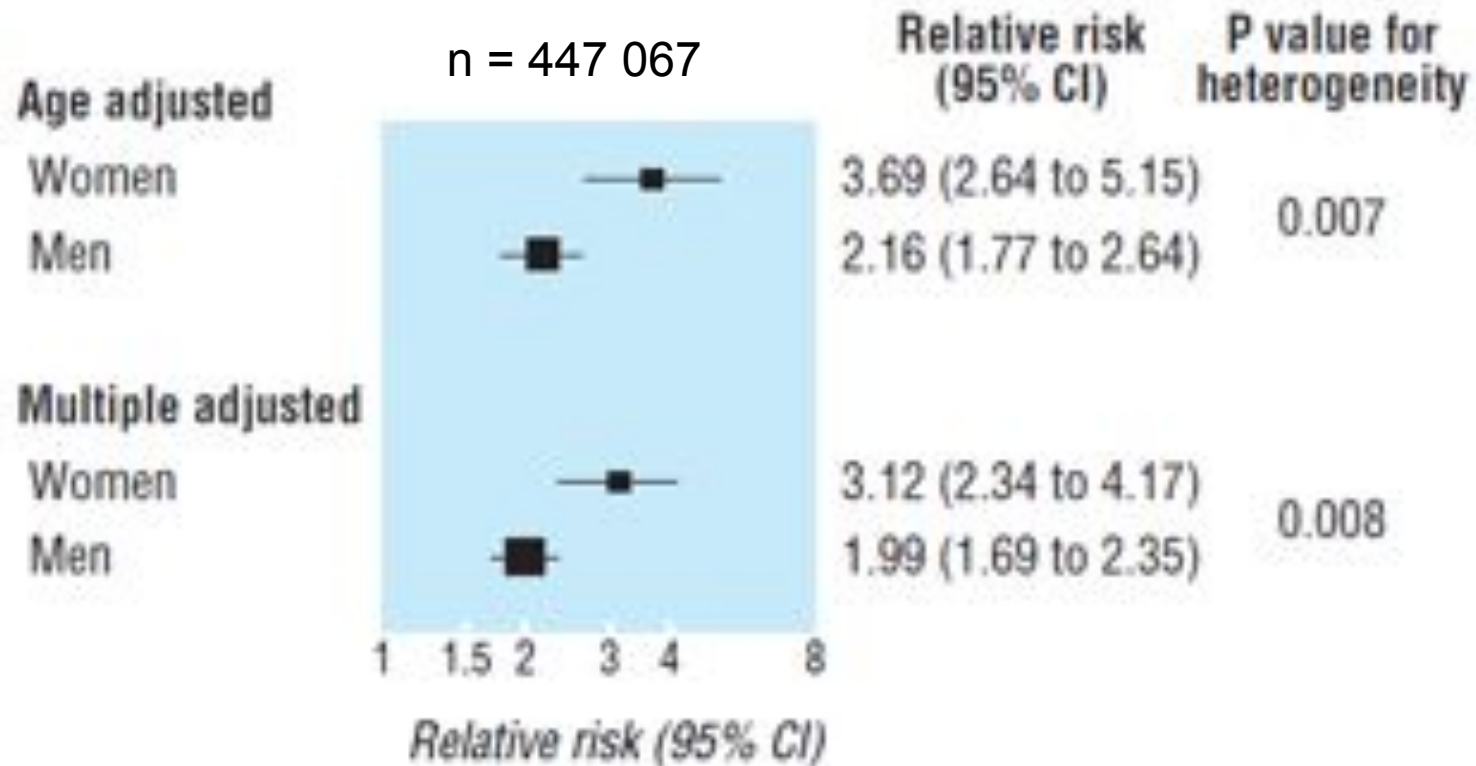
- Diabetes und KHK → „komplikationsträchtiges Duett“
- KHK – Screening?
- Diabetiker ≠ Diabetiker (Abklärung/Therapie)
- Wenn abklären – wie?

Diabetes und koronare Herzkrankheit(KHK)

- Zunehmende Prävalenz des Diabetes
- KHK – Epidemie?
- Atypische/asymptomatische Manifestation
- Stumme KHK relativ häufig und prognostisch ungünstig
- Primär – /Sekundärprophylaxe

Diabetes CAD – equivalent?

Fatal CAD events in diabetic pts



2 – 4 fold risk in diabetic pts

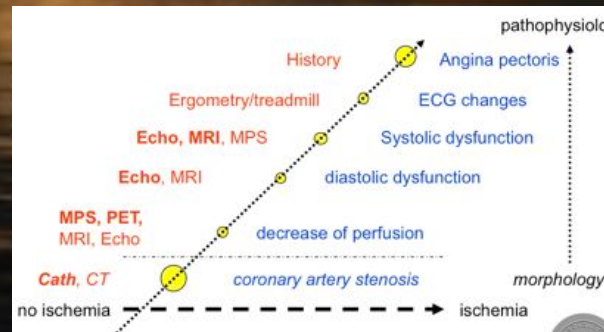
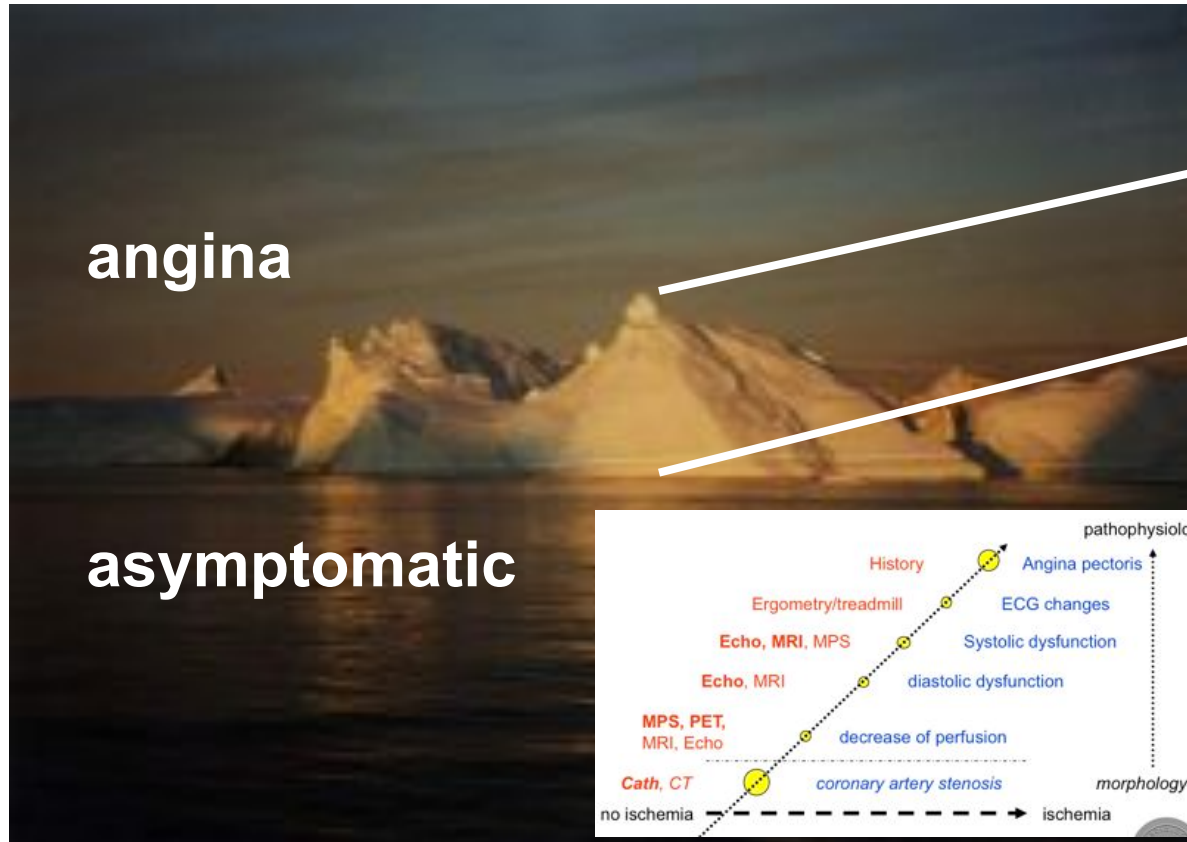
When *should* diabetic pts be tested for CAD

- If they suffer from (atypical) **angina**

Keep the anginal equivalents in mind!

- Shortness of breath
- Epigastric pain
- Weakness
- Stress intolerance
- Loss of exercise capacity

Symptoms – the tip of the iceberg



The *asymptomatic* diabetic patient I

S14

Diabetes Care Volume 37, Supplement 1, January 2014



Standards of Medical Care in Diabetes—2014

American Diabetes Association

Screening

- In asymptomatic patients, routine screening for CAD is not recommended because it does not improve outcomes as long as CVD risk factors are treated. **A**

The *asymptomatic* diabetic patient II



European Heart Journal (2013) 34, 3035–3087
doi:10.1093/eurheartj/ehz108

ESC GUIDELINES



ESC Guidelines on diabetes, pre-diabetes, and cardiovascular diseases developed in collaboration with the EASD

mate.¹²¹ However, in asymptomatic patients, routine screening for CAD is controversial. It is not recommended by the ADA, since it does not improve outcomes as long as CV risk factors are treated.¹²² This position is, however, under debate and the characteristics of the patients who should be screened for CAD need to be better defined.¹²³ Further evidence is needed to support screening for SMI in all high-risk patients with DM. Screening may be performed in patients at a particularly high risk, such as those with evidence of peripheral artery disease (PAD) or high CAC score or with proteinuria, and in people who wish to start a vigorous exercise programme.¹²⁴

Consensus Development Conference on the Diagnosis of Coronary Heart Disease in People With Diabetes

10–11 February 1998, Miami, Florida

AMERICAN DIABETES ASSOCIATION

6. What are the limitations and provisos of these recommendations?

Table 1—Indications for cardiac testing in diabetic patients

Testing for CAD is warranted in patients with the following:

1. Typical or atypical cardiac symptoms
2. Resting electrocardiograph suggestive of ischemia or infarction
3. Peripheral or carotid occlusive arterial disease
4. Sedentary lifestyle, age ≥ 35 years, and plans to begin a vigorous exercise program
5. Two or more of the risk factors listed below (a–e) in addition to diabetes
 - a) Total cholesterol ≥ 240 mg/dl, LDL cholesterol ≥ 160 mg/dl, or HDL cholesterol < 35 mg/dl
 - b) Blood pressure $> 140/90$ mmHg
 - c) Smoking
 - d) Family history of premature CAD
 - e) Positive micro/macroalbuminuria test

Prevalence of silent CAD in diabetes

non-diabetics

diabetics*

without evidence of CAD

2.5% - 11%

6.4% - 22%

*low risk patients

Screening bei „Niedrig – Risiko“ Diabetikern

Pathophysiology/Complications

ORIGINAL ARTICLE

Detection of Silent Myocardial Ischemia in Asymptomatic Diabetic Subjects

The DIAD study

FRANS J.T.H. WACKERS, MD¹
LAWRENCE H. YOUNG, MD¹
SILVIO E. INZUCCHI, MD²
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JANICE A. DAVEY, MSN¹
EUGENE J. BARRETT, MD⁴
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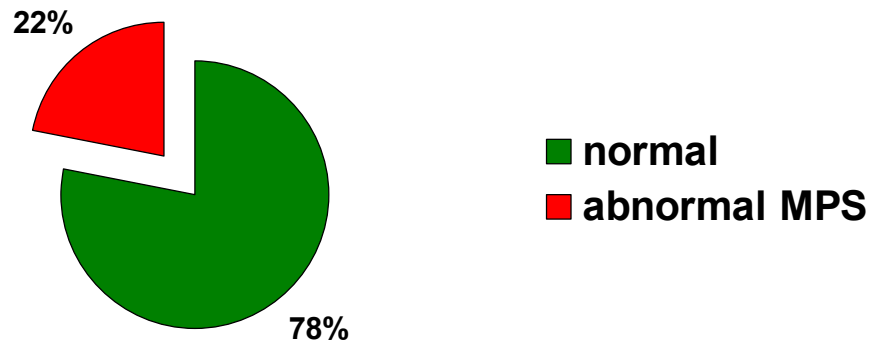
GARY V. HELLER, MD⁷
NEIL FILIPCHUK, MD⁸
SAMUEL ENGEL, MD⁹
ROBERT E. RATNER, MD¹⁰
AMI E. ISKANDRIAN, MD¹¹
FOR THE DETECTION OF ISCHEMIA IN
ASYMPTOMATIC DIABETICS (DIAD)
INVESTIGATORS*

for abnormal tests were abnormal Valsalva (odds ratio [OR] 5.6), male sex (2.5), and diabetes duration (3.2). Other traditional cardiac risk factors or inflammatory and prothrombotic markers were not predictive. Ischemic adenosine-induced ST-segment depression with normal perfusion ($n = 21$) was associated with women (OR 3.4). Selecting only patients who met American Diabetes Association guidelines would have failed to iden-

Detection of Ischemia in Asymptomatic Diabetics (DIAD)

- Number of **low risk diabetic** patients 1123
- mean age 61±7y
- duration of diabetes 9±8y

MPS results of 522 pts:



Independent predictor of abnormal MPS:

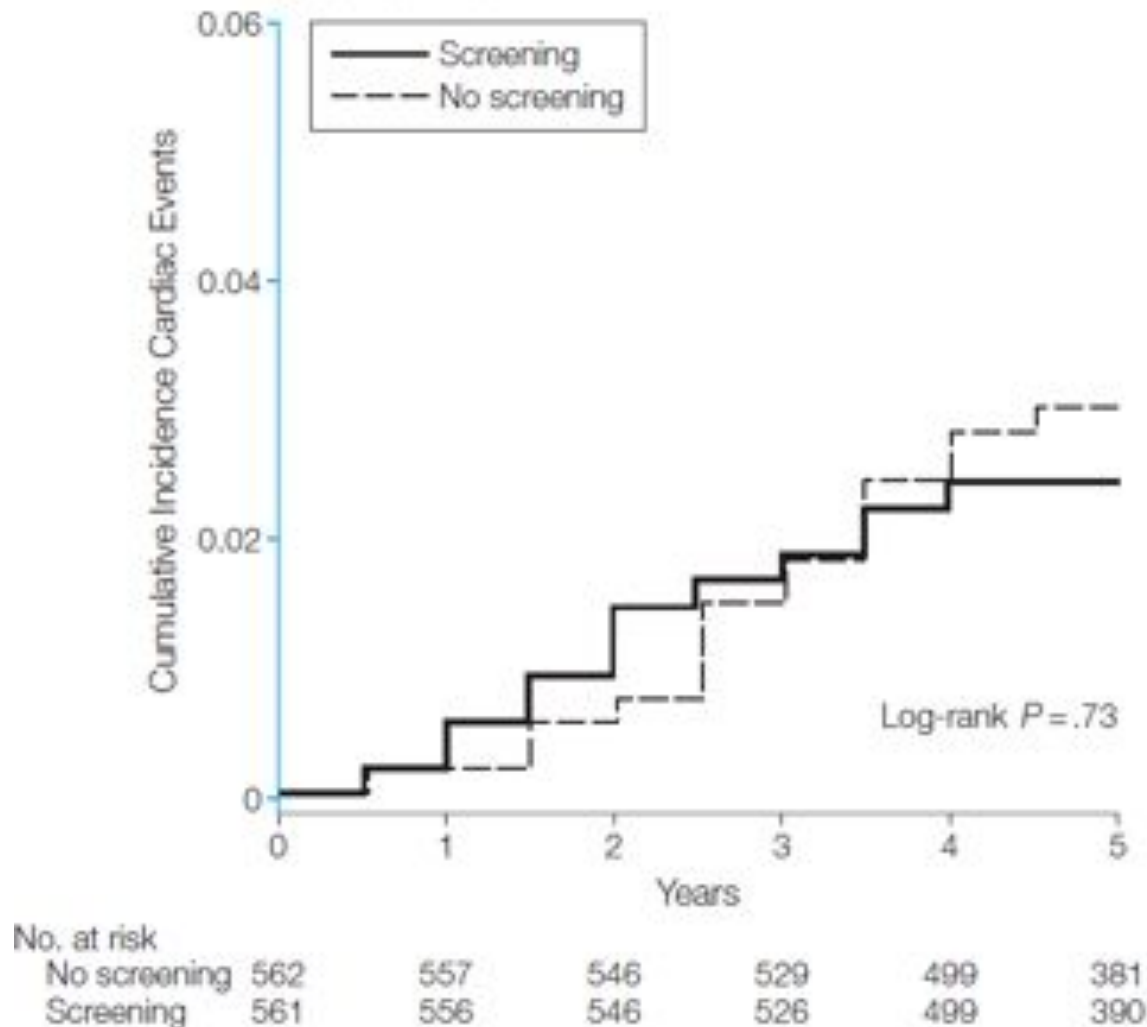
Cardiac autonomic neuropathy OR 2.4 (95%CI 1.2-4.8)

Verbessert das Screening die Prognose?

 ORIGINAL CONTRIBUTION

Cardiac Outcomes After Screening for Asymptomatic Coronary Artery Disease in Patients With Type 2 Diabetes The DIAD Study: A Randomized Controlled Trial

Does CAD screening of diabetic pts improve outcome?



Diabetes → KHK → Therapie

The NEW ENGLAND JOURNAL *of* MEDICINE

ESTABLISHED IN 1812

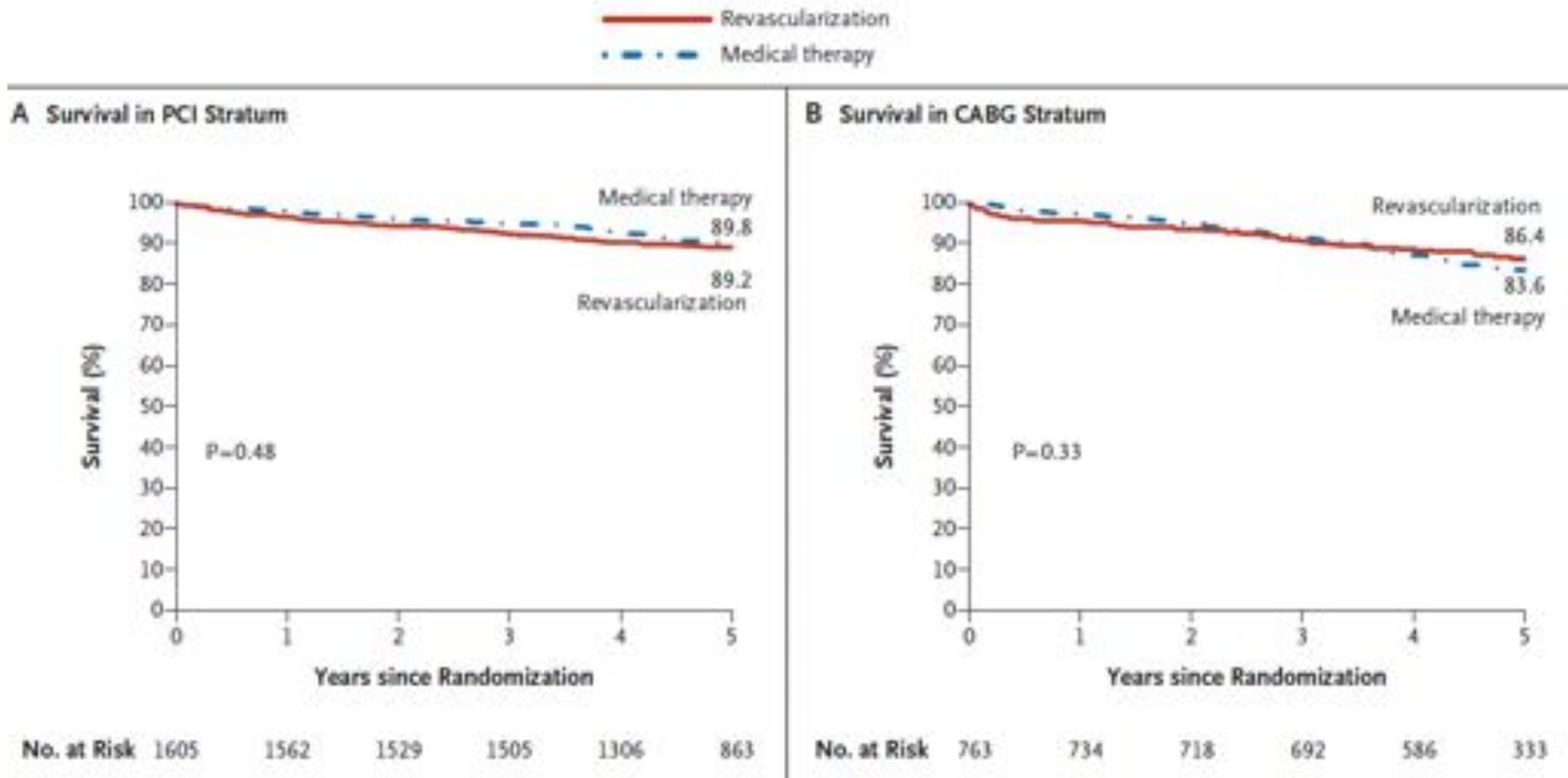
JUNE 11, 2009

VOL. 360 NO. 24

A Randomized Trial of Therapies for Type 2 Diabetes and Coronary Artery Disease

The BARI 2D Study Group*

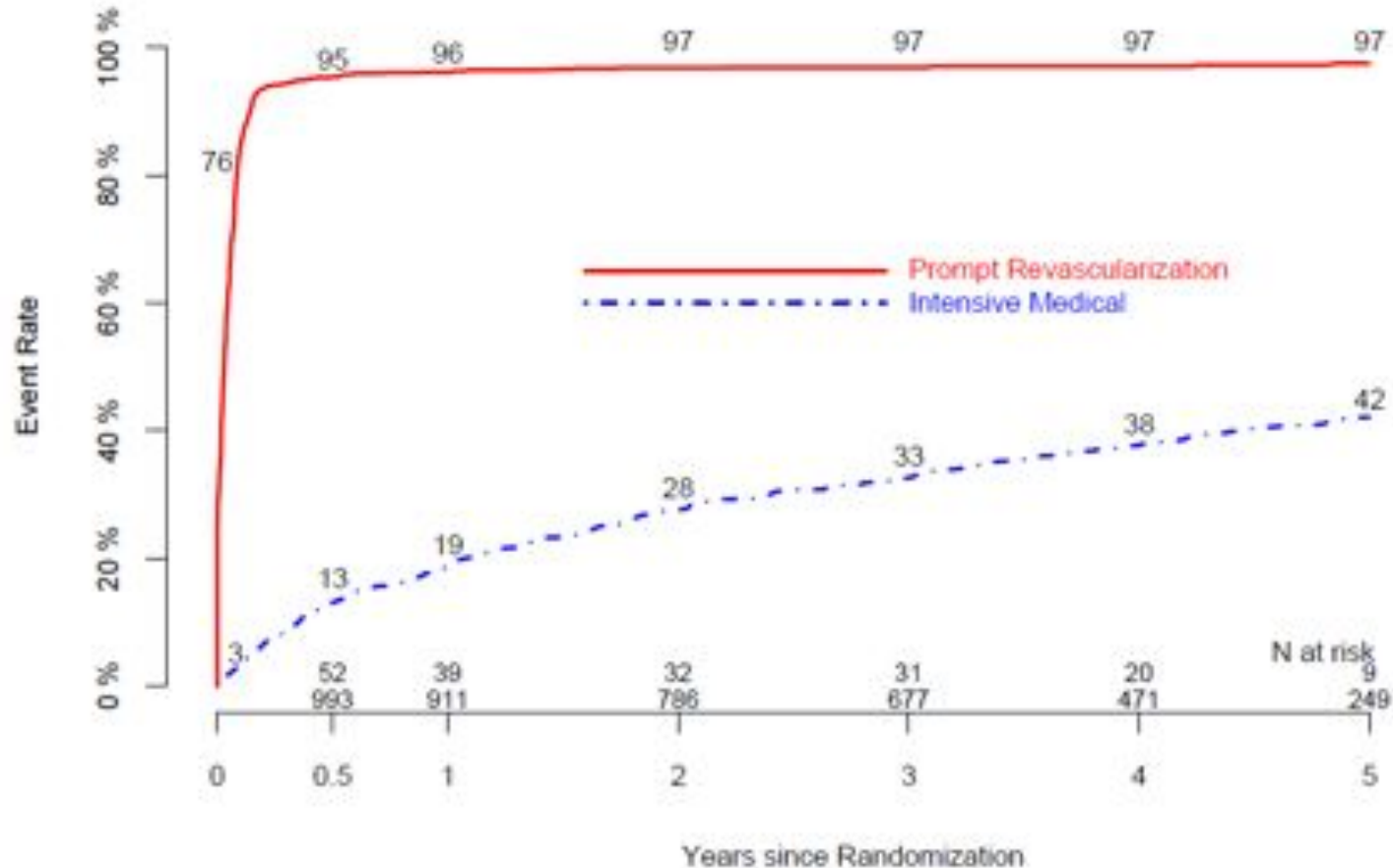
Does revascularisation improve outcome of diabetic CAD pts?



n=2368, LVEF normal in 82%
91% stents

BARI – 2D a closer look I

Revascularization rates



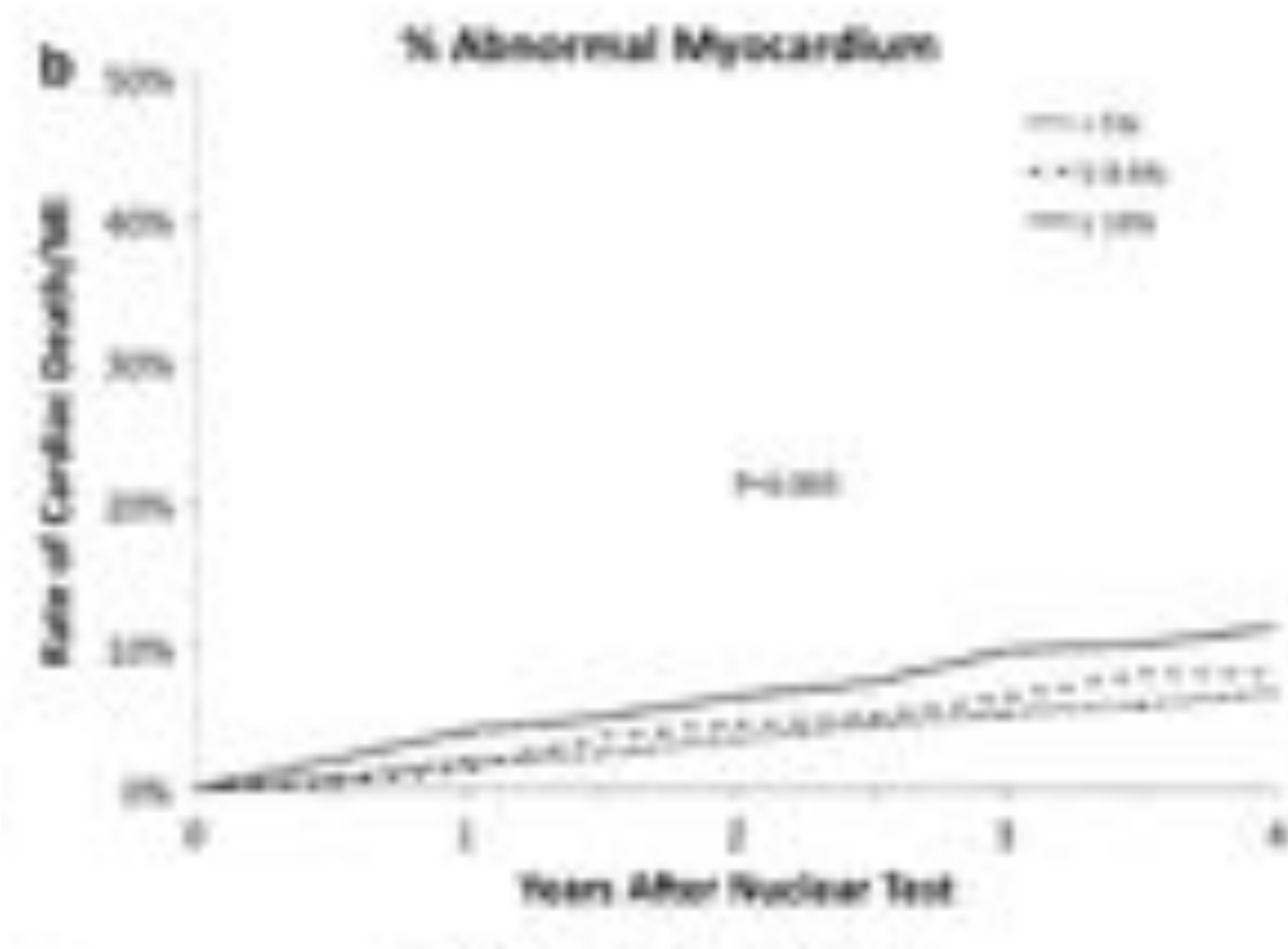
BARI – 2 D a closer look II

ORIGINAL ARTICLE

Impact of left ventricular function and the extent of ischemia and scar by stress myocardial perfusion imaging on prognosis and therapeutic risk reduction in diabetic patients with coronary artery disease: Results from the Bypass Angioplasty Revascularization Investigation 2 Diabetes (BARI 2D) trial

Leslee J. Shaw, PhD,^a Manuel D. Cerqueira, MD,^b Maria M. Brooks, PhD,^c Andrew D. Althouse, MA,^c Veronica V. Sansing, MS, PhD,^c George A. Beller, MD,^d Rodica Pop-Busui, MD, PhD,^e Raymond Taillefer, MD,^f Bernard R. Chaitman, MD,^g Raymond J. Gibbons, MD,^h Jaekyeong Heo, MD,ⁱ and Ami E. Iskandrian, MD^j

Extent of pathology and outcome



Screening bei „Hoch – Risiko“ Diabetikern TIME DM → BARDOT

JACC: CARDIOVASCULAR IMAGING

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<http://dx.doi.org/10.1016/j.jcm.2014.07.010>

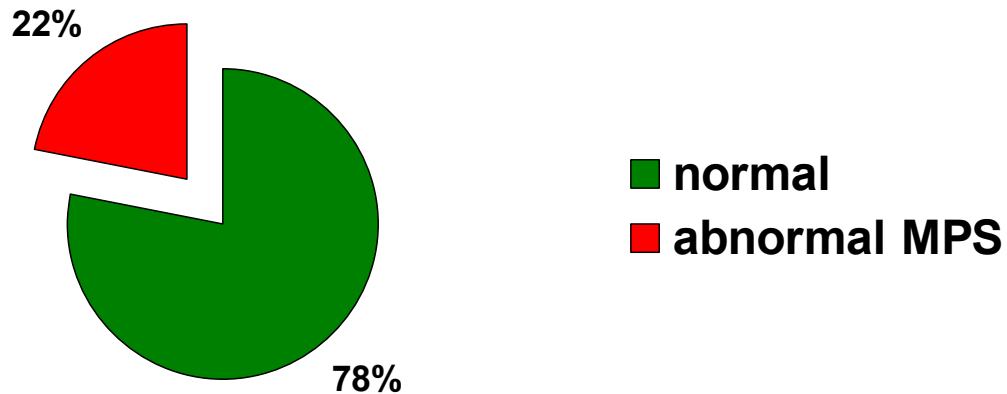
Progression to Overt or Silent CAD in Asymptomatic Patients With Diabetes Mellitus at **High Coronary Risk**



Main Findings of the Prospective Multicenter BARDOT
Trial With a Pilot Randomized Treatment Substudy

Michael J. Zellweger, MD,* Michael Marzoun, MD,† Hans H. Osterhues, MD,‡ Ulrich Keller, MD,§
Jan Müller-Brand, MD,|| Raban Jeger, MD,* Otmar Pfister, MD,* Thilo Burkard, MD,* Friedrich Eckstein, MD,¶
Stefanie von Felten, PhD,* Stefan Osswald, MD,* Matthias Pfisterer, MD*

BARDOT – patients with abnormal MPS

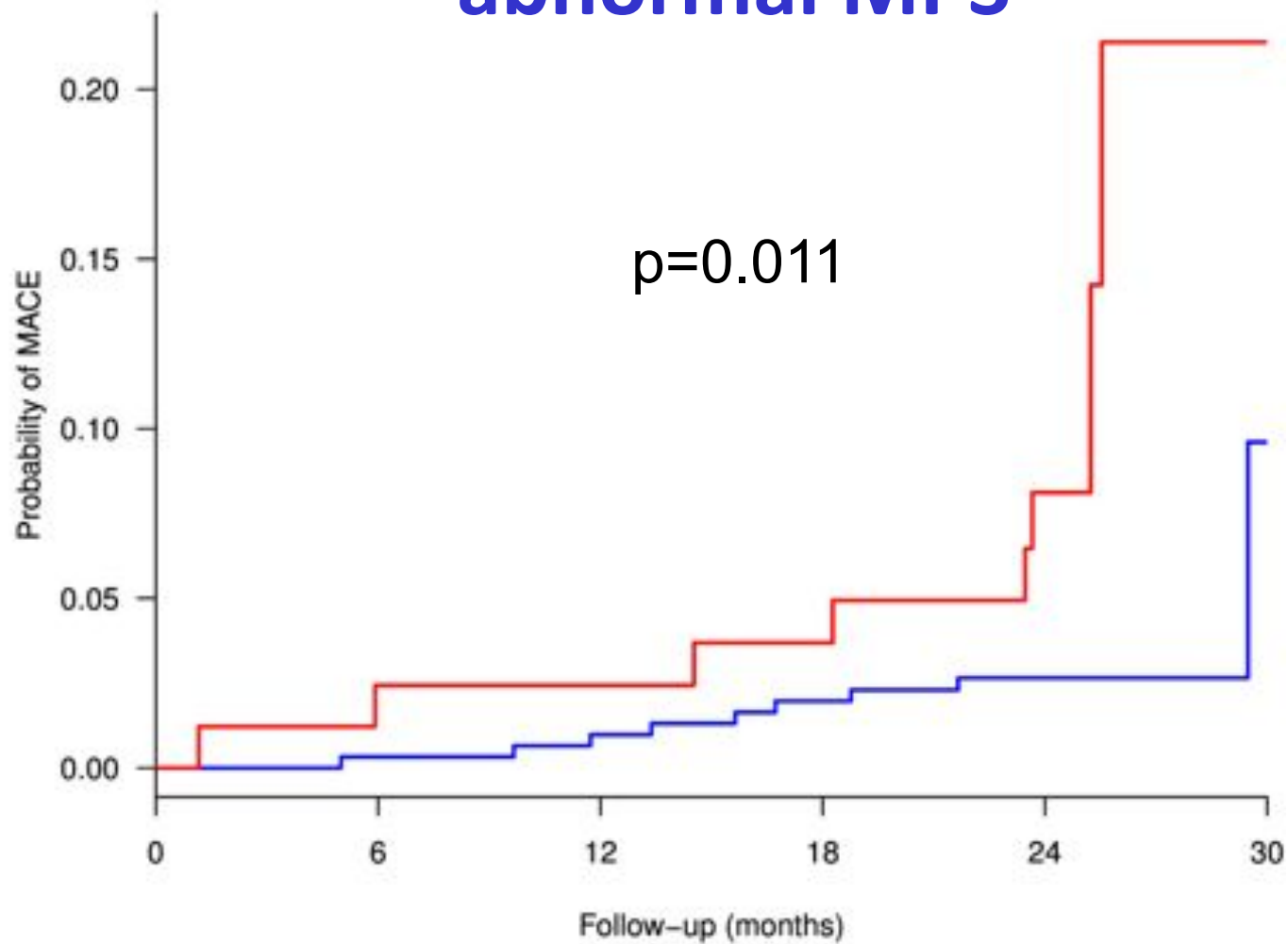


22% abnormal
MPS
compared with
6% in DIAD

Independent predictors of abnormal MPS

	OR	95% CI	p
male sex	2.95	[1.53, 6.05]	0.002
age	1.05	[1.01, 1.09]	0.026
diabetes duration	1.05	[1.01, 1.08]	0.009
smoking	1.98	[1.05, 3.69]	0.032
shortness of breath	1.60	[0.93, 2.75]	0.09
PAVD	2.10	[1.07, 4.06]	0.028
autonomic cardiac neuropathy	1.69	[0.98, 2.92]	0.059

MACE in pts with normal versus abnormal MPS



Number at risk

CAD+

82

80

78

77

43

1

CAD-

306

305

302

297

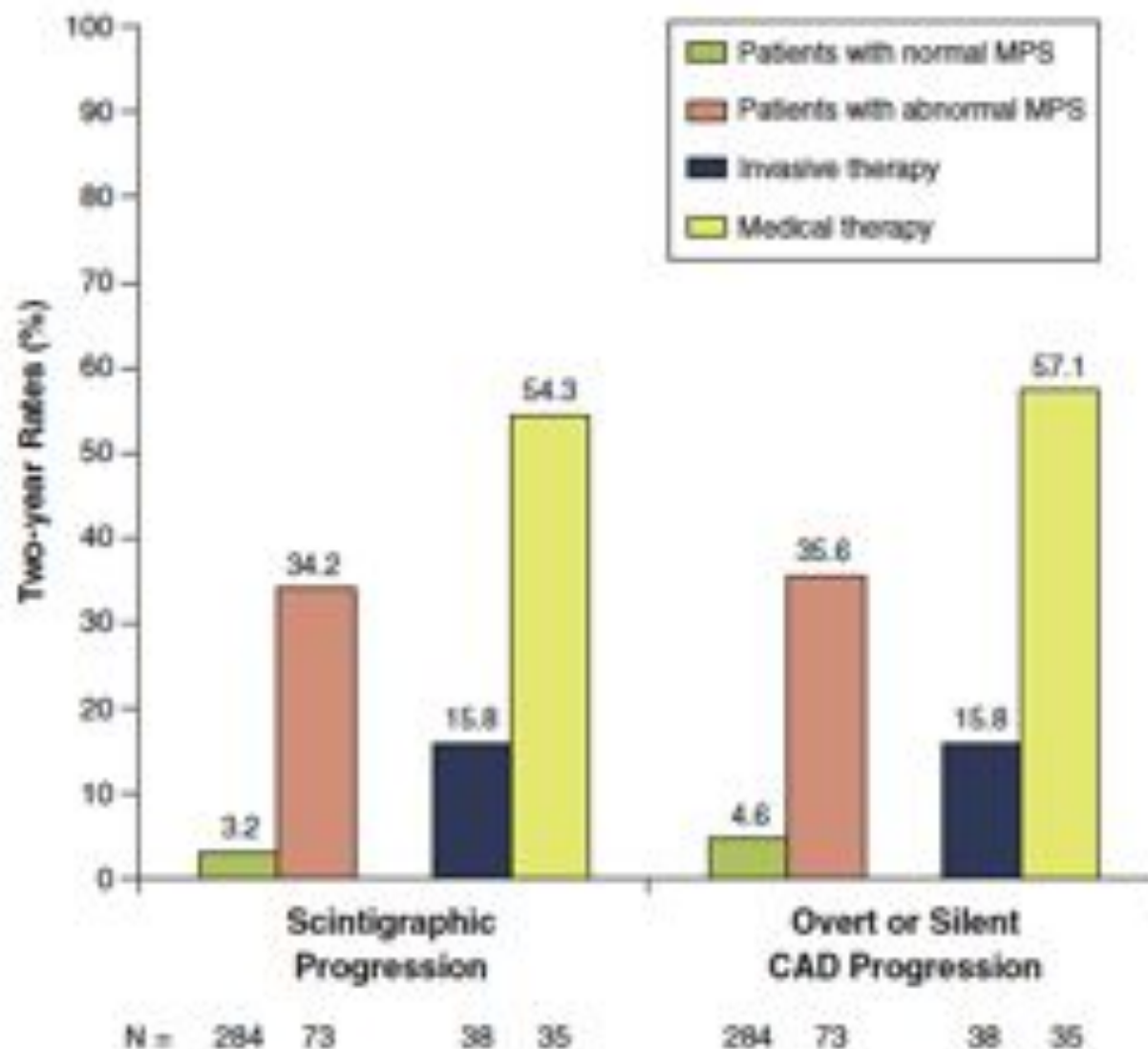
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Universitätsspital
Basel

Comparison of two-year rates of scintigraphic progression and “overt or silent CAD progression” in patients with normal versus abnormal MPS and for patients with abnormal MPS managed medically versus invasively



Synthese DIAD und BARDOT

**General CAD screening in diabetic
pts probably does not make
sense, however...**

Synthese DIAD und BARDOT

General CAD screening in diabetic pts probably does not make sense, however...

there may be pts at particular high risk who may benefit

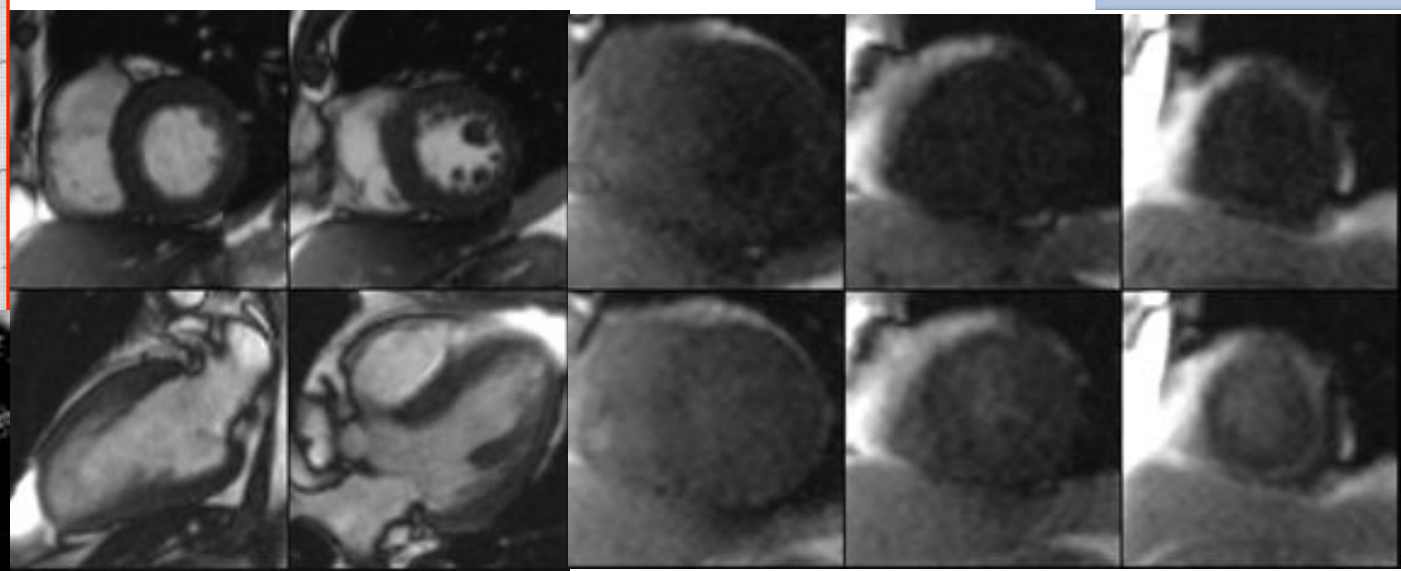
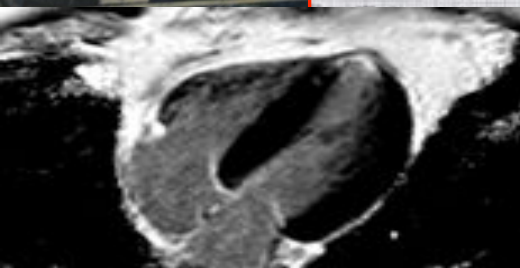
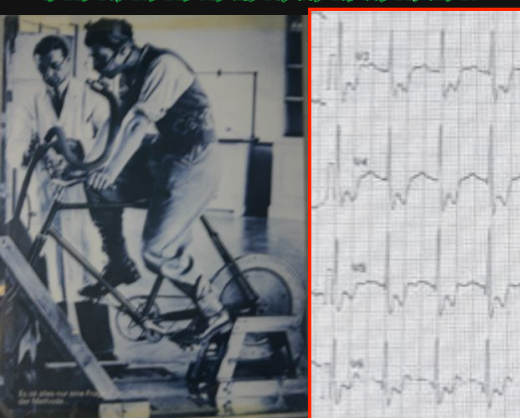
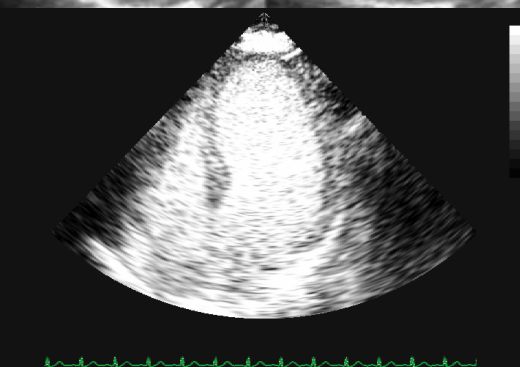
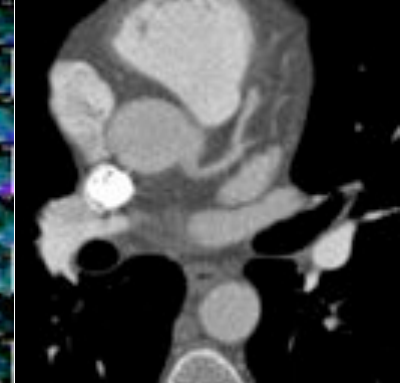
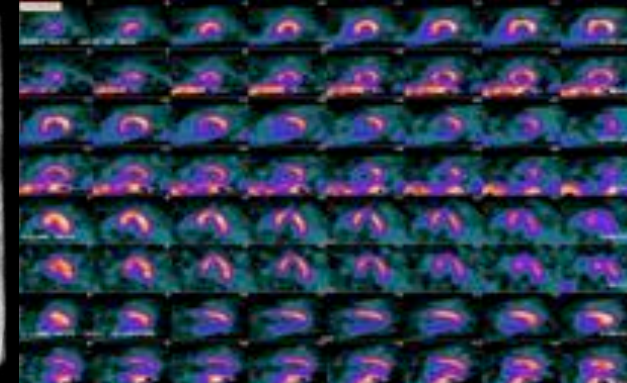
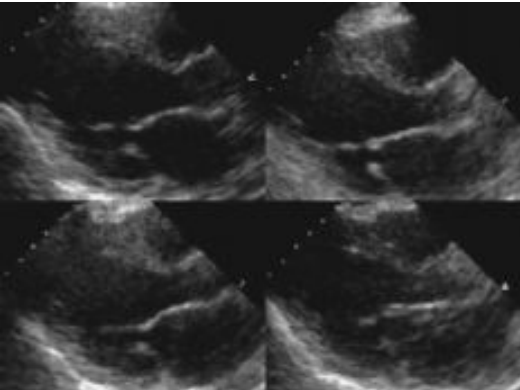
Upcoming guidelines...? which diabetic pts should we screen?

Table 1—*Indications for cardiac testing in diabetic patients*

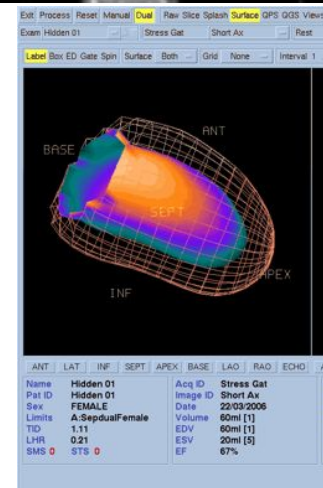
Testing for CAD is warranted in patients with the following:

1. Typical or atypical cardiac symptoms
2. Resting electrocardiograph suggestive of ischemia or infarction
3. Peripheral or carotid occlusive arterial disease

- End organ damage/autonomic cardiac neuropathy
- Shortness of breath
- “Long” diabetes duration
- Preoperative risk stratification

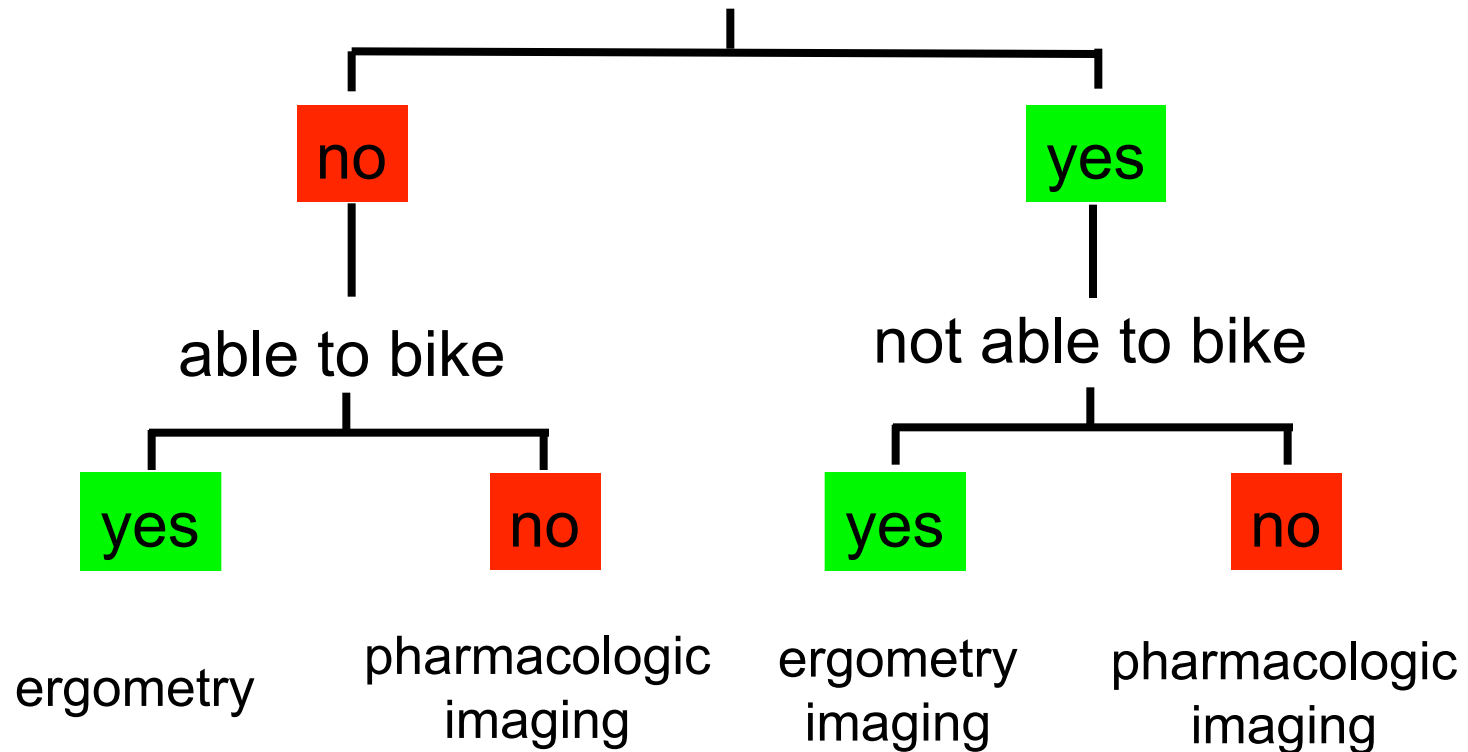


It is not so much
about which test,
but...



Welcher Test soll gewählt werden? Ergometrie - Bildgebung

Baseline ECG changes



Bildgebende Ischämiediagnostik versus Ergometrie

- + Immer möglich (u.a. dank pharmakologischen Stressoren)
- + Höhere Sensitivität und Spezifität
- + Ausmass, Lokalisation (der Narbe/Ischämie)
- + Aussage über Pumpfunktion
- + Risikostratifikation auch bei geringer Leistung
- Weniger verbreitet als Ergometrie
- Teurer

Schlussfolgerungen

- Diabetes/KHK → „komplikationsträchtiges Duett“
- Generelles KHK – Screening beim Diabetiker nicht indiziert
- Hochrisiko – Diabetiker können von einem KHK – Screening profitieren
- Eine kardiale Bildgebung ist dem „alleinigen Stresstest“ überlegen



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