



# Should patients with CAD be screened for aortic aneurysms?

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## Background

- Several population-based studies have shown benefit in terms of mortality from screening men  $\geq 65$  years for AAA
- Epidemiological screening studies suggest an association between AAA and atherosclerosis (CAD, PAD)
- prevalence of AAA in patients undergoing CABG or with acute coronary syndrome has been reported to be higher than in the general population, ranging from 6.6% to 18.2%

## Background

- several recent studies have indicated a decrease in the prevalence of AAA in the general population

**Is there evidence for a more targeted AAA screening strategy in selected groups of patients with an elevated risk of AAA development (e.g. patients with CAD)?**

## Evidence for AAA screening in patients with CAD. What could we determine ?

- Current prevalence of AAA in the CAD population (overall and according to the coronary profile)
- a screening strategy
- the cost of the screening
- Benefit in AAA-related mortality or all-cause mortality rates

# Current Prevalence of AAA in patients with CAD

## High Prevalence of Abdominal Aortic Aneurysm in Patients with Three-vessel Coronary Artery Disease

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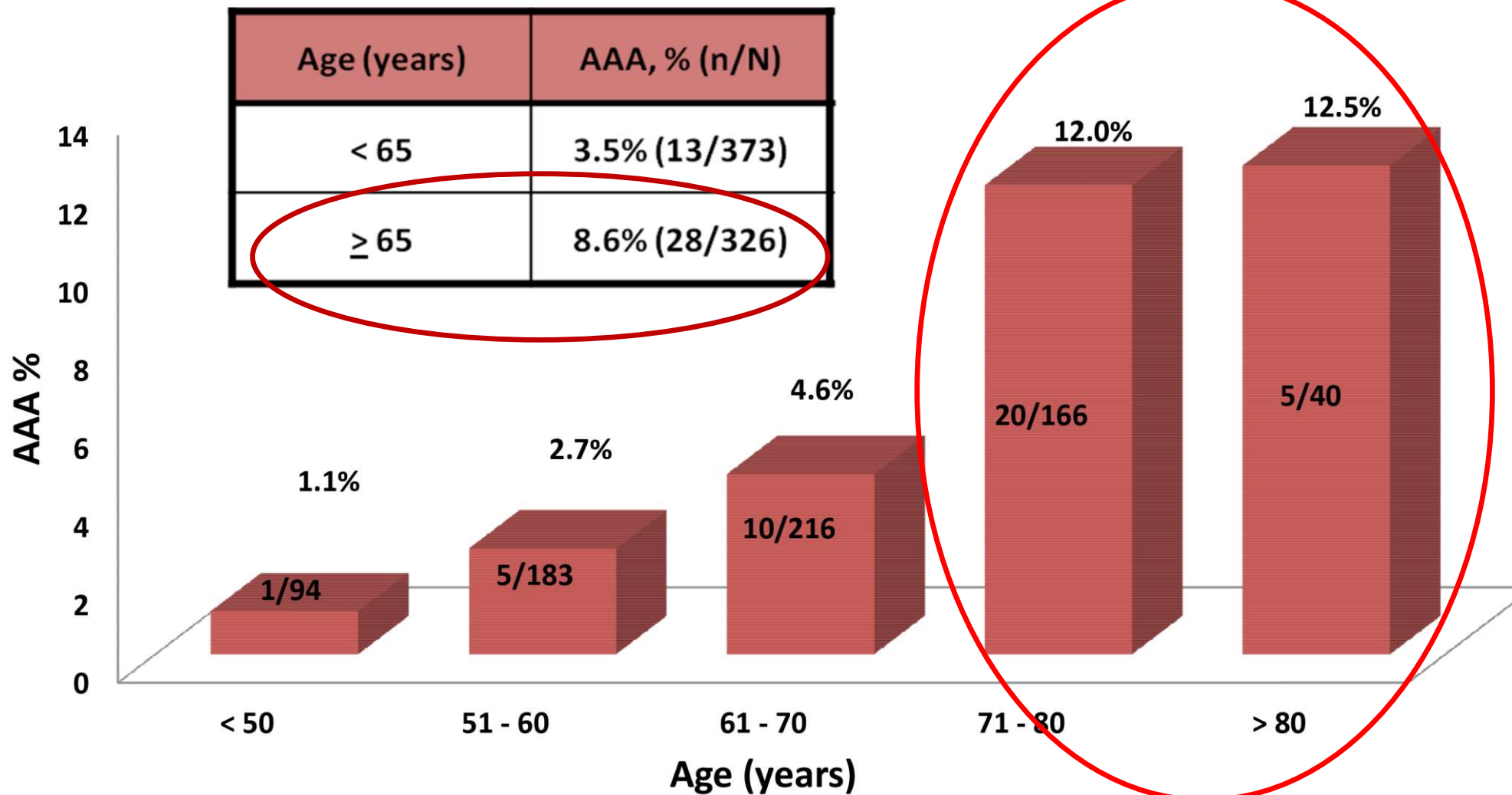
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- Between March 2009 and August 2010
- Prospective ultrasound screening study
- patients undergoing coronary angiography prior to valve surgery or for suspected or known CAD
- 1000 patients (patients with known AAA or previously operated for AAA were included)

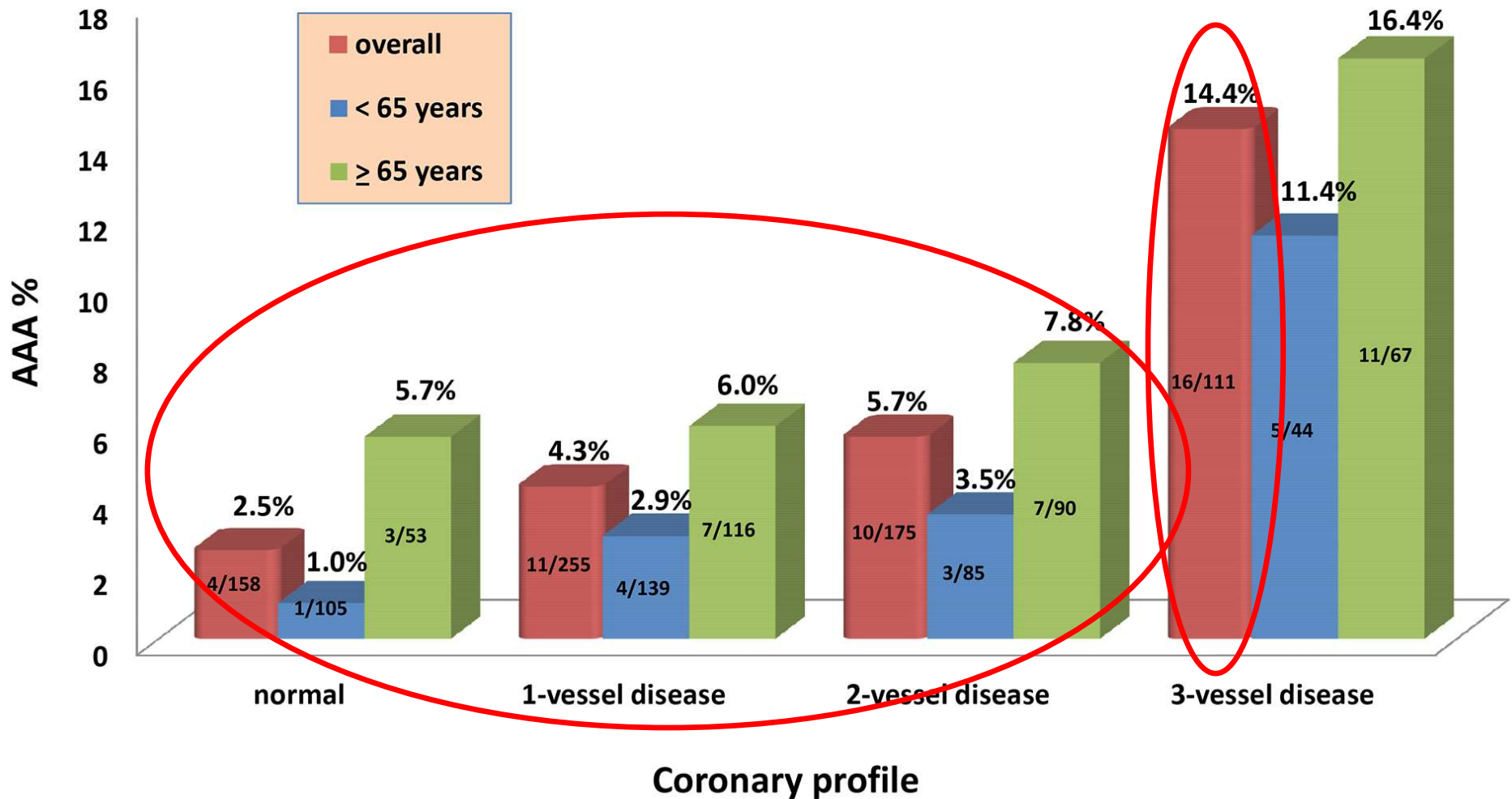
# Characteristics of screened patients, globally and according to absence or presence of abdominal aortic aneurysm (AAA)

Characteristic	All patients (n = 1,000)	No AAA (n = 958)	AAA (n = 42)	Univariate analysis	Multivariate analysis
Age (y), mean ± SD	64.0 ± 11.6	63.8 ± 11.6	70.3 ± 8.94	<.001	
Age ≥ 65	490 (49%)	462 (48.2%)	28 (66.7%)	.007	.003
Male gender	699 (69.9%)	658 (68.7%)	41 (97.6%)	.004	.005
Family history	79 (7.9%)	73 (7.6%)	6 (14.3%)	.12	.01
Smoker ever	703 (70.3%)	666 (69.5%)	37 (88.1%)	.03	.005
Past smoker	434 (43.4%)	414 (43.2%)	20 (47.6%)		.22
Current smoker	269 (26.9%)	252 (26.3%)	17 (40.5%)		.003
Coronary profile				<.0001	<.0001
No significant lesion	267 (26.7%)	263 (27.5%)	4 (9.5%)		
One-vessel disease	361 (36.1%)	350 (36.5%)	11 (26.2%)		.47
Two-vessel disease	238 (23.8%)	228 (23.8%)	10 (23.8%)		.18
Three-vessel disease	134 (13.4%)	117 (12.2%)	17 (40.5%)		<.001
Mean number of affected coronary arteries ± SD	1.2 ± 1.0	1.2 ± 1.0	2 ± 1	<.0001	
Aortic diameter (mm), mean ± SD <sup>a</sup>	18.10 ± 6.02	17.30 ± 3.50	41.9 ± 13.2	—	—

# Prevalence of abdominal aortic aneurysm (AAA) according to age in men



# Prevalence of abdominal aortic aneurysm (AAA) according to the coronary profile and age in men





## Screening strategy in patients with 3-vessel CAD

- Patients with CAD require regular follow-up with a cardiologist including transthoracic echocardiography (TTE)
- The ultrasound probe used for TTE (2.5 Mhz) is suitable for abdominal aorta imaging
- Imaging of the abdominal aorta performed in the supine position during the subcostal portion of the TTE

## Screening for abdominal aortic aneurysm in patients with acute myocardial infarction using trans-thoracic echocardiography

The measurement of the AA was  
feasible in 93% of the patients

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Received 30 /

Mean duration was  $3 \pm 1$  min

### Aims

Patients with acute myocardial infarction (AMI) represent a high-risk population in which screening for abdominal

The accuracy compared with the measurements performed  
by a radiologist using a dedicated vascular US system was  
excellent (mean difference  $1.5 \pm 1.3$  mm;  $P < 0.0001$ )

### Conclusion

Overall, the prevalence of AAA was 4.7%, increased with age, and seems higher than expected in the 'same-aged population'. In regard to the simplicity, accuracy, and feasibility, screening for AAA during TTE (one cardiovascular shot) may be of value after AMI especially in elderly patients.

# Effectiveness of Screening for Abdominal Aortic Aneurysm During Echocardiography

Victor Ab...  
Didier I...  
Dan...

**Abdominal aorta examination using the cardiac probe was feasible in 96.7 % of the patients**

Mane Ederhy, MD<sup>c</sup>,  
...sas, MD, PhD<sup>h</sup>,  
...behalf of the

Screening patients with abdominal aortic aneurysm (AAA) is associated with reduced AAA-related mortality, but population screening is poorly implemented. Opportunistic screening during imaging for other indications might be efficient. Single-center series reported AAA rates of 0.8% to 6.5% in patients undergoing transthoracic echocardiography (TTE), with disparities due to selection bias. In this first multicenter study, we aimed to assess the feasibility and criteria for screening AAA during TTE in real-life practice. During a week of May 2011, 79 centers participated in a nationwide survey. All patients aged

**With a median delay of 1.7 minutes (> 3 minutes in 3.6% of cases)**

operated al aorta 96.7%, A in 50 3.7% vs 1.3%, respectively,  $p = 0.007$ ) and increased by age at 2.2%, 2.5%, and 5.8% in age bands of 65 to 74, 75 to 84, and 85+ years, respectively. None of the female participants aged <75 years had AAA. Smoking status and family history of AAA were significantly more frequent among patients with AAA. The ascending aorta was larger in those with AAA ( $36.2 \pm 4.7$  vs  $34.0 \pm 5.2$  mm,  $p = 0.006$ ), and bicuspid aortic valve and/or major aortic regurgitation were also more frequent (8% vs 2.6%,  $p = 0.017$ ). In conclusion, rapid AAA screening during TTE is feasible and should be limited to men  $\geq 65$  years and women  $\geq 75$  years. © 2014 Elsevier Inc. All rights reserved. (Am J Cardiol 2014;■:■-■)

## Cost of the screening

- No direct cost :
  - no extra material, no cost for the National Health Service
  - The time spent by the cardiologist to perform the abdominal aorta imaging is short (mostly < 3 minutes)
- The indirect cost of the screening resulting from further explorations and interventions in patients in whom a AAA is found needs to be evaluated

## Screening strategy in patients with 3-vessel CAD

In summary, opportunistic examination of  
the abdominal aorta during routine  
echocardiography  
appears largely feasible, requiring only a short  
additional  
time and no extra cost

# Is screening patients with CAD effective to reduce mortality?

## PREVENTION OF RUPTURE OF ABDOMINAL AORTIC ANEURYSM

122 patients with a formerly unknown AAA operated emergently for rupture

Operative mortality = 21%

40 % of patients with rAAA had a history of CAD

### ABSTRACT

*Background and Aims:* Two thirds of patients with an abdominal aortic aneurysm (AAA) have relevant coronary artery disease (CAD). AAAs are prevalent in up to 16% of smokers with CAD. General surgeons should be aware of the potential of finding AAA prior to cardiac surgery. The aim of this study was to determine whether AAA could be detected by a general surgeon or a cardiologist during a routine cardiovascular evaluation.

*Material and Method:* All patients who were emergently operated AAAs, treated emergently for symptoms (n=71) or rupture (n=122) (rAAA) between January 1998 and June 2005. Patient charts were analysed and primary care physicians contacted.

*Results:* At presentation, mean age was 71 (+/-9) years, twenty (9%) were female. AAA had a mean diameter of 7.6 cm. Two thirds (143) were clinically obese (BMI 27 +/-5). 137

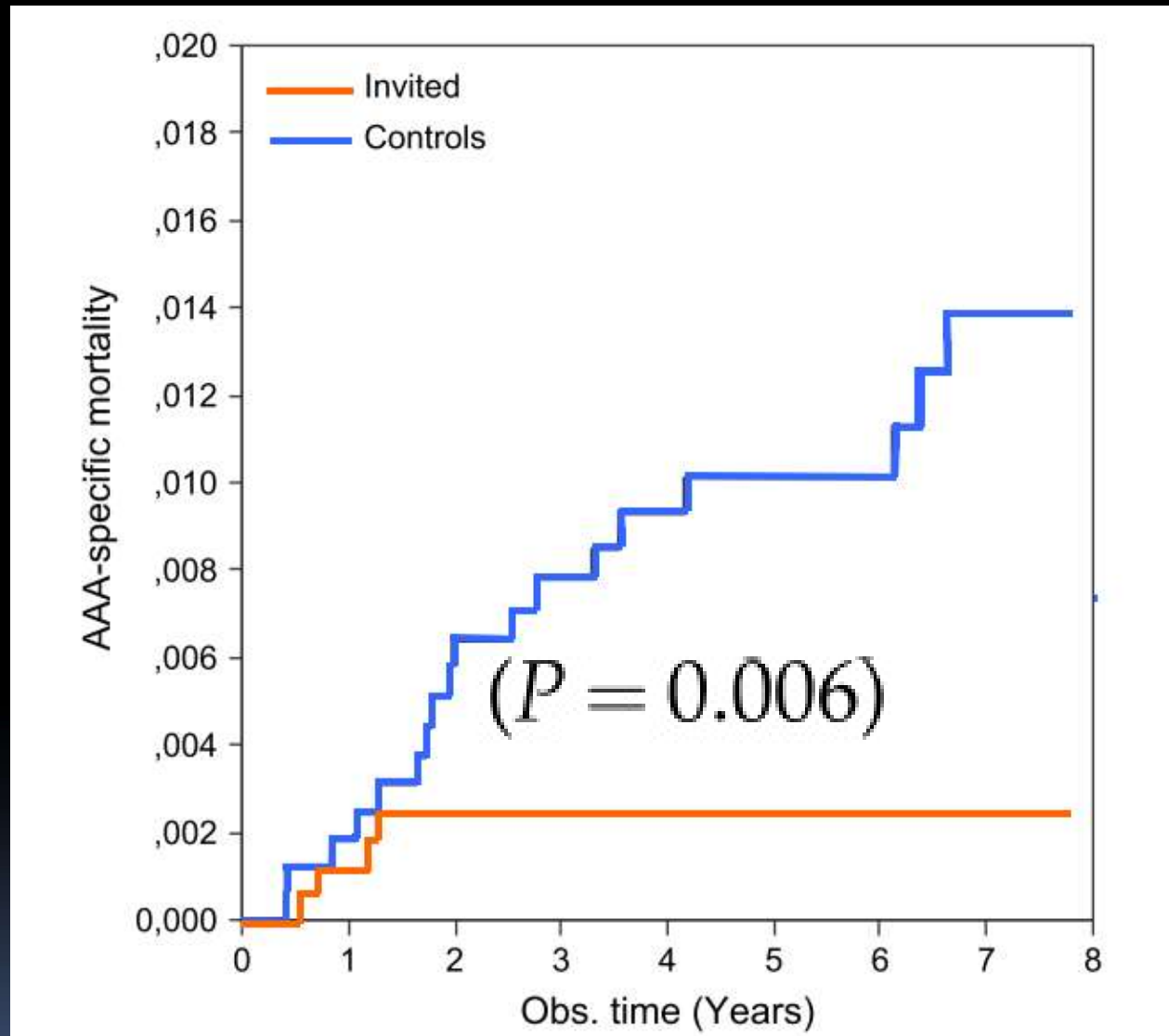
All patients with rAAA and history of CAD had been seen by a cardiologist within a year prior to rupture

evaluated in a larger study.

# Is screening patients with CAD effective to reduce mortality?

- Limitations
  - Life expectancy of patients with CAD
  - Operative mortality of open repair or EVAR in higher risk patients

# Effectiveness of screening to reduce AAA-related mortality in high risk patients





## Conclusion

- The prevalence of AAA is high in men aged  $\geq 65$  years and in those with three-vessel CAD regardless of age
- We recommend opportunistic examination of the abdominal aorta during routine TTE in this population

## Conclusion

- Indication for repair (EVAR or open) should be taken on an individual basis, taking into account patients' wishes, cardiac and non-cardiac factors and after optimalization of the cardiac treatment
- Further studies are needed to establish the benefit in terms of AAA-related mortality and all cause mortality.

Thank you for your attention

