ESC Heart & Brain Workshop

Carotid Stenosis - selecting the high risk patients for intervention

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Bristol-Myers Squibb

Pfizer

Medtronic
Further, Together

Declaration of Interest

No conflicts of interests

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Identifying people with asymptomatic carotid stenosis at higher risk of stroke

A novel clinical risk score

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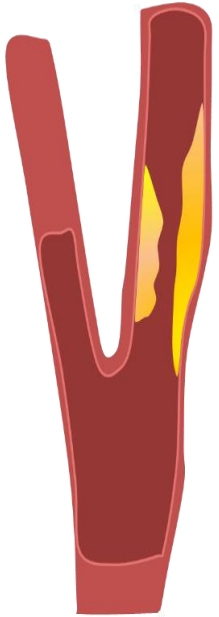
Carotid Artery Disease

- **Important cause of ischaemic stroke (15-20%)**
- **Most** (80%) carotid strokes have **no warning symptoms**
- **Asymptomatic stenosis: important long-term** stroke risk
- RCTs confirm **Net benefit** of CEA among asymptomatic patients
- Successful CEA **~halves long-term stroke risk**



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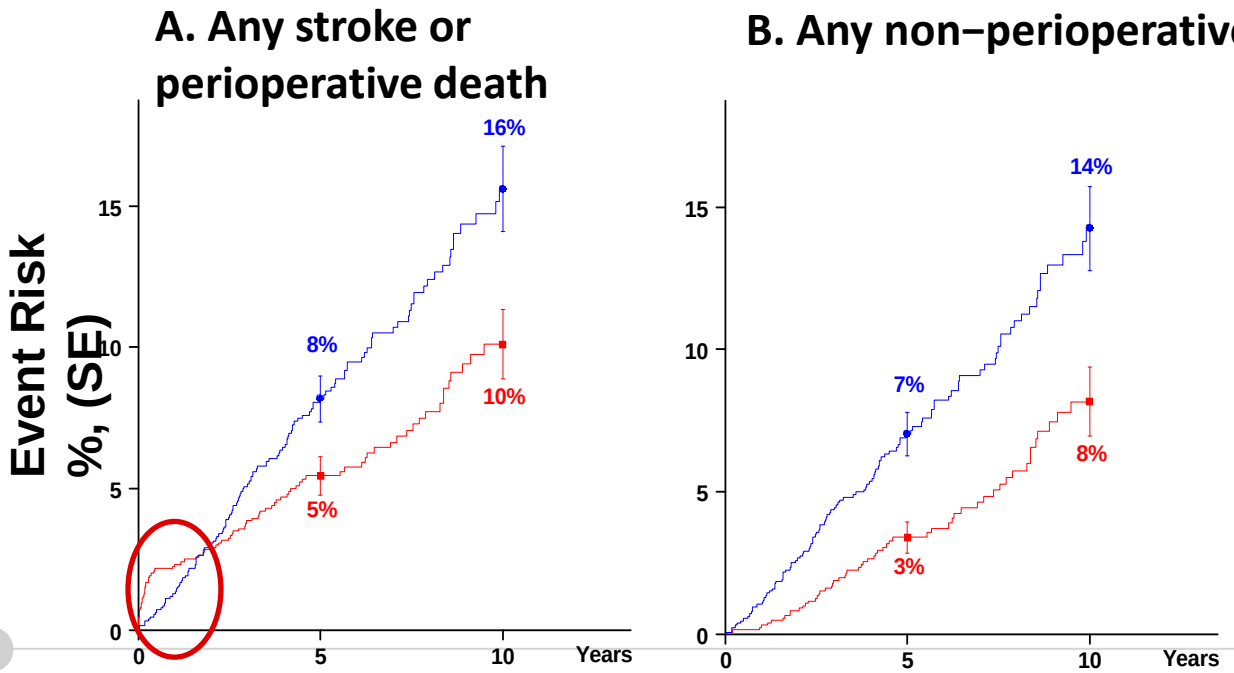
Trial Characteristics

	VA	ACAS	ACST-1
Recruitment	**1983** - 1987	1987 - 1993	1993 - **2003**
Participants	444	1 662	3 120
Region	USA	USA	Europe
Follow-up, Median [IQR]	5.7 [4.5-7.0]	4.8 [3.7-5.0]	**9.0** [6.1-11.1]

CEA for Asymptomatic Carotid Stenosis: VA, ACAS, ACST-1 Trials

2291 Patients on <u>triple therapy</u> (ie, including statin) before stroke



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Purpose of this Study

*There is uncertainty as to **which** asymptomatic patients benefit most from carotid intervention*

AIM: to develop a simple clinical risk score to identify patients with **high risk** asymptomatic carotid stenosis

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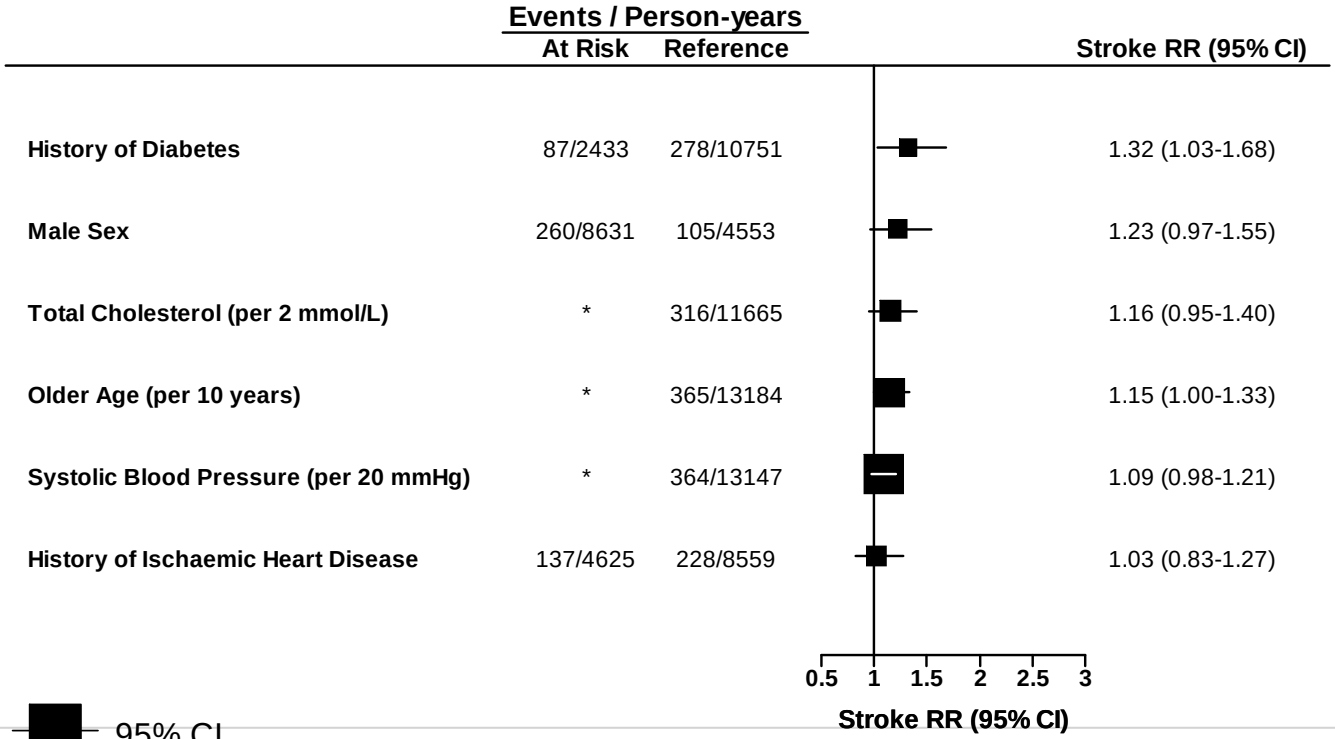
Methods

- **IPD of ‘medically treated’ patients from all 3 asymptomatic trials**
  - VA (1/6 of total)
  - ACAS (1/3)
  - ACST-1 (1/2)
- **Restricted to those with no CEA prior to stroke (ie, medically managed)**
- **Stroke risk ratios (RR) from Cox regression**
- **Most important factors then included in risk score (RR >1.3)**

Association of CV Risk Factors with Stroke
(amongst medically managed)



95% CI

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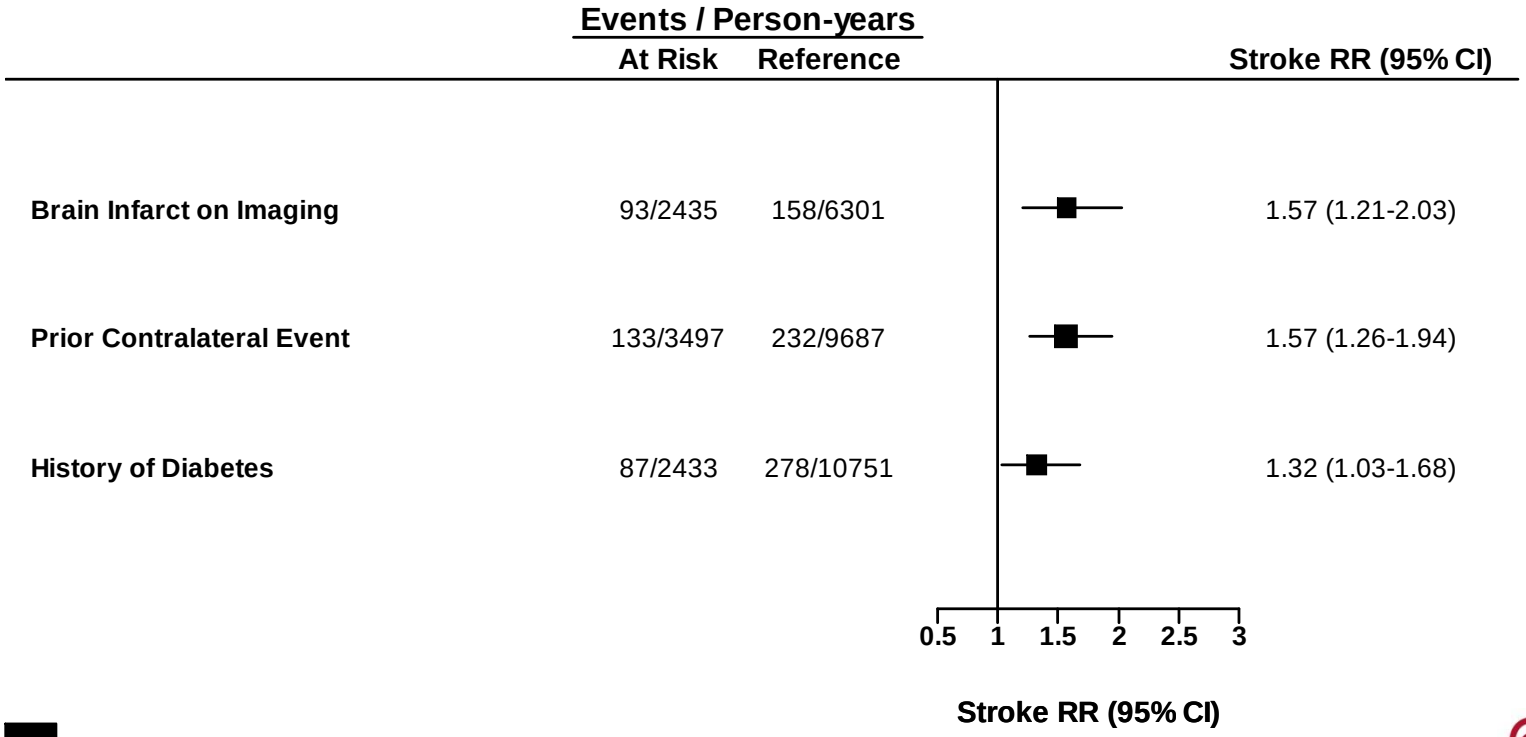
3 Important Stroke Risk Factors



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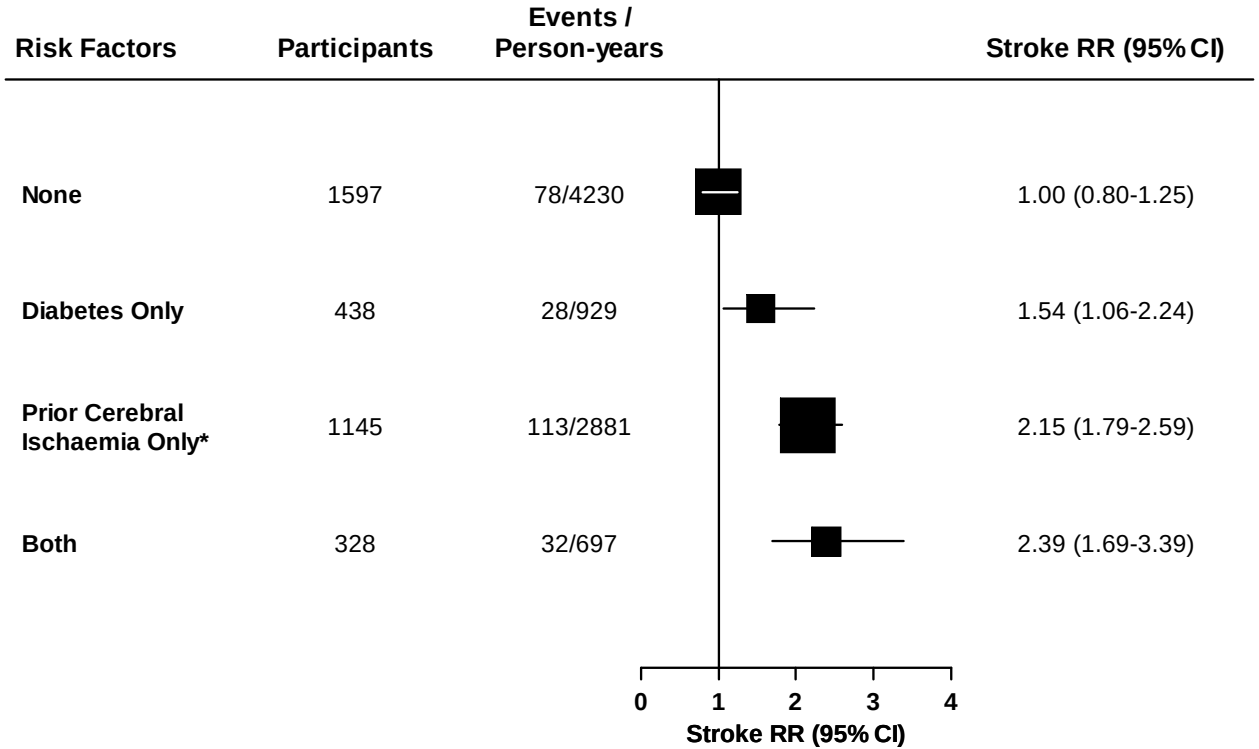
Summative Risk Score

Risk Factors	Score
None	0
Diabetes only	1
Prior cerebral ischaemia* only	2
Both	3

**Prior contralateral symptoms or brain infarct on imaging*

Risk Prediction



**Prior contralateral symptoms or brain infarct on imaging*

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Risk Prediction

If the 10-year stroke risk is:

9% (no risk factors)	**10y Absolute gain from CEA ~5%**
13%* (diabetes)	**10y Absolute gain from CEA ~7%**
20% (prior ischaemia)	**10y Absolute gain from CEA ~10%**

(1/3 of trial participants)

**Stroke risk of ACST-1 participants taking statin, BP and antithrombotic treatment*

Implications

- **Statins work:** With CEA or without CEA, modern statin ~halves stroke risk
- **And CEA works:** With a statin or without a statin, successful CEA ~halves stroke risk
- Risk of stroke **~double with prior cerebral ischaemia**
- **Those with higher risk scores** should **derive greater absolute benefit** from CEA

Conclusion

Simple characteristics (ie, diabetes, prior ischaemia)

can be used to **identify high stroke risk patients**

who might benefit most from CEA

(or be considered for ACST-2,

comparing CEA vs CAS)

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