

# **Risk factors for procedural stroke, MI and death from asymptomatic carotid endarterectomy**

## **Pooled Analysis of VACS, ACAS, ACST-1 & GALA Trials**

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On behalf of the VA, ACAS, ACST-1 and GALA Collaborators

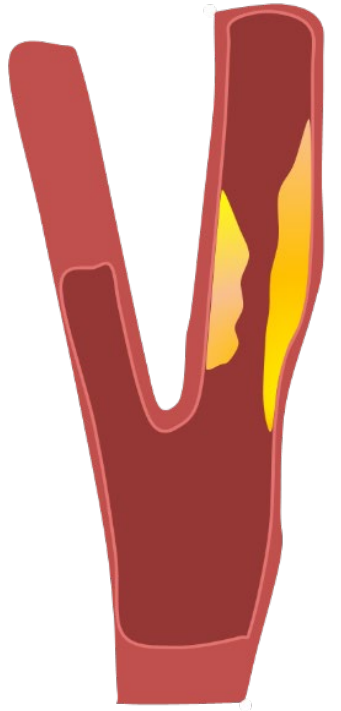
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# Disclosures

**None**

# Asymptomatic Carotid Stenosis


- **Important cause (15-20%) of ischaemic stroke**
- **Most (80%) carotid strokes have no warning symptoms**
- **Successful CEA halves long-term stroke risk**
- **Moderate absolute benefits** with good medical Rx
- **Procedural risks influence net benefit**
- **AIM: Assess risks factors for major procedural events**



# Methods

- Surgically managed patients with asymptomatic carotid stenosis
- IPD from 4 large CEA trials: **VACS, ACAS, ACST-1, GALA**
- Patients who had **carotid endarterectomy** (per protocol)
  - All patients considered fit for surgery
- Major perioperative events: **Stroke, MI, death** (30 days)
- Odds ratios (OR) adjusted for age, sex, trial

# Trial Characteristics

	<b>VACS</b>	<b>ACAS</b>	<b>ACST-1</b>	<b>GALA</b>
Recruitment	1983-1987	1987-1993	1993-2003	1999-2007
CEAs	232	1036	1840	1334 (asymptomatic)
Region	USA	USA	Europe	Europe
Median follow-up [IQR]	4.5 [2.5-6.0]	4.2 [2.9-5.0]	6.1 [3.9-9.1]	Up to 1y
				<b>Early CEA: LA vs GA</b>

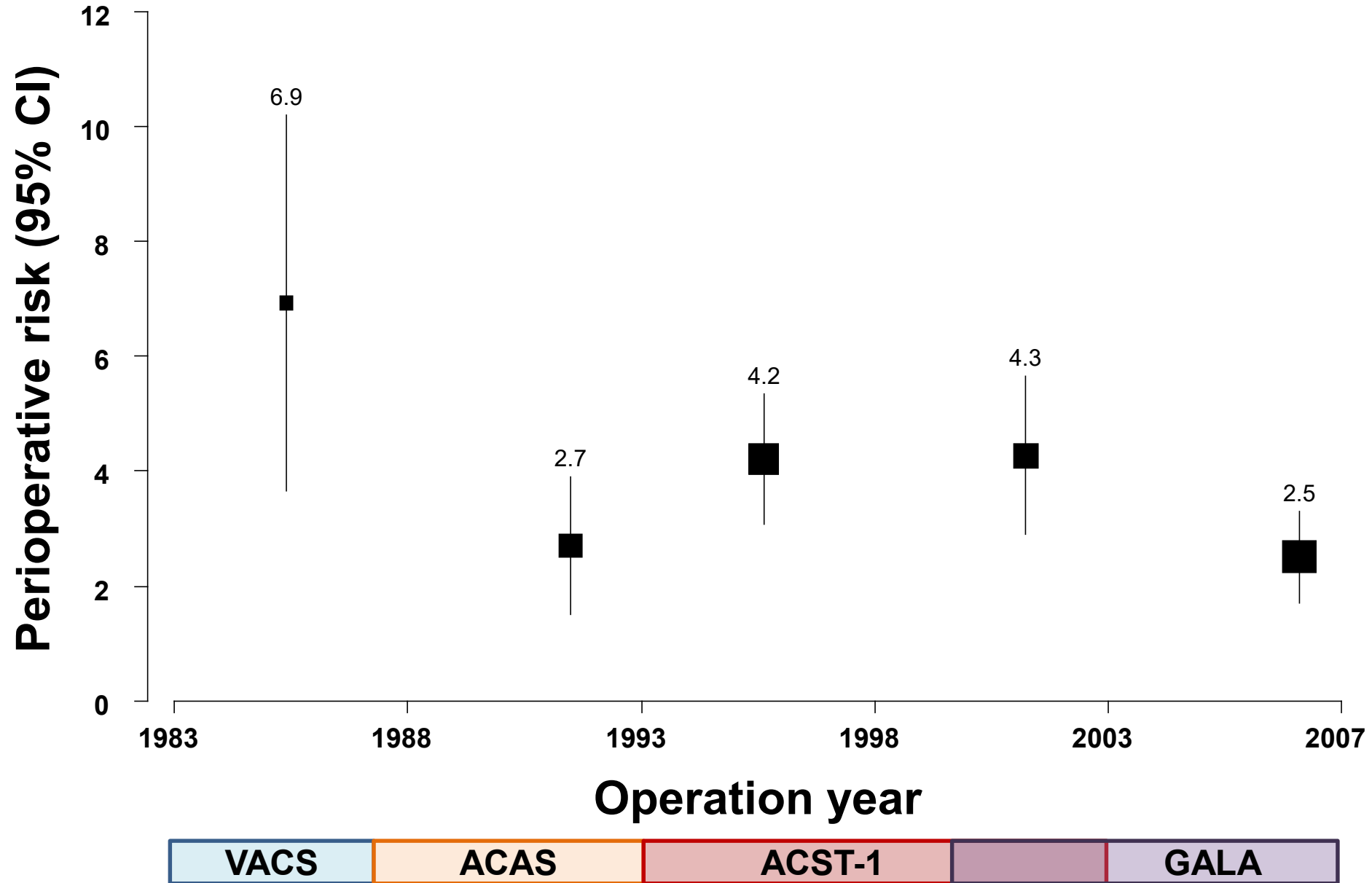
# Surgical Morbidity and Mortality

	<b>VACS</b> <b>(n 229)</b>	<b>ACAS</b> <b>(n 1036)</b>	<b>ACST-1</b> <b>(n 1840)</b>	<b>GALA</b> <b>(n 1334)</b>
Stroke	9	24	51	31
Myocardial infarction	7	6	16	5
Death	1	2	2	4
Stroke, <u>MI</u> or death	17	32	69	40
<b>Event rate (95% CI)</b>	<b>7.3%</b> (4.0 - 10.7)	<b>3.1%</b> (2.0 - 4.1)	<b>3.8%</b> (2.9 - 4.6)	<b>3.0%</b> (2.1 - 3.9)

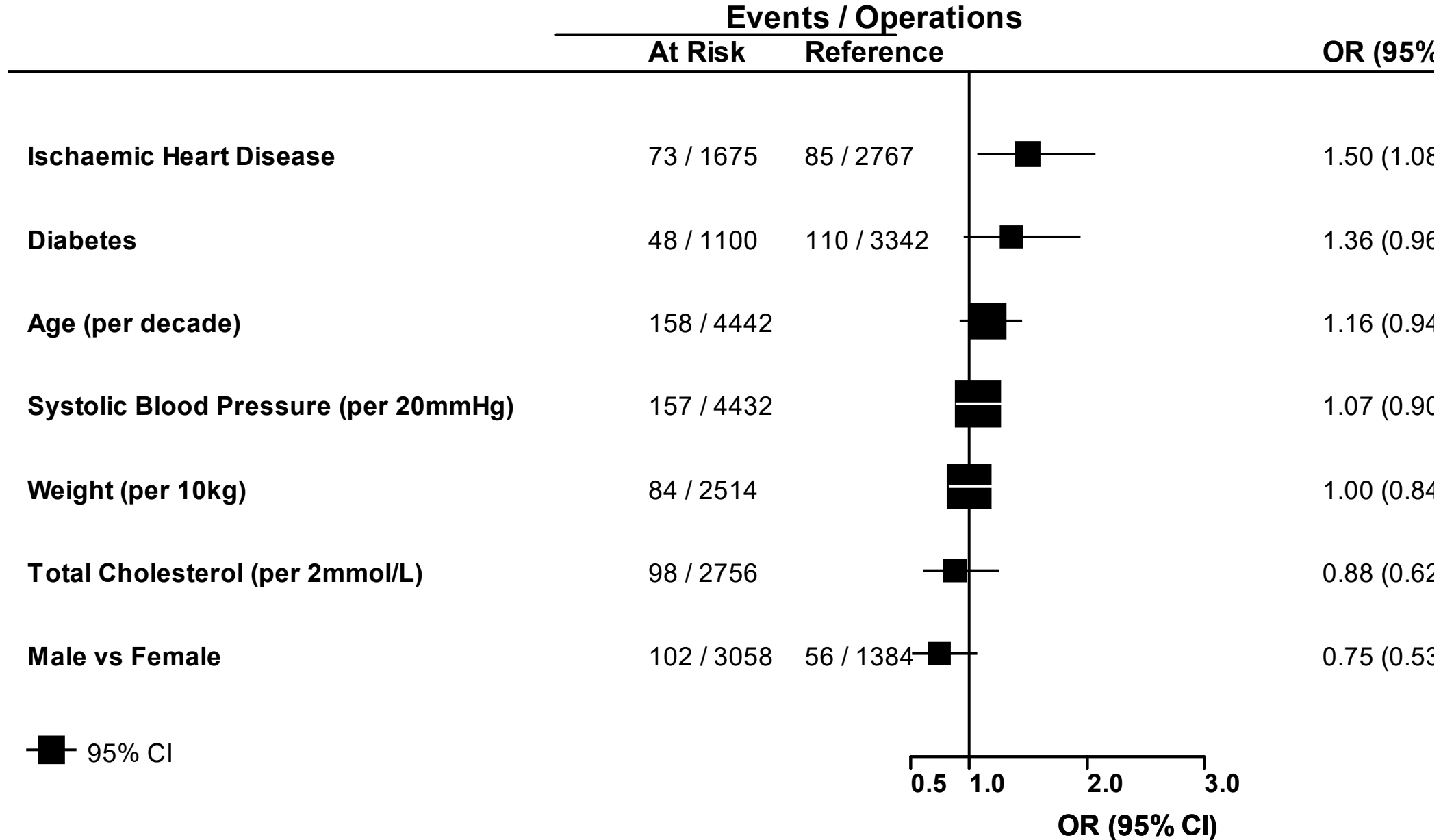
Events considered sequentially in order of stroke, myocardial infarction or death.

Deaths are those not caused by stroke or myocardial infarction.

# Trends in 30-day Stroke, MI, death

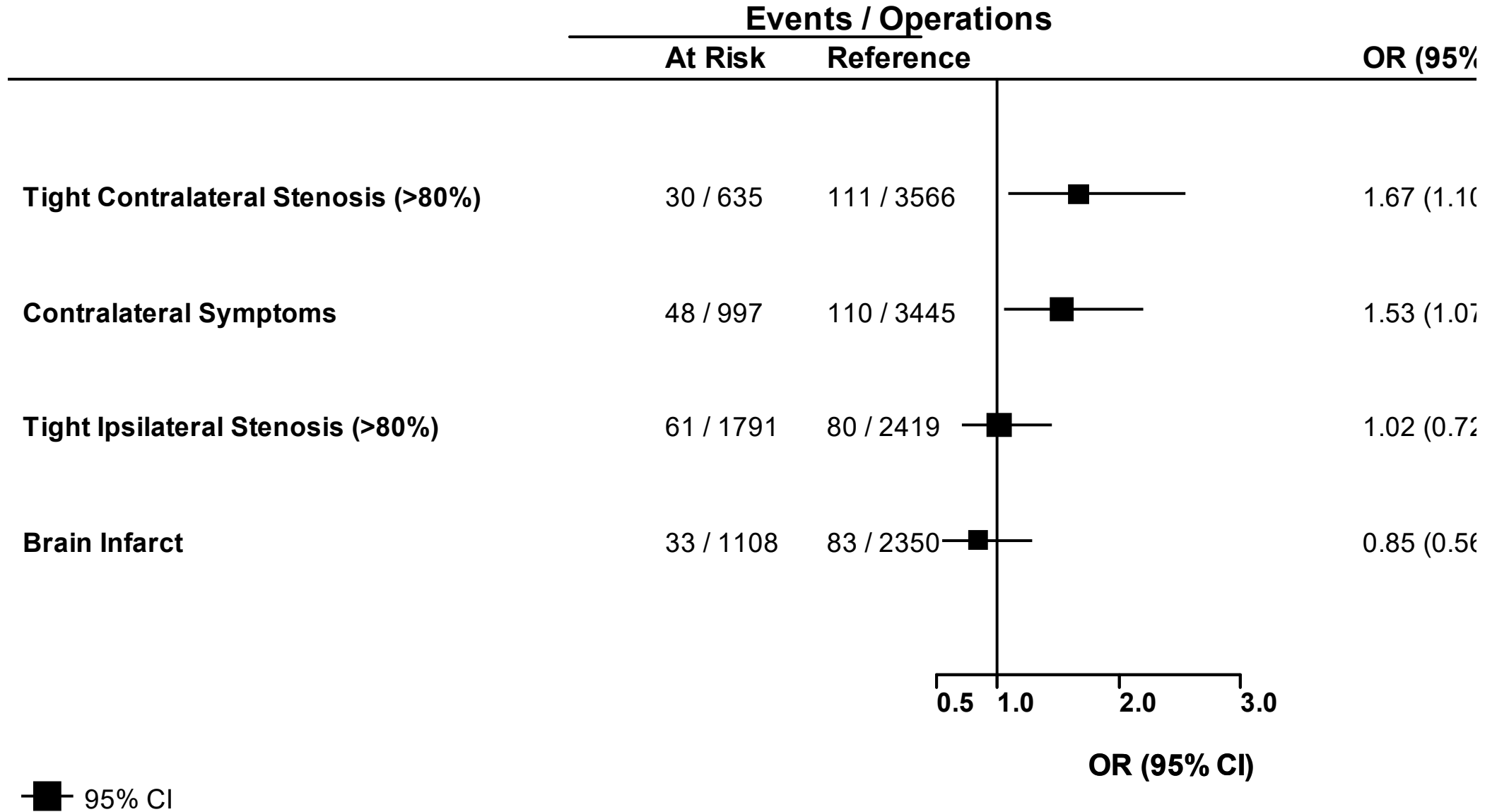


# Traditional CV Risk Factors

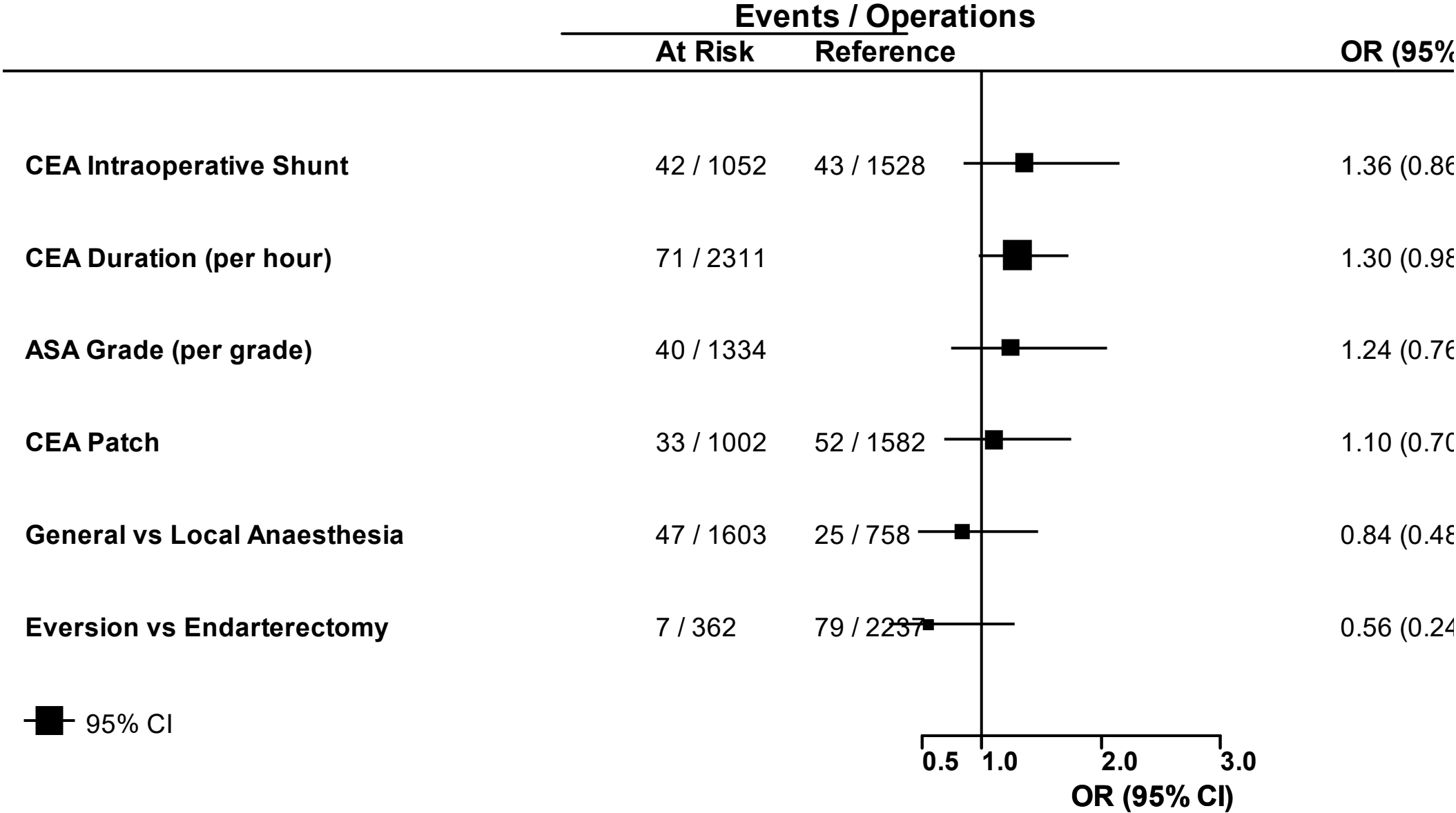




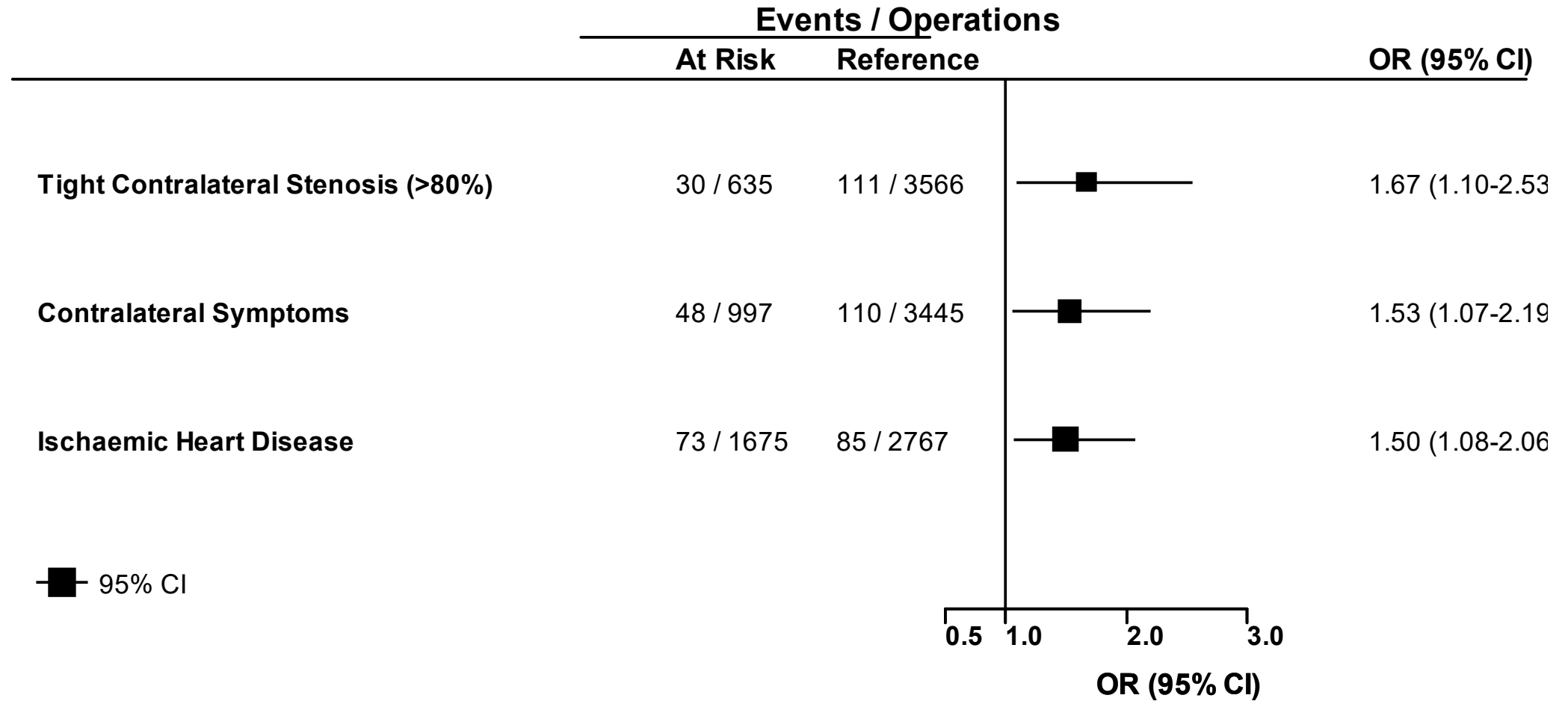
# Cerebrovascular Factors



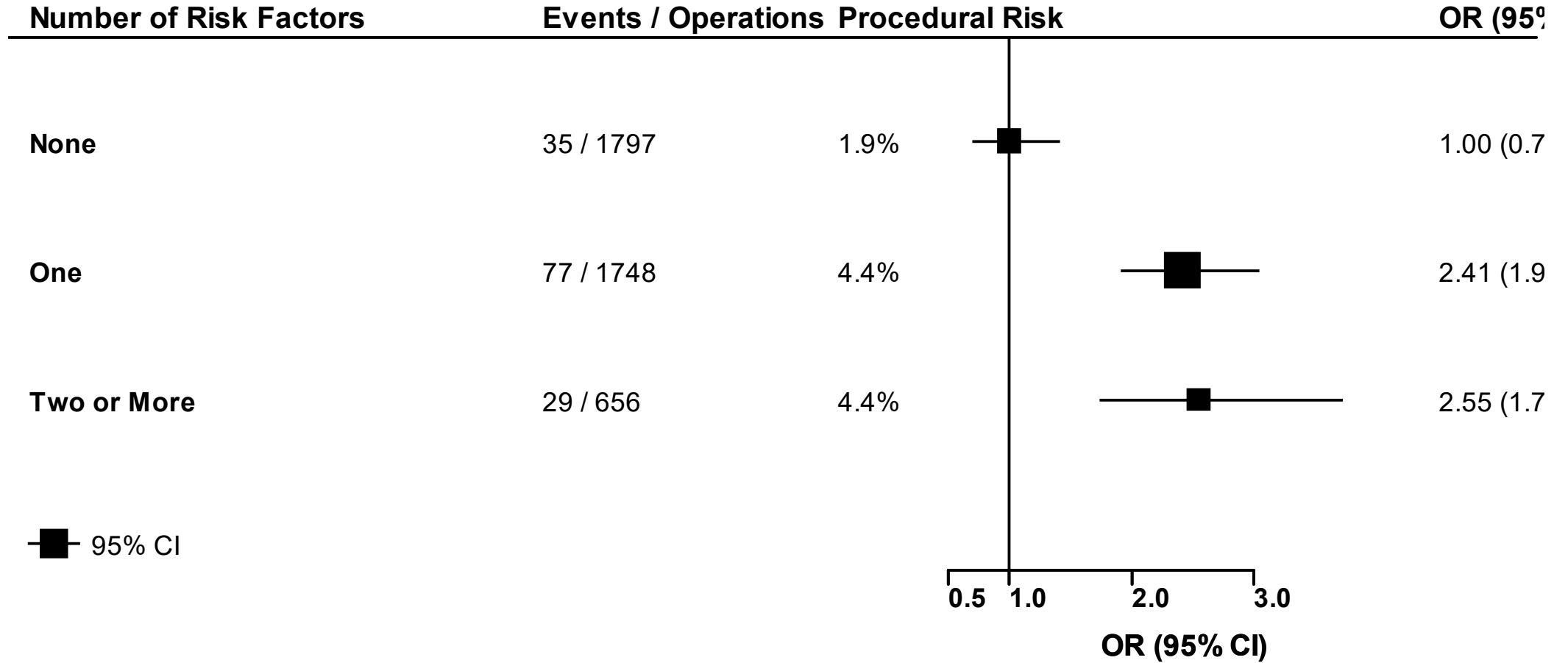
# Surgical Technique & Anaesthesia



# Important risk factors



# Number of risk factors



# Implications

Stroke risks of unoperated asymptomatic carotid stenoses declining

But, **procedural risks** of CEA **also declining**

**~1.5-2.0% for stroke/death** *-now safer than ever*

Higher risks with contralateral disease, contralateral stroke/TIA, IHD

Lower risks with ↑ volume and centralisation

**Consideration of long-term stroke risks AND procedural hazard**  
**KEY to selecting patients who benefit appreciably from CEA**

# Conclusion

**Procedural risks of asymptomatic carotid endarterectomy lower than ever before**

**Simple characteristics: tight contra disease, IHD, prior symptoms, identify patients at higher risk of surgical complications**

# Acknowledgements

ACST, ACAS, VACS, GALA Trialists and  
to the participants who took part

