

CAS: what factors should be taken into account?

Stenting carotidien: quels facteurs prendre en compte?

Early treatment after onset of symptoms

***La rapidité du traitement après survenue
des symptômes***

**Gustav Fraedrich,
on behalf of the Carotid Stenting Trialists' Collaboration**

Faculty Disclosure

Gustav Fraedrich

I have no financial relationships to disclose.

Je n'ai aucune relation financière à déclarer.

Funding / Financement: The Stroke Association

CSTC - Carotid Stenting Trialists' Collaboration

Preplanned meta-analysis of three large randomised European trials of stenting versus endarterectomy for symptomatic carotid stenosis

- **Endarterectomy versus Angioplasty in Patients with Symptomatic Severe Carotid Stenosis trial [EVA-3S]**
(*N Engl J Med* 2006;355:1660-1671)
- **Stent-Protected Angioplasty versus Carotid Endarterectomy in symptomatic patients trial [SPACE]**
(*Lancet* 2006;368:1239-1247)
- **International Carotid Stenting Study [ICSS]**
(*Lancet* 2010;375:985-997)



Short-term outcome after stenting versus endarterectomy for symptomatic carotid stenosis: a preplanned meta-analysis of individual patient data

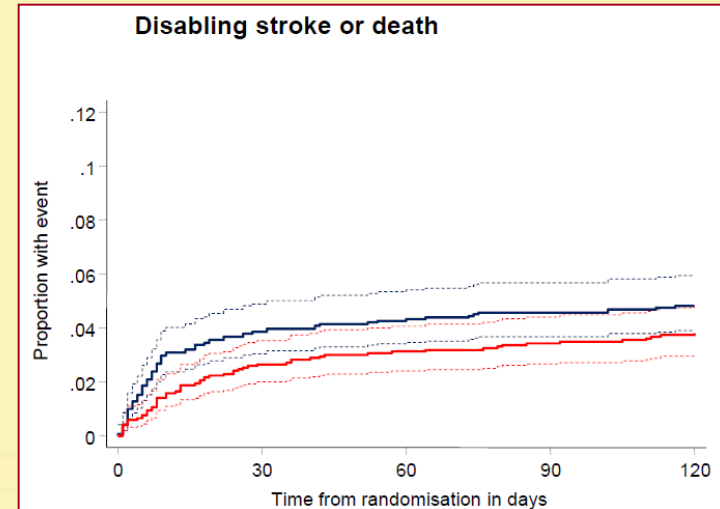
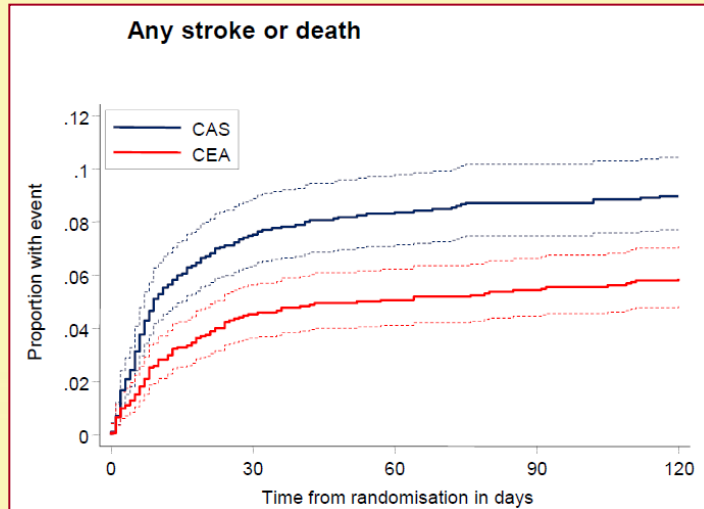
Carotid Stenting Trialists' Collaboration*

Lancet 2010; 376: 1062-73

CSTC - Carotid Stenting Trialists' Collaboration

	EVA-3S		SPACE		ICSS	
	CAS	CEA	CAS	CEA	CAS	CEA
All patients (n)	265	262	607	589	853	857
Excluded from PPA	2 %	2%	3 %	4%	3 %	4 %
Age (yrs)	69.5	70.7	68.1	68.7	70.2	70.1
Male	73 %	78 %	72 %	72 %	70 %	71 %
Retinal ischemia	15 %	16 %	16 %	15 %	21 %	20 %
TIA	37 %	30 %	36 %	37 %	33 %	36 %
Hemispheric stroke	48 %	54 %	48 %	48 %	47 %	45 %
Days event and TX	15.5	17.6	10.3	11.3	15.8	18.9
Stenosis $\geq$ 70%	94 %	92 %	63 %	61 %	89 %	91 %
Contralateral stenosis	13 %	13 %	10 %	11 %	18 %	17 %

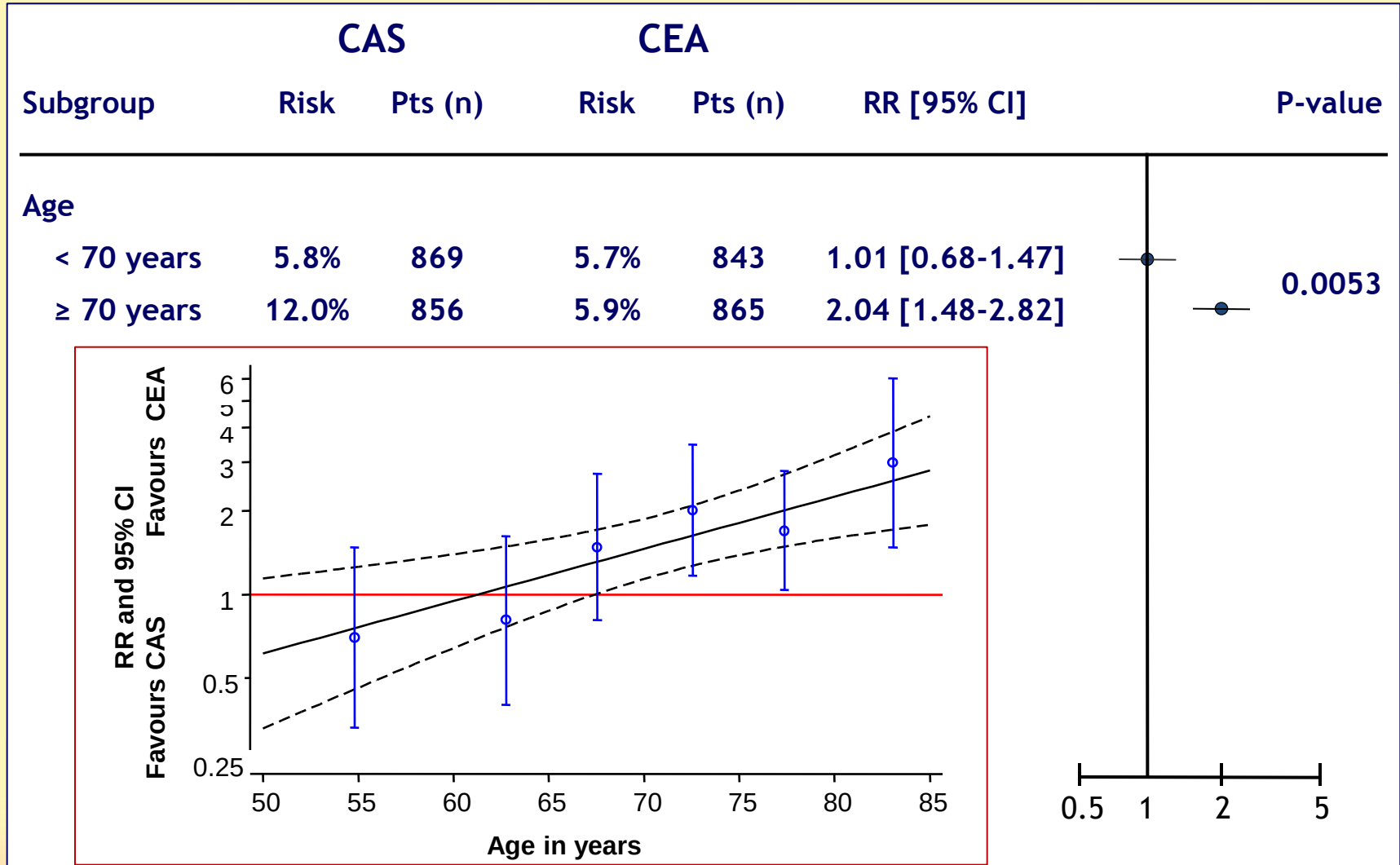
Outcome events within 120 days of randomisation



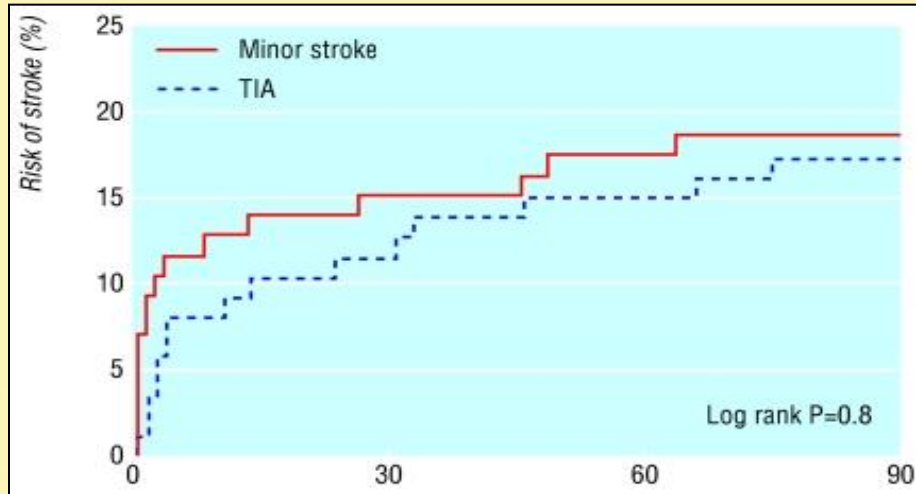
ITT

	CAS n=1679	CEA n=1645	Risk ratio [95% CI]	P-value	Risk diff. [95% CI]
Any stroke or death	130 7.7%	73 4.4%	1.74 [1.32-2.30]	0.0001	3.4 [1.8-5.0]
Disabling stroke or death	65 3.9%	43 2.6%	1.48 [1.01-2.15]	0.04	1.2 [0.0-2.4]
All-cause death	19 1.1%	10 0.6%	1.86 [0.87-4.00]	0.10	0.6 [-0.1-1.2]
Any stroke	125 7.4%	70 4.3%	1.74 [1.31-2.32]	0.0001	3.3 [1.7-4.9]

Any stroke or death <120 days of randomisation

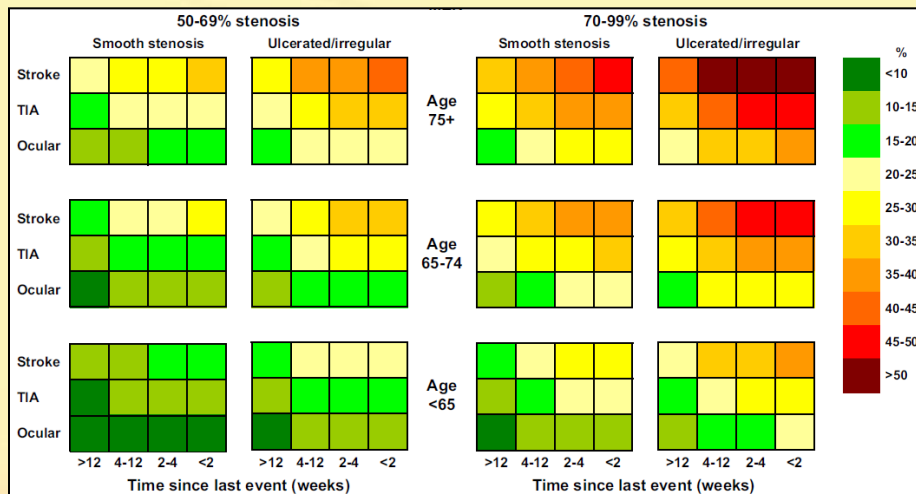


Cumulative risk of stroke after TIA or minor stroke



Population based study of early risk of stroke after transient ischaemic attack or minor stroke (Oxford Vascular Study)

[Coull A - BMJ 2004;328:326]



Predicted risk of ipsilateral stroke on medical treatment in ECST (male) patients with recently symptomatic carotid stenosis

[Rothwell PM - EJVES 2008;35:255]

2011 ASA/ACCF/AHA/AANN/AANS/ACR/ASNR/CNS/ SAIP/SCAI/SIR/SNIS/SVM/SVS Guideline on the Management of Patients With Extracranial Carotid and Vertebral Artery Disease

A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines, and the American Stroke Association, American Association of Neuroscience Nurses, American Association of Neurological Surgeons, American College of Radiology, American Society of Neuroradiology, Congress of Neurological Surgeons, Society of Atherosclerosis Imaging and Prevention, Society for Cardiovascular Angiography and Interventions, Society of Interventional Radiology, Society of NeuroInterventional Surgery, Society for Vascular Medicine, and Society for Vascular Surgery

Developed in Collaboration With the American Academy of Neurology and Society of Cardiovascular Computed Tomography

- 4. When CEA is indicated for patients with TIA or stroke, surgery within 2 weeks is reasonable rather than delaying surgery if there are no contraindications to early revascularization [Class IIa, Level of Evidence B]**

Circulation 2011;124:489 / Stroke 2011;42:227

Timing of Carotid Artery Stenting

Figure 2 Timing of stenting and 30-day outcome. Patients with peri/post-procedural complications underwent treatment significantly earlier in relation to the qualifying event than patients without complications: median delay 1.5 weeks (range: 0.2–3.0) vs. 3.2 weeks (range: 0.5–26.0), $P = 0.004$.

Topakian R - Eur J Neurol 2007;14:672

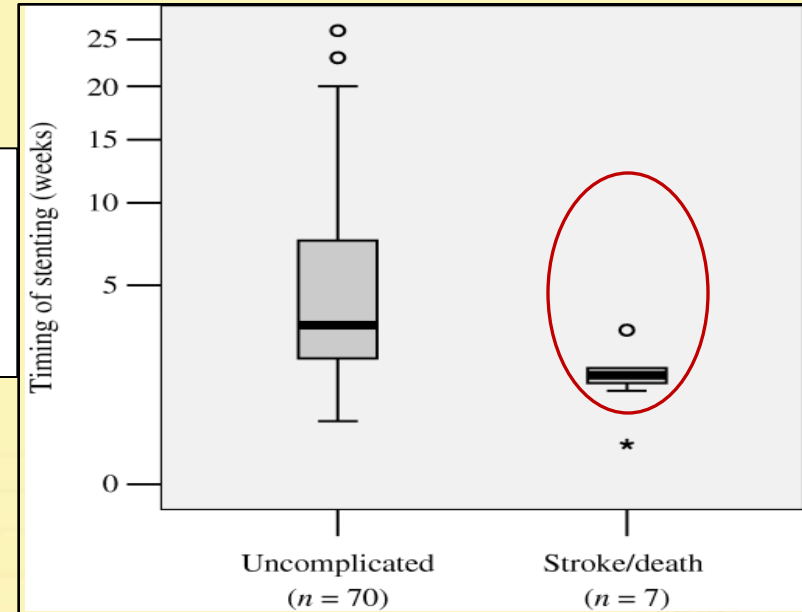
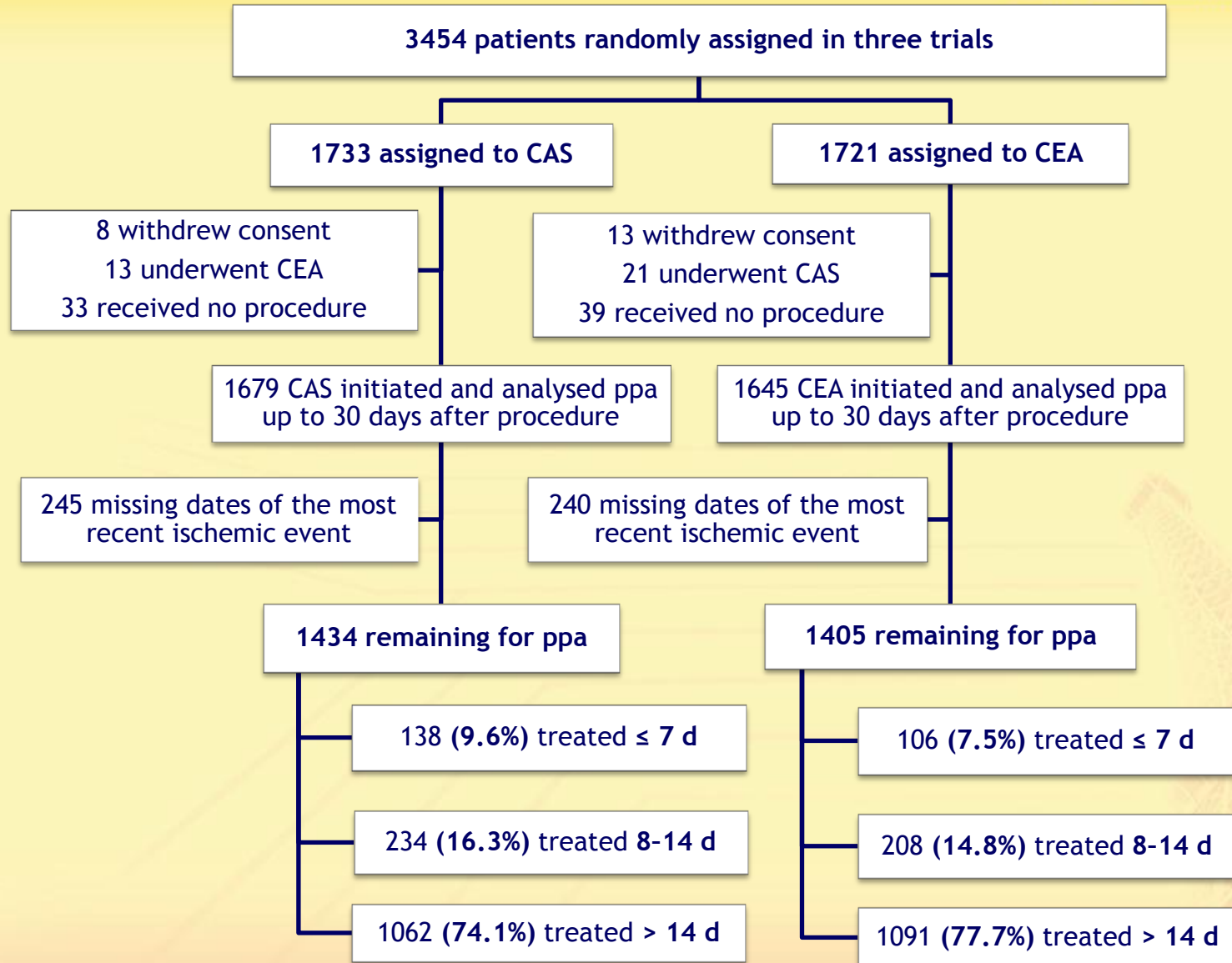


TABLE VI. Time from Neurologic Event (by type) to Stent Procedure: Odds Ratio and P -value for Comparisons (logistic regression) $n = 482$ Symptomatic Patients

	0–13 days vs. others		14–30 days vs. others		31–180 days vs. others	
	P -value	OR (95% CI)	P -value	OR (95% CI)	P -value	OR (95% CI)
Any event history	0.0184	2.15 (1.14, 4.08)	0.6496	0.78 (0.27, 2.27)	0.9741	0.99 (0.51, 1.93)
Stroke history	0.0137	2.91 (1.25, 6.79)	0.7401	1.29 (0.29, 5.81)	0.5254	0.73 (0.28, 1.92)
Tia history	0.0985	1.82 (0.89, 3.70)	0.4154	0.43 (0.06, 3.27)	0.2707	1.55 (0.71, 3.39)
Afx history	0.9779	<0.001	0.8133	0.78 (0.10, 6.11)	0.5366	0.53 (0.07, 4.03)
Stroke or tia history	0.0047	2.52 (1.33, 4.78)	0.7071	0.79 (0.23, 2.68)	0.9067	1.04 (0.53, 2.06)

Gray WA - Cath Cardiovasc Interv 2007;70:1025

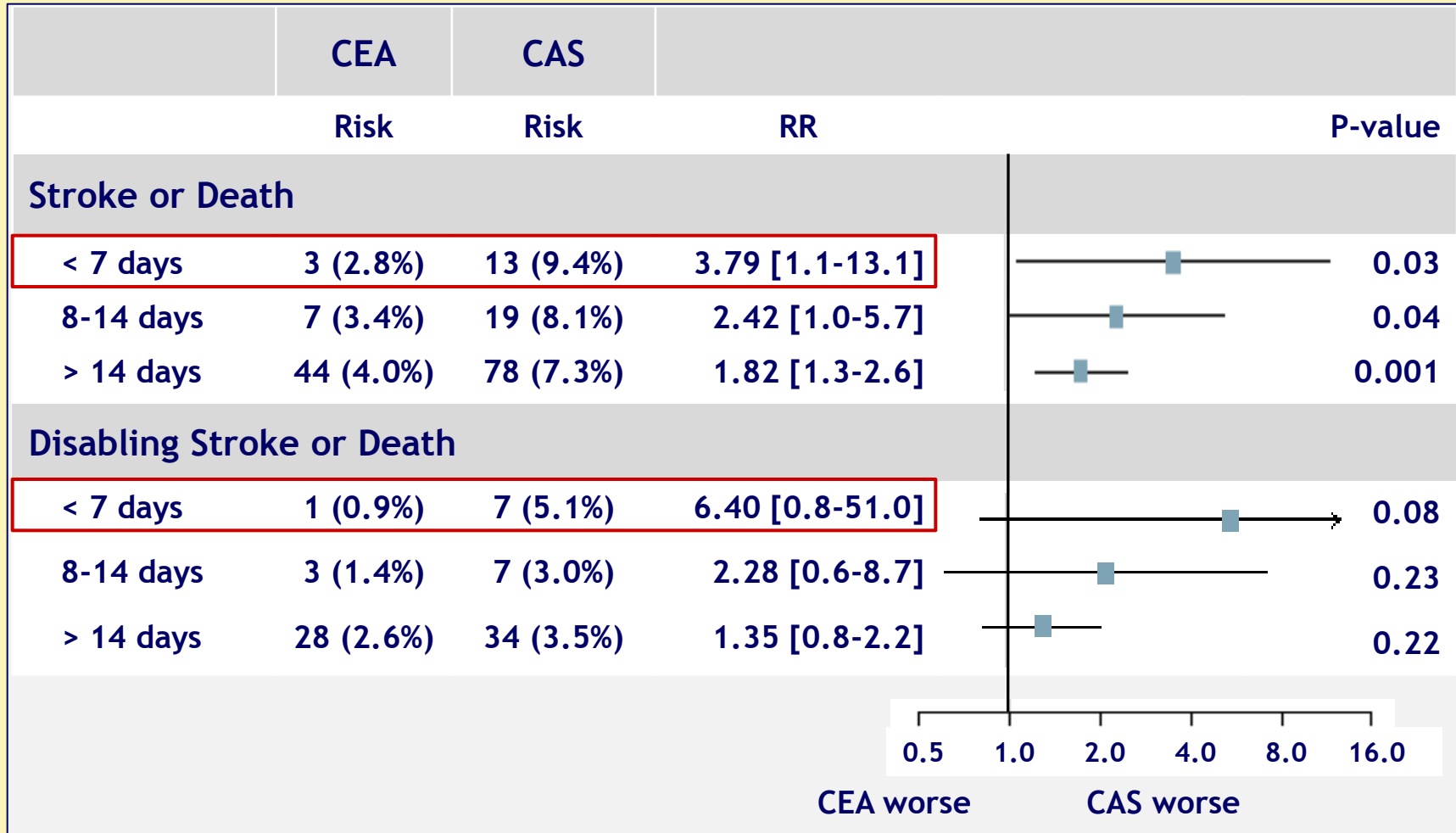
Study Population



Demographic Data

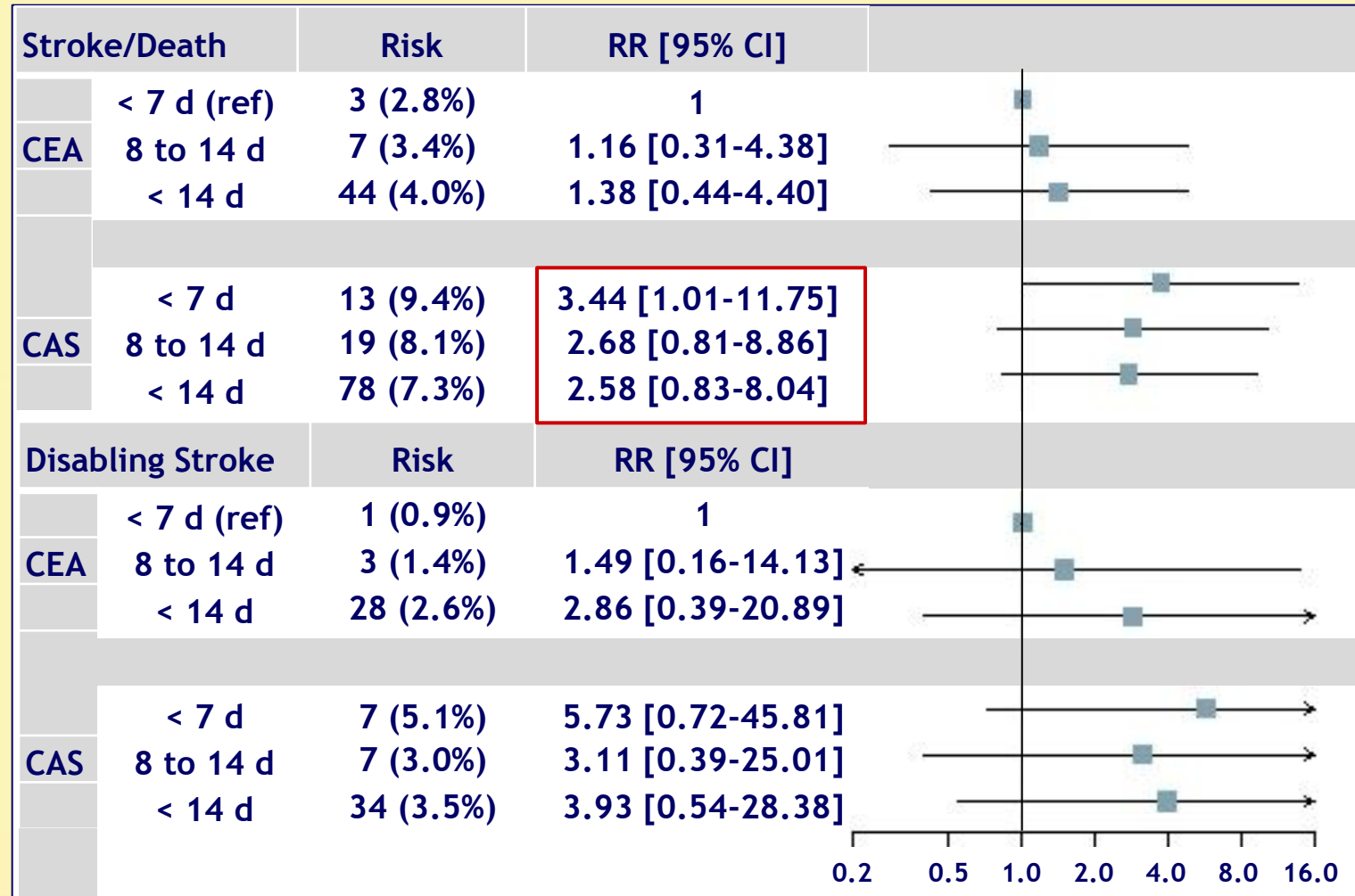
	CEA (n=1405)		CAS (n=1434)	
Age (years, mean, SD)	70.2	± 9.2	70.2	± 9.0
Male (n, %)	1012	72.0 %	1032	72.0 %
History of diabetes (n, %)	331	23.6 %	335	23.4 %
History of hypertension (n, %)	1012	72.0 %	1025	71.5 %
History of hypercholesterolaemia (n, %)	661	48.5 %	661	46.1 %
Any smoking history (n, %)	876	62.3 %	887	61.9 %
History of CHD (n, %)	351	25.0 %	347	24.2 %
History of PAD (n, %)	161	11.5 %	173	12.1 %
Degree of ipsilateral stenosis < 70% (n, %)	1175	83.6 %	1189	82.9 %
Contralateral stenosis/occlusion (n, %)	202	14.4 %	205	14.3 %
TIA (n, %)	486	34.6 %	491	34.2 %
Retinal ischemia (n, %)	243	17.3 %	261	18.2 %
Hemispheric stroke (n, %)	664	47.3 %	670	46.7 %
History of stroke before recent event (n, %)	176	12.5 %	184	12.8 %
Days elapsed between event and treatment	32	15-71	29	14-65
Treatment within 7 days of event (n, %)	106	7.5 %	138	9.6 %

Risk ratio adjusted for source trial



Binominal regression analysis

Risk ratio adjusted for age, sex, and type of qualifying event



Multivariate regression analysis

Conclusion

The periprocedural risk of stroke and death is higher after CAS than after CEA particularly in patients older than 70 years.

The early days after the initial ischemic event carry the highest risk for a recurrent ischemia.

The risk of CAS compared with CEA appears greatest in patients treated within 7 days of symptoms.

This effect is also apparent independent of age.

Thus, CEA should be preferred to CAS in symptomatic patients.