

Máme jasno v indikacích k řešení stenóz karotických tepen?



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Is stroke important to prevent?

In Europe, stroke causes 1.1 million deaths annually.

It is the commonest cause of acquired disability in adults, with more than half of stroke survivors being dependent on others for everyday activities.

- Stroke costs health providers in Europe 38 billion Euros per year



Scientific Society

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AANN/AANS/ACR/ASNH/CNS/SAIP/SCAI/SIH/SNIS/SVM/ SVS

Guideline on the Management of Patients With Extracranial Carotid and Vertebral Artery Disease. Executive Summary:

A report of the American College of Cardiology Foundation/ American Heart Association 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 Vascular Medicine, and Society for Vascular Surgery

European Society of Cardiology (ESC)

Society for Vascular Surgery (SVS), USA/Canada

Australia: Clinical guidelines for stroke management

European Stroke Association (ESO)

European Society for Vascular Surgery ESVS

UK National Guideline for Stroke

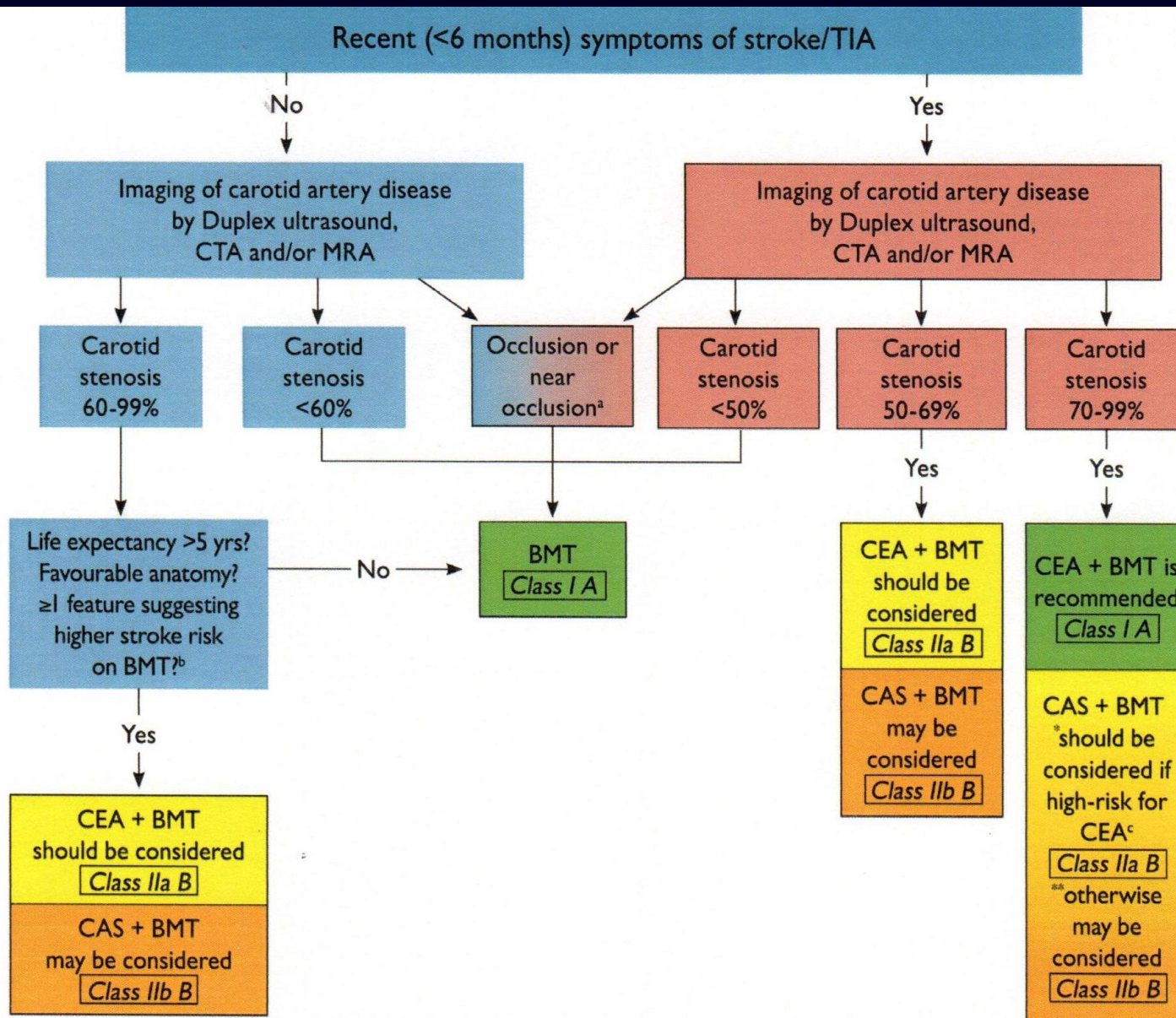
German Neurological Society (DGN)



Management of Atherosclerotic Carotid and Vertebral Artery Disease: 2017

Clinical Practice Guidelines of the European Society for Vascular Surgery (ESVS)

Writing Group a, A.R. Naylor, J.-B. Ricco, G.J. de Borst, S. Debus, J. de Haro, A. Halliday, G. Hamilton, J. Kakisis, S. Kakkos, S. Lepidi, H.S. Markus, D.J. McCabe, J. Roy, H. Sillesen, J.C. van den Berg, F. Vermassen,





More Questions than Answers?



Unresolved issues relating to managing carotid artery disease

The Writing Group identified key issues relating to the investigation and management of carotid artery disease that need to be addressed to better inform future guidelines.

These include:

Should the “accepted” risk thresholds for performing CEA or CAS be reduced from 6% in symptomatic patients and 3% in asymptomatic patients ?

Should the time threshold for a patient being defined as “recently symptomatic” (currently 6 months) be reduced ?

The need to develop a validated algorithm for identifying “high-risk for stroke” asymptomatic patients in whom to target CEA and CAS.

To determine whether asymptomatic carotid disease contributes towards cognitive decline and whether CEA/CAS can reverse or prevent this ?

Whether measurement of plasma biomarkers to evaluate excessive endothelial and coagulation system activation has any potential for guiding risk stratification in patients with asymptomatic carotid disease.

Should all recently symptomatic patients be started on dual antiplatelet therapy once parenchymal haemorrhage is excluded on CT/MRI and then be continued through the perioperative period ?

Relevance of new DW-MRI lesions after CEA and CAS.

Do these contribute towards a higher rate of recurrent stroke or cognitive decline ?

In patients undergoing emergency stent retrieval thrombectomy for acute ischaemic stroke because of an ICA or MCA (M1/M2) occlusion, is it safe to perform CAS to treat concurrent extracranial ICA stenoses during the same procedure ?

Which recently symptomatic patients with 0e49% ICA stenoses might benefit from urgent CEA or CAS ?

What is the optimal timing for performing CEA or CAS after intravenous thrombolysis ?

How should the presence of a tandem distal ICA severe stenosis influence management decisions in recently symptomatic patients with 50e99% ICA stenoses ?

Can we accurately define patients who really are “high-risk for CEA” in whom one should preferentially perform CAS ?

Can we accurately define patients who really are “high-risk for CAS” in whom one should preferentially perform CEA ?

What is the optimal method for protecting the brain during CAS: none, distal filter, proximal protection, transcarotid approach ?

Is it safe to perform CEA under locoregional anaesthesia if the patient is taking dual antiplatelet therapy ?

Does intravenous heparin therapy confer any additional benefit over mono or dual antiplatelet therapy in patients who present with crescendo TIAs ?

Is CEA under locoregional anaesthesia safer than CAS in “high-risk for CEA” patients with significant cardiac or chronic pulmonary disease ?

Is there any role for testing antiplatelet resistance prior to CEA or CAS ?



Sekundární prevence

tj. redukce klinických projevů u asymptomatických stenóz ACI

Terciální prevence

tj. redukce rekurence TIA/CMP po předcházející příhodě



Recommendation 8	Class	Level
A healthy diet, smoking cessation, and physical activity are recommended for all patients with asymptomatic carotid disease	I	B



Antiplatelet Th

Lipid – lowering Th

Management of hypertension

Treatment DM



Who is at higher risk for stroke on medical therapy?

The AHA has repeatedly advised that only “highly selected” asymptomatic patients should undergo CEA, but never defined what “highly selected” means.

An alternative interpretation of ACST-1 is that (at 10 years) only 46 strokes will be prevented at 5 years per 1000 CEAs (i.e. 95% of all CEAs were ultimately unnecessary).



Paraskevas et al

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Seeing light and shadows: A commentary on the 2017 European Society for Vascular Surgery carotid guidelines



CrossMark

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ASYMPTOMATIC CAROTID STENOSIS: DEFINING PATIENT SUBGROUPS AT HIGH RISK OF STROKE

Regarding asymptomatic carotid stenosis, the 2017 ESVS guidelines recommend that best medical treatment (BMT) should be the treatment of choice for the majority of asymptomatic patients. However, they define a subgroup of asymptomatic patients potentially at higher risk of ipsilateral stroke on BMT alone, including those with silent infarction on computed tomography or magnetic resonance imaging, spontaneous embolization on transcranial Doppler ultrasound, stenosis progression (>20%), large plaque area, large juxtaluminal black area on computerized plaque analysis, plaque echolucency, intraplaque hemorrhage on magnetic resonance imaging, and impaired cerebrovascular reserve.





CURRENT RISK THRESHOLDS MAY BE TOO HIGH

The recommended risk thresholds in the 2017 ESVS as well as in the 2014 AHA/ASA guidelines ($<6\%$ for symptomatic and $<3\%$ for asymptomatic patients) may currently be too high. An analysis of 48,185 CEAs from nine countries showed that the combined stroke/death rate in asymptomatic and symptomatic patients was 0.9% and 2.3%, respectively.³ Similarly, in an analysis of 23,235 symptomatic patients undergoing CEA from the UK National Vascular Registry,⁴ the combined 30-day stroke/death rate was 2.3%, ranging from 2.1% to 3.7%.





Recommendation 18		
In “average surgical risk” patients with an asymptomatic 60–99% stenosis in the presence of one or more imaging characteristics that may be associated with an increased risk of late ipsilateral stroke,^a <u>carotid stenting may be an alternative to carotid endarterectomy</u>, provided documented perioperative stroke/death rates are <3% and the patient’s life expectancy exceeds 5 years	IIb	B



CAS IS NOT AN ALTERNATIVE TO CEA

Evidence that CAS is currently not a good alternative to CEA came from a systematic review of stroke/death rates after CAS and CEA in contemporary registries involving >1,500,000 carotid revascularization procedures.⁹ Stroke/death rates after CAS were significantly higher than after CEA in 11 of 21 registries (52%) involving asymptomatic patients and in 11 of 18 registries (61%) involving symptomatic patients.⁹ Furthermore, CAS was associated with stroke/death rates that exceeded the risk thresholds recommended by the AHA/ASA (<6% for symptomatic and <3% for asymptomatic patients) in 9 of 21 (43%) registries involving asymptomatic patients and in 13 of 18 (72%) registries involving symptomatic patients. Finally, in 5 of 18 registries (28%), the procedural stroke/death rate after CAS in symptomatic patients exceeded 10%.⁹ Importantly, the increased stroke/death risk with CAS compared with CEA in these registries did not decline with time.⁹





LONG-TERM OUTCOME DATA

Three recent RCTs have concluded that CAS and CEA are associated with similar long-term outcomes in both symptomatic and asymptomatic patients.^{6,11,12} In contrast, a meta-analysis of eight RCTs (7005 patients; 3136 CEAs; 3869 CAS procedures) including the three recent RCTs^{6,11,12} showed that CAS is associated with a higher risk of long-term stroke (9.3% vs 6.8%, respectively; $P < .0001$) and the composite outcome of long-term stroke or death (316/3869 vs 230/3136 events, respectively; odds ratio, 1.25; $P = .01$) compared with CEA.¹³

Thus, at present, the claim that CAS is an *alternative* (implying equivalence) to CEA is unsubstantiated,¹⁴ and the 2017 ESVS guidelines make sure this earlier misinterpretation is rectified. No one disputes the fact that CAS is an alternative to CEA in specific patients at high risk for open surgery, but it is incorrect and misleading to recommend CAS as an alternative treatment option to CEA,¹⁴ given the repeated suboptimal results for CAS from real-world registries^{9,15} and meta-analyses of RCTs.^{7,8,10,13}





Table 14. Risk of stroke in the early time period after the index TIA in patients with 50–99% carotid stenoses compared with pooled data from the randomised trials.

	48 hours	72 hours	7 days	14 days	5 years
ECST + NASCET + VA, BMT patients ¹⁷³					21%
Fairhead ²⁰⁸				20%	
Purroy ²⁰⁹			10%		
Ois ²¹⁰		17%	22%	25%	
Bonifati ²¹¹	8%				
Johansson ²¹²	5%		8%	11%	
Mono ²¹³		4%			
Merwick ²¹⁴			8%		
Marnane ²¹⁵	5%	9%	16%		

**Table 15.** Proportion of patients undergoing CEA in national audits within 0–2, 3–7, 8–14, and >15 days after onset of symptoms.

National Audit	0–2 days	3–7 days	8–14 days	≥15 days
Sweden ²¹⁸	148/2596	804/2596	677/2596	967/2596
<i>n</i> = 2596	(6%)	(31%)	(26%)	(37%)
UK ²¹⁹	780/23,235	5126/23,235	6292/23,235	11,037/23,235
<i>n</i> = 23,235	(3%)	(22%)	(27%)	(48%)
Germany ²²⁰	5198/56,279	19,117/56,279	16,205/56,279	15,759/56,279
<i>n</i> = 56,279	(9%)	(34%)	(29%)	(28%)

Table 16. 30-day death/stroke risks after CEA, stratified for delay from symptom onset to CEA in national audits of practice.

National Audit	0–2 days % (95% CI)	3–7 days % (95% CI)	8–14 days % (95% CI)	≥15 days % (95% CI)
Sweden ²¹⁸	17/148	29/804	27/677	52/967
<i>n</i> = 2596	11.5% (6.8–17.8)	3.6% (2.4–5.1)	4.0% (2.6–5.8)	5.4% (4.0–7.0)
UK ²¹⁹	29/780	128/5126	132/6292	254/11,037
<i>n</i> = 23,235	3.7% (2.5–5.3)	2.5% (2.1–3.0)	2.1% (1.8–2.5)	2.3% (2.0–2.6)
Germany ²²⁰	157/5198	480/19,117	427/16,205	370/15,759
<i>n</i> = 56,279	3.0% (2.6–3.5)	2.5% (2.3–2.7)	2.6% (2.4–2.9)	2.3% (2.1–2.6)

**Table II.** Periprocedural complications in relation to the time interval between the index event and surgery

Complication	Total, No. (%)	Interval between index event and surgery				P value ^a
		0-2 days, No. (%)	3-7 days, No. (%)	8-14 days, No. (%)	15-180 days, No. (%)	
Stroke/mortality rate	10 (2.5)	2 (3)	3 (3)	1 (2)	4 (2)	.93
Stroke rate	6 (1.5)	0	2 (2)	1 (2)	3 (2)	1.0
Minor stroke (mRS 0-2)	3 (0.7)	0	1 (1)	0	2 (1)	.70
Major stroke (mRS 3-5)	3 (0.7)	0	1 (1)	1 (2)	1 (1)	.87
Mortality rate	4 (1.0)	2 (3)	1 (1)	0 (0)	1 (1)	.24
Noncerebral complications						
Myocardial infarction	3 (0.7)	1 (2)	1 (1)	0	1 (1)	.74
Major neck bleeding ^b	7 (1.7)	1 (2)	1 (1)	0	5 (3)	.37
Cranial nerve injuries ^c	9 (2.2)	3 (5)	2 (2)	2 (3)	2 (1)	.36

mRS, Modified Rankin scale.
^aStatistical analysis by Fisher exact test.
^bRequiring surgical revision.
^cTransient or persistent.

**Table II.** Primary outcomes stratified by the different carotid endarterectomy (CEA) timing groups

Outcomes	Overall (N = 989)	Group I (n = 96)	Group II (n = 322)	Group III (n = 94)	Group IV (n = 477)	P value
Hospital mortality	8 (0.8)	1 (1)	5 (1.6)	0 (0)	2 (0.4)	.266
POD (30 days)	13 (1.3)	1 (1)	6 (1.9)	1 (1.1)	5 (1)	.775
Not discharged home	186 (18.8)	26 (27.1)	90 (28)	35 (37.2)	35 (7.3)	<.001
Stroke	30 (3)	7 (7.3)	13 (4)	2 (2.1)	8 (1.7)	.016
MI	13 (1.3)	2 (2.1)	6 (1.9)	2 (2.1)	3 (0.6)	.333
Stroke/MI	40 (4)	9 (9.4)	18 (5.6)	4 (4.3)	9 (1.9)	.002
POD/stroke/MI	46 (4.7)	9 (9.4)	20 (6.2)	5 (5.3)	12 (2.5)	.009

MI, Myocardial infarction; POD, postoperative death.
Values are reported as number (%).



Table 22. Meta-analysis of the prevalence of late ipsilateral stroke in CEA/CAS patients with and without an asymptomatic “restenosis >70% or occlusion” in the constituent RCTs.^a

Procedure	Mean follow-up (months)	Stroke ipsilateral to >70% restenosis ^b	Stroke ipsilateral to restenosis <70%	OR (95% CI)
No. of RCTs				
No. of patients				
Any CEA	37	7/135 5.2%	40/2704 1.2%	4.77 (95% CI 2.29–9.92), $p < .0004$, $I^2 = 0\%$
7 RCTs ($n = 2810$)				
CAS	50	1/125 0.8%	37/1839 2.0%	0.87 (0.24–3.21), $p = .8339$, $I^2 = 0\%$
4 RCTs ($n = 1964$)				

^a Data derived from Kumar et al.³⁸⁰

^b All restenoses had been asymptomatic prior to stroke onset.

**Table 26.** Prevalence of perioperative stroke stratified for type of procedure.

Author	Population	n =	Stroke risk
Axelrod 2004 ⁴¹¹	Major vascular surgery	5296 aortic	0.5%
		7299 lower limb bypass	0.4%
		7442 major amputation	0.6%
Sharifpour 2014 ⁴¹²	Major vascular surgery	8077 major amputation	0.7%
		21,962 lower limb bypass	0.5%
		7888 open aortic	0.8%
		9823 EVAR	0.5%
Jørgensen 2014 ⁴¹³	Non-cardiac, including vascular	481,113	0.1%
Sonny 2014 ⁴¹⁴	Non-cardiac including vascular	2110	2.6%
Kikura 2008 ⁴¹⁵	General, orthopaedic, thoracic, non-carotid vascular	36,634	0.3%
Parvizi 2007 ⁴¹⁶	Knee arthroplasty	1636	0.4%
Bateman 2009 ⁴¹⁷	Hemicolectomy	131,067	0.7%
	Hip replacement	201,235	0.2%
	Lung resection	39,339	0.6%
Huang 2010 ⁴¹⁸	Caesarean section	303,862	0.05%
Mashour 2011 ⁴¹⁹	Non-cardiac (low risk) general, orthopaedic, urology, ENT, plastics, thoracic, gynaecology	523,059	0.1%
Biteker 2014 ⁴²⁰	Non-cardiac, non-vascular	1340	2.3%

EVAR = endovascular aortic aneurysm repair.



ESVS Guidelines 2017

Recommendation 89		
Routine carotid imaging in asymptomatic patients undergoing non-cardiac surgery procedures is not recommended	III	B



Are carotid interventions indicated in cardiac surgery patients?

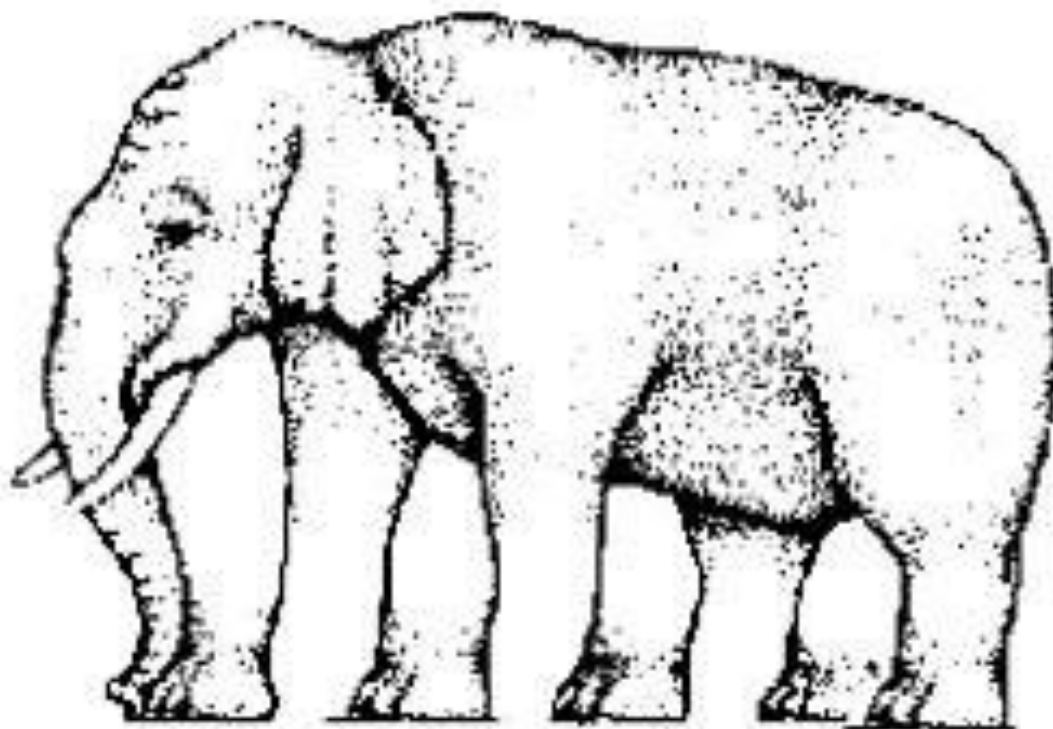
The evidence would, however, support prophylactic CEA (or CAS) in patients with bilateral asymptomatic 70 - 99% stenoses, or a 70 -99% stenosis with contralateral occlusion.



Treatment of coils and kinks.

The management of patients with ICA coils/kinks in the absence of significant stenoses is controversial.





Kolik nohou má tento slon?