

## Short Summaries of Papers on FACTCATCS website

2. **Abbott, A. L., K. I. Paraskevas, S. K. Kakkos, J. Golledge, H. H. Eckstein, L. J. Diaz-Sandoval, L. Cao, Q. Fu, T. Wijeratne, T. W. Leung, M. Montero-Baker, B. C. Lee, S. Pircher, M. Bosch, M. Dennekamp and P. Ringleb. Systematic Review of Guidelines for the Management of Asymptomatic and Symptomatic Carotid Stenosis. *Stroke*.2015;46(11): 3288-3301.**

### PUBLICATION SUMMARY (prepared by AL Abbott, January, 2016)

#### RESEARCH OVERVIEW

This was an analysis of all guideline recommendations published between January 2008 and January 2015 we could identify regarding routine carotid surgery (carotid endarterectomy, CEA) and/or carotid stenting (CAS) in patients with asymptomatic (ACS) and/or symptomatic carotid stenosis (SCS). The aims were to examine the extent to which all available scientific research was utilised and to assess recommendation clarity. Only the latest guideline by a particular writing group was included. All relevant languages were accommodated. We used predefined questions to determine how often CEA or CAS or medical treatment were recommended and the scientific basis for such recommendations. Each guideline was independently analysed by at least two authors, most of whom were multilingual.

#### MAJOR FINDINGS

- 34 total eligible guidelines were identified. These originated from 23 different countries or regions and were written in six different languages (English, German, Chinese, Korean, Dutch and Spanish).
- Most often treatment recommendations were given with respect to patients considered at average-surgical (CEA) risk, like patients selected in past randomised trials of medical treatment alone versus additional CEA (ACAS, ECST, NASCET and the Veterans Affairs trials) or early vs delayed CEA (ACST). Some guidelines also gave recommendations for patients considered high-CEA risk due to their anatomy or co-existing medical conditions (such as severe heart or lung disease). These subgroups were usually not clearly defined.
- Definitions of asymptomatic and symptomatic carotid stenosis varied and were usually incomplete- with 93% and 88% of applicable guidelines, respectively, omitting definition of the degree of stenosis referred to, how to measure the stenosis and/or the timing and territory of any previous stroke or TIA.
- For patients considered at average-surgical risk, CEA was endorsed (recommended it should or may be performed) in 96% of applicable guidelines regarding ACS patients and 100% of applicable guidelines regarding SCS patients. This is despite overall evidence indicating current medical treatment alone is now best for ACS patients while modern research to determine a surgical benefit for SCS patients is required.
- For patients considered at average-surgical risk, CAS was endorsed in 63% of guidelines regarding ACS patients and approximately 50% of guidelines regarding SCS patients. This is despite overall randomised trial and registry evidence indicating that CAS is more likely to cause stroke or death than CEA or medical treatment alone in such patients. The excess risk of stroke or death caused by CAS is not compensated by a slightly higher risk of heart attack associated with CEA in some past randomised trials. This last point was usually omitted from guidelines.
- For patients considered at high-surgical risk, CAS was endorsed by 48% of guidelines regarding ACS patients and 84% of guidelines regarding SCS. This is despite no evidence of a CAS benefit

compared to CEA or current medical treatment alone and the limited life expectancy of many such patients.

vii. Definitions of the 30-day rate of stroke and death which would infer an overall benefit from CEA or CAS over medical treatment alone (assuming the past randomised trials ACAS, ACST, ECST, NASCET and the Veterans Trials are still relevant) were incomplete in all applicable guidelines with respect to ACS and 97% of guidelines with respect to SCS.

viii. All endorsements of CEA and CAS were based on outdated (12-34 year old) comparisons of medical treatment alone versus additional CEA (from the past randomised trials ACAS, ACST, ECST, NASCET and the Veterans Trials) and so lacked current scientific validity.

ix. Recommendations regarding best medical treatment were often omitted and usually incomplete, whether or not patients were recommended CEA or CAS. Improvements in medical treatment since the randomised trials of CEA versus medical treatment alone were rarely mentioned and impacted on guideline recommendations in only one case (regarding ACS patients in the guideline from the UK Royal College of Physicians).

x. Terminology used to summarise recommendations, or the evidence used to make them, were not standardised across guidelines, making interpretation and comparison difficult.

xi. Many guidelines (44%) were identified only via the personal professional networks of the authors, not via popular search engines. This obstructs public access to guidelines.

### **SIGNIFICANCE**

This research has demonstrated how contemporary international guidelines over encourage the use of risky and expensive procedures which in many cases are more likely to harm than help patients. There were also many fundamental organisational problems. These issues should be addressed in all future guidelines on carotid stenosis management. This research also indicates the need for modern research to inform patient management decisions, including that each centre measure and publish its own key outcomes such as the 30-day rate of stroke and death following CEA or other carotid procedures.

### **RESEARCH FUNDING**

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**INDEPENDENT FACULTY MEMBER COMMENT:** nil at the time of posting

