

The European Stroke Organisation (ESO) guidelines

T. Steiner^{1,2}, R. Al-Shahi Salman³, and G. Ntaios⁴

¹Department of Neurology, Klinikum Frankfurt Höchst, Frankfurt, Germany

²Department of Neurology, Heidelberg University Hospital, Heidelberg, Germany

³Division of Clinical Neurosciences, Centre for Clinical Brain Sciences, University of Edinburgh, Edinburgh, UK

⁴Department of Medicine, Larissa University Hospital, School of Medicine, University of Thessaly, Larissa, Greece

In 2008, the European Stroke Organisation (ESO) updated the European Stroke Initiative (EUSI) recommendations for the management of ischemic stroke and transient ischemic attack, initially published in 2000 and updated in 2003 (1–3). Since then, the ESO has begun the process of implementing a new standardized system for the production and presentation of evidence-based clinical guidelines. The ESO guidelines committee agreed on two major developments: use of the Grading of Recommendations Assessment, Development and Evaluation (GRADE) system (4–7); and the transition to a model in which several guideline documents deal with specific topics of interest called modules rather than a single document on a large topic.

The GRADE system has a series of advantages over other systems that include clear separation between quality of evidence and strength of recommendation, explicit comprehensive criteria for downgrading and upgrading quality of evidence ratings, transparent process of moving from evidence to recommendations, explicit evaluation of the importance of outcomes of alternative management strategies, explicit acknowledgment of values and preferences, and clear pragmatic interpretation of strong versus weak recommendations for clinicians, patients, and policy makers (4–7). In summary, the GRADE approach starts with the formulation of the PICO (population, intervention, comparator, and outcome) questions. The selected outcomes are rated using a 9-degree scale (7–9: critical; 4–6: important; 1–3: of limited importance) and a search strategy is formulated. After a thorough literature search leading to the identification of all available evidence, eligible studies are then selected and their data are extracted and analyzed. The results can be imported into the GRADEPro software (8), allowing for efficient quality grading of the available evidence for each outcome and each clinical question. Then we determine the direction (either ‘against’ or ‘for’) and strength of the recommendation (either ‘strong’ or ‘weak’), and finally the recommendation is formulated using a standardized language (4–7).

The second major development in the ESO guidelines policy was to move from the classical model of a single guideline document on a major topic – e.g. management of ischemic stroke, transient ischemic attack, and hemorrhagic stroke – to subdivision of the major topic into focused modules. This enables the ESO Guidelines Committee to react quickly when new developments in a specific area of stroke medicine occur, and update recommendations on the related module with speed. With the

previous approach of a single large guideline document, an entire revision had to be completed before an updated publication, delaying the production of up-to-date guidelines for use in clinical practice.

For each module, the ESO Guidelines Committee invites an ESO member to organize a working group that follows the aforementioned road map to prepare the guidelines for this specific module. Prior to submission for publication, each guideline document is submitted for review to the ESO Guidelines Committee, the ESO Executive Committee, and two external reviewers. For transparency, all authors and reviewers report their potential conflicts of interest.

The first ESO guideline document using this new approach is the management of spontaneous intracerebral hemorrhage (ICH), published in the present issue of the *International Journal of Stroke* (pp. 840–855). In this guideline, a multidisciplinary group of clinical researchers addressed 20 PICO questions. In summary, the conclusions provide evidence-based support for acute stroke unit care, intensive blood pressure lowering within six-hours of onset, intermittent pneumatic compression in immobile patients with ICH, and secondary prevention with blood pressure lowering for ICH survivors. Another result of the comprehensive literature search and assessment was to see in how many areas there is only little to no evidence from randomized controlled trials or meta-analyses. However, because clinicians often wish for guidance in the absence of high-quality RCTs in diseases with such high morbidity and mortality as ICH, there is further guidance on what to do in the ‘additional information’ sections, based on observational data and views within the writing group.

Other modules which are currently in progress include prehospital stroke management; organization of acute endovascular treatment in acute ischemic stroke; the management of temperature, glycemia and mass effect in acute ischemic stroke; prevention of venous thromboembolism in stroke patients; investigation of stroke and transient ischemic attack; secondary stroke prevention; management of intracranial venous sinus thrombosis; and others.

The ESO Guidelines Committee is supported by two leading stroke conferences: the recently announced annual ESO Conference (ESOC) held for the first time in Glasgow on April 17–19, 2015, and thereafter moving around Europe (9). ESO guidelines will be presented and discussed at a specific guidelines session during ESOC. In addition, the traditional biannual Karolinska Stroke Update Conference is joining forces with the ESO and

DOI: 10.1111/ijvs.12369

continues at the ESO Karolinska Stroke Update from November 14 to 16, 2014 in Stockholm. These Karolinska meetings have been a valuable tool for in-depth discussion and recommendations on stroke practice since 1996 (10). This meeting will continue to provide an excellent opportunity to present, discuss, and disseminate the ESO guidelines, and identify topics for potential new modules.

At the same time, the ESO Guidelines Committee is working to prepare standardized procedures for several relevant issues like the ESO policy on endorsement of national stroke guidelines, the criteria used to select the module leaders and members, and the training of module members on the use of the GRADE system during annual workshops.

During recent years, the ESO has been actively engaged in new important challenges like the ESO Conference and the new standardized guidelines policy. The launch of the first ESO Conference in April 2015 (9), the publication of the ESO guidelines for the management of spontaneous ICH in the present issue of the *International Journal of Stroke*, and multiple other educational and scientific activities (11–14) emphasize the strong determination of the ESO to further promote stroke management, education, and research in Europe.

References

- 1 European Stroke Initiative recommendations for stroke management. European Stroke Council, European Neurological Society and European Federation of Neurological Societies. *Cerebrovasc Dis* 2000; **10**:335–51.
- 2 European Stroke Initiative Executive Committee, EUSI Writing Committee, Olsen TS *et al.* European Stroke Initiative recommendations for stroke management-update 2003. *Cerebrovasc Dis* 2003; **16**:311–37.
- 3 European Stroke Organisation Executive C, Committee ESOW. Guidelines for management of ischaemic stroke and transient ischaemic attack 2008. *Cerebrovasc. Dis.* 2008; **25**:457–507.
- 4 Guyatt GH, Oxman AD, Kunz R *et al.* Going from evidence to recommendations. *BMJ* 2008; **336**:1049–51.
- 5 Guyatt GH, Oxman AD, Kunz R *et al.* Incorporating considerations of resources use into grading recommendations. *BMJ* 2008; **336**:1170–3.
- 6 Guyatt GH, Oxman AD, Kunz R *et al.* What is 'quality of evidence' and why is it important to clinicians? *BMJ* 2008; **336**:995–8.
- 7 Guyatt GH, Oxman AD, Vist GE *et al.* Grade: an emerging consensus on rating quality of evidence and strength of recommendations. *BMJ* 2008; **336**:924–6.
- 8 Gradepro [computer program]. Version 3.2 for Windows. Jan Brozek, Andrew Oxman, Holger Schünemann, 2008. Available at <http://tech.cochrane.org/revman/other-resources/gradepro/about-gradepro>
- 9 European Stroke Organization (ESO), Announcement of European Stroke Organization Conference (ESOC) 2015. Available at <http://eso.kenes.com/> (accessed 7 June 2014).
- 10 Kaste M, Thomassen L, Grond M *et al.* Thrombolysis for acute ischaemic stroke: a consensus statement of the 3rd Karolinska Stroke Update, October 30–31, 2000. *Stroke* 2001; **32**:2717–8.
- 11 Mattle HP, Brainin M, Chamorro A *et al.* Second European Stroke Science Workshop. *Stroke* 2014; **45**:e113–22.
- 12 Mattle HP, Brainin M, Chamorro A *et al.* European Stroke Science Workshop. *Stroke* 2012; **43**:e81–8.
- 13 Brainin M, Michel P. European Stroke Organisation. *Stroke* 2013; **44**:e148–9.
- 14 European Stroke Organization (ESO), homepage. Available at www.eso-stroke.org (accessed 13 June 2014).