
2.1 Sources of Supporting Information

Evidence-based guidelines are an important contribution to efficient and cost-effective management of acute stroke. Such guidelines aim at providing recommendations for high quality and equal level of care to the national and international medical community and represent a common basis for the optimal management of acute stroke. The adherence to these guidelines may or may not play an important role in the outcome of acute stroke patients.

Guidelines and recommendations are certainly a valuable tool for clinicians involved in the treatment of acute stroke patients. A considerable number of guidelines covering different aspects of acute stroke management have been published over the last decade. However, too many guidelines with different and sometimes conflicting recommendations may make it difficult for some clinicians to decide which guidelines to follow. Detailed guidelines are helpful – but they have to be updated regularly to keep pace with the fast development in acute stroke treatment.

The American Heart Association/American Stroke Association has issued one of the best-known guidelines. The AHA ASA has published separate guidelines on management of acute ischemic stroke, which were published in 1994. As new scientific evidence becomes available based on controlled stroke trials, many guidelines have and will continue to be updated. For example, the AHA ASA guidelines of 1994 were amended soon after in 1996, when the US Food and Drug Administration (FDA) had approved thrombolytic therapy in ischemic stroke. They were again amended in 2009, when the time window for treatment of acute ischemic stroke with intravenous tissue plasminogen activator was expanded to 4.5 h – based on the results of the ECASS-III study (although labeling for the drug has not yet been adapted for use beyond the 3 h time window).

Besides the AHA ASA, other main American guidelines are those published by the National Institute of Neurological Disorders and Stroke (NINDS) and the National Stroke Association (NSA) which also include guidelines on stroke *prevention*, namely the guidelines for the prevention of stroke in patients with stroke or transient ischemic attack published in 2010 by the AHA ASA. The aim of this new statement is to provide comprehensive and timely evidence-based recommendations on the prevention of ischemic stroke among survivors of previous ischemic stroke or transient ischemic attack.

European clinicians may find it useful to apply the American guidelines or choose between a multitude of local, national, and international guidelines. For example, due to discrepancies between the different local health care resources, some local or national guidelines and recommendations cannot be applied at a specific hospital, e.g., lack of CT or MRI facilities, laboratory availability, or 24-h monitoring.

Finland was one of the first countries to publish national guidelines. Some national guidelines may represent a reliable source of evidence-based information on different aspects of acute stroke management, but a more homogenous presentation should facilitate the clinicians' task. Also, some recommendations, such as the WHO consensus statement, are too general to be efficiently implemented in the daily clinical decision-making.

International organizations have also issued guidelines, such as the European Federation of Neurological Societies (EFNS), which published its guidelines for acute stroke care in 1997.

More recently, the European Stroke Organization (ESO) published guidelines for management of ischemic stroke in 2008, which have been updated in 2009 with regard to thrombolytic therapy. These guidelines represent an update of the European Stroke Initiative (EUSI) guidelines published in 2000 and cover referral and emergency management, stroke unit service, diagnostics, primary and secondary prevention, general stroke treatment, specific treatment including acute management, management of complications, and rehabilitation.

The last decade was characterized by the implementation of stroke units for acute stroke patients together with a number of relevant national guidelines and recommendations. The recommendations for the establishment of primary stroke centers by the Brain Attack Coalition (BAC) published in 2000 address eleven major aspects of acute stroke care.

Furthermore, the ESO guidelines give a comprehensive overview of the organization of prehospital and in-hospital pathways and systems for acute stroke patients and recommend that acute stroke patients should be treated in stroke units.

Randomized clinical trials have shown that stroke units tend to increase survival rates among acute stroke patients as compared to general medical wards. Many different approaches to stroke unit organizations exist, e.g.:

- Acute stroke units focusing on skilled treatment for patients in the acute phase
- Nonintensive stroke units or stroke rehabilitation units
- Comprehensive stroke units combining acute and rehabilitation stroke care

Some of these are in the process of being certified according to criteria for optimal care of acute stroke patients.

Another international recommendation is the creation of mobile stroke teams in both acute care and rehabilitation hospitals. The aim here is to provide skilled treatment at every stage of the disease to those hospitals without own resources.

Over the last decade, telemedicine using a bidirectional videoconferencing equipment to provide health services or assist health care personnel in remote rural areas are emerging. They are seen as a potential timesaving and efficient means for evaluating patients experiencing acute stroke. Telemedicine may link an emergency department physician with a distant specialist in a stroke unit. Relevant statements are included, among others, in the recommendations for the implementation of telemedicine within stroke systems of care published in 2009 by the AHA ASA as well as in the ESO guidelines, but many questions remain unresolved, i.e., legal issues when giving indication for high-risk treatments of remote patients without adequate personal investigation.

Due to the increasing number of local, national, and international recommendations and guidelines, there seems to be an obvious need for critical evaluation and harmonization of available guidelines. Yet, although current guidelines differ in their variety, taking into account cultural and economic factors, they represent a solid instrument to assist the clinicians in daily acute stroke care.

As indicated by the ESO, global harmonization of stroke guidelines will be the focus of the World Stroke Organization, supported by the ESO and other national and regional stroke societies.

2.2 Guidelines

The following tables include an extract of the list of currently existing stroke guidelines identified through members of the World Stroke Organization (Tables 2.1–2.7).

Table 2.1 Stroke care across the continuum (prehospital, acute care, rehabilitation, and prevention)

Canadian best practice recommendations for stroke care (2008 update). Available: CMAJ 2008; 179: E1–E93	Canadian stroke strategy	Canada	2008
Chilean stroke guidelines	Cerebrovascular Diseases Group	Chile	2008
Stroke guideline	Chinese Neurological Society	China	2007
Guideline of cerebrovascular diseases treatment	Institute of Medicine in Shanghai	China	2008–2011
Guideline for stroke management	Chinese Stroke Association	China	2008
China guideline for cerebrovascular disease prevention and treatment	Neurology Commission Branch of CMA	China	2008
Demarin V, Lovren I, Huzjan A, et al. Recommendations for stroke management (2006 update). Available: Acta Clin Croat 2006; 45:219–285	Croatian Society for Neurovascular Disorders	Croatia	2006
Guidelines for management of ischemic stroke and transient ischemic attack	European Stroke Organization	Europe	2008
Aivoinfarkti (stroke)	Task Force nominated by the Finnish Neurological Association together with the Finnish Medical Society Duodecim	Finland	2006
Kaypa hoito (current care)	National Stroke Group	Finland	2006
Guidelines stroke 2007	Pokja Stroke Perdossi (Stroke Task Force Indonesian Neurological Association)	Yogyakarta Indonesia	2007
Spread stroke prevention Italian guidelines	SPREAD Italy	Italy	2007
Nacionaimi vodi za lije enjeakutnog mo danog udara	Neurological Society of Serbia & Montenegro	Montenegro	2004
Life after stroke: New Zealand guideline for management of stroke	Stroke Foundation of New Zealand	New Zealand	2003
New Zealand TIA guideline	New Zealand Guideline Group	New Zealand	2008
Guidelines for stroke management	Stroke Society of the Philippines	Philippines	2006
Guideline about stroke and TIA management in 2008	Romanian Association of Stroke	Romania	2008

Nationella riktlinjer för strokevård	National Board of Health & Welfare	Sweden	2005
National stroke guidelines	National Board of Health & Welfare	Sweden	2006
Inselspital, University of Bern (H. Mattle)	ZAS	Switzerland	2007
Guidelines for stroke prevention	Neurological Society of Thailand	Thailand	2007
National stroke guidelines 3rd edition	Royal College of Physicians	United Kingdom	2008
Stroke guidelines	National Institute for Health and Clinical Excellence (NICE)	United Kingdom	2008
SIGN 64: management of patients with stroke: rehabilitation, prevention, and management of complications, and discharge planning	Scottish Intercollegiate Guidelines Network (SIGN)	United Kingdom	2006

Table 2.2 Prehospital (emergency medical services) stroke care

(doi: 10.1590/S0004282X2002000400032)	Academia Brasileira de Neurologica	Brazil	2002
The recognition and emergency management of suspected stroke and TIA guidelines supplement	Royal College of Physicians (RCP) National Pre-Hospital Guidelines Group	United Kingdom	2006
Guideline for the management of acute ischemic stroke	American Heart Association	United States	2007
Guidelines for the management of spontaneous hemorrhage in adults	American Heart Association	United States	2007
Guidelines for the Management of transient ischemic attack	American Heart Association	United States	1994

Table 2.3 Acute and rehabilitation components

Clinical guidelines for stroke rehabilitation and recovery	National stroke foundation	Australia	2005
Best practice guideline for stroke care	Heart & Stroke Foundation of Canada	Canada	2003
Nursing best practice guideline: stroke assessment across the continuum of care	Registered Nurses Association of Ontario (RNAO)	Canada	2005
Nova Scotia guidelines for stroke care	Cardiovascular Health Nova Scotia	Canada	2008
Japanese guidelines for the management of stroke available: Int J Stroke; 2008; 3: 55–62	The Joint Committee (Japan Stroke Society, and other four stroke-related Japanese societies)	Japan	2004
Up-to-date principles of diagnostics and management of patients with acute disorders of cerebral perfusion	Ukrainian Anti-Stroke Association	Ukraine	2007

Table 2.4 Acute stroke care

Clinical guidelines for acute stroke management	National stroke foundation	Australia	2007
Guías de Práctica Clínica para la prevención del accidente cerebrovascular isquémico y el ataque isquémico transitorio Available: Revista Neurologica Argentina 2006; 31: 74–9	Sociedad Neurologica Argentina	Argentina	2006
Primeiro Consenso Brasileira	Sociedade Brasileira de Doencas Cerebrovasculares	Brazil	

Table 2.4 (continued)

Clinical practice guidelines for hemorrhagic stroke	Neurological Society of Thailand	Thailand	2004
Guideline stroke	Pokja Stroke Perdossi (Stroke Task Force Indonesian Neurological Association)	Indonesia	2008
SIGN 108 management of patients with stroke or TIA	Scottish Intercollegiate Guidelines Network (SIGN)	United Kingdom	2008
Stroke assessment: booklet for patients	Scottish Intercollegiate Guidelines Network (SIGN)	United Kingdom	2008
SIGN 78:management of patients with stroke: identification and management of dysphagia	Scottish Intercollegiate Guidelines Network (SIGN)	United Kingdom	2004
Stroke in childhood: clinical guidelines for diagnosis, management and rehabilitation	Royal College of Physicians (RCP) Pediatric Stroke Working Group	United Kingdom	2004
Stroke guidelines	Society Against Stroke in Ukraine (SASU)	Ukraine	2007
Guidelines for the early management of adults with ischemic stroke. Available: Stroke 2007; 38: 1655–1711	American Heart Association	United States	2007
Guidelines for the management of spontaneous intracerebral hemorrhage in adults: 2007 update Available: Stroke 2007; 38: 2001–2023	American Heart Association	United States	2007
Management of stroke in infants and children: a scientific statement for healthcare professionals from a special writing group of the stroke council. Available: Stroke 2008; 39: 2644–91	American Heart Association	United States	2008

Table 2.5 Stroke rehabilitation

Clinical guidelines for stroke rehabilitation and recovery http://www.strokefoundation.com.au/post-acute-health-professional	National stroke foundation	Australia	2005
Stroke care optimization of rehabilitation through evidence (SCORE)	SCORE Research Group	Canada	2007
Ottawa panel evidence-based clinical practice guidelines for post-stroke rehabilitation Available: Top Stroke Rehabil 2006; 13(2): 1–269	Ottawa Panel Research Group	Canada	2006
EBRSR: evidence-based review of stroke rehabilitation. 11th ed. London (ON): EBRSR; 2008	EBRSR Research Group	Canada	2008

(continued)

Table 2.5 (continued)

Clinical practice guidelines for hemorrhagic stroke	Neurological Society of Thailand	Thailand	2004
Management of adult stroke rehabilitation care: a clinical practice guideline. Available: Stroke 2005; 36: e100–e143	American Heart Association	United States	2005
Clinical practice guidelines for the management of stroke rehabilitation	Veterans Affairs/ Department of Defense	United States	2003

Table 2.6 Stroke prevention (secondary)

Neuroprotective agents in stroke: nacional opinión. Arq Neuropsiquiatr 2005; 63: 889–91	Doencas cerebrovasculares	Brazil	2005
Management of carotid disease in acute phase of stroke: nacional opinión. Arq Neuropsiquiatr 2005; 63(3A): 709–12	Sociedade Brasileira de Doencas Cerebrovasculares	Brazil	2005
Guidelines for the prevention of stroke in patients with ischemic stroke or TIA. Available: Stroke 2006; 37: 577–617	American Heart Association	United States	2006

Table 2.7 Stroke prevention (primary)

Primary prevention of ischemic stroke. A guideline from the American Heart Association/American Stroke Association Stroke Council. Stroke 2006; 37: 1583–1633	American Heart Association	United States	2006
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Source: http://www.world-stroke.org/guidelines_hb02.asp last access April 2011



Further Reading

Adams HP Jr, del Zoppo G, Alberts MJ, Bhatt DL, Brass L et al (2007) Guidelines for the early management of adults with ischemic stroke: a guideline from the American Heart Association/American Stroke Association Stroke Council, Clinical Cardiology Council, Cardiovascular Radiology and Intervention Council, and the Atherosclerotic Peripheral Vascular Disease and Quality of Care Outcomes in Research Interdisciplinary Working Groups: The American Academy of Neurology affirms the value of this guideline as an educational tool for neurologists. *Circulation* 115:e478–e534

European Stroke Organization (ESO) Executive Committee: Collective Name: ESO Writing Committee (2008) Guidelines for management of ischemic stroke and transient ischemic attack. *Cerebrovasc Dis* 25:457–507

<http://www.americanheart.org>. Last accessed May 2011

<http://www.ninds.nih.gov>. Last accessed May 2011

<http://www.stroke.org>. Last accessed May 2011

<http://www.efns.org>. Last accessed May 2011

<http://www.eso-stroke.org>. Last accessed May 2011

<http://www.stroke-site.org>. Last accessed May 2011

<http://www.springer.com/978-3-642-21404-2>

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