

## Trends for Optimal Management of Acute Stroke Patients in 2017

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Stroke still remains the most common cause of disability worldwide and is responsible for the third largest number of deaths [1-3]. Proven therapies for stroke are listed in table 1. IV administration of Tissue Plasminogen Activator (rt-PA) [4] and endovascular thrombectomy [6-8] revolutionized the management. However, due to the short therapeutic window for therapies, early recognition of stroke and urgent transfer to a specialized stroke unit [9] is of paramount importance in order to salvage ischemic brain tissue: "Time is Brain" [11, 12]. The first step is to evocate stroke.

For prehospital management, since stroke is a medical emergency it is crucial for attending General Practitioner (GP) to recognize the symptoms and signs of stroke or transient attack (and to educate patients/lay people). Only two thirds of primary care physicians immediately transferred patients with clear stroke symptoms to a hospital emergency department [13].

In order to make a rapid diagnosis of stroke in the field by paramedical staff or medical practitioners by phone, simplified algorithms have been developed. The most useful is FAST developed by the US National Stroke Foundation ([www.strokefoundation.com](http://www.strokefoundation.com)). FAST (Face, Arm, Speech, Time) should facilitate rapid stroke recognition and phone to the emergency medical number of the state, for SAMU, the number 15 in France, 911 in United States). Exact time of first symptoms onset are major information to transmit to stroke team. Organizing prehospitalization care is essential to minimize the delay of therapy initiation. Transport to the closest primary stroke center or comprehensive stroke center should be immediate and rapid. It may even involve air medical transport [14]. Implementation of the guidelines for stroke organization shorten the course of procedures in the acute phase and may improve the patient's outcome (Table 2). In patients with moderate or severe clinical deficit (NIHSS > 8), vascular intracerebral is advocated to select the subjects with large vessel occlusion. In this case, it is recommended to transfer the patient to a center where it is feasible 24/7 to carry out endovascular treatment by a trained neuroradiologist [3,16].

This secondary treatment should not postpone the fibrinolysis administration. Initial acute clinical examination by a neurologist evaluates the level of consciousness and search the focal neurologic signs (Table 3). Assessment of the neurological deficit using the NIH Stroke Scale correlates with the site of arterial occlusion. The use of NIHSS by Helicopter Emergency Medical Service providers may identify patients with large vessels occlusion and inform triage decision for patient ineligible for rt-PA [17]. Reliability of the clinical diagnostic of vascular territory (carotid versus vertebrobasilar) is only moderate [18]. It is not possible to distinguish ischemic and hemorrhagic stroke with the sole clinical examination. CT scan is since the institution of thrombolysis an integral part of acute stroke diagnostics. CT angiography was used as a selection criterion in all recent studies using thrombectomy for acute occlusion of the main intracerebral artery and demonstrated the benefit of thrombectomy in patients with acute occlusion of the main intra-cerebral artery [6-8] with reduced severity of post stroke disability and increased the rate of functional independence [8]. Moreover, patients with contraindications for thrombolysis could also be included for thrombectomy.

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Finally, more sophisticated methods for penumbra imaging like magnetic resonance diffusion and perfusion are of particular interest for patients presenting later in the course of ischemic stroke but need time and are not always accessible 24/7 [19].

Acute stroke care organization should enable to perform effective revascularization therapy as soon as possible after the initial brain imaging, this examination provides indication for the procedure. Hospitals and clinics with imaging facilities play a major role in triage. Telestroke is also of interest in rural states [20].

General Practitioner has an important role in patient and community education on symptoms of stroke and importance to call immediately the state emergency medical number for rapid transport to the closest primary stroke center or comprehensive stroke center.

S.No	Proven intervention for acute stroke
1	Intravenous rt-PA within 3 hours in USA and 4.5 hours in other countries (a longer therapeutic window is accepted for acute occlusion of basilar artery)[3,4]
2	Aspirin within 48 hours[5]
3	Thrombectomy(with modern stent retrievers) within 8 hours[6-8]
4	Stroke care unit[9]
5	Hemicraniectomy for severe cerebral edema [10]

Table 1: Proven intervention for acute stroke.

S.No	Main steps for improving door-to-needle times [derived from 15]
01	Hospital pre-notification by emergency medical system
02	Rapid triage protocol and activation of stroke team
03	Availability of stroke protocols
04	Rapid access to IV cannulation
05	Rapid imaging and laboratory tests
06	Mixing rtPA when the patient is eligible and rapid iv administration
07	Data Registry and periodic data review by the whole stroke team

Table 2: Main step for improving door-to-needle times (derived from 15).

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S.No.	Symptoms of stroke and Transient Ischemic Attack (TIA)
01	Sudden onset of weakness of face, arm, hand or leg
02	Sudden onset of sensory symptoms on one side of the body
03	Sudden onset of vertigo or ataxia
04	Sudden loss or difficulty in speech
05	Sudden loss of vision or diplopia

Table 3: Symptoms of stroke and Transient Ischemic Attack (TIA).

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