HAUTE AUTORITÉ DE SANTÉ

CLINICAL PRACTICE GUIDELINES

Stroke: early management (alert, prehospital phase, initial hospital phase, indications for thrombolysis)

GUIDELINES

May 2009

The full scientific report (in French) can be downloaded from
www.has-sante.fr

Haute Autorité de Santé
Communication and Public Information Department
2 avenue du Stade de France - F 93218 Saint-Denis La Plaine CEDEX
Tel.:+33 (0)1 55 93 70 00 - Fax:+33 (0)1 55 93 74 00

This document was validated by the Board of the Haute Autorité de Santé in May 2009.

Table of contents

Abbreviations

alteplase or rt-PA	Tissue Plasminogen Activator
ASA	American Stroke Association
CH	Cerebral Haemorrhage
CI	Cerebral Infarction
EHPAD	Residential care institution for dependent adults
FAST	Face Arm Speech Time (message based on the Cincinnati Prehospital Stroke Scale)
HAS	*Haute Autorité de Santé*
IA	Intra-Arterial
ICU	Intensive care unit
IV	Intravenous
MA	Marketing authorisation
MRA	Magnetic resonance angiography
MRI	Magnetic resonance imaging
NIHSS	National Institute of Health Stroke Scale
SU	Stroke Unit
ROSIER	Recognition of Stroke in Emergency Room Scale
SAMU	Emergency Medical Assistance Service
SFMU	*Société française de médecine d'urgence*
SMUR	Mobile emergency unit
TIA	Transient Ischemic Attack

Guidelines

1 Introduction

1.1 Subject and objectives

► Subject

These clinical practice guidelines concern the early management of stroke: alert, prehospital phase, initial hospital phase, indications for thrombolysis. They were drafted by the *Haute Autorité de Santé* (HAS) at the joint request of the *Société française neuro-vasculaire* (French Neurovascular Society) and the Directorate for Hospital and Organisation of Care..

These guidelines complement those on vascular prevention in patients with ischemic attack or transient ischemic attack (TIA)[1] which cover the prevention of vascular events (stroke, myocardial infarction and vascular death) after the acute phase in patients who have had a cerebral infarct (CI), and after diagnosis for patients with a TIA.

In Western countries, stroke is the first cause of acquired disability in adults, the second cause of dementia after Alzheimer's disease (30 % of all cases of dementia are entirely or partially caused by stroke) and the third cause of mortality. In France, the annual incidence is 1.6 to 2.4/1000 people of all ages, i.e. from 100,000 to 145,000 cases of stroke per year, with 15 to 20 % of deaths after the first month and 75 % of patients surviving with functional disorders; the annual prevalence of stroke is from 4 to 6/1000 people of all ages.

The average age at which stroke occurs, based on data from the Dijon Stroke Register from 1985 to 2004, is 71.4 years in men and 76.5 years in women. This register shows an increase in the absolute number of incident cases of stroke. The role of age and a generally ageing population suggest that the number of stroke patients will rise and that the burden of this disease for society will become increasingly onerous. It should also be remembered that stroke does not only affect the elderly as 25 % of stroke victims are under the age of 65.

► Objectives

The objectives of these guidelines are to:

- Identify relevant information for the general public in order to improve recognition of warning signs and increase awareness of the need for urgent treatment;
- Optimise the initial prehospital and hospital care pathway of patients with suspected stroke and improve management for the largest possible number of stroke patients;
- Reduce the frequency and severity of the functional disorders associated with stroke through early multiprofessional management, implemented as quickly as possible in a stroke unit (SU), or failing this, in a hospital with an organised care pathway for patients with suspected stroke, in coordination with a SU;
- Improve the practices of the SAMU-Centre 15 dispatching physician, emergency physicians and all professionals involved in the early management of stroke (including TIAs).

► Questions raised

As a large number of guidelines are available on stroke management practices and organisation, it was decided to base these guidelines on descriptions of concrete situations,

[1] Vascular prevention in patients with ischemic attack or transient ischemic attack. Clinical practice guidelines. HAS, 2008.

from alert to administration of treatment. In each of these situations, the organisation of stroke management raises the following questions.

- **Alert after a suspected stroke** (i.e. call from patient, bystander or health professional)
  - Who should the public be told to call and why?
  - What information should be given to the public and how?
- **Prehospital phase**
  - Which patients require medical transport? By whom? When should a helicopter be used?
  - Should general practitioners be given specific information? Should they make home visits after a call for suspected stroke? How should they respond without making a home visit?
  - Which scales should be used to clinically diagnose and assess the severity of stroke (Cincinnati, Los Angeles, ROSIER (Recognition of Stroke in Emergency Room Scale), NIHSS scales)? Which scales are usable by non-physicians?
  - Should other examinations be performed?
  - When and how should mobile CT scanners be used and do they improve response time?
- **Initial hospital phase**
  - To which department should the patient be sent to as a priority? Accident and emergency or radiology department or SU when there is one?
  - How should the initial management be organised if the patient comes directly to the emergency department?
  - Is there a mandatory point of entry through which all patients must pass or is it sufficient to define a meeting point for the patient, neurologist or emergency physician and nurse?
  - What is the general role of telemedicine throughout this management phase?
- **Thrombolysis of cerebral infarction**
  - Should thrombolysis indications and contraindications be reviewed?
  - With telemedicine, can alteplase be used in certain cases by physicians who are not neurologists or outside SUs?

1.2 Populations targeted

► General population

These guidelines are intended to increase awareness of neurovascular diseases and to provide information for the general public, patients at risk of vascular damage and their families.

► Patients targeted

These guidelines cover management of patients during the first few hours after the initial symptoms of stroke. In practice, this can mean:

- a TIA;
- a CI;
- a cerebral haemorrhage (CH).

Both TIA and stroke require identical management and the general points about stroke in these guidelines also apply to TIAs. A definition of a TIA proposed in 2004[2] was “a brief episode of neurologic malfunction caused by focal brain or retinal ischemia, with clinical symptoms typically lasting less than one hour, and with no evidence of acute infarction”. This definition assumes that cerebral imaging is carried out.

[2] Diagnosis and immediate management of transient ischemic attacks (TIAs) in adults. Clinical practice guidelines. ANAES, 2004.

Patients with subarachnoid haemorrhage are excluded from the scope of these guidelines.

1.3 Professionals targeted

The guidelines are intended for all health professionals and others involved in stroke management, in particular:

- general practitioners;
- neurologists, emergency physicians, intensivists, physicians attached to fire brigades, radiologists and neuroradiologists, neurosurgeons, cardiologists, internists, geriatricians, angiologists, physical medicine and rehabilitation specialists, coordinating physicians in residential care institutions for dependent adults (EHPAD);
- paramedical professionals (nurses, nursing auxiliaries, physiotherapists, speech therapists, etc.) in emergency departments, SUs and other departments admitting stroke patients, care personnel in EHPADs;
- SAMU-Centre 15 medical dispatch assistants and medical call centre personnel;
- certified first responders and ambulance personnel.

1.4 Guideline grading

The proposed guidelines were graded as indicated in Appendix 3. In the absence of scientific evidence, the guidelines are based on professional agreement among members of the working group and peer reviewers. A lack of evidence does not signify that the guidelines are not relevant but, whenever possible, should encourage the carrying out of further studies.

2 Alert

Early management of stroke requires that the general population and, in particular, patients with risk factors or a history of vascular disease and their families know how to recognize stroke symptoms (grade C).

Awareness must also be raised among professionals so that prehospital and initial hospital care pathways are as effective as possible (professional agreement).

2.1 Increasing awareness and informing the general population about neurovascular disease

► Information for the general public

Information campaigns targeting the general public should be encouraged and repeated as their effect is only temporary. Provision of information must not be restricted to patients with vascular risk factors, but should target the entire population including young people (grade C).

Information for the general public should stress the following points:

- How to recognize symptoms suggesting stroke or TIA. Use of the FAST [3] (*Face Arm Speech Time*) message can be an effective means of conveying information (professional agreement);
- The emergency nature of the situation:

[3] F=face numbness or weakness especially on one side; A=arm numbness or weakness especially on one side of the body; S=speech slurred or difficulty speaking or understanding; T=time to call 911 if these occur suddenly or are accompanied by: loss of vision, loss of balance with dizziness or the worst headache you have ever had, with no known cause, both sudden and severe.

  - The earlier patients receive management and treatment (admission to SU and possible thrombolysis) the more effective they are likely to be,
  - Even if symptoms regress the SAMU-Centre 15 must be called (professional agreement);
- The importance of leaving the patient lying down (professional agreement).

► Messages transmitted by the general practitioner

General practitioners should inform at-risk patients (with a history of vascular disease, high blood pressure, diabetes, arterial disease of the lower limbs, etc.) and their families about the main signs of stroke. They should instruct these patients to call the SAMU-Centre 15 immediately after the onset of symptoms before contacting the surgery and explain the importance of noting the time when these first symptoms occur (professional agreement).

If a patient presenting signs of stroke directly rings the surgery or call centre, the general practitioner should transfer the call to the SAMU-Centre 15 and preferably stay on line to take part in a 3-way conference call (caller, general practitioner, SAMU-Centre 15 physician dispatcher) (professional agreement).

2.2 Increasing awareness and training the medical and paramedical population to manage neurovascular disease

Specific and continuing training of SAMU-Centre 15 medical dispatchers and switchboard operators in medical call centres about how to identify patients with suspected stroke, using the five warning signs of the ASA[4] should be developed and reinforced (professional agreement).

Specific training programmes to identify and manage stroke in the acute phase should be reinforced and developed for emergency services personnel (firefighters, ambulance personnel, certified first responders), using the FAST message (professional agreement).

Ongoing training initiatives on stroke management should be developed for professionals in emergency care pathways and all those likely to deal with this type of patient (general practitionners and specialist physicians, nurses, nursing auxiliaries, physiotherapists, speech therapists, carers, secretaries, etc.) (professional agreement).

The following key messages should be conveyed to professionals managing stroke (professional agreement):
- Consider any sudden, transient or prolonged neurological deficit as an emergency;
- Note the exact time of onset of symptoms;
- Know that SU management is effective;
- Understand the specific treatments for stroke.

TIA is an emergency situation and warrants immediate neurovascular management to confirm diagnosis, determine the aetiology and administer emergency treatment (grade C).

[4] The 5 warning signs of the ASA are:
sudden numbness or weakness of the face, arm or leg, especially on one side of the body;
sudden confusion, trouble speaking or understanding;
sudden trouble seeing in one or both eyes;
sudden trouble walking, dizziness, loss of balance or coordination;
sudden, severe headache with no known cause.

3 Prehospital phase

3.1 Patient assessment

A limited number of stroke assessment scales should be used to standardise their management:

- The FAST scale (or its equivalent in French) should be used as a diagnostic tool for paramedics and emergency services personnel who must be trained in its application (professional agreement);
- All emergency physicians should know how to use the NIHSS scale (National Institute of Health Stroke Scale) and assess the severity of stroke (professional agreement).

3.2 Medical coordination in the SAMU-Centre 15

The initial call from a patient or the patient's family regarding a suspected stroke should be managed by SAMU-Centre 15 medical dispatch centres (professional agreement).

Targeted and standardised questionnaires should be used for telephone assessments of patients with suspected stroke and to assist the decision of the dispatching physician (professional agreement).

All medical dispatch procedures for a patient with suspected stroke or TIA should include calling the physician of the nearest SU. Referral of patients is jointly decided by the dispatching physician and the SU physician (professional agreement).

3.3 Transport

Dispatching a SMUR medical team must not delay management of a patient with suspected stroke. This is necessary in cases of confusion, respiratory distress or haemodynamic instability (professional agreement).

Dispatch centres should choose the fastest means of transport available to transport the patient (professional agreement).

No recommendation can be given on the role of on-board imaging as this has yet to be assessed.

A standard form should be filled out to collect information on the patient's case history, current medication, the time of symptom onset and clinical severity factors assessed using the NIHSS scale (professional agreement).

If medical transport is used, blood tests should be taken so that laboratory parameters may be assessed on arrival, until on-board laboratory testing facilities are available (professional agreement).

Authorising all those involved in emergency medical assistance to test capillary blood glucose in the prehospital phase is recommended (professional agreement).

Hypoglycaemia should be corrected during the prehospital phase. For patients with hyperglycaemia, there is no evidence supporting the use of insulin during the prehospital phase.

If medical transport is used, an electrocardiogram should be performed (professional agreement).

As any concomitant haemodynamic disorders may increase the effect of cerebral ischemia, in the absence of signs of intracranial hypertension, confusion, nausea or vomiting, it is

recommended to transport the patient in a dorsal recumbent position (professional agreement).

Blood pressure should be measured. However, there is no evidence in favour of treating high blood pressure, unless there are associated extraneurological indications such as cardiac decompensation (professional agreement).

Systematic oxygen therapy is not recommended, unless saturation is lower than 95 % (professional agreement).

4 Initial hospital phase

4.1 Hospital admission

The in-hospital neurovascular care pathway should be carefully organised and coordinated with all the personnel involved (emergency medical staff, neurologists, radiologists, laboratory specialists, intensivists, etc.) and formalised through written procedures. It should have an effective structural and functional organisation allowing rapid access to neurovascular expertise and cerebral imaging. The performance of this organisation should be regularly evaluated (professional agreement).

Patients referred to a hospital with a SU should be managed by a physician from the neurovascular care pathway as soon as they are admitted (professional agreement).

A standard form for collecting information on case history, current medication, time of symptom onset and clinical severity factors assessed using the NIH score is filled out when the patient is admitted if this was not done during the prehospital phase (professional agreement).

Emergency ECG and laboratory tests including tests of haemostasis, capillary glucose and a haemogram should be performed if they were not carried out during the prehospital phase (professional agreement).

Blood pressure, heart rate, oxygen saturation and temperature should all be monitored (professional agreement).

Hospitals without a SU that admit stroke patients should organise a pathway for managing suspected stroke patients in coordination with a SU (professional agreement).

4.2 Cerebral and vascular imaging

Patients suspected of acute stroke should have priority access 24 hours a day and 7 days a week to cerebral imaging. Protocols for management of patients with suspected acute stroke should be formalised and contractualised between the department admitting these patients and the radiology department (professional agreement).

MRI is the most effective examination for early diagnosis of signs of recent ischemia and it can also show intracranial bleeding. It should be the preferred course of action.

If MRI is possible as a first-line examination, it should be accessible as an emergency procedure and short protocols should be used including the following sequences: diffusion, FLAIR, gradient echo (grade B).

If emergency access to MRI is not possible, a cerebral CT scan should be carried out. This examination does not consistently show signs of recent ischemia, but it can be used to view intracranial haemorrhaging.

Intracranial arteries are investigated via cerebral MRA, angiography scan or transcranial Doppler procedures (professional agreement).

Early investigation of the cervical arteries should be conducted in all cases of ischemic stroke. This is urgent in cases of TIA, minor infarction and fluctuating or progressing ischemic stroke. The first-line examination can be a Doppler ultrasound, an MRA of the cervicoencephalic vessels with injection of gadolinium or an angiography scan of the supra-aortic arteries (grade B).

4.3 Which patients are eligible for SU hospitalisation?

All patients suffering from stroke should be referred to a SU.

4.4 Which patients are eligible for intensive care hospitalisation?

Decisions about admission to intensive care are made on a case-by-case basis by all the professionals involved, including intensivists and neurologists, while respecting the wishes of the patient (professional agreement).

Decisions to limit and stop treatment should be made jointly (professional agreement).

Intensivists are also involved in the management of patients with brain death (professional agreement).

4.5 When should neurosurgical expertise be called upon?

Following neurovascular consultation, a neurosurgical opinion should be requested for patients with malignant Sylvian infarction, cerebellar infarction or haematoma complicated by intracranial hypertension or in certain cases of hemispheric cerebellar haematoma (professional agreement).

4.6 Initial management algorithm

An algorithm for management of patients with suspected stroke outlining the main stages from emergency response to the initial hospital phase is shown in Appendix 1.

5 Cerebral infarction thrombolysis

5.1 Intravenous thrombolysis

► Indications

Intravenous (IV) thrombolysis using rt-PA for CIs is recommended for up to 4.5 hours (Off-label *see Appendix 2*) (professional agreement). It should be administered as early as possible (grade A).

IV thrombolysis may be used in patients over 80 years old for up to 3 hours (professional agreement).

For patients aged under 18, the indications for thrombolysis should be discussed on a case-by-case basis with a neurologist from a SU (professional agreement).

The indication for thrombolysis should be reassessed in patients with initial blood glucose levels higher than 11 mmol/l , because of the increased haemorrhagic risk (grade C).

Current data do not allow recommendation of sonothrombolysis.

► Administration procedures

In hospitals with a SU, IV thrombolysis is prescribed by a neurologist (according to MA) and/or a doctor with an inter-university diploma in neurovascular pathology (off-label). The patient should be monitored in the SU (professional agreement).

In hospitals that do not have a SU, indications for thrombolysis should be approved during a teleconsultation with the neurovascular physician of the SU to which the patient will be transferred after thrombolysis (off-label) (professional agreement).

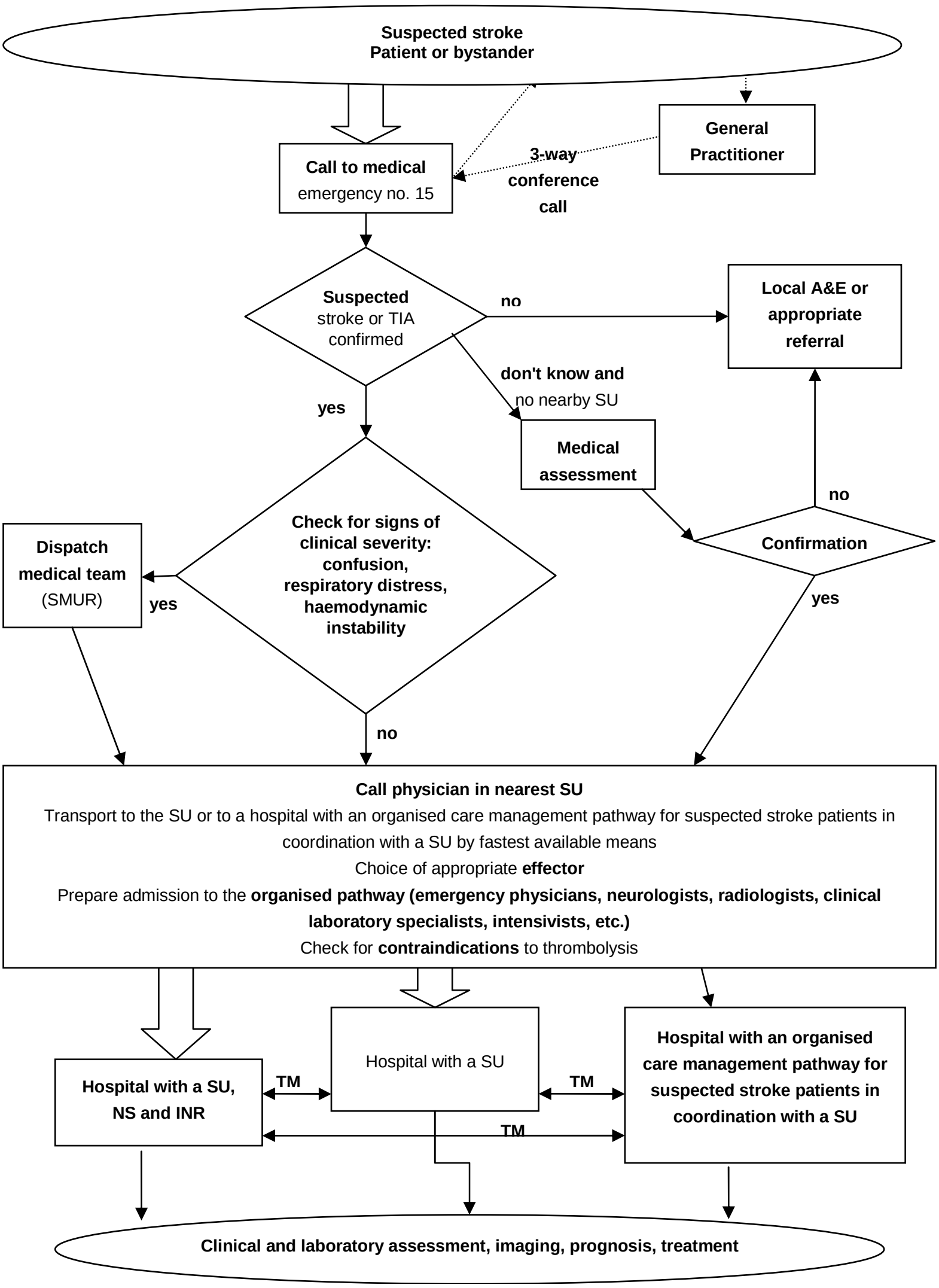
5.2 Intra-arterial thrombolysis, combined thrombolysis (intra-arterial and intravenous) and mechanical revascularisation

Decisions to administer thrombolysis intra-arterially (IA) are made on a case-by-case basis, following consultation between vascular neurologists and neuroradiologists, for up to 6 hours for occlusions of the middle cerebral artery, and for even longer than 6 hours for occlusions of the basilar artery given their extremely serious nature (off-label) (professional agreement).

IA thrombolysis should be administered in hospitals with an interventional neuroradiology centre authorised within the context of the SIOS (healthcare organisation interregional scheme) and a SU (professional agreement).

Combined thrombolysis (IV then IA) and mechanical revascularisation via thrombectomy or endovascular ultrasound are not recommended and should be assessed.

Appendix 1. Algorithm for early management of stroke patients



INR: interventional neuroradiology; NS: neurosurgery; SU: stroke unit; TM: telemedicine

Appendix 2. Contraindications to alteplase in the ACTILYSE® marketing authorisation

"Hypersensitivity to the active substance or to any of the excipients,

Like all thrombolytic agents, ACTILYSE® is contraindicated in cases where there is a high risk of haemorrhage:

- significant bleeding disorder at present or within the past 6 months
- known haemorrhagic diathesis
- concomitant administration of oral anticoagulants (e.g. warfarin)
- manifest or recent severe or dangerous bleeding
- known history of or suspected intracranial haemorrhage
- suspected subarachnoid haemorrhage or condition after subarachnoid haemorrhage from aneurysm
- any history of central nervous system damage (e.g. neoplasm, aneurysm, intracranial or spinal surgery)
- recent (less than 10 days) traumatic external heart massage, obstetrical delivery, recent puncture of a non-compressible blood-vessel (e.g. subclavian or jugular vein puncture)
- severe uncontrolled arterial hypertension
- bacterial endocarditis, pericarditis
- acute pancreatitis
- documented ulcerative gastrointestinal disease during the last 3 months, oesophageal varices, arterial-aneurysm, arterial/venous malformations
- neoplasm with increased bleeding risk
- severe liver disease, including hepatic failure, cirrhosis, portal hypertension (oesophageal varices) and active hepatitis
- major surgery or significant trauma in past 3 months.

Additional contraindications in acute ischemic stroke:

- symptoms of ischemic attack beginning more than 3 hours prior to infusion start or when time of symptom onset is unknown
- minor neurological deficit or symptoms rapidly improving before start of infusion
- severe stroke as assessed clinically (e.g. NIHSS > 25) and/or by appropriate imaging techniques
- seizure at onset of stroke
- evidence of intracranial haemorrhage (ICH) on the CT scan
- symptoms suggestive of subarachnoid haemorrhage, even if CT scan is normal
- administration of heparin within the previous 48 hours and a thromboplastin time exceeding the upper limit of normal
- patients with any history of prior stroke and concomitant diabetes
- prior stroke within the last 3 months
- platelet count of below 100,000/mm^3
- systolic blood pressure > 185 or diastolic BP > 110 mm Hg, or aggressive management (intravenous pharmacotherapy) necessary to reduce BP to these limits
- blood glucose less than 50 or greater than 400 mg/dl.

<u>Use in children, adolescents and elderly patients</u>

ACTILYSE® is not indicated for the treatment of acute stroke in paediatric patients under 18 years or adults over 80 years of age."[5]

[5] Most of the patients included in randomised controlled trials were aged from 18 to 80 years old.

The Clinical Practice Guideline Method

Clinical practice guidelines (CPG) have been defined as proposals developed by an explicit method to help the practitioner and the patient to find the most appropriate care in a given clinical situation.

The clinical practice guidelines (CPG) method is one of the methods used by HAS to produce clinical guidelines. It is based on critical analysis and review of the available medical literature as well as on the opinion of a multidisciplinary group of professionals involved with the subject of the guidelines.

Choosing subjects for guidelines

The HAS Board chooses the subjects for clinical guidelines. In selecting subjects the Board takes into account public health priorities and any requests from ministers responsible for health and social security. The HAS Board can also accept subjects proposed by learned societies, the French national cancer institute, the French Association of National Health insurance funds, the French National Association of Healthcare Professions, organisations representing health care professionals or establishments or registered user groups.

Steps of the working method

Steering committee
HAS sets up a steering committee made up of representatives of the learned societies, professional or user organisations and, if need be, of the relevant health agencies and institutions. The committee exactly defines the subject of the guidelines, the questions to be discussed, the patient populations and the professionals for whom the guidelines are intended. It draws attention to relevant publications, particularly existing guidelines. It proposes suitable professionals to take part in working groups and act as peer reviewers. Finally it takes part in the peer review.

Working group
HAS sets up a multidisciplinary and multiprofessional working group made up of healthcare professionals who practice within the French national health service or privately and who come from different geographical backgrounds or represent different schools of thought and, if appropriate, other professionals concerned and representatives of patient and user organisations. HAS appoints a working group chair to coordinate the group's work in collaboration with the HAS project manager. A report author is also designated by HAS to select, analyse and review the relevant medical and scientific literature (see box). The report author drafts the scientific report and assigns the chosen studies levels of evidence, under the supervision of the HAS project manager and the working group chair.

Sources for drafting the scientific report

- Medical and scientific databases searched systematically over a time period appropriate to the subject (languages: French, English). In particular, search for clinical practice guidelines, consensus conferences, medical decision-aid articles, systematic reviews, meta-analyses and other assessments.
- If appropriate, more specific databases (e.g. health economics)
- All useful internet sites (government agencies, learned societies, etc.)
- Grey literature (documents which cannot be accessed through conventional channels)
- Legislative and regulatory texts that may be related to the subject
- References cited in the articles retrieved (manual search)
- Articles provided by the members of the working group and by peer reviewers.

Searches are updated regularly until the project is complete.

Producing the draft guidelines
The working group produces draft guidelines based on the report and the opinions expressed during the meetings of the working group (usually two meetings). Guidelines are graded A, B or C on a scale proposed by HAS according to the level of evidence on which they are based.[6] The grading used for the guidelines is given in the box below. The draft guidelines are then submitted to the peer reviewers.

Peer reviewers
HAS appoints the peer reviewers using the same criteria as for working group members. The peer reviewers are consulted by post and give an opinion on the content and structure of the report and guidelines, in particular on whether the guidelines are easy to read, to understand and to apply. Members of the HAS specialist committee responsible for professional guidelines (Committee for the Assessment of Healthcare Strategies*)* also peer review the guidelines.

Grading of guidelines

Grade	Scientific evidence level
A	trials of a high level of evidence (level of evidence 1), e.g. high-power randomised controlled trials (RCTs) free of major bias and/or meta-analyses of RCTs or decision analyses based on level 1 trials.
B	studies of an intermediate level of evidence (level of evidence 2), e.g. RCTs with some bias, meta-analyses based on questionable methodology, well-conducted non-randomised controlled trials or cohort studies;
C	studies of a lower level of evidence, e.g. case control studies (level of evidence 3) or case series (level of evidence 4).

In the absence of reliable publications, the guidelines are based on professional agreement among members of the working group and peer reviewers.

Final version of the guidelines
The working group analyses the peer reviewers' comments, amends the report if necessary, and produces the final version of the guidelines and a quick reference guide (QRG), during a working session.

The final version of the report and guidelines and the procedure used to produce them are discussed by the Approval Committee for Clinical Practice Guidelines which may ask the working group to make amendments before submitting its opinion to the HAS Board.

Validation by the HAS Board
The HAS Board validates the final report and authorises its distribution.

Distribution
HAS makes available on its website (www.has-sante.fr), free of charge, the report, the guidelines and the Quick Reference Guide (QRG). HAS may decide to print both the QRG and the guidelines.

[6] For more information on the method of producing clinical practice guidelines, see ANAES 1999 guide (in French): "*Recommendations pour la pratique clinique - Base méthodologique pour leur réalisation en France*". www.has-sante.fr.

Participants

Learned societies and professional associations

The following learned societies and professional associations were approached for the production of these guidelines:

- Association de recherche en soins infirmiers;
- Bataillon des marins-pompiers de Marseille;
- Brigade des sapeurs-pompiers de Paris;
- Centre européen de référence pour l'éducation aux premiers secours;
- Collège des neurologues des hôpitaux généraux;
- Collège français de médecine d'urgence;
- Collège national des généralistes enseignants;
- Collège professionnel des gériatres français;
- Fédération des médecins coordonnateurs en EHPAD (établissement d'hébergement pour personnes âgées dépendantes);
- Fédération française de neurologie;
- France AVC;
- Observatoire régional des urgences de Midi-Pyrénées;
- Samu de France;
- Société de formation thérapeutique du généraliste;
- Société de réanimation de langue française;
- Société française de documentation et de recherche en médecine générale;
- Société française de médecine générale;
- Société française de neurologie;
- Société française neuro-vasculaire;
- Société française de cardiologie;
- Société française de gériatrie et de gérontologie;
- Société française de médecine d'urgence;
- Société française de médecine sapeurs-pompiers;
- Société française de neurochirurgie;
- Société française de pédiatrie;
- Société française de radiologie;
- SOS Médecin France.

Steering committee

Dr Bruno Bailly, project manager, SEVAM, HAS, Saint-Denis

Dr Jérôme Beaujard, general medicine, La Fare-des-Oliviers

Professor Max Budowski, general medicine, Paris

Dr Muriel Dhénain, project manager, HAS, Saint-Denis

Dr Patrice Dosquet, head of the guidelines department, HAS, Saint-Denis

Dr Guillaume Foucart, emergency physician, SAMU 31, Toulouse

Professor Marc Freysz, anaesthesia and rescuscitation, SAMU 21, Dijon

Christine Gardel, department manager, IPAQS, HAS, Saint-Denis

Dr Sylvie Gillier-Poirier, general medicine, Saint-Sébastien-sur-Loire

Dr Michel Laurence, project manager, HAS, Saint-Denis

Dr Daniel Meyran, anaesthesia and rescuscitation, Marseille fire brigade, Marseille

Dr France Woimant, neurology, Paris

Working group

Dr France Woimant, neurology, Paris - chair
Dr Yann L'hermitte, emergency medicine, coordinating physician SAMU 77, Melun - report author
Dr Valérie Wolff, neurology, Strasbourg - report author
Dr Muriel Dhénain, HAS, Saint-Denis - project manager

Dr Thomas Aczel, emergency medicine, coordinating physician, Marseille fire brigade, Marseille

Professor Alain Bonafé, radiology, Montpellier

Dr Catherine Busseuil, emergency medicine, Montélimar

Dr Pascal Cassan, emergency medicine, French Red Cross, Paris

Dr Alban Chantegret, emergency medicine, coordinating physician SAMU 21, Dijon

Denise Desseaux, patient association representative, France AVC, Tourcoing

Dr Stéphane Dubourdieu, emergency medicine, coordinating physician, Paris fire brigade, Paris

Dr Jean-Louis Ducassé, anaesthesia and rescuscitation, coordinating physician SAMU 31, Toulouse

Marie Erbault, project manager, SPP, HAS, Saint-Denis

Dr Sandrine Greffard, geriatrics, Paris

Professor Charles Honnorat, general medicine, Rennes

Dr Jean-Pierre Larrumbe, general medicine, Velaux

Dr Elisabeth Medeiros de Bustos, neurology, Besançon

Dr Patrick Miroux, emergency medicine, Compiègne

Professor Jean-Philippe Neau, neurology, Poitiers

Dr Philippe Niclot, neurology, Pontoise

Professor François Proust, neurosurgery, Rouen

Évelyne Uzols, emergency department nurse, Aurillac

Declarations of conflict of interest

The participants of the organising committee and working group have communicated their declaration of interests to HAS.

Peer reviewers

Dr Laurent d'Araujo, emergency medicine, Provins

Dr Caroline Arquizan, neurology, Montpellier

Dr Christophe Barberis, emergency medicine, Marseille fire brigade, Marseille

Dr Denis Berthelon, radiology, Le Creusot

Dr Frédéric Berthier, emergency medicine, coordinating physician SAMU 44, Nantes

Dr Karine Blanc-Lasserre, neurology, Valence

Dr Éric Bodiguel, neurology, Bourges

Dr Pierre-Edouart Bollaert, medical rescuscitation, Nancy

Dr Anne Boulin, radiology, Paris

Dr Jacques Boulliat, neurology, France AVC, Paris

Professor Marie-Germaine Bousser, neurology, Paris

Dr Thomas de Broucker, neurology, Saint-Denis

Dr Yves Burckel, emergency medicine, Mareille fire brigade, Marseille

Dr Anne Castot, AFSSAPS, Saint-Denis

Dr Renato Colamarino, neurology, Vichy

Yvon Croguenec, anaesthetic nurse, SAMU 29, Brest

Dr Emmanuel Cuny, neurosurgery, Bordeaux

Dr Olivier Dereeper, neurology, Calais

Dr Claude Depriester, neuroradiology, Lille

Dr Sabine Deveaux, emergency medicine, Cergy-Pontoise

Dr Jean-Michel Dudouit, emergency medicine, coordinating physician SAMU 972, Fort-de-France

Dr Antoine Dunac, neurology, Nice

Dr Emmanuel Ellie, neurology, Bayonne

Dr Annette Girard-Claudon, emergency medicine, neurology and stroke care referral coordinator, coordinating physician SAMU 972, Fort-de-France

Professor Maurice Giroud, neurology, Dijon

Dr Patrick Goldstein, anaesthesia and rescuscitation, coordinating physician SAMU 59, Lille

Dr Benoît Guillon, neurology, Nantes

Dr Jean-Michel Hervochon, radiology, La Rochelle
Dr Vincent Hubert, anaesthesia and rescuscitation, Amiens
Dr Christophe Lapras, neurosurgery, Argonnay
Dr Benoît Lavallart, geriatrics, Paris
Professor Xavier Leclerc, neuroradiology, Lille
Dr Christian Léorier, general medicine, Saint-Paul-les-Trois-Châteaux
Dr Daniel Levy, emergency medicine, Marseille fire brigade, Marseille
Dr David Luis, general rescuscitation, Bondy
Dr Guillaume Marc, neurology, Angers
Dr Nathalie Maubourguet, general medicine, Pessac
Dr Jacques Migueres, general medicine, Paris
Dr Thierry Moulin, neurology, Besançon
Dr François Mounier-Vehier, neurology, Lens
Professor Catherine Oppenheim, radiology, Paris
Dr Hervé Outin, medical rescuscitation, Poissy
Patrick Peulmeule, anaesthetic nurse, Villeneuve-sur-Lot
Dr Jean-Marc Philippe, emergency medicine, Aurillac
Professor Fernando Pico, neurology, Versailles
Professor Laurent Pierot, radiology, Reims
Dr Jean-François Pinel, neurology, Rennes
Dr Laurent Renie, neurology, Aix-en-Provence
Dr Catherine Rey-Quino, AFSSAPS, Saint-Denis
Dr Gilles Rodier, neurology, Pringy
Dr Thierry Rusterholtz, ARH Rhône-Alpes, Lyon
Dr Denis Sablot, neurology, Perpignan
Dr Jean-François Savet, neurology, France AVC, Mâcon
Dr Igor Sibon, neurology, Bordeaux
Dr Serge Timsit, neurology, Brest
Dr Xavier Vandamme, neurology, La Rochelle
Professor Marc Verny, geriatrics, Paris
Dr Viguier Alain, neurology, Toulouse

Acknowledgements

HAS also wishes to thank all the persons listed below for their involvement in the editing of certain paragraphs or appendices of the report or for internal peer review at HAS:
Isabelle Bongiovanni, project manager, SEMESP, HAS, Saint-Denis
Dr Armelle Desplanques, head of the pilot programmes department, HAS, Saint-Denis
Gersende Georg, project manager, SBPP, HAS, Saint-Denis
Dr Valérie Izard, project manager, SEM, HAS, Saint-Denis
Catherine Rumeau-Pichon, assistant to the director of DEMESP, HAS, Saint-Denis
Francine Reymann, Association des infirmières de neurologie, Mulhouse

Descriptive leaflet

TITLE	**Stroke: early management (alert, prehospital phase, initial hospital phase, indications for thrombolysis)**
Method of production	HAS' method for the production of clinical practice guidelines
Date of online publication	30 july 2009 Available only as a pdf file: www.has-sante.fr
Objectives	The objective of these guidelines is to: ● Identify relevant information for the general public in order to improve recognition of warning signs and increase awareness of the need for urgent treatment; ● Optimise the initial prehospital and hospital care pathway of patients with suspected stroke and improve management for the largest possible number of stroke patients; ● Reduce the frequency and severity of the functional disorders associated with stroke through early multiprofessional management, implemented as quickly as possible in a stroke unit (SU), or failing this, in a hospital with an organised care pathway for patients with suspected stroke, in coordination with a SU; ● Improve the practices of the SAMU-Centre 15 dispatching physician, emergency physicians and all professionals involved in the early management of stroke (including transient ischemic attacks [TIAs]).
Professionals concerned	● general practitioners; ● neurologists, emergency physicians, intensivists, physicians attached to fire brigades, radiologists and neuroradiologists, neurosurgeons, cardiologists, internists, geriatricians, angiologists, physical medicine and rehabilitation specialists, coordinating physicians in residential care institutions for dependent adults (EHPAD); ● paramedical professionals (nurses, nursing auxiliaries, physiotherapists, speech therapists, etc.) in emergency departments, SUs and other departments admitting stroke patients, care personnel in EHPADs; ● SAMU-Centre 15 medical dispatch assistants and medical call centre personnel; ● certified first responders and ambulance personnel
Requested by	*Société française neuro-vasculaire* (French Neurovascular Society) and *Direction de l'hospitalisation et de l'organisation des soins* (Directorate for Hospitalisation and Organisation of Care)
Promotor	Haute Autorité de Santé (HAS), Guidelines Department
Funding	Public funds
Project management	Coordination: Dr Muriel Dhénain, project manager, HAS guidelines department (department head: Dr Patrice Dosquet) Secretarial services: Jessica Layouni Literature research: Emmanuelle Blondet, with the assistance of Sylvie Lascols (head of documentation department: Frédérique Pagès)
Participants	Learned societies, steering committee, working group (chair: Dr France Woimant, neurology, Paris), peer reviewers: see list of participants Steering committee and working group members completed declarations of interest.
Literature search	January 2002 to April 2009 2229 articles identified, 1075 articles analysed of which 288 cited
Report authors	Dr Yann L'Hermitte, emergency medicine, Melun Dr Valérie Wolff, neurology, Strasbourg
Validation	Opinion of the Approval Committee for Clinical Practice Guidelines Validation by the Board of HAS in May 2009
Other formats	Quick reference guide (in English) Scientific report (in French only) Can be downloaded free of charge from www.has-sante.fr