

# Physicians are not well informed about the new guidelines for the treatment of acute stroke

Os médicos não estão bem informados sobre as novas diretrizes para o tratamento de AVC agudo

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## ABSTRACT

Treatment of cerebrovascular disease has advanced rapidly in the last two decades. Recent data has added challenges to the treatment of ischemic stroke in the acute phase. **Objective:** To evaluate the knowledge of physicians about the treatment of ischemic stroke in the acute phase. **Methods:** An online questionnaire was submitted to all physicians enrolled in the Regional Council of Medicine in Brazil. **Results:** 456 physicians from different specialties answered the questions. Most of them did not know that mechanical endovascular thrombectomy is often considered as the gold standard treatment in cases of ischemic stroke in the acute phase; and 85% of them did not realize that thrombectomy together with intravenous thrombolysis was possible. The maximum time to act in an acute event also presented many divergences, even with regard to the infusion of rtPA. The lack of structure, medication and absence of a neurologist were considered the main barriers to treatment. **Conclusion:** Physicians are not well informed about the new guidelines for the treatment of acute stroke. Most physicians incorrectly answered most of the questions on the questionnaire.

**Keywords:** stroke; mechanical thrombolysis; thrombectomy; intracranial hemorrhages; thrombolytic therapy; fibrinolysis

## RESUMO

O tratamento da doença cerebrovascular tem avançado rapidamente nas últimas duas décadas. Dados recentes acrescentaram desafios ao tratamento do AVC isquêmico na fase aguda (AIFA). **Objetivo:** Avaliar o conhecimento médico sobre o tratamento do AIFA. **Métodos:** Um questionário on-line foi submetido a todos os médicos inscritos no Conselho Regional de Medicina. **Resultados:** 456 médicos de diferentes especialidades responderam às perguntas. A maioria deles não sabia que a tromboectomia endovascular mecânica é frequentemente considerada como tratamento padrão-ouro nos casos de AIFA. 85% não realizariam tromboectomia junto com a trombólise intravenosa. O tempo máximo para atuar no evento agudo também apresentou muitas divergências, mesmo em relação à infusão de rtPA. A falta de estrutura, medicação e neurologista foram consideradas as principais barreiras ao tratamento. **Conclusão:** Os médicos não estão bem informados sobre as novas diretrizes para o tratamento do AIFA. A maioria dos médicos errou a maioria das perguntas desse questionário.

**Palavras-chaves:** acidente vascular cerebral; trombólise mecânica; tromboectomia; hemorragias intracranianas; terapia fibrinolítica; fibrinólise

Stroke is the major cause of death and sequelae in the world. The World Health Organization recommends the adoption of urgent measures for its prevention and treatment. In Brazil, there are about 68,000 deaths from stroke annually with significant economic and social impact. Efforts to improve the acute treatment have included educational campaigns to the population to recognize the signs and symptoms, and quick access to an emergency ambulance<sup>1</sup>. Recently, positive trials of mechanical thrombectomy associated with intravenous rtPA have been published<sup>2</sup> and new concepts about acute stroke treatment are being considered. Until the end of 2015, five positive randomized controlled trials confirmed that the use

of thrombectomy in cases of proximal occlusions to the middle cerebral artery is a better approach than isolated intravenous therapy. The American Heart Association/American Stroke Association published an update of the guideline with recommendations for endovascular treatment in acute stroke as a class I level A recommendation<sup>3</sup>. The number needed to treat in these studies ranged from 3 to 5 (Figure). Despite several published studies having shown that much of the population cannot identify the symptoms of stroke, resulting in a delay reaching the hospital<sup>4,5,6,7,8</sup>, we aimed to quantify the current knowledge of physicians regarding the 'state-of-the-art' treatment for acute stroke.

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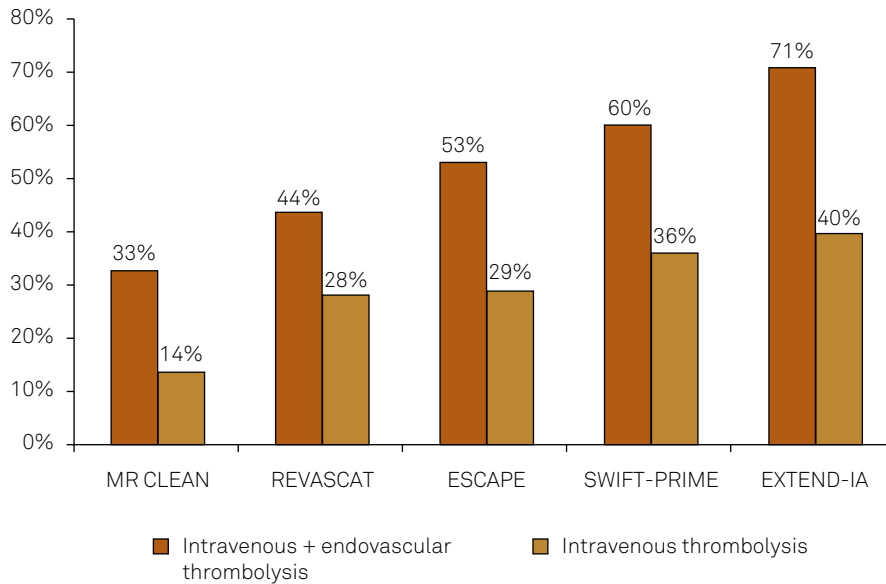
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**Figure.** Rate of recanalization in the principal trials comparing mechanical endovascular thrombectomy alone versus in combination with intravenous thrombolysis with rtPA infusion.

## METHODS

An online questionnaire with a total of 10 questions was prepared by our interventional neuroradiology team. The questions 1 to 6 contained epidemiological data and 7 to 10 inquired about current management of the stroke acute phase. The questionnaire was built on the Survey Monkey® platform and the responses were collected 60 days after sharing with the press office of the Department of Regional Council of Medicine (CRM-PR)<sup>9</sup>. Informed consent was obtained in the first part of the submission and was approved by the ethical committee. The questionnaires were sent to all doctors with an active membership to the CRM-PR. The data were analyzed by statistical frequency analysis.

## RESULTS

The questionnaires were answered by 456 doctors. About 20% replied that they never treated patients with acute stroke, a little more than 26% rarely attended to this kind of population and almost 43% answered that they 'sometimes' treated acute stroke patients. Just over 10% of the respondents reported that they cared for stroke patients daily. Experts in other areas accounted for 290 (63.6%) of all respondents, 101 (22.15%) had no medical specialty, 35 (7.67%) were residents in internal medicine, 15 (3.3%) were neurologists, 10 (2.2%) neurosurgeons, three (0.65%) neuroradiologists and two (0.43%) interventional radiologists. We separated these into two groups: Neurogroup (NG) and Nonneurogroup (NoNG) according to our expectation of their knowledge. The NG included specialties related to stroke. In both groups, gender was classified as male, time since graduation in medicine was more than 15 years and private office preference were

the principal answers. The Table shows the main questions and answers in the questionnaire, specifically comparing the knowledge about mechanical thrombectomy between both groups. More than 258 (50%) of the NoNG had 'no idea' about the new evidence for mechanical thrombectomy. Six (21%) of the NG also answered 'no idea'. A question about stroke units had a slight difference in favor of the NG, but critical points had the greatest mistakes for all. The barrier to treatment revealed a misconception by most physicians in all areas. A total of 216 (47.36%) believed that structural problems in hospitals were the greatest obstacle for the treatment of acute stroke. The delay in seeking hospital treatment was answered by 155 (34%) as the main barrier to treatment.

## DISCUSSION

Emerging therapies in the treatment of stroke continue to be published and recent multicenter studies have brought news that change the guidelines yet again.

However, in many countries, the implementation of all these treatments requires great logistical effort, government support and medical knowledge.

Publications about the lay knowledge still show that, in spite of the public campaigns and Stroke International Day, many people cannot recognize the signs and symptoms of a stroke and consequently cause delays in medical care. On the other hand, it is important to remember that there are few neurologists in an emergency room, primary care or possibly even inside the hospital. Medical education on the new trends of acute stroke treatment needs to be disseminated among all medical specialties and beyond. We did not find studies with these characteristics in the literature to evaluate this.

**Table.** Main questions and answers of the questionnaire. The absolute numbers refer to the number of doctors who chose the respective alternative.

Questions and answers	Neuro	Non-neuro group
In 2015, five large well-conducted trials have been published in journals with a high impact factor. Do you know the level of evidence for mechanical thrombectomy indication (removal of endovascular thrombus) according to the latest guidelines of the American Heart Association/American Stroke Association?		
A	67.86%	13%
B	3.57%	12.85%
C	7.14%	4%
D	0%	0.90%
I have no Idea	21.43%	58.50%
Not even knew it existed	0%	10%
<b>Treatment of stroke in the acute phase: incorrect statement that the doctor must identify.</b>		
A The main recent trials of the subject studied only the anterior circulation stroke.	8	159
B Intra-arterial thrombolysis is contraindicated if intravenous thrombolysis has been started.	4	61
C Mechanical thrombectomy can be performed with the same stent that is commonly used for cerebral aneurysm embolization.	11	95
D The window for mechanical thrombectomy is classically up to 6 hours, with some exceptions.	5	113
<b>Regarding the availability of spaces exclusively intended for patient care of acute stroke (stroke units) of the Brazilian public health system. Which is the incorrect statement that the doctor must identify:</b>		
A They must give patient care for the stroke within 24 hours of the ictus.	9	87
B They must offer thrombolytic intravenous treatment for ischemic stroke.	2	50
C They don't offer endovascular treatment for mechanical recovery of the thrombus.	15	228
D Currently, stroke treatment is entitled to at least 5 beds.	2	63
<b>What is the main barrier to emergency treatment in medium and high complexity hospitals in cases of ischemic stroke reported in the Brazilian and world literature?</b>		
A Insecurity of the physician in the emergency room to perform thrombolysis	1	69
B The delay in reaching the hospital after the onset of symptoms.	21	134
C Lack of assessment by a neurologist in a timely manner.	0	15
D Structural, inputs and logistics problems.	6	21

We found a lack of knowledge in most physicians, including neurologists, neurosurgeons and neuroradiologists away from acute stroke care. Even some basic concepts were not known. Perhaps one of the barriers to achieving real improvement in stroke treatment may be the lack of a task force in the entire medical community dealing with emergencies. In Brazil, and possibly in many other countries, the major limiting factor remains the doctors' lack of information about stroke. Correcting this deficiency is a fundamental factor that must precede any other measures.

Developing countries like Brazil can aspire to follow all the scientific improvements but they also need to add education resources for physicians. Almost all the achievements in stroke care, since the first thrombolysis in our country, came through the task force of the Brazilian Academy of Neurology, represented by the Brazilian Society of Cerebrovascular Diseases. The stroke units with intravenous thrombolysis were only implemented and supported by government in 2012, in other words, 17 years after the first publication of

this<sup>1</sup>. We need go forward, where the science goes, and do it faster. Today, there are only four stroke units in the state of Paraná, three in the capital Curitiba and one in the metropolitan region.

We suggest including all physicians in a serious continuing medical education program. If the treatment requires a neurologist, personally or by telemedicine, this knowledge should be available for all.

We conclude that physicians are not well informed about the new guidelines for the treatment of acute stroke. Most physicians incorrectly answered most of the questions on the questionnaire. This is critical, because endovascular mechanical thrombectomy is a procedure with an evidence level 1A that, together with intravenous thrombolysis, has completely changed the neurological outcome of these patients. This knowledge needs to be more widely disseminated with all its details, from the clinical findings of stroke to the criteria of indications and exclusions for endovascular rescue.

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