

## New study to evaluate the diagnostic accuracy of non-contrast flatdetector CT compared to multi slice CT

- **Multi-center clinical trial SPINNERS initiated by Prof. Marios-Nikos Psychogios and Dr. Adam S. Arthur**
- **If the outcome of the study shows non-inferiority of flatdetector CT, this will support the one-stop-management approach in acute ischemic stroke**

SPINNERS stands for "ProSPective evaluation of the diagnostic accuracy of siNe spiN non-contrast flat-dEctector CT (FDCT) for the detection of intracranial hemorrhage in stroke patients". The just registered study is an investigator-initiated clinical trial performed at multiple sites in Switzerland, Austria, and the US. If the outcome of the study shows non-inferiority of flatdetector CT, this will support the one-stop-management (or angio only) approach which may improve diagnosis, door to needle time and, subsequently, the outcome for acute ischemic stroke patients. In this workflow, both imaging for the diagnosis of the LVO and the subsequent thrombectomy are carried out with the help of FDCT right inside the angiography room<sup>1</sup>.

Stroke and cerebrovascular disease are among the leading causes of death and disability worldwide. Stroke can be caused by either circulatory disorders (ischemic cerebral infarction) or bleeding into the brain (hemorrhagic stroke). To clinically differentiate these disease states, which require different therapies, a non-contrast computed tomography scan of the head is currently state-of-the-art.

According to the American Heart Association, 795,000 strokes are occurring in the US each year. Around 87 percent are caused by ischemic cerebral infarctions<sup>2</sup>. Following the publication of five large studies<sup>3,4</sup>, mechanical thrombectomy became the gold standard for the treatment of acute ischemic stroke caused by large-vessel occlusion (LVO).

This minimally invasive procedure requires a neurointerventionalist and should be performed as early as possible after the onset of stroke symptoms (“time is brain” concept). However, lifesaving thrombectomy may often be delayed.<sup>5,6</sup> One way to significantly shorten the time to treatment is to implement a "one-stop-management" approach for severe strokes, e.g., patients presenting with an NIHSS<sup>7</sup> value larger than 9.

One of the biggest hurdles to a large-scale implementation of the one-stop-management approach so far has been the lack of clinical evidence to prove a reliable distinction between ischemic and hemorrhagic stroke by means of FDCT. Artifacts and decreased image quality near the base of the skull limited its use to that of a triage tool in previous generations of angiography systems.

With the SPINNERS study, the initiators plan to investigate whether FDCT imaging with syngo DynaCT Sine Spin (a novel imaging protocol available on the Artis icono angiography system) has a non-inferior diagnostic accuracy to MDCT (Multi Detector Computed Tomography) in detecting intracranial bleedings.

Initiators and principal investigators of the SPINNERS study are Prof. Marios-Nikos Psychogios, Head of Diagnostic and Interventional Neuroradiology, University Hospital Basel, Switzerland and Dr. Adam S. Arthur, Chair of Neurosurgery at the University of Tennessee Health Sciences Center and Semmes-Murphey Clinic, Memphis, TN, US. The multi-center study is planned to be conducted at approximately 12 clinical sites in Switzerland, Austria, and the US, and is designed to include 252 patients. The SPINNERS study is funded by Siemens Healthineers.

The SPINNERS study is registered under ClinicalTrials.gov:

<https://www.clinicaltrials.gov/ct2/show/NCT05458908?term=05458908&draw=2&rank=1>

<sup>1</sup>Psychogios MN, Bähr M, Liman J, Knauth M. One Stop Management in Acute Stroke: First Mothership Patient Transported Directly to the Angiography Suite. *Clin Neuroradiol.* 2017 Sep;27(3):389-391. doi: 10.1007/s00062-017-0574-z.

<sup>2</sup> Heart Disease and Stroke Statistics—2018 Update: A Report From the American Heart Association. *Circulation.* 2018;137:e67–e492, <https://doi.org/10.1161/CIR.0000000000000558>

<sup>3</sup> Román LS, Menon BK, Blasco J, Hernández-Pérez M, Dávalos A, Majoie CBLM, et al. Imaging features and safety and efficacy of endovascular stroke treatment: A meta-analysis of individual patient-level data. *The Lancet Neurology.* 2018;17:895-904

<sup>4</sup>Goyal M, Menon BK, van Zwam WH, Dippel DWJ, Mitchell PJ, Demchuk AM, et al. Endovascular thrombectomy after large-vessel ischaemic stroke: A meta-analysis of individual patient data from five randomised trials. *The Lancet.* 2016;387:1723-1731

<sup>5</sup> Goyal M, Menon BK, van Zwam WH, Dippel DW, Mitchell PJ, Demchuk AM, et al. Endovascular thrombectomy after large-vessel ischaemic stroke: a meta-analysis of individual patient data from five randomised trials. *Lancet*. 2016 Apr 23;387(10029):1723-31. doi: 10.1016/S0140-6736(16)00163-X.

<sup>6</sup> McTaggart RA, Ansari SA, Goyal M, Abruzzo TA, Albani B, Arthur AJ, et al. Initial hospital management of patients with emergent large vessel occlusion (ELVO): report of the standards and guidelines committee of the Society of NeuroInterventional Surgery. *J Neurointerv Surg*. 2017 Mar;9(3):316-323. doi: 10.1136/neurintsurg-2015-011984.

<sup>7</sup> NIHSS (National Institutes of Health Stroke Scale) is a score system for assessing acute stroke.

The products/features mentioned herein are not commercially available in all countries.  
Their future availability cannot be guaranteed.

This press release and a press picture is available at

<https://www.siemens-healthineers.com/press/releases/SPINNERS>.

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