

# A view on the care flow and tooling aspects of interventional acute ischemic stroke treatment

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**Abstract**— The recent trials on the efficacy of thrombectomy for stroke treatment, such as MR CLEAN, EXTEND-IA, ESCAPE, SWIFT-PRIME, REVASCAT [1-5], have clearly demonstrated the improved patient outcome for interventional treatment through thrombectomy, provided that the onset was within a certain time frame. This has led to a turning point in the way the care flow of the hyper-acute phase will be set up in the near future. In this communication we will sketch the views of an imaging manufacturer and the experiences of a clinical center with respect to acute stroke treatment.

## I. INTRODUCTION

The recent published trials on interventional treatment of acute ischemic stroke through thrombectomy (catheter-assisted mechanical clot removal) [1-5] have led to a pivotal change in the ideas of future management of the stroke care flow. Since the time between the onset of the stroke and the treatment in the intervention room is of utmost importance (time is brain), it has become apparent that streamlining the complete acute trajectory leading to the possible treatment through thrombectomy is crucial. Furthermore, also inside the intervention room it is essential to have proper and appropriate tooling and equipment at hand.

## II. STAGES

The entire healthcare continuum can be divided into several phases, see Fig. 1. The acute care flow takes place in phase 3 (diagnosis) and 4 (treatment). The first stage of the acute care flow is contacting a healthcare provider, establishing the presence of stroke related symptoms, and the transportation to the (first line) hospital

A second stage, is the triage in which hemorrhagic stroke is differentiated from ischemic stroke. In case of ischemia, the severity of the stroke (e.g., through ASPECTS scoring [6]) and the eligibility for thrombectomy has to be established (e.g. by determining the clot location, the size of the ischemic core, the size of the penumbra, and/or the assessment of collateral

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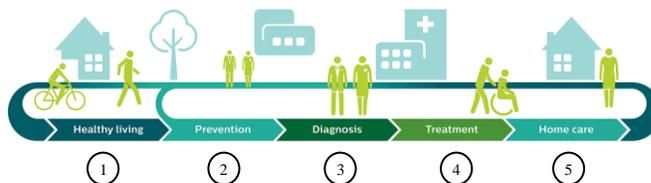


Figure 1. The healthcare continuum. For acute ischemic stroke, particularly phase 3 (diagnosis) and 4 (treatment), a swift transition between them is of importance.

circulation). After it has been decided that a patient might benefit from thrombectomy, the transition to the third stage is made, which is the interventional treatment.

## III. TOOLING

In order to enable a care flow that helps to move through the mentioned stages as swiftly and easily as possible, it is vital that the information infrastructure facilitates and caters this flow. Tooling should harbor various paths, varying from transportation from a first line hospital to a specialized stroke center, to a ‘one stop shop’ where the diagnosis is performed immediately in the intervention room. Therefore, a hospital (or community) wide information infrastructure, as well as proper interventional tooling (such as high quality cone-beam CT on the C-arm equipment) is needed to achieve an optimal and tailored care flow.

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