

Under- and overtriage in prehospital detection of acute ischemic stroke eligible for revascularization

A quality-control study

Introduction

- **Acute ischemic stroke (AIS)** : acute condition with a major impact on both functional prognosis (morbidity) and mortality of our patients.
- In Switzerland, more than **16'000 people** suffer from a stroke every year, of whom 25% will die and one third will have permanent sequelae.
- Canton Vaud: **early detection** mainly carried out by center 144 (EMCC) and paramedic teams (EMS). If a stroke is suspected, they activate the **Lausanne ischemic stroke pathway (LISP)** for potential priority arrival at a Stroke Unit (for intravenous treatment) or Stroke Center (for both intravenous and endovascular treatment).



Objective

- Evaluating **undertriage** of a standard Swiss stroke pathway for monitoring of quality and safety of care
- Evaluating **overtriage** of the same pathway for optimising emergency department's patient flow and limiting overcrowding.
- Two sets of eligibility criteria for revascularisation according to scientific evidence during the study period, and depending on the **time from onset** of symptoms:



Method

- **Retrospective** observational quality-control study
- **Observation period** : 01.01.2018 – 31.05.2022 (**≈ 4.5 years**)
- **Inclusion of patients** by using and checking **two databases**:
 - Adults managed by EMS from Lausanne region with a definitive diagnosis of AIS
 - Adults managed by EMS from Lausanne region for whom the LISP was called



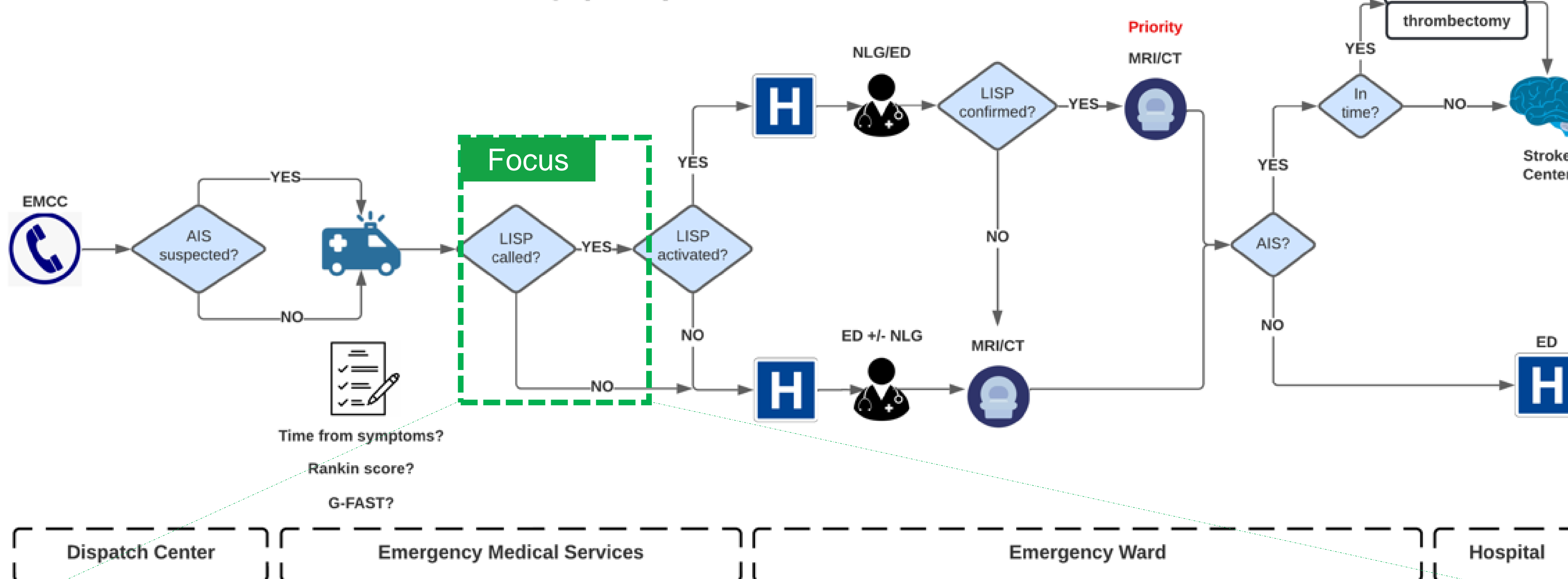
< 8 hours or wake-up	8 hours – 24 hours
New neurological disabling deficit	New neurological deficit + G-FAST ≥ 3
Score <i>Rankin</i> ≤ 3	

Gaze deviation
Facial drop
Arm drop
Speech slurred
Time

Results

- Total AIS and AIS-imitators: **1270**

Lausanne Ischemic Stroke Pathway (LISP)



Overtriage :

LISP called for AIS not eligible for revascularisation or other diagnosis

Undertriage :

LISP not called for AIS eligible for revascularisation

N = 1270	AIS eligible for revascularisation n = 585	AIS not eligible or other diagnosis n = 685
LISP called n = 1038	429	609
LISP not called n = 232	156	76

Overtriage 58.7%
(609/429+609)

Correct triage 39.8%
(429+76/1270)

Undertriage 26.7%
(156/429+156)

Conclusions

- Detecting AIS eligible for revascularization in prehospital setting is **very challenging**
- Overtriage is necessary to maintain a low rate of undertriage but **acceptable thresholds within a healthcare system** have to be discussed and defined on a local level
- Such quality analysis is mandatory to find the right balance between **security** and **overcrowding** of emergency departments.

