## Project Title

Reducing Door to Puncture Timing for Endovascular Therapy in NNI-TTSH Hyperacute Stroke Patients

## Project Lead and Members

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## Organisation(s) Involved

National Neuroscience Institute

## Healthcare Family Group Involved in this Project

Nursing, Medical

## Specialty or Discipline

Neurology, Neuroradiology

## Project Period

Start date: Oct-2019

Completed date: Jul-2020

## Aims

To reduce door-to-groin puncture median time by 20% for patients who arrived at NNI @ TTSH campus as the first primary hospital and eligible for Endovascular Therapy

## Background

See poster appended / below

## Methods

See poster appended / below

## Results

See poster appended / below

## Lessons Learnt

See poster appended / below

## Conclusion

See poster appended / below

## Additional Information

Singapore Healthcare Management (SHM) Conference 2021 – Shortlisted Project (Risk Management Category)

## Project Category

Care & Process Redesign, Quality Improvement, Workflow Redesign, Clinical Practice Improvement, Access To Care, Turnaround Time, Value Based Care, Functional Outcome

## Keywords

Acute Ischemic Stroke, Functional Dependence, Rankin Scale, Inter-Professional Teamwork

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# Reducing Door to Puncture timing for Endovascular Therapy in NNI-TTSH Hyperacute Stroke patients.

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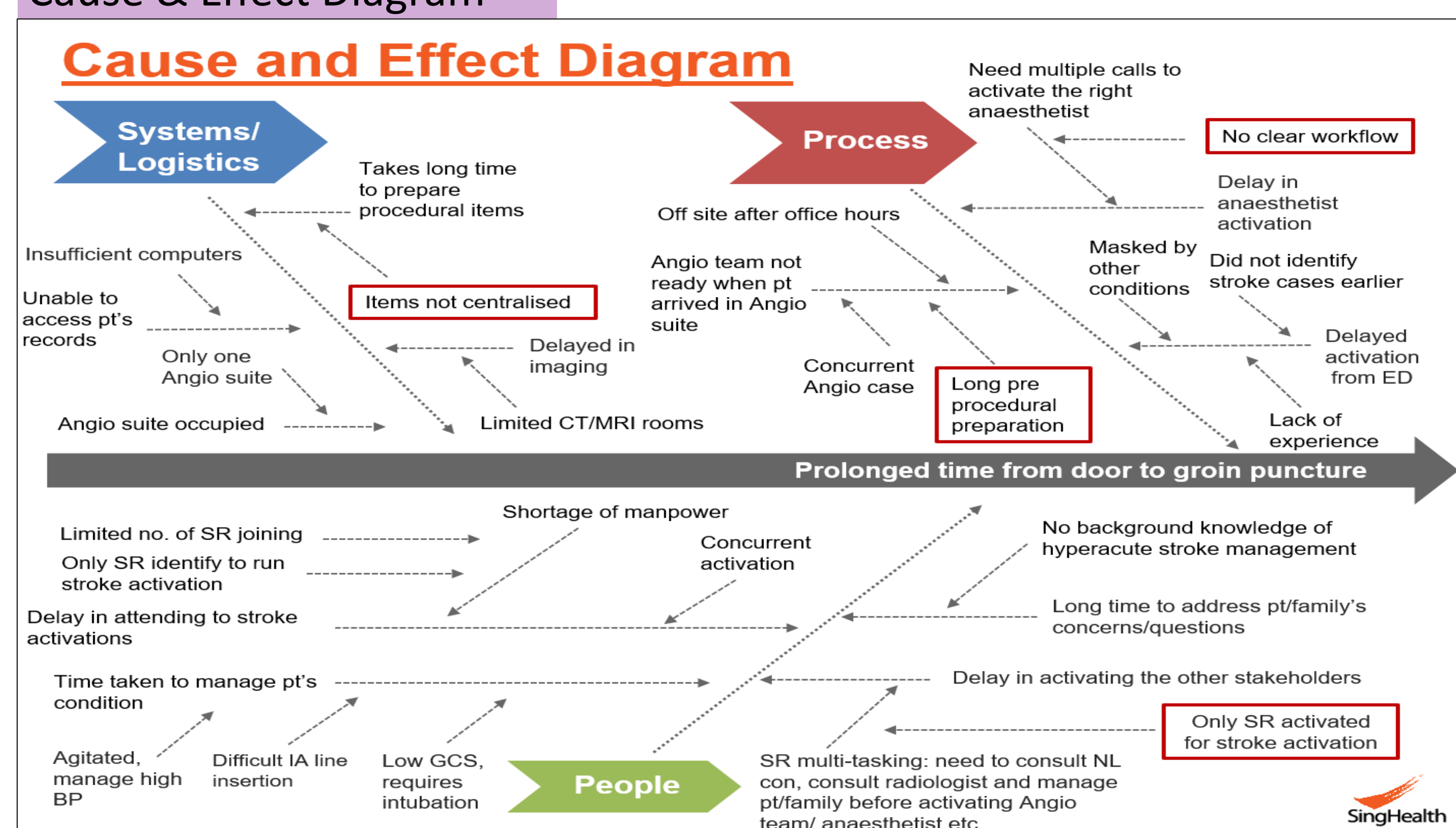3. Neurology Department, NNI

## INTRODUCTION AND AIM

For eligible acute ischemic stroke patients, shorter time to Endovascular Therapy (EVT) is associated with better functional outcomes. Every hour of delay in EVT results in 5.3% decreased probability of functional dependence (Modified Rankin Scale 0-2). The aim was to reduce door–to-groin puncture median time by 20% for patients who arrived at NNI @TTSH campus as the first primary hospital and eligible for EVT. Wake-up strokes and secondary transfers to NNI@TTSH Campus were excluded in this project.
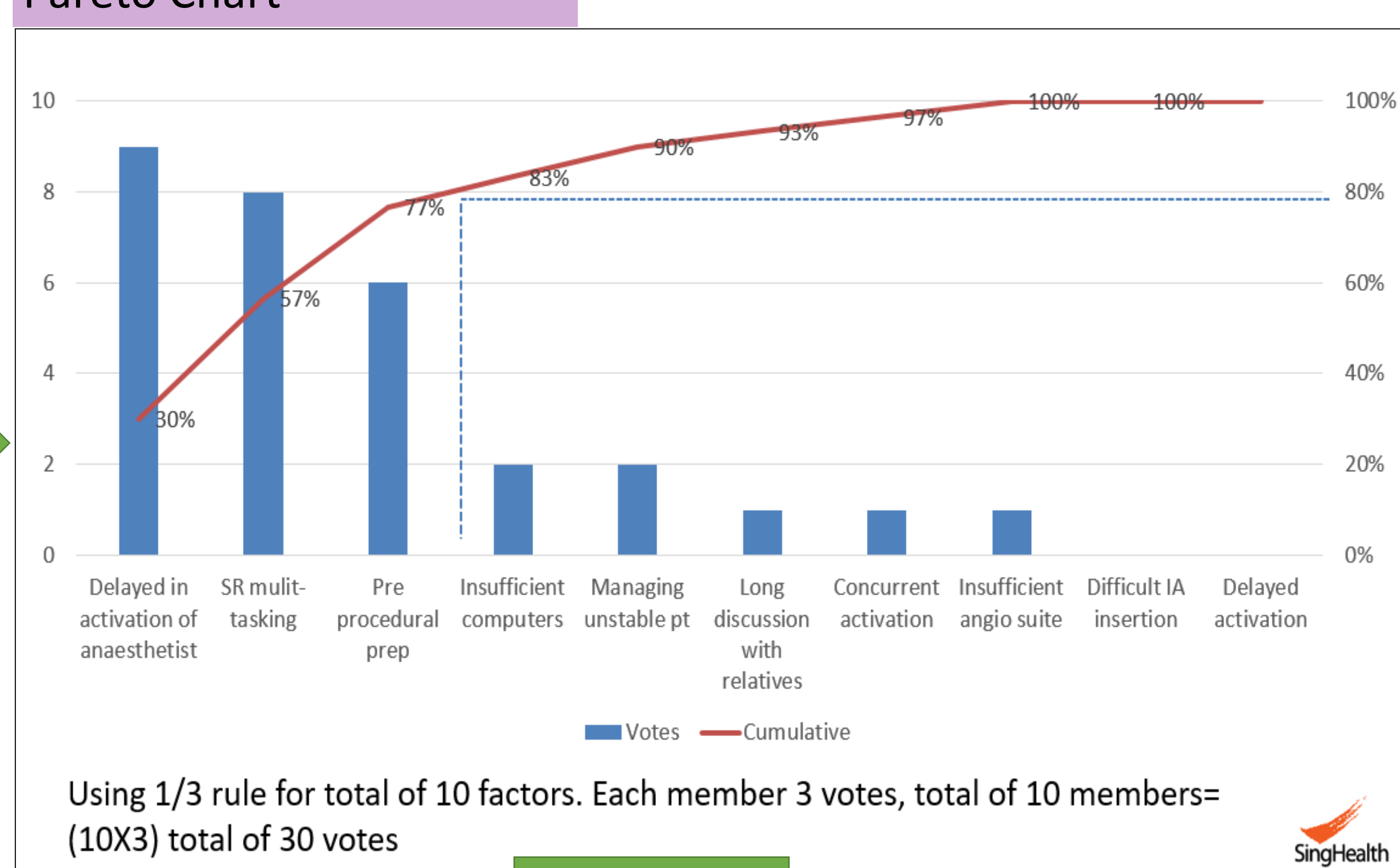
## METHODOLOGY

Using Plan-Do-Study-Act (PDSA) quality improvement methodology, a multidisciplinary team is set up to identify and discuss ways to improve workflow to shorten door to groin puncture timing for EVT.

### Cause & Effect Diagram



### Pareto Chart



Using 1/3 rule for total of 10 factors. Each member 3 votes, total of 10 members= (10X3) total of 30 votes

Top two factors:

### Implementation

**PDSA 1 October 2019**

• Simplified workflow for activating anaesthetist for EVT cases

**PDSA 2 July 2020 (Delayed due to COVID-19 situation)**

• Neuroradiology nurses participate in stroke activation after training completed. Requisites required for EVT are also pre-prepared to better facilitate work processes.
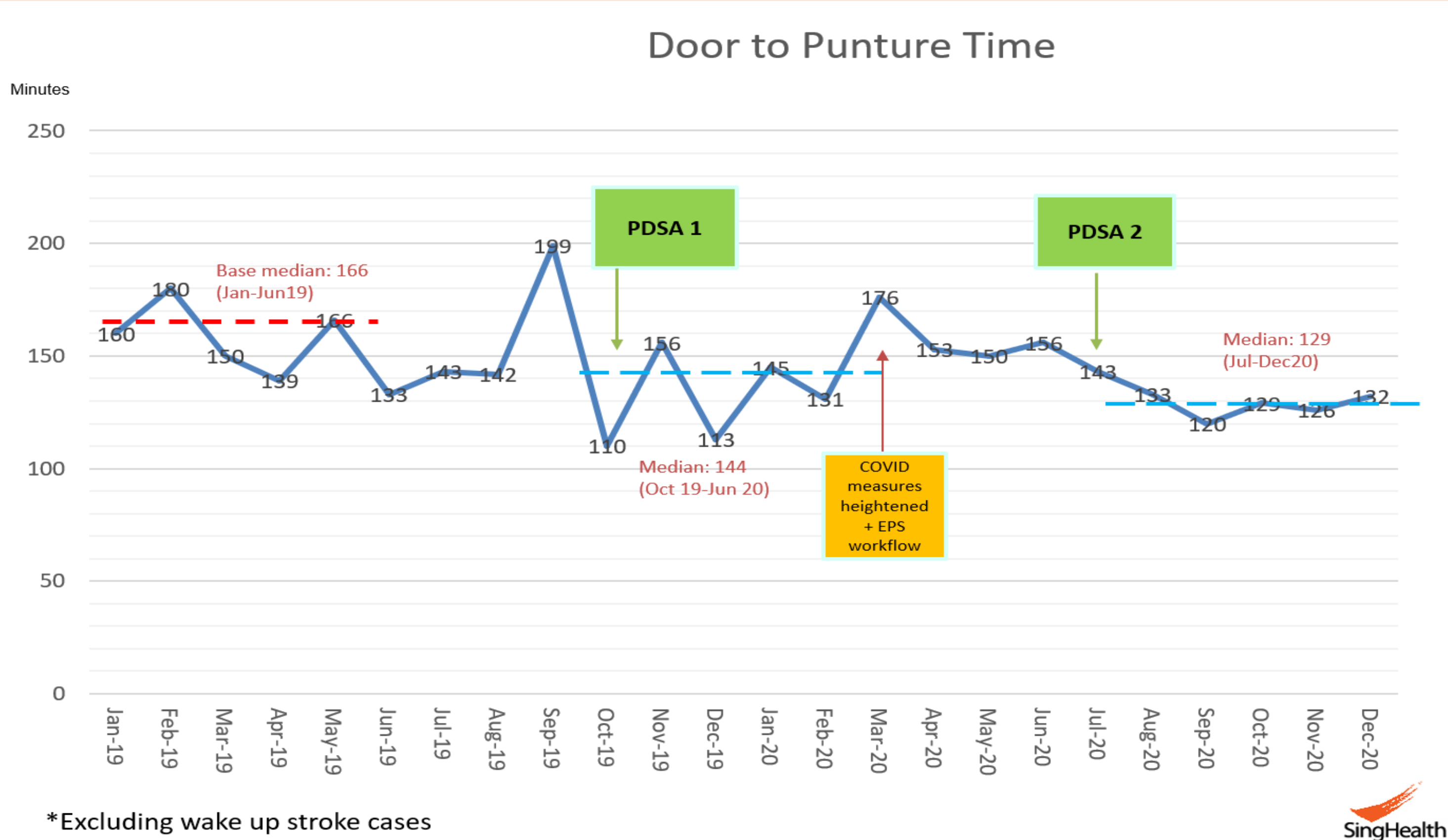
**Delayed Anaesthetist activation**
• No clear workflow
• Confusion of roster

**Senior Resident multi-tasking**
• Various tasks and coordination done solely by one Senior Resident
• Concurrent stroke activations

## RESULTS



*Excluding wake up stroke cases

• A baseline data collection from January to June 2019 was collected, the median door-to-groin puncture time for 22 patients was 166 minutes (IQR=147-196).

• PDSA cycle 1 implemented in October 2019, the post intervention median door-to-groin puncture time for 71 patients (from October 2019 to June 2020) reduced to 141 minutes (IQR =117-182).

• PDSA cycle 2 implemented in July 2020, the post intervention median door-to-groin puncture time for 67 patients (from July to December 2020) further reduced to 129 mins (IQR= 112-152).

There is a **significant reduction of median time by 22.3%.**

## CONCLUSION

Neuroradiology nurses' involvement in stroke activations have hastened the door-to-groin puncture time. Inter-professional teamwork and constant monitoring with iterative process to improve is the key to reduce door-to-groin puncture time.

## REFERENCES

1. (Jahan R, Saver JL, Schwamm LH, et al. Association Between Time to Treatment With Endovascular Reperfusion Therapy and Outcomes in Patients With Acute Ischemic Stroke Treated in Clinical Practice. JAMA. 2019;322(3):252–263. doi:10.1001/jama.2019.8286)