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# Endovascular treatment of acute ischemic stroke in the Netherlands for late arrivals

**Submission date**
21/09/2017

**Recruitment status**
No longer recruiting

**Registration date**
11/12/2017

**Overall study status**
Completed

**Last Edited**
07/05/2025

**Condition category**
Circulatory System

[_] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

## Plain English summary of protocol

Background and study aims
Ischaemic strokes occur when a blood clot blocks the flow of blood and oxygen to the brain. They occur about 20,000 times a year in the Netherlands. Since the mid-nineties, ischemic stroke has been treated with clot-dissolving medication (thrombolytics) within 4.5 hours after symptoms start. This treatment has a moderate effect on clinical improvement. A new, promising treatment option and important subject of research in the past 10 years is endovascular treatment (EVT). This involves removing the clot using a small tube (catheter). This method has been proved to be safe and effective if performed within 6 hours after the start of symptoms. However, many patients with ischemic stroke (up to 25%) arrive in the hospital after this 6 hour time-window. The aim of this study is to determine the safety and effectiveness of EVT between 6 and 24 hours after the start of symptoms.

Who can participate?
Patients aged 18 or older with acute ischemic stroke

What does the study involve?
Participants are randomly allocated to be treated with EVT or the best medical treatment. Every participant undergoes a scan of the brain blood vessels to assess the restoration of blood flow 24 hours later, and a brain scan to assess final infarct (dead tissue) volume 5-7 days later. Three months later all participants are interviewed by telephone to assess their functional outcome.

What are the possible benefits and risks of participating?
EVT may improve functional outcome when applied 6 to 24 hours after the start of symptoms. Based on previous studies, few complications are expected.

Where is the study run from?
1. Maastricht University Medical Center (Netherlands)
2. Academic Medical Center (Netherlands)
3. Erasmus Medical Center (Netherlands)
4. University Medical Center Utrecht (Netherlands)

When is the study starting and how long is it expected to run for?
May 2017 to November 2022

Who is funding the study?
Dutch Heart Foundation (Netherlands)

Who is the main contact?
Robert-Jan Goldhoorn

# Contact information

### Type(s)
Scientific

### Contact name
Mr Robert-Jan Goldhoorn

### Contact details
P. Debyelaan 25
Maastricht
Netherlands
6229 HX

# Additional identifiers

### EudraCT/CTIS number

### IRAS number

### ClinicalTrials.gov number

### Secondary identifying numbers
NL58246.078.17

# Study information

### Scientific Title
Multicenter randomised clinical trial of endovascular treatment of acute ischemic stroke in the Netherlands for late arrivals

### Acronym
MR CLEAN-LATE

### Study objectives
Endovascular treatment for acute ischemic stroke due to an intracranial large vessel occlusion of the anterior circulation is effective for patients treated between 6 and 24 hours after symptom onset or last seen well less than 24 hours, after selection based on collateral flow.

### Ethics approval required
Old ethics approval format

## Ethics approval(s)
Medisch Ethische Toetsings Commissie Erasmus MC (Medical Ethical Committee Erasmus MC), 11 /09/2017, ref: MEC-2017-367

## Study design
Multicenter phase III clinical trial with randomized treatment allocation, open label treatment and blinded endpoint evaluation (PROBE design)

## Primary study design
Interventional

## Secondary study design
Randomised controlled trial

## Study setting(s)
Hospital

## Study type(s)
Treatment

## Participant information sheet
Not available in web format, please use the contact details to request a patient information sheet

## Health condition(s) or problem(s) studied
Acute ischemic stroke due to an intracranial large vessel occlusion of the anterior circulation

## Interventions
Randomisation: web-based; permuted blocks. Backup by telephone.

The control group will receive best medical management. The intervention group will receive endovascular treatment (EVT). All patients in the intervention group will be transferred to the angiosuite. The procedure involves arterial catheterization, after which intracranial thrombectomy will be performed with a stent-retriever or other device approved by the steering committee. Every participant will undergo a CTA of the cerebral vessels to assess rate of recanalization 24 hours after randomization, and a brain scan to assess final infarct volume 5-7 days after randomization. Three months after inclusion all participants will be interviewed by telephone to determine functional outcome.

## Intervention Type
Procedure/Surgery

## Primary outcome measure
Functional outcome, measured by the modified Rankin Scale (mRS) at 90 days

## Secondary outcome measures
1. Mortality at 90 days
2. Recanalization on CTA at 24 hours
3. Infarct size on non-contrast head CT (NCCT) at 5-7 days or just before discharge
4. Symptomatic intra-cranial hemorrhage according to the Heidelberg criteria at 24 hours, and 5-

7 days after randomization
5. Clinical stroke severity, measured by the National Institutes of Health Stroke Scale score at 24 hours and 5-7 days after randomization

### Overall study start date
01/05/2017

### Completion date
01/11/2022

## Eligibility

### Key inclusion criteria
1. Clinical diagnosis of acute ischemic stroke
2. Caused by proximal intracranial anterior circulation occlusion (distal intracranial carotid artery or middle (M1/M2) cerebral artery confirmed by neuro-imaging (CTA or MRA)
3. Presence of poor*, moderate or good collateral flow as shown by neuroimaging (CTA)
4. CT or MRI ruling out intracranial hemorrhage
5. Start of IA treatment (groin puncture) possible between 6 and 24 hours after symptom onset or last seen well < 24 hours including wake-up strokes
6. A score of at least 2 on the NIH Stroke Scale
7. Age of 18 years or older
*Inclusion and randomization will be restricted to patients with moderate or good collaterals when 100 patients with poor collaterals have been included in the study

### Participant type(s)
Patient

### Age group
Adult

### Lower age limit
18 Years

### Sex
Both

### Target number of participants
500

### Total final enrolment
535

### Key exclusion criteria
1. Pre-stroke disability which interferes with the assessment of functional outcome at 90 days, i. e. mRS >2
2. Cerebral infarction in the previous 6 weeks with residual neurological deficit or signs of large recent infarction on neuroimaging in the territory of the middle cerebral antery
3. Clinical evidence of hemorrhagic diathesis, confirmed by an INR > 3 and/or a platelet count < 40 x 109/L and/or an APTT > 50 sec

4. Clearly demarcated hypodensity in >1/3 of the middle cerebral artery territory, consistent with current symptoms
5. Participation in trials other than current and MR ASAP

### Date of first enrolment
01/11/2017

### Date of final enrolment
01/11/2021

## Locations

### Countries of recruitment
Netherlands

### Study participating centre
**Maastricht University Medical Center**
Maastricht
Netherlands
6202 AZ

### Study participating centre
**Academic Medical Center**
Amsterdam
Netherlands
1005 AZ

### Study participating centre
**Erasmus Medical Center**
Rotterdam
Netherlands
3000 CA

### Study participating centre
**University Medical Center Utrecht**
Utrecht
Netherlands
3508 GA

## Sponsor information

**Organisation**
Maastricht University Medical Center

**Sponsor details**
P. Debyelaan 25
Maastricht
Netherlands
6229 HX

**Sponsor type**
Hospital/treatment centre

**ROR**
https://ror.org/02d9ce178

# Funder(s)

**Funder type**
Charity

**Funder Name**
Hartstichting

**Alternative Name(s)**
Heart Foundation

**Funding Body Type**
Private sector organisation

**Funding Body Subtype**
Trusts, charities, foundations (both public and private)

**Location**
Netherlands

# Results and Publications

**Publication and dissemination plan**
Additional documents (study protocol/statistical analysis plan) will be available approximately 1 year after the first patient's inclusion. Planned publication of the results in a high-impact peer-reviewed journal.

**Intention to publish date**
01/11/2023

## Individual participant data (IPD) sharing plan

The data sharing plans for the current study are unknown and will be made available at a later date.

## IPD sharing plan summary

Data sharing statement to be made available at a later date

## Study outputs

| Output type | Details | Date created | Date added | Peer reviewed? | Patient-facing? |
|---|---|---|---|---|---|
| Protocol article | protocol | 07/01/2020 | 16/02/2021 | Yes | No |
| Protocol article | protocol | 24/02/2021 | 26/02/2021 | Yes | No |
| Results article | | 29/03/2023 | 03/04/2023 | Yes | No |
| Results article | 2-year follow-up | 25/06/2024 | 25/06/2024 | Yes | No |
| Other publications | post hoc secondary analysis of CTP parameters association of EVT with functional outcomes among patients in the late window after ischemic stroke selected based on collateral flow | 05/05/2025 | 07/05/2025 | Yes | No |