PROTOCOL : Validation of low field MRI in patients with stroke symptoms less than 12 hours.

Protocol ID	**To be assigned**
Short title	**Low-field MRI in stroke code patients**
EudraCT number	***n/a***
Version	**V3.0**
Date	**16/06/2025**
project leader	***ND Kruyt***
Subinvestigators	***E. van Etten*** ***AC van Es*** ***A Webb*** ***MA v Buchem*** ***N Kraaijvanger*** ***R Croese***
Sponsor LUMC	***LUMC Albinusdreef 2, 2333 ZA Leiden***
Subsidising party	***n/a***
Independent expert (s)	***Dr. E Niks, Neurologist LUMC***

PROTOCOL SIGNATURE SHEET

Name	**Signature**	**Date**
Head of Department:	**Prof Dr. JJGM Verschuuren** **Head of Department of Neurology LUMC.**	
[Coordinating Investigator/Project leader/Principal Investigator]:	**ND Kruyt, Neurologist**	

Contents

1. INTRODUCTION AND RATIONALE 9
2. OBJECTIVES 10
3. STUDY DESIGN 10
4. STUDY POPULATION 10
4.1 Population (base) 10
4.2 Inclusion criteria 10
4.3 Exclusion criteria 11
4.4 Sample size calculation 12
5. TREATMENT OF SUBJECTS 12
5.1 Investigational product/treatment 12
6. INVESTIGATIONAL PRODUCT 12
6.1 Name and description of investigational product(s) 12
6.2 Summary of findings from non-clinical studies 12
6.3 Summary of findings from clinical studies 12
6.4 Summary of known and potential risks and benefits 13
7. METHODS 13
7.1 Study parameters/endpoints 13
7.1.1 Main study parameter/endpoint 13
7.1.2 Secondary study parameters/endpoints (if applicable) 13
7.1.3 Other study parameters (if applicable) 14
7.2 Study procedures 14
7.3 Replacement of individual subjects after withdrawal 15
7.4 Follow-up of subjects withdrawn from treatment 15
7.5 Premature termination of the study 15
8. SAFETY REPORTING 15
8.1 Temporary halt for reasons of subject safety 15
8.2 AEs, SAEs and SUSARs 15
8.2.1 Adverse events (AEs) 15
8.2.2 Serious adverse events (SAEs) 15
8.2.3 Suspected unexpected serious adverse reactions (SUSARs) 16
8.3 Annual safety report 16
8.4 Follow-up of adverse events 16
8.5 [Data Safety Monitoring Board (DSMB) / Safety Committee] 17
9. STATISTICAL ANALYSIS 17
9.1 Primary study parameter(s) 17
9.2 Secondary study parameter(s) 17
9.3 Other study parameters 17
9.4 Interim analysis (if applicable) 17
9.5 Regulation statement 17
9.6 Recruitment and consent 17
9.7 Objection by minors or incapacitated subjects (if applicable) 18
9.8 Benefits and risks assessment, group relatedness 18

9.9 Incentives (if applicable) 18
9.10 Compensation for injury 18
10. ADMINISTRATIVE ASPECTS, MONITORING AND PUBLICATION 18
10.1 Handling and storage of data and documents 18
10.2 Monitoring and Quality Assurance 19
10.3 Amendments 19
10.4 Annual progress report 19
10.5 Temporary halt and (prematurely) end of study report 19
10.6 Public disclosure and publication policy 20
10.7 Potential issues of concern 20
11. REFERENCES 20

LIST OF ABBREVIATIONS AND RELEVANT DEFINITIONS

ABR	**General Assessment and Registration form (ABR form), the application form that is required for submission to the accredited Ethics Committee; in Dutch: Algemeen Beoordelings- en Registratieformulier (ABR-formulier)**
AE	**Adverse Event**
AR	**Adverse Reaction**
CA	**Competent Authority**
CCMO	**Central Committee on Research Involving Human Subjects; in Dutch: Centrale Commissie Mensgebonden Onderzoek**
CV	**Curriculum Vitae**
DSMB	**Data Safety Monitoring Board**
EU	**European Union**
EudraCT	**European drug regulatory affairs Clinical Trials**
GCP	**Good Clinical Practice**
GDPR	**General Data Protection Regulation; in Dutch: Algemene Verordening Gegevensbescherming (AVG)**
IB	**Investigator's Brochure**
IC	**Informed Consent**
IMP	**Investigational Medicinal Product**
IMPD	**Investigational Medicinal Product Dossier**
IMD	**Investigation with Medical Device**
IMDD	**Investigational Medical Device Dossier**
METC	**Medical research ethics committee (MREC); in Dutch: medisch-ethische toetsingscommissie (METC)**
(S)AE	**(Serious) Adverse Event**
SPC	**Summary of Product Characteristics; in Dutch: officiële productinformatie IB1-tekst**
Sponsor	**The sponsor is the party that commissions the organisation or performance of the research, for example a pharmaceutical company, academic hospital, scientific organisation or investigator. A party that provides funding for a study but does not commission it is not regarded as the sponsor, but referred to as a subsidising party.**
SUSAR	**Suspected Unexpected Serious Adverse Reaction**

UAVG	**Dutch Act on Implementation of the General Data Protection Regulation; in Dutch: Uitvoeringswet AVG**
WMO	**Medical Research Involving Human Subjects Act; in Dutch: Wet Medisch-wetenschappelijk Onderzoek met Mensen**

SUMMARY

Rationale: Neuro-imaging is a key step in the clinical evaluation of stroke patients. Conventional magnetic resonance imaging (MRI) systems operate at high-strength magnetic fields (1.5-3Tesla) that require strict, access-controlled environments and careful screening for contra-indications. Limited access to timely neuroimaging remains a key structural barrier to effectively monitor the occurrence and progression of stroke. Recently a portable low-field MRI system (Hyperfine Low Field MRI, HLFM) has been installed in the Radiology Department at LUMC. This device has been approved by the METC Leiden/The Hague/Delft for a study in healthy volunteers (Protocol development for a Hyperfine Very Low Field (0.064 Tesla) MRI system" (NL81853.058.22) with registration number P22.063). This current proposal is the first one that would use the Hyperfine in patients at LUMC. Worldwide, over 2000 patients have been successfully scanned using the HLFM, with applications ranging from paediatric hydrocephalus to stroke. With respect to stroke studies, all previous work has concentrated on sub-acute patients: here we will study the Hyperfine in acute stroke patients for the first time.

Objective: To validate the applicability and feasibility of using the HLFM in a clinical setting of acute stroke.

Study design: Prospective pilot cohort study, single centre.

Study population: Adult patients admitted because of suspicion of acute stroke (ischemic or haemorrhagic)

Intervention (if applicable): Low-field MRI (HLFM)

Main study parameters/endpoints: Accuracy of HLFM in acute stroke patients. Comparison of radiological findings between the HLFM device and conventional CT imaging as performed in routine clinical practise will be done. Feasibility outcomes will include time and measures to be undertaken to perform a scan on the HLFM , and patient reported satisfaction.

Nature and extent of the burden and risks associated with participation, benefit and group relatedness: Participating subjects will be subjected to the HLFM in after routine assessment using a non-contrast CT/CT-agiography/CT-perfusion scan and – in some cases - conventional MRI.

A recent study using a low-field MRI showed that performing imaging in patients admitted to a critical care unit was feasible and without complications or safety concerns.

Safety risks associated with the HLFM*.*

A Prospective Risk investigation for the Hyperfine in this setting is performed and attached.

A full risk analysis was performed for protocol METC NL81853.058.22

1. INTRODUCTION AND RATIONALE

Advanced brain imaging is the cornerstone of acute stroke diagnosis and planning of intravenous thrombolysis (IVT) and/or endovascular thrombectomy (EVT) treatment as reperfusion therapies. Although Magnetic Resonance Imaging (MRI) is superior to CT imaging, as it provides a much better signal to noise ratio creating more detailed images, CT is generally used in the acute setting as it is faster, more feasible, less laborious and cheaper. MRI is thus generally only used in the subacute (i.e. days after) phase in case clinicians require more radiological evidence. Recently, trials have shown that MRI can be used to select acute stroke patients for IVT and EVT that would otherwise not be eligible from reperfusion treatment. Examples of this are patients with unknown time of onset (e.g. waking up with stroke symptoms), patients with a lacunar syndrome or patients with posterior circulation infarction. Therefore the need for MRI, also in the acute phase, becomes increasingly evident.[1]

In the subacute phase of a stroke, during the hours or days when a patient is admitted to the stroke unit, patients regularly undergo additional neuro-imaging as part of routine practice. For example, to rule out a secondary haemorrhage if a patient deteriorates, or if there is clinical uncertainty about the initial diagnosis. In these cases, the patient has to be transported to the CT or MRI suite which is not only laborious and inconvenient but can actually lead to worse outcomes for critically ill patients as they must to leave the stroke unit. For all these reasons, having a neuro-imaging tool available at the bedside is highly desirable. Conventional MRI systems operate through high-strength magnetic fields (1.5-3T) that require strict, access-controlled environments, rigid safety precautions, and highly trained technicians. As a result, traditional neuroimaging workflow requires patient transport to dedicated hospital imaging suites. This operational paradigm has been necessary to ensure patient safety in and around high-field scanners but has rendered MRI difficult to access and time consuming in the setting acute stroke.

MRI scanners operating at low field strength (i.e. < 0.1T) allow for open geometry designs that can ease patient handling and positioning and are compatible with nearby ferromagnetic materials, enabling scanning outside the controlled access environment of an MRI suite. Moreover, bringing the portable Hyperfine low field MRI (HLFM) scanner with more lenient requirements to the patient (i.e. to the emergency department) rather than transporting the patient to the scanner would tackle logistic problems of transporting a critically ill patient. In the future it is even conceivable that such a portable low field system is operated in the ambulance to ensure even faster diagnosis and subsequent treatment initiation.

A possible drawback of HLFM is that it lacks sufficient accuracy to detect stroke related imaging abnormalities to be clinically useful. Recently the feasibility of a portable low field MRI was demonstrated in critically ill patients (including stroke patients) in an intensive care setting.[2] The authors report that in these patients low-field MRI findings were in agreement with available conventional radiology reports. However, patients did not have acute stroke and in this setting accuracy and feasibility of low field MRI remains unknown.

We *aim* to set up a pilot study to assess feasibility and applicability of the HLFM in the emergency department setting of acute stroke.

2. OBJECTIVES

Primary Objective: a pilot study to investigate the accuracy of the portable HLFM in the setting of acute stroke.

Secondary Objective(s): to investigate the feasibility of the portable HLFM in acute stroke patients admitted to the emergency department

3. STUDY DESIGN

This is a single centre pilot cohort study with case by case flexible design. We intend to include 4*15 = 60 patients admitted to the emergency department with a suspicion of acute stroke (a so called stroke code patients) within 12 hours from symptom onset. Each group requires at least 5 patients with symptom onset <6 hours:

Group 1: patients with ischemic stroke due to proximal vessel occlusion

Group 2: patients with ischemic stroke due to a subcortical infarct (lacunar syndrome)

Group 3: patients with haemorrhagic stroke

Group 4: patients with a non-stroke diagnosis (so called ‘stroke mimic’).

Patients will be recruited from the emergency department of the LUMC assessing over 800 stroke code patients annually, most of whom are within the 12 hour time window. Of these about 340 have ischemic stroke (150 due to a proximal vessel occlusion); 100 have haemorrhagic stroke. The study will run during office hours only. Taking into account the in- and exclusion criterion we expect that we can reach the projected sample sizes within 18 months.

4. STUDY POPULATION

4.1 Population (base)

Stroke code patients are patients brought to the emergency department with a suspicion of stroke for whom the ambulance paramedics have pre-notified the stroke team. All patients will be recruited from the emergency department of the LUMC.

4.2 Inclusion criteria

In order to be eligible, subjects in **all groups** must meet all of the following criteria:

1) Age >18 years.
2) Symptom onset < 12 hours.
3) Admission to the emergency department of LUMC as a stroke code (i.e. suspected stroke by ambulance paramedics) during office hours.

4) Admission head CT on the emergency department
5) Informed consent by the patient.

The following additional inclusion criteria apply for the groups:

For **group 1**

- A diagnosis of ischemic stroke due to proximal vessel occlusion in the anterior circulation based on CT at the emergency department

For **group 2**

- Clinical and radiological suspicion of lacunar ischemic stroke. These patients will often receive additional MRI during routine work-up for radiological confirmation. Therefore preferably already on the emergency department there should be the intention to (later) perform a MRI scan of the brain for routine practice purposes. Because we anticipate that this will not always be done, we allow for additional inclusions in this group (see under sample size section 4.4)

For **group 3**

- A diagnosis of haemorrhagic stroke demonstrated on on CT at the emergency department.

For **group 4**

- Non-stroke diagnosis based on clinical judgement and neuro-imaging at the emergency department. (a so called stroke mimic, i.e. epilepsy, migraine, functional neurological disorder).

4.3 Exclusion criteria

A potential subject who meets any of the following criteria will be excluded from participation in this study:

- Eminent death
- (severe) claustrophobia
- Pacemaker; cochlear implant; implanted insulin pump
- Intra-ocular metal foreign body/ intracranial metal clip/ device on the admission CT.Pregnancy
-
- Acute life threatening or disabling conditions requiring direct intervention
- Study related procedures estimated to delay time to reperfusion treatment (intravenous thrombolysis or endovascular thrombectomy)

4.4 Sample size calculation

For this pilot study, we require a total of 60 participants; including 15 patients per group. Importantly, since not all patients in group 2 (lacunar ischemic stroke) will receive follow-up routine neuro-imaging we estimate that we have to include 10-20 additional patients for that group in order include 15 patients with confirmed lacunar stroke on routine care neuro-imaging. Therefore the total amount of included patients will be 60-80.

This sample size (i.e. 15 per group) allows us to study the practicality of the study procedures and explore the sensitivity/ specificity of the HLFM for acute ischemic or haemorrhagic stroke. Furthermore, the imaging results of a pilot study with this sample size should provide sufficient data to determine a sample size of a future, larger cohort study. We plan to conduct an interim analysis after each 5 inclusions per group to assess the quality of imaging results. If this shows very poor imaging results, we can decide to terminate the study early. This approach ensures that we can make informed decisions about the continuation of the study based on ongoing results within each group.

5. TREATMENT OF SUBJECTS

5.1 Investigational product/treatment

See attached IMDD for the Hyperfine

6. INVESTIGATIONAL PRODUCT

6.1 Name and description of investigational product(s)

See attached IMDD for the Hyperfine

6.2 Summary of findings from non-clinical studies

This device has been used in several non-clinical studies in order to compare its performance vs conventional field strength MRI in adults, as well as pediatrics. The overall summary of findings is that, despite the very low field strength, the system is capable of producing images with very low geometric distortion and spatial resolutions on the order of 2 x 2 x 5 mm.

6.3 Summary of findings from clinical studies

In February 2020, the Hyperfine Swoop received its FDA clearance for the system. Since its release on the market, several hundreds of subjects (both volunteers and patients, as well as children aged two years and above) have undergone MRI with Hyperfine Swoop without adverse events or complications.

Several publications have already appeared in peer-reviewed journals, showing the safety and feasibility of the Hyperfine Swoop as a portable low-field scanner, including:

- 50 patients with different brain pathologies have been imaged at the bedside in intensive care settings in a study by Sheth.[2]
- the ability to deploy portable MRI neuroimaging at the hospital bedside and provide initial evaluation for detection of intracerebral haemorrhage was shown with Hyperfine Swoop imaging 56 patients with intracerebral haemorrhage, 48 with acute ischemic stroke and 40 healthy volunteers.[3]
- the ability to routinely collect structural neuroimaging paediatric data using the Hyperfine Swoop in a general lab setting, i.e., without need for dedicated and shielded MRI suites and adjacent equipment and control rooms has been shown in 42 healthy and typically-developing children, 6 weeks to 16 years of age.[4]
- Hyperfine Swoop has been also demonstrated to be the first mobile MRI imaging system capable of performing point-of-care neuroimaging.[5]
- A complete methodology has been described by Prabhat et al. for safely screening, coordinating, and executing portable MRI exams with Hyperfine Swoop, and providing further detail on how to scan specific patient populations.[6]
- The first experience of low-field, portable MR imaging start-up and use in Malawi has been reported together with complementary troubleshooting mechanisms, paving the way for similar resource-constrained contexts.[7]

6.4 Summary of known and potential risks and benefits

See attached risk assessment

7. METHODS

7.1 Study parameters/endpoints

7.1.1 Main study parameter/endpoint

Baseline and medical history data, final diagnosis at discharge (the outcome), diagnostic test performance (i.e. sensitivity, specificity, positive predictive value, and negative predicted value). Findings of neuro-imaging on routine practice and the HLFM.

7.1.2 Secondary study parameters/endpoints (if applicable)

- Adverse events or complications occurring during the setup and use of the portable HLFM MRI device
- Mean exam time
- Number of patients completing the exam/ discontinuing the exam.

7.1.3 Other study parameters (if applicable)

n/a

7.2 Study procedures

As mentioned in the exclusion criteria, study procedures should never interfere with stroke care logistics, especially not with the administration of IVT or EVT since both treatments are time sensitive (TIME=BRAIN). In practice this will not pose any problems for the patients that will receive IVT since IVT is administered at the Emergency Department while the patient is still on the CT scanner and the low field MRI is scheduled after that. For stroke patients with a large vessel occlusion stroke (group I) this point should be carefully considered if the patient is eligible for EVT (which is not always the case in large vessel occlusion stroke). In such cases the patient can only participate if the HLFM investigation does not delay logistics of EVT treatment. For example, this could be the case when other factors are already delaying this procedure such as the angiosuite not being available.

Study related procedures include establishment of study eligibility, ruling out contra-indications for MRI, the informed consent procedure, the HLFM scan and the collection of data from the HLFM and from the electronic patient records.

Assessment of study eligibility, ruling out contra-indications for MRI and the informed consent will be done by the investigator, the neurology resident, or the emergency physician. For details on the informed consent procedure see under 9.6.

Assessment of study eligibility and contra-indications for MRI will be assessed by the attending physician and subsequently verified by the radiology technologist using a standardized institutional checklist. The contraindication assessment in the acute setting is identical to the protocol used for conventional MRI procedures within the hospital, encompassing all general and device-specific MRI safety guidelines.
The HLFM scanner is located on the emergency department adjacent to the room where the CT scanner is located. The patient will be transported there while on his/her bed. The bed is introduced into the HLFM by ED nurses. For nurses to become acquainted with this procedure we will schedule 2 practice sessions before the start of the study. There will be a sign on the door to the room of the HLFM indicating that people with ear implants or cardiac devices should not enter that room. The HLFM will be operated by certified personnel from the radiology staff or by a certified PhD student.
Data from the HLFM will be stored in PAX. The HLFM images will be assessed by a neuroradiologist with the clinical information that was known when the routine CT scan was ordered but blinded to the CT images/outcome. Assessments will be standardized and stored in an online case record form (CastorEDC). Patient data from the electronic patient records will be collected by the investigator and are also stored in the online case record form (CastorEDC).

Subjects can leave the study at any time for any reason if they wish to do so without any consequences. The investigator can decide to withdraw a subject from the study for urgent medical reasons.

7.3 Replacement of individual subjects after withdrawal

For every patient without consent an additional patient will be included

7.4 Follow-up of subjects withdrawn from treatment

n/a

7.5 Premature termination of the study

n/a

8. SAFETY REPORTING

8.1 Temporary halt for reasons of subject safety

In accordance to section 10, subsection 4, of the WMO, the sponsor will suspend the study if there is sufficient ground that continuation of the study will jeopardise subject health or safety. The sponsor will notify the accredited METC without undue delay of a temporary halt including the reason for such an action. The study will be suspended pending a further positive decision by the accredited METC. The investigator will take care that all subjects are kept informed.

8.2 AEs, SAEs and SUSARs

8.2.1 Adverse events (AEs)

In this study (S) AE’s will only have be reported if occurring during the MRI scanning procedure or up to 30 minutes thereafter.

Adverse events are defined as any undesirable experience occurring to a subject during the study, whether or not considered related to the HLFM exam. All adverse events reported spontaneously by the subject or observed by the investigator or his staff will be recorded.

8.2.2 Serious adverse events (SAEs)

In this study (S) AE’s will only have be reported if occurring during the MRI scanning procedure or up to 30 minutes thereafter.

A serious adverse event is any untoward medical occurrence or effect that

- results in death;
- is life threatening (at the time of the event);
- requires hospitalisation or prolongation of existing inpatients' hospitalisation;
- results in persistent or significant disability or incapacity;
- is a congenital anomaly or birth defect; or
- any other important medical event that did not result in any of the outcomes listed above due to medical or surgical intervention but could have been based upon appropriate judgement by the investigator.

An elective hospital admission will not be considered as a serious adverse event.

The investigator will report all SAEs to the sponsor without undue delay after obtaining knowledge of the events.

The sponsor will report the SAEs through the web portal *ToetsingOnline* to the accredited METC that approved the protocol, within 7 days of first knowledge for SAEs that result in death or are life threatening followed by a period of maximum of 8 days to complete the initial preliminary report. All other SAEs will be reported within a period of maximum 15 days after the sponsor has first knowledge of the serious adverse events.

8.2.3 Suspected unexpected serious adverse reactions (SUSARs)

n/a.

8.3 Annual safety report

n/a

8.4 Follow-up of adverse events

All AEs will be followed until they have abated, or until a stable situation has been reached. Depending on the event, follow up may require additional tests or medical procedures as indicated, and/or referral to the general physician or a medical specialist. SAEs need to be reported till end of study within the Netherlands, as defined in the protocol

8.5 Data Safety Monitoring Board (DSMB) / Safety Committee]

n/a

9. STATISTICAL ANALYSIS

Baseline data will be reported by group as categorical or continuous variables, where appropriate.

9.1 Primary study parameter(s)

This is a pilot study, so all analyses will be explorative and pragmatic. With each fifth patient per group sensitivity and specificity of HLFM findings for detecting acute ischemic or haemorrhagic stroke or no stroke using the final diagnosis as the gold standard will be assessed.

9.2 Secondary study parameter(s)

Scanning time will be documented for each study subject and records will be kept to assess the number of finalized and failed HLFM investigations.

9.3 Other study parameters

n/a

9.4 Interim analysis (if applicable)

After each fifth patient per group (ischemic stroke (lacunar/LVO); hemorrhagic stroke, stroke mimic.

ETHICAL CONSIDERATIONS

9.5 Regulation statement

The study will be conducted according to the principles of the Declaration of Helsinki (2024) and in accordance with the Medical Research Involving Human Subjects Act (WMO) and other guidelines, regulations and Acts.

9.6 Recruitment and consent

Study patients will be recruited from patients admitted to the emergency department as a stroke code (see inclusion criterion 3). Patients will be recruited while on the emergency department right after routine CT investigations are completed and after treatment with IVT if this is appropriate. The inclusion criteria are measured at the time of arrival at the ED and the assessment of whether the inclusion criteria are met is made by the treating

physician or investigator.
Informed consent will be asked for the additional HLFM investigation and for the collection and coded storage of data from the electronic patient record. During the acute phase, stroke patients are sometimes unable to physically sign the informed consent form. In such cases, initial verbal consent after explanation of the study procedure and understanding by the patient, is allowed. The decision to continue with a verbal informed consent will have to be documented in the electronic patient record and, once the patient is physically able to sign informed consent at another instance, this will have to be done. It is the responsibility of the investigators to see to this.

9.7 Objection by minors or incapacitated subjects (if applicable)

Yes, e.g. in case aphasia leading to inability to comprehend

9.8 Benefits and risks assessment, group relatedness

n/a

9.9 Incentives (if applicable)

n/a

9.10 Compensation for injury

The sponsor/investigator has a liability insurance which is in accordance with article 7 of the WMO.
The sponsor (also) has an insurance which is in accordance with the legal requirements in the Netherlands (Article 7 WMO). This insurance provides cover for damage to research participants through injury or death caused by the study.
The insurance applies to the damage that becomes apparent during the study or within 4 years after the end of the study.

10. ADMINISTRATIVE ASPECTS, MONITORING AND PUBLICATION

10.1 Handling and storage of data and documents

Data from the patient record including baseline characteristics, radiological outcomes as well as clinical outcome such as final discharge diagnosis will we coded and entered into a web-based database (Caster EDC) by the investigator. Data from HLFM assessments will be assessed by a neuro-radiologist blinded to the CT outcome and stored in Castor. The Neuro-radiologist will not have access to the other data in the Caster database to prevent unblinding.

10.2 Monitoring and Quality Assurance

Single centre: Monitoring will be executed by (internal) monitors of the LUMC according to the monitor plan.

10.3 Amendments

Amendments are changes made to the research after a favourable opinion by the accredited METC has been given. All amendments will be notified to the METC that gave a favourable opinion. All substantial amendments will be notified to the METC and to the competent authority. Non-substantial amendments will not be notified to the accredited METC and the competent authority, but will be recorded and filed by the sponsor.

10.4 Annual progress report

The sponsor/investigator will submit a summary of the progress of the trial to the accredited METC once a year. Information will be provided on the date of inclusion of the first subject, numbers of subjects included and numbers of subjects that have completed the trial, serious adverse events/ serious adverse reactions, other problems, and amendments.

10.5 Temporary halt and (prematurely) end of study report

The investigator/sponsor will notify the accredited METC of the end of the study within a period of 8 weeks. The end of the study is defined as the last patient's last visit.
The sponsor will notify the METC immediately of a temporary halt of the study, including the reason of such an action.
In case the study is ended prematurely, the sponsor will notify the accredited METC within 15 days, including the reasons for the premature termination.
Within one year after the end of the study, the investigator/sponsor will submit a final study report with the results of the study, including any publications/abstracts of the study, to the accredited METC.
The sponsor will notify the accredited METC and the competent authority of the end of the study within a period of 90 days. The end of the study is defined as the last patient's last visit.
The sponsor will notify the METC immediately of a temporary halt of the study, including the reason of such an action.
In case the study is ended prematurely, the sponsor will notify the accredited METC and the competent authority within 15 days, including the reasons for the premature termination.

Within one year after the end of the study, the investigator/sponsor will submit a final study report with the results of the study, including any publications/abstracts of the study, to the accredited METC and the Competent Authority.

10.6 Public disclosure and publication policy

The study database will be closed within one month after the last patients final diagnosis is established. A manuscript will be drafted and submitted to a journal within 6 months from closure of the database.

10.7 Potential issues of concern

A detailed risk/benefit analysis is provided in Appendix III of the attached IMDD.

11. REFERENCES

1) Hilkes et al; Stroke; Lancet; 403: 2820–36; 2024
2) Sheth et al; Assessment of Brain Injury Using Portable, Low-Field Magnetic Resonance Imaging at the Bedside of Critically Ill Patients; Jama Neurology 2021
3) Mazurek et al; Portable, bedside, low-field magnetic resonance imaging for evaluation of intracerebral hemorrhage. *Nature Communications* 12(1) 2021.
4) Deoni, S. C. L et al Accessible pediatric neuroimaging using a low field strength MRI scanner. *NeuroImage, 238*, 118273. 2022
5) Deoni, S.C.L et al Development of a mobile low-field MRI scanner. *Sci Rep 12*, 5690 (2022).
6) Prabhat, A. M. et al;. Methodology for Low-Field, Portable Magnetic Resonance Neuroimaging at the Bedside. *Frontiers in Neurology, 12*; 2021
7) Chetcuti, K. et al; (2022). Implementation of a Low-Field Portable MRI Scanner in a Resource-Constrained Environment: Our Experience in Malawi. *American Journal of Neuroradiology*. 2022
8) Kompanje EJO, et al. Informed consent procedures for emergency interventional research in patients with traumatic brain injury and ischaemic stroke. The Lancet Neurology. p. 1033–42; 2020.