

# Intramuscular or combined intramuscular/intra-arterial administration of bone marrow mononuclear cells in patients with advanced limb ischaemia

<b>Submission date</b> 16/07/2007	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered
<b>Registration date</b> 16/07/2007	<b>Overall study status</b> Completed	<input type="checkbox"/> Protocol
<b>Last Edited</b> 31/12/2020	<b>Condition category</b> Circulatory System	<input type="checkbox"/> Statistical analysis plan
		<input checked="" type="checkbox"/> Results
		<input type="checkbox"/> Individual participant data

## Plain English summary of protocol

Not provided at time of registration

## Contact information

### Type(s)

Scientific

### Contact name

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## Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

## Secondary identifying numbers

N/A

# Study information

## Scientific Title

Intramuscular or combined intramuscular/intra-arterial administration of bone marrow mononuclear cells in patients with advanced limb ischaemia

## Study objectives

The primary aim of our study was to test the feasibility and safety of exclusively intramuscular, and combined intramuscular/intra-arterial delivery of Bone marrow Mononuclear Cells (BMC) in patients with advanced limb ischaemia without conventional options for surgical or endovascular treatment.

## Ethics approval required

Old ethics approval format

## Ethics approval(s)

Ethics approval received from the Medical Ethical Committee of the Leiden University Medical Centre on December 12, 2003 (ref: P03.149).

## Study design

Randomised controlled trial

## Primary study design

Interventional

## Secondary study design

Randomised controlled trial

## Study setting(s)

Hospital

## Study type(s)

Treatment

## Participant information sheet

## Health condition(s) or problem(s) studied

Bone marrow mononuclear cells in patients with advanced limb ischaemia

## Interventions

Hospital admittance was planned in a short-stay setting (24 - 48 hours). The harvest procedure was performed according to standard protocols for bone marrow donation for allogeneic transplantation. 750 millilitre bone marrow was collected from the posterior iliac crest under epidural or general anaesthesia. The suspension was filtered and subsequently concentrated in a final volume of 40 mL. Upon concentration of the BMC-fraction, the erythrocyte fraction was collected separately and re-infused to the patient.

The mononuclear cells were implanted approximately 4 hours after bone marrow aspiration. The method of administration was randomly assigned to the patients using a random number table:

1. By local injection into the gastrocnemius muscle
2. By combined Intramuscular (IM) and Intra-Arterial (IA) delivery

The investigators were not blinded for the assignment. In case of total IM delivery, we implanted 1 ml using a 26-gauge needle on 40 sites, 1.5 cm deep, using the full surface of the gastrocnemius muscle. In patients assigned to the combined treatment arm, the volume of each IM injection was 0.5 ml. The remaining 20 ml was slowly infused after selective catheterisation of the superficial femoral artery (or profunda femoral artery in case of occlusion of the Superficial Femoral Artery [SFA]), performed according to the standard procedures within the Department of Radiology.

### **Intervention Type**

Other

### **Phase**

Not Specified

### **Primary outcome measure**

1. Wound healing/limb salvage (Fontaine 3/4), measured at 6 months
2. Pain-free walking distance (Fontaine 2), measured at 6 months

### **Secondary outcome measures**

1. Ankle/brachial index, measured at 3, 6 and 12 months
2. Pain scores (Brief Pain Inventory), measured at 3, 6 and 12 months
3. Quality of Life (RAND-36), measured at 3, 6 and 12 months
4. Artery scores (angiogram), measured at 6 months
5. Limb salvage/wound healing and pain free walking distance at 3 and 12 months

### **Overall study start date**

01/01/2004

### **Completion date**

01/01/2006

## **Eligibility**

### **Key inclusion criteria**

1. Disabling claudication (Fontaines stages IIb/III or Rutherfords categories 3/4) or critical limb ischaemia (Fontaines stages IV or Rutherfords categories 5/6) despite greater than six months optimal medical therapy
2. Ineligibility for angioplasty or bypass procedures
3. Male or female, greater than 18 years old
4. Life expectancy greater than one year
5. Written informed consent

### **Participant type(s)**

Patient

**Age group**

Adult

**Lower age limit**

18 Years

**Sex**

Both

**Target number of participants**

25

**Total final enrolment**

16

**Key exclusion criteria**

1. Candidates for angioplasty or bypass procedures
2. Inability to undergo bone marrow harvesting
3. Life threatening co-morbidity
4. International Normalised Ratio (INR) greater than 2
5. History of malignant disease in five years prior to treatment
6. Inability to undergo arterial catheterisation
7. Inability to follow the protocol and to comply with the follow up requirements
8. Any other conditions that, in the opinion of the investigators, could interfere with the therapy or could pose a significant threat to the subject if the investigational therapy was to be initiated

**Date of first enrolment**

01/01/2004

**Date of final enrolment**

01/01/2006

**Locations****Countries of recruitment**

Netherlands

**Study participating centre**

**Leiden University Medical Centre**

Leiden

Netherlands

2300 RC

**Sponsor information**

**Organisation**

Leiden University Medical Centre (LUMC) (The Netherlands)

**Sponsor details**

Department of Vascular Surgery  
P.O. Box 9600  
Leiden  
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2300 RC

**Sponsor type**

Hospital/treatment centre

**Website**

[http://www.lumc.nl/english/start\\_english.html](http://www.lumc.nl/english/start_english.html)

**ROR**

<https://ror.org/027bh9e22>

**Funder(s)****Funder type**

Hospital/treatment centre

**Funder Name**

Leiden University Medical Centre (LUMC) (The Netherlands)

**Results and Publications****Publication and dissemination plan**

Not provided at time of registration

**Intention to publish date****Individual participant data (IPD) sharing plan****IPD sharing plan summary**

Not provided at time of registration

**Study outputs**

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Results article</a>	results	01/01/2010	31/12/2020	Yes	No