

# Randomised controlled trial to compare the effects of granulocyte-colony stimulating factor (G-CSF) and autologous bone marrow progenitor cells infusion on quality of life and left ventricular function in patients with heart failure secondary to ischaemic heart disease

<b>Submission date</b> 28/07/2005	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered
		<input type="checkbox"/> Protocol
<b>Registration date</b> 23/11/2005	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan
		<input type="checkbox"/> Results
<b>Last Edited</b> 04/03/2013	<b>Condition category</b> Circulatory System	<input type="checkbox"/> Individual participant data
		<input type="checkbox"/> Record updated in last year

**Plain English summary of protocol**  
Not provided at time of registration

## Contact information

**Type(s)**  
Scientific

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## Additional identifiers

**Protocol serial number**  
1.2

# Study information

## Scientific Title

## Acronym

REGENERATE-IHD

## Study objectives

1. Administration of G-CSF to patients with heart failure secondary to ischaemic heart disease will lead to an increase in circulating progenitor cells as measured by peripheral CD34+ positive cell counts
2. Cardiac function and symptoms will improve in patients in whom the peripheral CD34+ counts increase in response to G-CSF administration
3. Direct coronary injection of autologous bone marrow derived stem cells will confer an additional improvement in cardiac function and symptoms above that derived from G-CSF infusion alone
4. Direct intramyocardial injection of autologous bone marrow derived stem cells will lead to an improvement in cardiac function and symptoms above that derived from G-CSF infusion alone

## Ethics approval required

Old ethics approval format

## Ethics approval(s)

Not provided at time of registration

## Study design

Randomised controlled trial

## Primary study design

Interventional

## Study type(s)

Treatment

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

Heart failure secondary to ischaemic heart disease.

## Interventions

Daily subcutaneous injections of G-CSF at 10 µg/kg or placebo OR daily subcutaneous injections of G-CSF at 10 µg/kg followed by intracoronary injection of stem cells or placebo OR daily subcutaneous injections of G-CSF at 10 µg/kg followed by intramyocardial injection of stem cells or placebo

## Intervention Type

Other

## Phase

Not Specified

## **Primary outcome(s)**

At 6 months:

1. The change in global left ventricular ejection fraction (LVEF) at 6 months relative to baseline measured by quantitative left ventriculography
2. The change in regional wall motion score index at 6 months relative to baseline measured by tissue doppler imaging
3. The change in quality of life scores compared to baseline

## **Key secondary outcome(s)**

At 6 months:

1. Death as result of the underlying cardiac condition
2. The occurrence of major arrhythmias defined as ventricular tachycardia or survived sudden death
3. Presence of clinically evident heart failure
4. The change in global left ventricular ejection fraction at 6 months relative to baseline measured by resting echocardiography
4. The change in global and regional wall motion score index measured by resting echocardiography
5. Serum levels of amino-terminal pro-brain natriuretic peptide (NT-BNP)
6. Change in myocardial function as measured by magnetic resonance imaging (MRI) scanning (first 40 suitable patients in each group)
7. Change in voltage and shortening maps as assessed by NOGA (intramyocardial group only)

At 12 months:

1. The occurrence of a major adverse cardiac event (MACE)
2. The change in left ventricular ejection fraction relative to baseline measured by resting echocardiography using Simpson's rule
3. The change in global and regional wall motion score index measured by resting echocardiography and tissue doppler imaging
4. Change in quality of life scores
5. Serum levels of amino-terminal pro-brain natriuretic peptide (NT-BNP)
5. Change in myocardial function as measured by MRI scanning (first 40 suitable patients in each group)

## **Completion date**

18/05/2010

## **Eligibility**

### **Key inclusion criteria**

Patients with a diagnosis of heart failure secondary to ischaemic heart disease attending a heart failure clinic for optimisation of their heart failure medication or who are on optimal heart failure treatment under supervision from their physician.

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

Patient

### **Healthy volunteers allowed**

No

### **Age group**

Adult

**Sex**

All

**Key exclusion criteria**

1. Recent acute coronary syndrome as judged by a rise of troponin above normal values in the last 6 months
2. The presence of cardiogenic shock
3. The presence of acute left and/or right-sided pump failure as judged by the presence of pulmonary oedema and/or new peripheral oedema
4. Known severe pre-existent left ventricular dysfunction (ejection fraction <10% prior to randomisation)
5. Congenital cardiac disease
6. Cardiomyopathy secondary to a reversible cause e.g. thyroid disease, alcohol abuse, hypophosphataemia, hypocalcaemia, cocaine abuse, selenium toxicity and chronic uncontrolled tachycardia
7. Cardiomyopathy in association with a neuromuscular disorder e.g. Duchenne's progressive muscular dystrophy
8. Contra-indication for bone marrow aspiration
9. Known active infection
10. Known infection with human immunodeficiency virus (HIV), hepatitis B virus (HBV), or hepatitis C virus (HCV)
11. Lifestyle with high risk for infection with HIV, HBV, or HCV
12. Chronic inflammatory disease
13. Serious known concomitant disease with a life expectancy of less than one year
14. Follow-up impossible (no fixed abode etc.)
15. Previous participation in this study
16. Female subjects of childbearing potential
17. Paced rhythm >80% of the time
18. Serum creatinine >200 mg/dl

**Date of first enrolment**

18/05/2005

**Date of final enrolment**

18/05/2010

**Locations**

**Countries of recruitment**

United Kingdom

England

**Study participating centre**

**The London Chest Hospital**  
London  
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## Sponsor information

### Organisation

Barts and the London NHS Trust (UK)

### ROR

<https://ror.org/00b31g692>

## Funder(s)

### Funder type

Charity

### Funder Name

The Heart Cells Foundation

## Results and Publications

### 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="#">Interim results article</a>	interim results	01/01/2009		Yes	No