

# RElated haplo-DonoR haematopoietic stEm cell transplantation for adults with Severe Sickle cell disease

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<b>Registration date</b> 25/10/2022	<b>Overall study status</b> Ongoing	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
<b>Last Edited</b> 04/10/2024	<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

### Background and study aims

Sickle Cell Disease (SCD) is a serious inherited condition, in which red blood cells become an abnormal sickle shape under stressful conditions causing blood vessels to be easily blocked. This leads to health problems such as sickle cell crises (painful episodes around the body), a higher risk of stroke, heart issues and many other complications.

People with SCD need treatment throughout their lives. Currently available treatments for SCD include regular blood transfusions (when blood from a donor is given to replace a patient's red blood cells) and a medicine called hydroxycarbamide. Sometimes painkillers are given to manage painful episodes. These treatments are not sufficient because some people may not respond well or fully. Stem Cell Transplant (SCT) is a procedure that may cure SCD. This process destroys damaged blood cells and replaces them with stem cells from the blood or bone marrow of a genetically matched family donor.

Unfortunately, many patients do not have a fully matched donor available. Research has shown that SCT from haploidentical (half-matched) family donors has the same potential to cure severe SCD, but this is only approved for use in children due to concerns about side effects in adults. New transplant protocols mean it is now possible for haploidentical SCT to be done safely in adults. This treatment is expensive, so it is important to show that this is good value for money for the NHS.

The aim is to carry out a clinical trial to find out whether haploidentical SCT is safe, effective, and cost-worthy in treating adults with severe SCD. We will invite participants; assigned by chance to receive either haploidentical SCT or standard of care. We will monitor participants for 2 years to see if haploidentical SCT cures people of SCD and is a good value for the NHS.

### Who can participate?

Adults aged 18 years old and over with severe SCD with a first-degree relative that is eligible as a haploidentical (half-matched) donor

What does the study involve?

Participants will be assigned to one of two groups at random (decided by chance by a computer, like at the flip of a coin). The first is the standard of care group. Participants in this group will receive standard medical care including any currently available treatment for SCD. The second is the haploidentical stem cell transplant group. Participants in this group will receive a stem cell transplant from a haplo-matched family donor. Participants will be in the study for around 2 years.

At a minimum, this will involve initial screening and baseline visits then, depending on the arm randomised to, preparation and admission for stem cell transplant with regular visits until 3 months post-transplant. Participants will then have set study visits after 6 months, 12 months and 24 months. These visits will be scheduled at the same time as standard hospital visits as much as possible. We will also ask for information about participants' general well-being every 3 months, either in person or over the phone. In the first 3 months of the study, the frequency at which participants will need to come for hospital visits will depend on the treatment arm they are in.

We will collect the following: demographic information (age, sex ethnicity etc.), medical history, information from a physical examination (health check that participant is fit for transplant procedure), blood, urine, data from lung function test, data from echocardiogram (heart) scan, MRI and MRA scan, FerriScan & FibroScan (liver scans) and questionnaire on quality of life.

What are the possible benefits and risks of participating?

We cannot guarantee or promise that the participant will receive any benefits from this research. However, the procedure is potentially curative of sickle cell disease. The tests provided may also help participants learn about their general health. This study may help doctors and scientists to better understand the treatments for sickle cell disease. Therefore, participation may have an indirect benefit to science and society in the future to help people suffering from sickle cell disease.

There are important potential side effects from a bone marrow transplant and this is why only those with severe SCD are currently being considered for this treatment. The main risks of the trial for participants randomised to the transplant arm relate to the medical risks of the transplant procedure. These include side effects of chemotherapy drugs, infection related to immune suppression required for the transplant procedure and graft versus host disease. Side effects of chemotherapy are minimised by supportive care measures such as anti-emetics. Risks of infection are minimised by the use of infection prevention such as anti-bacterial, anti-fungal and antiviral preventative medicines. Patients will be monitored regularly as part of routine transplant care for infection and therefore the development of any infection can be treated promptly. Graft versus hosts disease is minimised by the use of immune suppression medicines to continue for one year after transplant. Similarly, regular monitoring of patients allows for early detection and treatment of graft versus host disease while symptoms are minimal.

Participants who do not receive a transplant will continue with their regular sickle cell care. The main issue here is that while they would not be exposed to the adverse effects of a transplant, they will not receive a potentially curative transplant and continue with sickle cell disease. This may be distressing for some participants. We aim to minimise this via good information prior to and regular review with the sickle teams within the Haemoglobinopathy coordinating centres. Participants will be routinely offered psychological support. If the trial proves successful, then these participants would be offered a transplant in the future.

Where is the study run from?

The study is lead by researchers at King's College Hospitals NHS Foundation Trust, Guy's and St Thomas' Hospitals NHS Foundation Trust and King's College London. The trial is being coordinated by the King's Clinical Trials Unit (KCTU) at King's College London.

When is the study starting and how long is it expected to run for?

March 2022 to June 2027

Who is funding the study?

National Institute for Health and Care Research (NIHR) Health Technology Assessment (HTA) programme (UK)

Who is the main contact?

Mr Daryl Hagan (REDRESS Trial Manager) (UK)  
redress@kcl.ac.uk

## Contact information

### Type(s)

Public

### Contact name

Mr Daryl Hagan

### Contact details

REDRESS Trial Manager  
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SE5 8AF  
+44 (0)20 7848 0532  
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### Type(s)

Principal investigator

### Contact name

Dr Victoria Potter

### ORCID ID

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### Contact details

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United Kingdom  
SE5 9RS  
+44 (0)203 2993730  
victoriapotter@nhs.net

## Additional identifiers

**ClinicalTrials.gov (NCT)**  
NCT05392894

**Integrated Research Application System (IRAS)**  
312212

**Central Portfolio Management System (CPMS)**  
54147

## Study information

### Scientific Title

A multi-centre open randomised controlled trial to assess the effect of related haplo-donor haematopoietic stem cell transplantation versus standard of care (no transplant) on treatment failure at 24 month in adults with severe sickle cell disease (REDRESS V1.0)

### Acronym

REDRESS V1.0

### Study objectives

Haematopoietic stem cell transplantation from haploidentical donors is a clinically and cost-effective treatment for adults with severe sickle cell disease as measured by treatment failure or mortality (clinical effectiveness) and healthcare resource use (cost-effectiveness) after 24 months.

### Ethics approval required

Old ethics approval format

### Ethics approval(s)

Approved pending at time of registration, London – Chelsea Research Ethics Committee (REC) (c/o. Gemma Oakes, Approvals Specialist, REC London Centre, 2 Redman Place, London, E20 1JQ, UK; +44 (0)207 104 8029; chelsea.rec@hra.nhs.uk), ref: 22/LO/0702

### Study design

Multicentre open-label randomized controlled study

### Primary study design

Interventional

### Study type(s)

Treatment

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

Sickle cell disease

## Interventions

This is a multi-centre, open-label, randomised controlled trial to assess the effect of haploidentical stem cell transplant compared to standard of care (no transplant) on treatment failure in adults with severe sickle cell disease over 2 years. 120 participants will be assigned at random using the King's Clinical Trials Unit randomisation system online tool to receive a transplant or standard of care in a 1:1 ratio. We will collect data from participants at 6, 12, 18 and 24 months after randomisation on their response to treatment. We will also collect data on quality of life and healthcare service use every 3 months from the point of randomisation.

## Intervention Type

Other

## Primary outcome(s)

Treatment failure or mortality, defined as occurrence of vaso-occlusive crisis, or transfusion from 6 months post-randomisation, measured by accessing medical records by 24 months post-randomisation

## Key secondary outcome(s)

Current secondary outcome measures as of 04/10/2024:

1. Health-related quality of life (QoL) measured using the EQ-5D-5L questionnaire at 3, 6, 9, 12, 15, 18, 21 and 24 months
2. Healthcare utilisation: Frequency of hospital admissions and opiate use in haploidentical SCT and standard of care groups measured using participant reporting in a questionnaire at 3, 6, 9, 12, 15, 18, 21 and 24 months
3. Employment status of participants at 24 months
4. All-cause mortality from randomisation, defined as death from any cause, measured by accessing medical records within 24 months
5. Sickle Cell Disease-related mortality (excluding transplant-related complications): defined as death due to any sickle cell disease-related cause, measured by accessing medical records within 24 months
6. Sickle-type haemoglobin percentage (HbS%) as measured using haemoglobin electrophoresis at 6, 12 and 24 months
7. SCD-related complications (transfusion requirement, painful VOC, stroke, pulmonary hypertension) measured by accessing medical records within 24 months
8. Haemoglobin levels, reticulocyte count, LDH, and bilirubin measured by accessing medical records for standard lab blood tests at 6, 12, and 24 months
9. Pulmonary function measured using FEV1 %, FEV1/FVC ratio, and transfer capacity of the lung, for the uptake of carbon monoxide (TLCO) % at 12 months and 24 months
10. Renal function measured using urea, creatinine and eGFR levels measured by accessing medical records for standard urine tests at 6, 12 and 24 months
11. Iron overload measured using serum ferritin level with FerriScan (R2-MRI-based method) at 24 months
12. Cardiac function and pulmonary hypertension measured using echocardiogram/tricuspid regurgitation velocity (TRV) at 12 and 24 months
13. Cerebrovascular progression measured using a clinical stroke or evidence of progression on MRI/MRA at 24 months
14. Evidence of hepatic progression measured using a liver function (ALT, AST, ALP, GGT, Bilirubin levels in blood samples) and FibroScan liver elastography at 24 months

15. Percentage of participants requiring opioid use for pain related to the vaso-occlusive sickle-related crisis measured by accessing medical records at 12 months and 24 months

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### **Completion date**

30/06/2027

## **Eligibility**

### **Key inclusion criteria**

Current exclusion criteria as of 04/10/2024:

1. Adult patients aged  $\geq 18$  years
2. Confirmed haploidentical donor
3. Severe SCD phenotype who are at high risk for morbidity and mortality. Severe SCD is defined by at least one of the following:
  - 3.1. Clinically significant neurologic event (stroke) or deficit lasting  $> 24$  hours

- 3.2. History of  $\geq 2$  acute chest syndromes in a 2-year period preceding enrolment despite optimum treatment, e.g. with hydroxycarbamide (HC)
  - 3.3. History of  $\geq 3$  severe pain crises per year in a 2-year period preceding enrolment despite the institution of supportive care measures (e.g. optimum treatment with HC)
  - 3.4. Administration of regular transfusion therapy ( $\geq 8$  packed red blood transfusions per year for 1 year to prevent vaso-occlusive complications).
  - 3.5. Patients assessed as requiring transfusion but with red cell alloantibodies/very rare blood type, rendering it difficult to continue/commence chronic transfusion
  - 3.6. Patients requiring HC/transfusion for treatment of SCD complications who cannot tolerate either therapy due to significant adverse reactions
  - 3.7. Established end organ damage relating to SCD, including but not limited to progressive sickle vasculopathy and hepatopathy.
  4. Patients must be fit to proceed to Haploidentical SCT as defined below:
    - 4.1. Karnofsky score  $\geq 60$
    - 4.2. Cardiac function: LVEF  $\geq 45\%$  or shortening fraction  $\geq 25\%$
    - 4.3. Lung Function: FEV1, FVC and TLCO  $\geq 50\%$
    - 4.4. Renal function: EDTA GFR  $\geq 40$  ml/m<sup>2</sup>/1.73m<sup>2</sup>
    - 4.5. Hepatic function: ALT  $< 3 \times$  ULN and bilirubin  $< 2 \times$  the upper limit of normal, those with hyperbilirubinemia due to sickle-related haemolysis will not be excluded. No radiological evidence of cirrhosis.
  5. Written informed consent
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  - 3.4. Administration of regular transfusion therapy ( $\geq 8$  packed red blood transfusions per year for 1 year to prevent vaso-occlusive complications).
  - 3.5. Patients assessed as requiring transfusion but with red cell alloantibodies/very rare blood type, rendering it difficult to continue/commence chronic transfusion
  - 3.6. Patients requiring HC/transfusion for treatment of SCD complications who cannot tolerate either therapy due to significant adverse reactions
  - 3.7. Established end organ damage relating to SCD, including but not limited to progressive sickle vasculopathy and hepatopathy. End-organ sufficient for entry to this trial shall be ratified at the UK NHP.
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  - 4.2. Cardiac function: LVEF  $\geq 45\%$  or shortening fraction  $\geq 25\%$
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5. Written informed consent

**Participant type(s)**

Patient

**Healthy volunteers allowed**

No

**Age group**

Adult

**Lower age limit**

18 years

**Sex**

All

**Key exclusion criteria**

1. Fully matched sibling donor.
2. Previous bone marrow transplant.
3. Pregnancy or breast feeding.
4. Participants who are able to conceive a child and are unprepared to use effective contraception.
5. Clinically significant donor-specific HLA antibodies.
6. HIV infection or active Hepatitis B or C.
7. Uncontrolled infection including bacterial, fungal and viral.
8. Participation in another interventional trial in the last three months.
9. Pre-existing condition deemed to significantly increase the risk of Haploidentical SCT by the local Principal Investigator.

**Date of first enrolment**

23/02/2023

**Date of final enrolment**

30/06/2025

**Locations**

**Countries of recruitment**

United Kingdom

**Study participating centre**

**King's College Hospital**

Denmark Hill

London

United Kingdom

SE5 9RS

**Study participating centre**  
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250 Euston Road  
London  
United Kingdom  
NW1 2PG

**Study participating centre**  
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W12 0HS

**Study participating centre**  
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Oxford Road  
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M13 9WL

**Study participating centre**  
**St George's Hospital**  
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Tooting  
London  
United Kingdom  
SW17 0QT

**Study participating centre**  
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80 Newark Street  
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E1 2ES

**Study participating centre**  
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Sheffield  
United Kingdom  
S5 7AU

**Study participating centre**  
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London  
United Kingdom  
SE1 9RT

**Study participating centre**  
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Lyndon  
West Bromwich  
United Kingdom  
B71 4HJ

**Study participating centre**  
**Queen Elizabeth Hospital**  
Mindelsohn Way  
Edgbaston  
Birmingham  
United Kingdom  
B15 2GW

**Study participating centre**  
**Bristol Haematology and Oncology Centre**  
22 Horfield Rd  
Bristol  
United Kingdom  
BS2 8ED

## **Sponsor information**

**Organisation**

King's College Hospital NHS Foundation Trust

**ROR**

<https://ror.org/01n0k5m85>

## Funder(s)

**Funder type**

Government

**Funder Name**

National Institute for Health and Care Research

**Alternative Name(s)**

National Institute for Health Research, NIHR Research, NIHRresearch, NIHR - National Institute for Health Research, NIHR (The National Institute for Health and Care Research), NIHR

**Funding Body Type**

Government organisation

**Funding Body Subtype**

National government

**Location**

United Kingdom

## Results and Publications

**Individual participant data (IPD) sharing plan**

The datasets generated and/or analysed during the current study will be published as a supplement to the results publication

**IPD sharing plan summary**

Published as a supplement to the results publication

**Study outputs**

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">HRA research summary</a>			28/06/2023	No	No
<a href="#">Study website</a>	Study website	11/11/2025	11/11/2025	No	Yes