ISRCTN96735894 https://doi.org/10.1186/ISRCTN96735894

The HOPE machine for preserving kidney transplants trial

Submission date
24/01/2021

Recruitment status
No longer recruiting

Registration date
27/01/2021

Overall study status
Completed

Last Edited
08/02/2022

Condition category
Urological and Genital Diseases

[X] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[_] Record updated in last year

Plain English summary of protocol

Background and study aims
A kidney transplant is the transfer of a healthy kidney from one person into the body of a person who has little or no kidney function. The main role of the kidneys is to filter waste products from the blood and convert them to wee. If the kidneys lose this ability, waste products can build up, which is potentially life-threatening.
Kidney transplantation remains the therapy of choice for patients with end stage kidney disease. However, the number of patients waiting for a kidneys continues to increase and far exceeds the availability of donors which has pushed transplant centres to consider less ideal organ donors. Donation after circulatory death (DCD) i.e. cardiac arrest, currently represents 45% of deceased donors in the UK and 20% in Switzerland.
Due to the delay between cardiac arrest and start of cold flush prior to procurement; DCD kidneys are more prone to develop delayed graft function (DGF) which is defined as the need for dialysis within the first 7 days after transplantation with rates as high as 55-60%.
To overcome these disadvantages of DCD organs, new concepts of organ preservation such as machine perfusion have been introduced. Machine perfusion has demonstrated superiority over conventional cold storage being associated with lower DGF and improved 1 and 3 year transplant kidney survival rate. The addition of Oxygen to cold machine perfusion is known to improve outcomes in liver transplantation and pre-clinical data suggests similar effects on transplanted kidneys.

Who can participate?
Adults over 18 years, who have received a DCD kidney transplant.

What does the study involve?
In this trial we aim to put different methods of DCD organ preservation in a comparison including oxygenated cold machine perfusion, simple cold machine perfusion and static cold storage to investigate any additional benefit of combining oxygenation and cold machine perfusion. The participants will be consented and will require follow up over a period of 12 months post operatively including blood tests

What are the possible benefits and risks of participating?
There are no risks from participating as there is no deviation from the routine care and follow up

protocol and the results will help shape the future of organ preservation as well as provide an opportunity for the participants to gain access to this new technology.

Where is the study run from?
1. St. James's University Hospital, Leeds (UK)
2. University Hospital, Zurich (Switzerland)

When is the study starting and how long is it expected to run for?
October 2019 to February 2025

Who is funding the study?
1. Organ Recovery Systems (USA)
2. Kidney Research UK
3. Leeds Hospital Charities (UK)

Who is the main contact?
Dr Philipp Kron (scientific), philipp.kron@usz.ch
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Contact information

Type(s)
Scientific

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Additional identifiers

Integrated Research Application System (IRAS)
273420

Central Portfolio Management System (CPMS)
47480

Study information

Scientific Title
Hypothermic Oxygenated PErfusion for DCD KIDNEY Grafts: A Multi-centre Trial

Acronym
HOPE for KIDNEYS

Study objectives
Oxygenated Cold Machine Perfusion techniques improve outcomes of kidney transplants from DCD grafts by reducing the rates of delayed graft function i.e. promoting immediate functioning of the kidneys after transplant and reducing the need of dialysis in the short term after transplant.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approval pending, East Midlands - Leicester Central Research Ethics Committee (The Old Chapel, Royal Standard Place, Nottingham, NG1 6FS, UK; +44 (0)207 104 8388; leicestercentral.rec@hra.nhs.uk), ref: 20/EM/0276

Primary study design
Interventional

Study design
Multicentre interventional non-randomized study with matched historical control cohorts

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Delayed graft function (DGF) in kidney transplant from donation after cardiac death (DCD)

Interventions
This will be a 3 arm study and follow up will be over 12 months for all participants and historical cohorts:

-HOPE arm: Kidneys will be preserved using Hypothermic Machine Perfusion + Oxygen treatment for which patients will be recruited and data will be collected prospectively
-HMP arm: Kidneys will have been preserved using Hypothermic Machine Perfusion without Oxygen. This is a historical treatment group
-SCS arm: Kidneys will have been preserved using Static Cold Storage (Ice Box). This is a historical control group as this is the most common current practice

Intervention Type
Mixed

Primary outcome(s)
Rate of Delayed Graft Function will be assessed by the monitoring the requirement of Renal Replacement Therapy (dialysis) within 1 week of transplant

Key secondary outcome(s)
Data for the HOPE arm will be collected in specifically designed Case report Files (CRFs) while data for the historical groups will be collected from Hospital Databases and Electronic Records
1. Duration in days and Number of Dialysis Sessions will be calculated between Transplant and achievement of graft Function
2. Creatinine reduction ratio between Day 0 and Day 7 of less than 70 percent
3. Length of hospital stay in days
4. Rates of biopsy proven rejections within 12 months of transplant
5. Incidence of complications according to the Clavien-Dindo Classification within 90 days from Transplant
6. Serum Creatinine Levels, eGFR and Creatinine Clearance at 30 days, 90 days and 12 months from Transplant
7. Death Censored Graft Survival and Patient Death at 12 months from Transplant
8. Analysis of Perfusion Fluid for:
8.1. Markers of Kidney injury using NGAL and creatinine in plasma samples
8.2. Oxidative damage of DNA will be analyzed in perfusate and plasma by 8-hydroxy-2-deoxy Guanosine (8-OHdG)
8.3. Nuclear injury will be measured by release of high mobility group box protein-1
8.4. Quantitative real-time polymerase chain reaction (PCR) will be performed if possible (TaqMan gene expression assays) for Toll-like receptor (TLR)-4, tumor necrosis factor-alpha (TNF-[alpha]), high mobility group box-1 protein (HMGB-1), von Willebrand factor (vWF), endothelin 1 (Edn-1), Hepatocyte growth factor

Completion date
21/02/2025

Eligibility

Key inclusion criteria
1. Age ≥18 years
2. DCD grafts
3. Primary kidney transplantation
4. Single kidney transplantation
5. Signed informed Consent

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 Years

Sex
All

Key exclusion criteria
1. DBD graft
2. Dual kidney transplantation
3. Kidney re-transplantation
4. Multi-organ transplantation
5. Perfusion of the organ not possible due to technical problems

Date of first enrolment
01/03/2022

Date of final enrolment
28/02/2024

Locations

Countries of recruitment
United Kingdom

England

Switzerland

Study participating centre
St. James's University Hospital
Leeds Teaching Hospitals NHS Trust
Beckett Street
Leeds
United Kingdom
LS9 7TF

Study participating centre
University Hospital Zurich
Ramistrasse 100
Zurich

Switzerland
8091

Sponsor information

Organisation
Leeds Teaching Hospital

Funder(s)

Funder type
Industry

Funder Name
Organ recovery Systems

Funder Name
Kidney Research UK (TBC)

Alternative Name(s)

Funding Body Type
Private sector organisation

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

Location
United Kingdom

Funder Name
Leeds Hospital Charities

Results and Publications

Individual participant data (IPD) sharing plan
All data generated or analysed during this study will be included in the subsequent results publication.

IPD sharing plan summary

Other

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
HRA research summary			28/06/2023	No	No
Protocol file	version v0.7	02/12/2020	27/01/2021	No	No