

# Liver immunosuppression free trial ("LIFT"), version 1

<b>Submission date</b> 08/07/2015	<b>Recruitment status</b> No longer recruiting	<input checked="" type="checkbox"/> Prospectively registered <input checked="" type="checkbox"/> Protocol
<b>Registration date</b> 08/07/2015	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input checked="" type="checkbox"/> Results
<b>Last Edited</b> 11/08/2025	<b>Condition category</b> Digestive System	<input type="checkbox"/> Individual participant data

## Plain English summary of protocol

### Background and study aims

Following liver transplantation patients need to be given powerful drugs (known as immunosuppressive medication), to prevent organ rejection. These drugs are usually given for the rest of the patients life, which can result in important side effects. This the main reason why in the long run transplanted patients die more frequently than non-transplanted healthy individuals. Not all liver transplant patients, however, require lifelong immunosuppressive medication. Some of them develop a phenomenon known as operational tolerance and can discontinue this medication without rejecting the transplanted liver. In tolerant patients the withdrawal of anti-rejection medication could increase their survival and improve their quality of life. However, until now there have been no tests to identify tolerant patients before immunosuppression medication is stopped. Our research group recently identified a genetic test of tolerance in liver biopsies that can predict the outcome of immunosuppressive drug withdrawal. This test could radically change the long-term care of liver transplant patients.

### Who can participate?

Liver transplant patients that received their new liver more than 3 years ago or more than six years ago if aged 18-49 or at least 50 years old respectively.

### What does the study involve?

Participants first have a liver biopsy for the genetic test of tolerance. They are then randomly allocated to one of two groups. Patients randomized to group 1 are offered drug withdrawal regardless of the result of the genetic test. Patients randomized to group 2 undergo drug withdrawal if the genetic test is positive, and continue the immunosuppressive medication if the test is negative. By comparing the outcome of the 2 groups we will determine how much the test can benefit transplanted patients.

### What are the possible benefits and risks of participating?

Chronic immuno-suppression (IS) is associated with a variety of life threatening side effects following liver transplantation, including infection, malignancy, hypertension, diabetes, nephrotoxicity and cardiovascular diseases. Calcineurin inhibitor induced nephrotoxicity, in particular, is responsible for a significant rate of chronic renal failure, need for renal replacement therapy and increased mortality. Elimination of calcineurin inhibitors may preserve

waning renal function and avoid the associated morbidity and mortality risk. Identification of a reproducible and reliable tolerance signature will allow tailoring of IS to individual patient characteristics. It may also identify critical pathways responsible for the tolerant state that can be therapeutically exploited to induce tolerance in those who do not achieve it spontaneously. While there is abundant information in the literature suggesting that in carefully selected liver recipients IS withdrawal is feasible and safe, the procedure is not without risk, as it can induce immunologically-mediated allograft rejection. In this regard, the main risks of IS withdrawal are acute and/or chronic rejection, silent development of allograft fibrosis, potential complications associated with the need to increase IS to treat rejection episodes; and graft loss or patient mortality.

Where is the study run from?  
King's College London (UK)

When is the study starting and how long is it expected to run for?  
August 2015 to October 2017

Who is funding the study?  
National Institute for Health Research (UK)

Who is the main contact?  
Ms Jurate Wall

## Contact information

Type(s)  
Scientific

Contact name  
Ms Jurate Wall

Contact details  
King's College London  
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SE5 9RS

## Additional identifiers

EudraCT/CTIS number  
2014-004557-14

IRAS number

ClinicalTrials.gov number  
NCT02498977

Secondary identifying numbers

## Study information

### Scientific Title

Prospective randomised marker-based trial to assess the clinical utility and safety of biomarker-guided immunosuppression withdrawal in liver transplantation ("LIFT" Trial).

### Acronym

LIFT

### Study objectives

The objective of this study is to determine if a genetic test of tolerance in liver biopsies can be employed to optimize immunosuppression withdrawal, so that withdrawal is only performed in patients who have developed tolerance.

### Ethics approval required

Old ethics approval format

### Ethics approval(s)

NRES Committee London- South East, 09/02/2015, ref: 14/LO/2172

### Study design

Randomised; Interventional; Design type: Treatment

### Primary study design

Interventional

### Secondary study design

Randomised controlled trial

### Study setting(s)

Other

### Study type(s)

Treatment

### Participant information sheet

Not available in web format, please use contact details to request a participant information sheet

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

Topic: Hepatology; Subtopic: Hepatology; Disease: All Hepatology

### Interventions

Adult liver transplant recipients will undergo gradual IS withdrawal following randomisation 1:1 to either:

1. Non-Biomarker-based IS weaning (Arm A)

2. Biomarker-based IS weaning (Arm B). Participants allocated to Arm B will be offered IS withdrawal only if they are classified as tolerant on the basis of a biomarker test (Arm B+), while they will remain on maintenance IS if classified as non-tolerant (Arm B-)

## **Intervention Type**

Other

## **Primary outcome measure**

To determine if the use of a liver tissue transcriptional test of tolerance to stratify liver recipients prior to IS withdrawal accurately identifies operationally tolerant recipients and reduces the incidence of rejection, as compared with a control group in whom IS withdrawal is performed without stratification.

## **Secondary outcome measures**

1. To establish the safety of biomarker-guided IS withdrawal
2. To determine the health-economic impact of withdrawing IS in liver transplant recipients and to assess how much this cost is influenced by the use of a diagnostic test of operational tolerance
3. To assess the effect of IS withdrawal on the quality of life of liver transplant recipients
4. To determine the extent to which IS withdrawal improve drug-related co-morbidities
5. To investigate if liver transplant recipients under IS become operationally tolerant over time
6. To determine if the presence of donor-specific anti-HLA antibodies influence the success of IS withdrawal, and whether IS withdrawal promotes the development of anti-HLA antibodies in liver transplant recipients
7. To explore the association between operational liver transplant tolerance, iron metabolism, immunosenescence, and specific gut microbiome profiles

## **Overall study start date**

01/08/2015

## **Completion date**

31/03/2021

# **Eligibility**

## **Key inclusion criteria**

Current participant inclusion criteria as of 29/01/2019:

1. At the time of screening: more than 3 years post-transplant if participants are  $\geq 50$  years old, OR  $\geq 6$  years post-transplant if participant age is  $\leq 50$  years old.
2. Recipient of either deceased or living donor liver transplant.
3. Recipient of single organ transplant only
4. Liver function tests: direct bilirubin  $\leq 17.1$   $\mu\text{mol/L}$  and ALT  $\leq 60$  IU/L at the screening visit.
5. On calcineurin inhibitor (CNI) IS with or without one of the following: Low dose mycophenolic acid ( $\leq 1080$  mg daily), mycophenolate mofetil (MMF  $\leq 1500$  mg daily), azathioprine ( $\leq 150$  mg daily), sirolimus/everolimus; or on monotherapy with sirolimus/everolimus or mycophenolate /mycophenolic acid monotherapy (effective contraception must be used before beginning mycophenolate therapy, during therapy, and for six weeks following discontinuation of therapy, see Appendix 6),
6. Ability to sign informed consent.

Previous participant inclusion criteria:

1. At the time of screening: more than 3 years post-transplant if participants are  $\geq 50$  years old, OR  $\geq 6$  years post-transplant if participant age is 18-49 years old.
2. Recipient of either deceased or living donor liver transplant
3. Recipient of single organ transplant only
4. Liver function tests: direct bilirubin  $\leq 17.1$   $\mu\text{mol/L}$  and ALT  $\leq 60$  IU/L at the screening visit.
5. On calcineurin inhibitor (CNI) based maintenance IS and no more than one of the following: Low dose mycophenolic acid ( $= 1080$  mg daily), mycophenolate mofetil (MMF  $= 1500$  mg daily), or azathioprine ( $= 150$  mg daily); or on mycophenolate/mycophenolic monotherapy (effective contraception must be used before beginning mycophenolate therapy, during therapy, and for six weeks following discontinuation of therapy)
6. Ability to sign informed consent

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

Patient

### **Age group**

Adult

### **Lower age limit**

18 Years

### **Sex**

Both

### **Target number of participants**

Planned Sample Size: 148; UK Sample Size: 98

### **Key exclusion criteria**

Current participant exclusion criteria as of 29/01/2019:

1. Serum positivity for HCV-RNA
2. Serum positivity for HIV-1 infection, HBV surface antigen or HBV-DNA
3. Immune-mediated liver disease in which IS discontinuation is inadvisable (autoimmune hepatitis, primary sclerosing cholangitis, primary biliary cirrhosis).
4. Acute or chronic rejection within the 52 weeks prior to screening.
5. GFR  $< 30$  mL/min (to mitigate the risk of worsening renal failure should rejection occur and high level of CNI be required).
6. The need for chronic anti-coagulation that cannot be safely discontinued to safely perform for a liver biopsy.
7. Baseline (screening) liver biopsy showing any of the following: a) acute rejection according to Banff criteria; b) early or late chronic rejection according to Banff criteria; c) inflammatory activity and/or fibrosis in excess of permissive criteria (Table 1) (25); f) any other findings that might make participation in the trial unsafe. Eligibility will be determined by the central pathologist.
8. Patient age  $< 18$  years old at the time of transplant.
9. Pregnant females and females of childbearing age not using effective contraception (See Appendix 6).
10. Current illicit drug or alcohol abuse.
11. Inability to participate in frequent monitoring of liver function (every 3 weeks) and clinical visits during IS withdrawal.

12. Inability to comply with study directed treatment.
13. Any medical condition that in the opinion of the principal investigator would interfere with safe completion of the trial.
14. Participation in another clinical trial during the month prior to enrolment.

Previous participant exclusion criteria:

1. HCV infection (defined by serum positivity for HCV-RNA)
2. Positive serology for HIV-1, hepatitis B surface antigen, or hepatitis B DNA
3. Immune-mediated liver disease in which IS discontinuation is inadvisable (autoimmune hepatitis, primary sclerosing cholangitis, primary biliary cirrhosis)
4. Acute or chronic rejection within the 52 weeks prior to screening
5. GFR <40 mL/min (to mitigate the risk of worsening renal failure should rejection occur and high level of CNI be required)
6. The need for chronic anti-coagulation that cannot be safely discontinued for a minimum of 1 week to safely perform for a liver biopsy
7. Baseline (screening) liver biopsy showing any of the following:
  - 7.1. Acute rejection according to Banff criteria
  - 7.2. Early or late chronic rejection according to Banff criteria
  - 7.3. Moderate-severe fibrosis (Ishak stage 3 or more)
  - 7.4. Chronic hepatitis (defined as predominantly mononuclear portal inflammation with or without plasma cells) with moderate/marked portal inflammation (Ishak 3 or more) or with mild/moderate interface hepatitis (Ishak 2 or more)
  - 7.5. Perivenular necro-inflammatory activity in a majority of terminal hepatic venules
  - 7.6. Any other findings that might make participation in the trial unsafe. Eligibility will be determined by the central pathologist
8. Pregnant females and females of childbearing age not using effective contraception
9. Current illicit drug or alcohol abuse
10. Inability to participate in frequent monitoring of liver function (every 3 weeks) and clinical visits during IS withdrawal
11. Inability to comply with study directed treatment
12. Any medical condition that in the opinion of the principal investigator would interfere with safe completion of the trial

**Date of first enrolment**

01/08/2015

**Date of final enrolment**

01/10/2017

## **Locations**

**Countries of recruitment**

England

United Kingdom

**Study participating centre**

**King's College Hospital (lead)**

London

United Kingdom  
SE5 9RS

## Sponsor information

### Organisation

King's College London

### Sponsor details

Division of Applied Biomedical Research  
London  
United Kingdom

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### Sponsor type

University/education

### ROR

<https://ror.org/0220mzb33>

## Funder(s)

### Funder type

Government

### Funder Name

National Institute for Health 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

**Publication and dissemination plan**

In order to disseminate the results of the research we will:

- 1. Engage with the communication officers at King's College London, MRC Centre for Transplantation and NIHR BRC at Guy’s and St Thomas Trust to highlight our achievements within their websites and newsletters
  - 2. Submit the results to national and international scientific meetings and to high impact factor publications (NEJM, Lancet or similar)
  - 3. Engage with liver transplant recipients through patient groups that promote the interests of patients receiving liver transplants such as LISTEN (London-based), Royal Victoria Hospital Liver Patients Group (based in Belfast), ALTA (Cambridge), and Birmingham Liver Transplant Support Group.
  - 4. Disseminate the results through the regular meetings of the Comprehensive Local Research Network for liver
  - 5. Participation in the EU BIO-DrIM Consortium will facilitate dissemination at European level.
  - 6. Share our results with the US Immune Tolerance Network, a NIH-supported research consortium focused in promoting the performance of immune tolerance clinical trials in transplantation and autoimmunity
- There are no restrictions on this dissemination.

**Intention to publish date**

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

Not provided at time of registration

**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="#">Protocol file</a>	version 11	27/09/2019	07/10/2022	No	No
<a href="#">HRA research summary</a>			28/06/2023	No	No
<a href="#">Results article</a>		01/04/2025	11/08/2025	Yes	No