

**Events investigated for possible donor-derived transmission of infections, malignancies, and other cases of interest**

**April 2023 - March 2024**



# Preface

This report has been produced by the Patient Safety Team, Organ Donation and Tissue and Transplantation Directorate (OTDT), NHS Blood and Transplant.

All figures quoted in this report are events as reported to NHSBT between 1 April 2023 and 31 March 2024. The purpose of this report is to share information with clinical teams working in organ donation, organ retrieval and transplantation about cases reported and investigated for this period.

### Acknowledgement

The Patient Safety Team in OTDT at NHS Blood and Transplant would like to thank all colleagues in the organ donation, organ retrieval and transplant community responsible for reporting clinical incidents and events to us. We are grateful to all clinical colleagues for providing the information required to investigate each case. Without the in-depth investigations and help from colleagues this report would not be possible. Thanks also to pathology and microbiology colleagues UK wide and all who have provided their expertise during the investigations.

## Contents

|  |    |
|--|----|
| 1.Executive Summary                              | 5  |
| 2. Clinical cases- Infection                     | 6  |
| <u>Bacteria and Fungi</u>                        |    |
| • ODT INC Tuberculosis Infection                 | 7  |
| • ODT INC <i>Candida albicans</i>                | 7  |
| <u>Viruses</u>                                   |    |
| • ODT INC Hepatitis C post Liver Transplantation | 8  |
| • ODT INC HHV-8 infection                        | 9  |
| • ODT INC HHV-8 infection                        |    |
| 3. Malignancy                                    |    |
| • ODT INC Adenocarcinoma                         | 10 |
| • ODT INC Renal Cell Carcinoma                   |    |
| • ODT INC Chromophic Renal Cell Carcinoma        |    |
| 4. Other   |    |
| • ODT INC Haemochromatosis                       | 10 |
| • Cases of interest                              | 11 |
| 5. Living Donation addendum                      | 12 |
| 6. Conclusion                                    | 13 |

## Executive Summary

Organ Donation, Organ Retrieval and Transplantation remains a critical part of the NHS. Despite the immense pressure across the system, 1,510 people donated their organs after death last year. Alongside this there were 938 living donors last year (2023/24). This enabled a lifesaving transplant for 4,651 people. This represents a 6% increase in deceased organ donors and 3% increase in the number of people receiving transplants on the previous year. However, this increase is not enough to meet the needs of those waiting. The number of people on the active transplant waiting list is 7,484 in March 2024. The reality remains that there are simply not enough organs to meet demand.

Transplantation is the treatment of choice for most patients with end stage organ failure. As with any health intervention, solid organ transplantation is associated with risk of an adverse outcome, and this must be balanced against the anticipated benefit of receiving a donor organ and the risk of remaining on the waiting list. These uncertainties can be directly linked to the donor organ, such as transmission of infection, malignancy, metabolic, and immune-mediated diseases, as well as poor or nonfunction of the graft following transplantation. These are unexpected occurrences that cannot be completely avoided but need to be identified, monitored, and managed.

This report is intended to provide a resumé of cases where infection and cancers have been investigated and confirmed as probably originating from the donor. A few selected cases of interest are included.

During the same timeframe, 1 April 2023 to 31 March 2024, 876 incidents were reported to OTDT. When incidents are reported to OTDT, they are classified under seven main categories for investigation purposes and are outlined below:

- Donation (273)
- Organ Retrieval (208)
- Transplantation (148)
- Transplant Support Services (Organ offering and allocation) (85)
- Living Donation (26)
- Quality Assurance (75)
- Deceased Organ Donation Characterisation (Laboratory incidents) (61)

The number in brackets represents the number of reported incidents for that category. It is important to view the number of reported and confirmed donor transmissions in relation to the number of organs transplanted.

The Activity Report for the same period can be found here:

<https://nhsbtdbe.blob.core.windows.net/umbraco-assets-corp/33780/foreword.pdf>

EXTERNAL USE



## **Infection**

The underlying principle remains that the risk of an infection being passed on through transplanted organs and tissues must be kept to an acceptable minimum. What constitutes an acceptable minimum is dependent on the balance of risk and benefit for the potential intended recipient in terms of either receiving that transplant or waiting until the next suitable organ offer. In some super-urgent and urgent situations, a higher risk of infection may be acceptable. The reports below reflect clinical incidents that have been reported, investigated, and confirmed as probable/confirmed donor transmission cases. Any learning is also shared.

## **BACTERIAL AND FUNGAL INFECTIONS**

### **ODT INC- *Mycobacterium tuberculosis* (MTB)**

Approximately 2 months after kidney transplantation a recipient presented unwell with night sweats, lethargy, and a dry cough. Symptoms persisted and an abdominal CT scan reported a perinephric collection around a right iliac fossa transplant and multiple enlarged para-aortic lymph nodes. The collection was aspirated and along with a sputum sample sent to microbiology. Sputum was positive for MTB and the recipient was commenced on anti-tuberculous treatment. The recipient had had investigations due to pulmonary changes in the past and had also travelled to endemic TB areas. They did not fulfil local criteria for IGRA screening. CT chest showed new miliary nodularity within the lungs consistent with diagnosis of miliary TB.

The contra-lateral kidney was used for research.

The liver recipient centre was informed, and the patient was reviewed and followed up, with no evidence of TB infection.

The donor was from an endemic area. It was not possible to establish if the donor had latent TB. It was also not possible to establish if this was a reactivation in the kidney recipient. This was a possible donor-derived infection.

### **INC *Candida albicans***

On post-transplant day 4, a renal centre reported a positive transport perfusion fluid and information that their recipient was unwell. The result confirmed a 'moderate growth of *Enterococcus faecium* and a moderate growth of *Candida spp*, further identified as *Candida albicans*.'

Donor had had aspiration pneumonia (in the community). It was documented on the retrieval findings:  
*Approximately 1 litre of likely pus in patient's pleural cavity, some fluid may have entered the abdominal cavity.*  
Samples taken for microscopy/culture

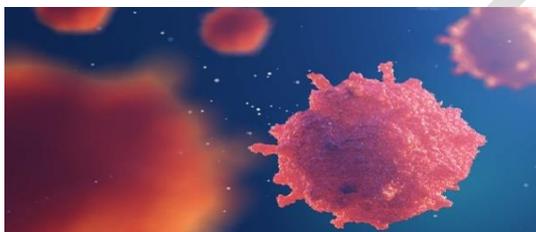
Initial accepting renal centres were informed and the kidneys were declined, given the findings. Kidneys re-offered and accepted. Additional donor pleural fluid samples were sent with each kidney.

One recipient had delayed graft function with a perirenal collection, and an upper polar infarct. The patient returned to theatre on two subsequent occasions for re-exploration, washout, and biopsy. The biopsy showed acute tubular injury (ATI) and the patient was treated for sepsis with prolonged transplant recovery. The paired kidney recipient became septic post-operatively and underwent further surgery with eventual graft nephrectomy. The patient acutely deteriorated 3 weeks post operation and sustained a cardiac arrest and died.

The pleural fluid result, post-transplant confirmed: (1) Heavy growth *Enterococcus faecium* and (2) Heavy growth *Candida albicans*.

## **VIRUSES**

### **ODT INC – Hepatitis C virus (HCV)**



Reported that post donation Nucleic Acid Testing (NAT) produced a positive Hepatitis C (HCV) result in an organ donor. The donor microbiology at the time of donor characterisation and organ offering produced an HCV antibody (Ab) screen negative result. Both renal recipient centres informed.

Review of the donor characterisation information known at the time of organ offering showed that the donor was at a high risk of a blood borne virus due to social/behavioural factors.

Both recipients were tested, and both returned HCV ribonucleic (RNA) positive results when their pre-transplant status was HCV Ab negative in both cases. The kidney recipients accepted the grafts knowing that there was a high risk of viral transmission. They were commenced on anti-viral treatment and their kidney function improved. Although the HCV level was slow to clear, it continuously decreased. This was confirmed as a donor-derived HCV transmission in the serological window period, from a donor with known risk factor for recent infection, Highlighting the relevance of testing such donors by a molecular test.

### **ODT INC Human Herpes Virus type 8 (HHV-8)**

A kidney recipient had a diagnosis of Kaposi's sarcoma (KS) 20 months post-transplant, confirmed with an inguinal lymph node biopsy; they required chemotherapy. Routine donor HHV-8 testing was not in place at the time of donation, but retrospective serological testing of donor samples demonstrated detectable anti-HHV-8 antibodies. The kidney recipient did not have detectable anti-HHV-8 antibodies on two samples tested; these were taken on the day before the transplant and at around 5 months post-transplant, respectively.

The paired kidney recipient centre was contacted, and samples sent for HHV-8 testing, showing that this recipient had detectable HHV-8 antibodies post-transplant but not pre-transplant. The patient had had an illness with undiagnosed cause, which was compatible with a seroconversion illness.

The pulmonary heart valve was also transplanted from this donor and the team were informed. Donor-derived infection is likely in this case.

### **ODT INC HHV-8**

The donor was tested as per recent practice for antibodies to HHV-8. The antibody result was reported as negative. The right liver lobe recipient became unwell post transplantation and HHV-8 DNA was detected in their blood. The recipient died.

This recipient became unwell 14 weeks post-transplant and was treated for cholangitis. Liver transplant function deteriorated; HHV-8 DNA was detected in the blood. Following subsequent diagnosis of HHV-8 disease, treatment was commenced with rituximab (anti-CD20 monoclonal antibody), but the patient died.

The left liver recipient also became infected with HHV-8 and had been treated with Rituximab for proven EBV post-transplant lymphoproliferative disease (PTLD). They did not develop HHV-8 disease. Both kidney recipients do not appear to have any evidence of HHV-8 infection.

This case reflects the complexity of HHV-8 infection and unknown disease determinants in the post-transplant period. On the basis of currently available tests, HHV-8 antibody result interpretation is complex and subjective, and screening is not able to detect all infections. Familiarity with possible disease presentation patterns and exclusion of HHV-8 is important.

## **2.0 MALIGNANCY**

### **ODT INC Adenocarcinoma**

A lung nodule was identified during retrieval and was not thought to be of concern but it was sent for frozen section from the donor hospital. The histopathology result showed a "3mm adenocarcinoma lesion no more than minimally invasive" The transplant centres were immediately informed and the liver and kidneys were declined and not transplanted.

The heart had already been transplanted and the recipient was informed; it was thought that the risk to the recipient was extremely low. The eyes had been retrieved; however, adenocarcinoma is not a contraindication for eye donation.

There was no known history of cancer in the donor, nor anything that would have alerted the team to this finding intra-operatively.

### **ODT INC**

It was reported that on the backbench that the retrieval surgeon noted a lesion on one of the kidneys. At this stage, the heart had been sent to the recipient centre, where the surgery had progressed beyond the point of return. The frozen section was reported as a neuroendocrine tumour, the accepting centres were informed, and the organs stood down.

The final histopathology report was received a couple of weeks later and the tumour was identified as a renal cell carcinoma not a neuroendocrine tumour. This was disseminated to the heart transplant centre and it was considered as unlikely to have any impact on the heart recipient.

### **ODT INC**

A routine biopsy from a kidney recipient on the day of transplant showed an incidental finding of a small chromophic renal cell carcinoma. There was no evidence of cancer in the donor at the time of retrieval. Both the liver and paired kidney transplant centres were informed but the risks to recipients were considered low.

### **OTHER**

#### **ODT INC- Hemochromatosis**

It was reported that a liver recipient's liver biopsy identified high levels of iron indicating possible genetic haemochromatosis. There was no evidence of this on donor characterisation. The donor family were contacted

for consideration of genetic testing. There were no siblings and therefore no requirement to undertake family screening. The liver recipient did well post-operatively.

## **CASES FOR INTEREST**

### **ODT INC**

Four years post-transplant the Transplant Registry team reported a confirmed appendix biopsy result as a 5mm well differentiated neuroendocrine tumour. The report concluded that the depth of invasion and probable vascular invasion indicated an uncertain malignant potential. This was a multi-visceral transplant recipient and on follow up they were doing well with no evidence of malignancy. The biopsy was taken as a routine by the retrieval team from the multi- visceral transplant centre.

### **ODT-INC**

Five years post-transplant it was reported that a renal recipient had developed a high-grade urothelial carcinoma showing squamous differentiation (50%) and glandular differentiation (30%). Information in relation to donor characterisation was reviewed and nothing significant was identified. The case was considered and while it was probably donor derived, it was thought unlikely to be donor transmitted. All recipient centres were informed.

### **ODT INC**

Three years post kidney transplant, a recipient developed a foot lesion and a biopsy confirmed Kaposi's Sarcoma. The recipient was from a country with high seroprevalence of HHV-8. Nothing of concern was noted in the donor history. Retrospective serological testing of the donor demonstrated no detectable HHV-8 antibodies in a sample obtained for donor characterisation. The kidney recipient had detectable HHV-8 antibodies pre-transplant and we understand a diagnosis of Kaposi's sarcoma was made approximately 24 months after the transplant, consistent with a pre-existing HHV-8 infection, acquired before the kidney transplant.

### **ODT INC**

It was reported that a bilateral lung recipient was diagnosed with hyperammonaemia syndrome 2 weeks post-transplant. BAL samples post-transplant tested positive by PCR for ureaplasma infection at the reference laboratory. No donor respiratory samples were available for analysis. A sample of donor lung tissue was sent

to the laboratory by the transplant centre and the report was “negative for Mycoplasma and Ureaplasma spp by PCR.” Therefore, it was concluded that there was no evidence to support donor derived transmission.

### **ODT INC**

An abnormal amylase led to a pancreas biopsy to rule out rejection. The pancreatic biopsy pancreas revealed lymphoma attributed to early non-primary EBV related PTLD. A stored donor blood sample was tested for EBV with the following results: EBV IgM borderline positive, EBV IgG and EBV DNA PCR negative. Expert clinical interpretation stated “DNA not detected. No evidence of EBV. The IgM is just above the cut off and given the profile obtained, including a negative PCR, it is likely to be a false reactivity.”

### **Living Donation**

Historically the number of Living Kidney Donation (LKD) incidents reported to OTDT Patient Safety Team has been low. However, the Patient Safety Team Clinical have noted an increase in the number of incidents reported recently. We actively encourage reporting of incidents. Centres also have a regulatory requirement to report certain incidents to NHSBT under their HTA license, this includes serious adverse events and reactions (SAEARs) such as loss of organ through damage.

Over a 6-year period 2018-2024 a total of 121 cases were reported: during this period, a total of 4735 living donation transplants took place. A breakdown of the data is presented below.

- April 2018- March 2020 – 24 incidents were reported- after investigation 2 cases were reported to the HTA as a SAE and 2 as a SAR.
- April 2020 – March 2022- 39 incidents were reported to OTDT none of these required reporting to the regulator.
- April 2022 – March 2024 – 58 incidents were reported to OTDT- after investigation 5 of these cases were reported as SAEs and 7 cases reported a SARs to the HTA.

A thematic review of the incidents was carried out to establish themes and trends. The incidents are broadly related to:

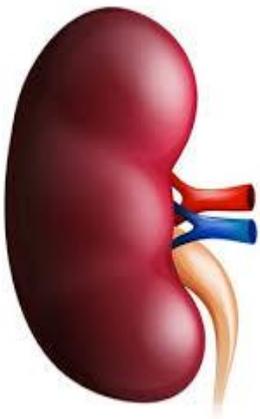
- Organ damage
- Donor and Recipient issues
- Registration
- Matching run issues
- Overseas patients
- Administration
- Logistics

- HLA testing

Living Donation possible transmission related incidents reported from 2023- March 2024 detailed below.

### ODT INC

A living kidney donor was diagnosed with chronic lymphocytic leukaemia 8 weeks (CLL) post donation. The donor's WCC was 14.1 and the lymphocyte count 8.5 on the day of admission. The donor was well with no clinical concerns and donation proceeded. The discharge letter included a recommendation to repeat the FBC 2 months later which confirmed persistent lymphocytosis and the donor was diagnosed with CLL. The case review showed persistent lymphocytosis in the 20 months prior to the donor surgery. Donor and recipient were worked up for donation/transplant at two separate centres. Recipient informed, risk thought to be low. Reported to the HTA.



### ODT INC

It has been reported that a live kidney donor developed breast cancer (nuclear grade ductal *carcinoma in situ* B5a), 18 months following their donation. Histology was shared with the recipient centre. After review it was considered that the risk of donor transmitted disease was very low (given diagnosis and lapse of time since donation). The recipient was informed about the donor diagnosis.

### ODT INC

Three years post donation, it was reported that a kidney donor was diagnosed with a small bowel neuroendocrine tumour. The recipient centre was informed and the risk to the recipient was thought to be very low given the 3-year time timeframe between donation and diagnosis.

### ODT INC

It was reported that a donor who donated a kidney to a relative was diagnosed with Stage 4 lung cancer 13 years post donation. Given the time lapse the transmission of disease to the recipient was thought negligible. Information to be captured in the UK LD Registry.

## **CONCLUSION**

The benefit of reporting concerns post-transplantation cannot be over-estimated. Timely reporting of incidents is important as it may affect the health of another transplant recipient and may inform clinical management of patients. We would like to acknowledge the centres that continue to report to us and encourage everyone to report rare, unusual and/or unsuspected findings post-transplantation.

We would advise that any cancer diagnosed post-transplant is reported to OTDT. In relation to infection, we would again advise that any unusual infection, unexpected occurrence, or something that may impact the health of another recipient is reported.

Please continue to do so via the link below:

<https://www.odt.nhs.uk/odt-structures-and-standards/governance-and-quality/tell-us-about-an-incident/>

**Thank you to everyone involved in the organ donation, organ retrieval and transplant pathway for their continued help and support, and above all for reporting to us and assisting OTDT with our investigations.**

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