NHS Blood and Transplant

Data collection and analysis

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Caring Expert Quality

Overview

- Introduction
- Trial outcomes
- Sample size calculations
- Data collection
- Analysis

Introduction – UKTR

- UK Transplant Registry (UKTR) is a valuable resource
- Centrally maintained, held by NHS Blood and Transplant
- Internationally recognised for quality and completeness
- Prospectively collects data:
  - potential and actual solid organ donors
  - transplants and transplant recipients
  - periodic follow up data for living donors and recipients
- UKTR has been already used for the sample size calculations and forecasting in the PITHIA trial, and will be used for data collection

Trial outcomes

Outcomes

Primary

- Proportion of kidneys that are transplanted on first offer
- Estimated glomerular filtration rate (eGFR) measured at one year after transplant

Secondary

- Proportion of kidneys utilised
- Total number of kidney transplants performed
- Proportion of kidneys discarded after retrieval, out of all retrieved kidneys
- Number and proportion of 'single' vs 'dual' kidney transplants performed

Outcomes

Secondary (continued)

- Biopsy utilisation and fidelity:
  - defined as the proportion of kidneys that are biopsied in concordance with the education plan, out of all kidney biopsies
- Kidney Donor Profile Index (KDPI) of transplants performed
- Cold ischaemia time (CIT)
- 12-month patient survival
- 12-month graft survival (censored for patient death)
- Proportion of kidneys diagnosed with primary non-function
- Proportion of kidneys diagnosed with delayed graft function
  - use of dialysis during the first postoperative week

Outcomes

Safety

- Biopsy-related complication rate

Subgroup

- DBD only
- DCD only
- Donors aged ≥70yrs
- Centres with a low median UK KDRI of transplanted DCD kidneys

Sample size calculations

First primary outcome

Proportion of kidneys that are transplanted on first offer

- Data extracted on first kidney offers from deceased donors aged ≥60yrs in the UK, 1 April 2014 - 31 March 2016

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Median number first offers per centre per month (pcpm)	Median number first offers pcpm transplanted
4.38	1.21
Current utilisation rate: 28%	

First primary outcome

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- Following the methodology proposed by Hooper and Bourke[1] to detect a 10% difference the trial will have 80% power
- 24 month trial duration, hence it is anticipated that 2102 kidneys will be in the trial

[1] Hooper R and Bourke L. Cluster randomised trials with repeated cross sections: alternatives to parallel group designs. BMJ (2015); 350:h2925

Second primary outcome

Estimated eGFR at one year after transplant

- Data extracted: Kidney only transplants from deceased donors, aged ≥60yrs in the UK (excluding Cambridge), 1 April 2014 and 31 March 2016

Mean eGFR	Standard deviation
41.89 ml/min	16.05 ml/min

- Our design estimated between 90% and 80% power to detect a standardised effect of 0.25, which is equivalent to a change in eGFR of about 6 ml per minute

Data collection

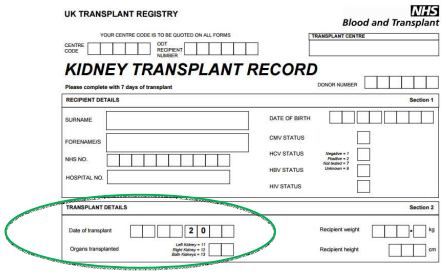
Data collection

- PITHIA is a registry-based randomised trial
- Data required for the trial are already routinely collected on UKTR
- Advantages:
  - No extra burden on participants with extra appointments, tests or added bureaucracy
  - Once the trial is established, transplant centres will have almost no extra work related to the trial
  - Cost effective

First primary outcome

Proportion of kidneys that are transplanted on first offer

- Obtained using the Hub Operations (previously Duty Office) log results and kidney transplant record forms



UK TRANSPLANT REGISTRY

NHS Blood and Transplant

YOUR CENTRE CODE IS TO BE QUOTED ON ALL FORMS

CENTRE CODE | OUT RECIPIENT NUMBER | TRANSPLANT CENTRE

KIDNEY TRANSPLANT RECORD

Please complete with 7 days of transplant

DONOR NUMBER

RECIPIENT DETAILS — Section 1

SURNAME | DATE OF BIRTH

FORENAMES | CMV STATUS

NHS NO. | HCV STATUS (Negative = 1, Positive = 2, Not tested = 7, Unknown = 9)

HOSPITAL NO. | HBV STATUS

HIV STATUS

TRANSPLANT DETAILS — Section 2

Date of transplant: 2 0

Organs transplanted (Left Kidney = 11, Right Kidney = 12, Both Kidneys = 13)

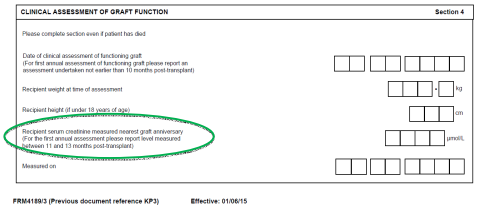
Recipient weight: . kg

Recipient height: cm

Second primary outcome

Estimated eGFR at one year after transplant

- Obtained from Kidney Annual follow up form, Section 4: Clinical Assessment Of Graft Function



CLINICAL ASSESSMENT OF GRAFT FUNCTION — Section 4

Please complete section even if patient has died

Date of clinical assessment of functioning graft (For first annual assessment of functioning graft please report an assessment undertaken not earlier than 10 months post-transplant)

Recipient weight at time of assessment: . kg

Recipient height (if under 18 years of age): cm

Recipient serum creatinine measured nearest graft anniversary (For the first annual assessment please report level measured between 11 and 13 months post-transplant): μmol/L

Measured on

FRM4189/3 (Previous document reference KP3) Effective: 01/06/15

- Serum creatinine measured from which eGRF is calculated using sex, age, ethnicity of recipient and the MDRD formula

Secondary outcomes

- For majority of these outcomes, the data will come from one of the following forms:
  - Core Donor Data Form
  - Kidney Recipient Registration
  - Kidney Transplant Record
  - Kidney 3 Month Follow Up
  - Kidney Annual Follow Up
- Biopsy utilisation and fidelity will be collected separately

Analysis

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Analysis principles

- Intention-to-treat i.e. participants will be analysed according to the treatment arm as specified in the randomisation list
- Two sided 5% significance
- Departures from randomisation will be monitored
  e.g. if a centre is delayed in switching to intervention
- Per protocol analysis will show effect of departures from randomisation

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Analysis – Primary outcomes

Proportion of kidneys that are transplanted on first offer

- Generalised mixed model, with log link, Poisson model with robust standard errors
- A random effect to account for centre and adjustment for time
  → Primary estimate of treatment effect will be risk adjusted

Mean eGRF at one year

- Compute mean for each treatment group
- Compared using a statistical technique which will allow for possible selection bias i.e. can only be measured for patients who have survived to one year

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Questions?