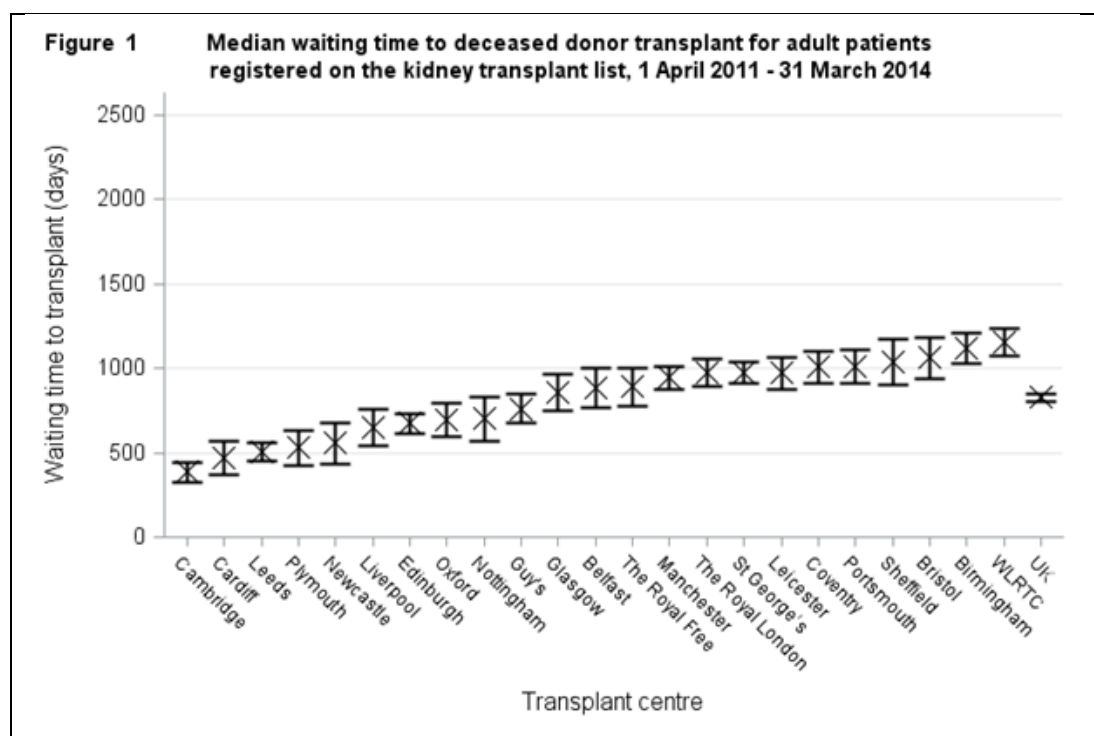


NHS BLOOD AND TRANSPLANT
ORGAN DONATION AND TRANSPLANTATION DIRECTORATE
KIDNEY ADVISORY GROUP

RISK ADJUSTED WAITING TIME - KIDNEY CENTRE SPECIFIC REPORTS

INTRODUCTION

- 1 Unadjusted median times to transplant are currently published in the kidney centre specific reports (**Figure 1**). A risk adjusted model is presented in this paper to be used in the development of risk-adjusted waiting times for future reports.



DATA

- 2 Data were obtained from the UK Transplant Registry on patients activated on the UK kidney transplant list between 1 April 2010 and 31 March 2014. Patients receiving a live donor or multi-organ transplant were excluded. The adult cohort included 8766 patients and the paediatric cohort included 257 patients.

METHODS

- 3 The outcome variable of interest is time from activation on the kidney transplant list until transplant, with censoring for death, removal or at date of analysis for patients still active.

- 4 Multivariable Cox proportional hazards models were constructed for adult and paediatric patients separately. Factors investigated were: gender, ethnic group, highly sensitised, blood group, dialysis status, matchability score, primary renal disease and age at registration. Factors were identified as important by comparing the log likelihood ratio statistic of nested models and p-values of 0.05 or less were considered significant.

RESULTS – ADULT

- 5 After model selection the factors identified as affecting time to transplant are gender, ethnic group, whether the patient was highly sensitised, blood group, dialysis status, matchability score, primary renal disease and age at registration (**Table 1**).
- 6 Female patients, highly sensitised patients, patients on dialysis, patients with matchability score of 4 and above and older patients were likely to wait longer to receive a transplant.

| Factor | Level | N | HR | 95% CI | p-value |
|-----------------------|--------------------|------|------|---------------|---------|
| Gender | Male | 5540 | 1 | | |
| | Female | 3226 | 0.92 | (0.87 - 0.97) | 0.004 |
| Ethnic Group | White | 6210 | 1 | | |
| | Asian | 1408 | 0.82 | (0.76 - 0.89) | <0.0001 |
| | Black | 781 | 0.87 | (0.79 - 0.96) | 0.005 |
| | Other | 256 | 0.87 | (0.75 - 1.02) | 0.09 |
| | Unknown | 111 | 0.65 | (0.51 - 0.83) | 0.0005 |
| Highly Sensitised | No | 7769 | 1 | | |
| | Yes | 997 | 0.37 | (0.34 - 0.42) | <0.0001 |
| Blood Group | O | 4020 | 1 | | |
| | A | 3132 | 1.97 | (1.86 - 2.09) | <0.0001 |
| | B | 1250 | 0.97 | (0.90 - 1.06) | 0.54 |
| | AB | 364 | 4.90 | (4.33 - 5.55) | <0.0001 |
| Dialysis Status | On Dialysis | 5725 | 1 | | |
| | Not on dialysis | 3041 | 1.12 | (1.06 - 1.18) | <0.0001 |
| Matchability Score | 1-3 | 3378 | 1 | | |
| | 4-7 | 3671 | 0.66 | (0.62 - 0.70) | <0.0001 |
| | 8-10 | 1717 | 0.28 | (0.25 - 0.30) | <0.0001 |
| Primary Renal Disease | Glomerulonephritis | 1697 | 1 | | |
| | Polycystic kidneys | 914 | 1.10 | (1.00 - 1.21) | 0.05 |
| | Diabetes | 1031 | 1.01 | (0.91 - 1.12) | 0.81 |
| | Other | 3960 | 0.88 | (0.82 - 0.94) | 0.0002 |
| | Not reported | 1164 | 0.84 | (0.76 - 0.92) | 0.0002 |
| Age at registration | 1-year increase | 8766 | 0.98 | (0.98 - 0.98) | <0.0001 |

RESULTS – PAEDIATRIC

- 7 After model selection, the factors identified were matchability score, ethnic group and whether the patient was highly sensitised. This is shown in **Table 2**.

| Factor | Level | N | HR | 95% CI | p-value |
|--------------------|--------------|----------|-----------|---------------|----------------|
| Ethnic Group | White | 154 | 1 | | |
| | Asian | 69 | 0.70 | (0.52 - 0.95) | 0.02 |
| | Black | 21 | 1.22 | (0.76 - 1.97) | 0.42 |
| | Other | 9 | 0.68 | (0.31 - 1.47) | 0.32 |
| | Unknown | 4 | 1.26 | (0.46 - 3.42) | 0.65 |
| Highly Sensitised | No | 234 | 1 | | |
| | Yes | 23 | 0.44 | (0.26 - 0.74) | 0.002 |
| Matchability Score | 1-3 | 105 | 1 | | |
| | 4-7 | 117 | 0.33 | (0.24 - 0.45) | <0.0001 |
| | 8-10 | 35 | 0.17 | (0.11 - 0.28) | <0.0001 |

- 8 Paediatric patients of Asian ethnicity, highly sensitised patients and patients with a matchability score of 4 and above were likely to wait longer for transplant.

SUMMARY

- 9 Gender, ethnic group, whether the patient was highly sensitised, blood group, dialysis status, matchability score, primary disease and age at registration were found to be important in determining time to transplant in adult patients.
- 10 Ethnic group, matchability score and whether patients were highly sensitised were found to be important factors affecting time to transplant in paediatric patients.

ACTION

- 11 Members are asked for comments on the models presented and the possible inclusion of risk-adjusted median waiting times in the kidney centre specific reports.

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