

### Are DCD Kidneys More Susceptible to Age-Related Kidney Damage and Ischaemic Injury?

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**Background:** Many clinicians are reluctant to transplant kidneys from older donation after cardiac-death (DCD) kidney donors and are also concerned that DCD kidneys may be more susceptible to ischaemic injury than donation after brain-death kidneys (DBD). We assessed the evidence for these concerns.

**Methods:** A comprehensive analysis of all adult, first-time, recipients of kidneys from controlled DCD and DBD donors performed in the UK between 2005 and 2010 was undertaken. The variables associated with graft survival were identified and their relative importance for DCD and DBD kidney transplant outcomes described.

**Findings:** Graft survival (all-cause graft loss) was similar for recipients of DCD (n=1826) and DBD (n=4283) kidneys with an unadjusted 3-year survival rate of 82.9% and 85.0%, respectively. A Cox proportional hazards model was built with step-wise variable selection, using one half of DCD kidney data set (n=910), and identified increasing donor age, cold ischaemic time and recipient age as being associated with decreased graft survival. The strength of the associations were tested with the second half of the DCD kidney data set (n=916): increasing donor age (over 60 years vs under 40 years) had a hazard ratio of 2.39 (p= 0.002), increasing cold ischaemic time (over 24 hours versus under 12 hours) HR 2.14 (p=0.044) while recipient age was not significant. Comparison of overall DCD and DBD transplant outcomes, using the Cox model, demonstrated no difference in graft survival between the DCD (n=916) and DBD (n=4283) groups (DCD versus DBD HR 1.15, p=0.17) and no interaction between donor age over 60 years and donor type (p= 0.59). An interaction between cold ischaemic time of over 24 hours and DCD donor kidneys was demonstrated (p=0.042). Further comparison using the Cox model with all the DCD data (n=1826) supported this trend with cold ischaemic times of ,12-18 hours' and over ,24 hours' having a significant (p= 0.049 and p= 0.005) interaction with DCD donation.

**Conclusion:** Recipients of older DCD donor kidneys are not at higher risk of graft loss than recipients of similarly aged DBD donor kidneys. DCD kidneys are, however, more susceptible to cold ischaemic injury and early transplantation is important to maximise transplant outcome.

### What Is the Potential Increase of the Heart Graft Pool by Cardiac Donation after Circulatory Death?

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**Background:** Heart transplantation remains to date the only definite treatment option for end-stage heart diseases. Currently only heart procured from brain death (DBD) donors are used. Combined with an increasing demand, the constant heart graft shortage leads to an increase of deaths on cardiac transplantation waiting lists. The use of hearts procured after donation after circulatory death (DCD) could help to partly decrease the heart graft shortage. The aim of this study was to evaluate the potential increase of heart graft pool by development of DCD heart transplantation.

**Methods:** The authors retrospectively reviewed their local donor database for the period 2006-2011, and screened the complete controlled DCD donor population for potential heart donors, using the same criteria as for DBD heart transplantation. The acceptable warm ischemic time (WIT) was limited to 30min from life support withdrawal to aortic cannulation.

**Results:** During the analyzed timespan, 177 DBD and 70 DCD were effectively performed. From the 177 DBD, a total of 70 (39.5%) hearts were procured and transplanted locally or in another center. Out of the 70 DCD, 8 (11%) donors fulfilled the criteria for heart graft procurement and had a WIT of less than 30 minutes. During the same period, 82 patients were newly listed for heart transplantation, of which 53 were transplanted, 20 died or were unlisted, and 9 were still awaiting transplantation.

**Conclusions:** Based on our database and a WIT of less than 30min, it could be estimated that 11% of the DCD might be heart graft donors, representing a 11% increase in heart graft procurement, as well as potential reduction of the deaths on the waiting list by 40%.