Cold Ischemia Time in Deceased Donor Transplants where the Donor and Recipient are in the Same Hospital

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Background

Longer cold ischemia time (CIT) is associated with worse outcomes following deceased donor kidney (KT) and liver transplantation (LT). In cases where the deceased donor was recovered at the transplant center, CIT is expected to be short as no transport time is necessary. We hypothesized that inefficiencies in the system unnecessarily prolonged CIT. As such, we explored CIT of same-hospital deceased donor transplants.

Methods

Same-hospital LT and KT were identified from SRTR data. The relationship between CIT and patient-level factors (MELD exception, recipient BMI, procedure type, ethnicity, interactions with age, and ECD) was explored. Center level variation was examined using a multi-level linear model.

Results

Livers: Between 2008 and 2012, 93 transplant centers performed 2006 same-hospital LTs. Median (IQR) CIT for same-hospital LT was 4.8 (3.5-6.4) hours. The shortest 5% of CIT were less than 2.0 hours, while the longest 5% of CIT were greater than 9.5 hours. 10.8% of LT were longer than 8 hours. Having a MELD exception was associated with 30% less CIT ($p<0.001$). Significant center-level variation was found, explaining 20.4% of total variance of in-hospital CIT (X^2 test $p<0.001$).

Kidney: Between 2008 and 2012, and 176 centers performed 2870 same-hospital KTs. Median (IQR) CIT for KT was 13.0 (8.3-18.7) hours. The shortest 5% of CIT were less than 4.0 hours, while the longest 5% of CIT were greater than 28 hours. 9.9% of KT were longer than 24 hours. Significant center-level variation was found, explaining 24.5% of total variance of in-hospital CIT (X^2 test $p<0.001$).

Results

Figure 1: Histogram of Cold Ischemia Time

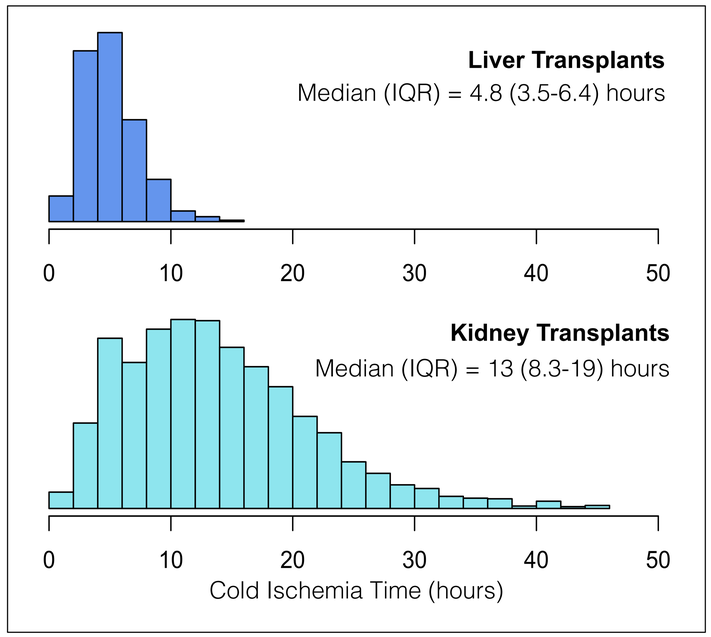


Table 1: Center Level Effect on CIT

Center-Level Effect (Liver Transplants)	var	SD
Liver Transplant Center (n = 91)	1.13	1.06
Residual	4.39	2.09

20.4% of total variance explained by center-level variation

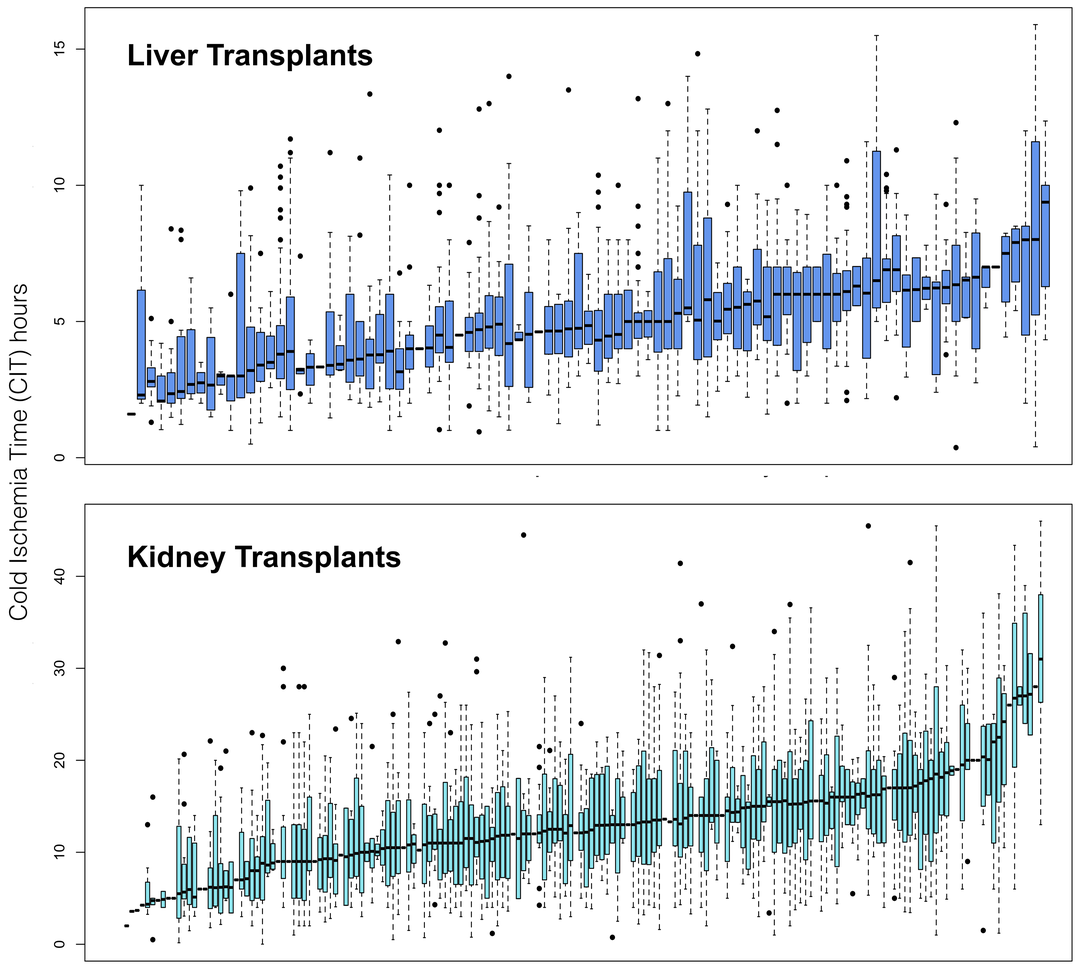
log likelihood ratio: 213 (df = 3, X^2 test $p<0.001$)

Center-Level Effect (Kidney Transplants)	var	SD
Kidney Transplant Center (n = 173)	13.5	3.68
Residual	41.6	6.45

24.5% of total variance explained by center-level variation

Log Likelihood Ratio: 611 (df = 3, X^2 test $p<0.001$)

Figure 2: Center Level Cold Ischemia Time of Same Hospital Transplants



Conclusions

Despite having no transport delay, very long cold ischemia times are found in many KT and LT performed in the same center as the donor. This varies significantly by center, with center level variation accounting for 20-25% of the variation in CIT.

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