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Submitted: February 21, 2011

“The Influence of Systems and Processes on Cold-Ischemic Time in Liver Transplantation”

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Background: Systems and processes of care are essential to coordination of procurement and liver transplantation. They influence the length of cold ischemic time (CIT) and hence liver transplant (LT) recipient outcomes. **Aim:** The aim is to examine the correlation between the time of liver procurement and CIT. We hypothesized that systems and processes of care at certain times of the day were apt to achieve shorter CIT. **Methods:** UNOS data was used to identify 9,027 adult recipients of a primary deceased-donor LT between 1/06-12/08. Recipients were stratified into 24 groups based on procurement (crossclamping) time. Adjusted multivariate analysis was conducted. The primary outcome was CIT. Secondary outcomes were graft- and patient-survival at 1, 3, and 5 years measured using Kaplan-Meier survival analysis and log-rank tests. $P < 0.05$ was considered significant. **Results:** Mean CIT for the population was 6.8 hrs. The longest mean CIT occurred for procurements conducted at a 0200h, while the shortest mean CIT occurred for procurements conducted at 1500h ($p = 0.001$). This was consistent across all UNOS regions. No significant difference in patient characteristics was identified between the 24 time groups. The highest volume of procurements occurred at 0600h, while the highest number of transplant procedures occurred at 0900h. The LT recipients of organs procured at 1500h demonstrated higher 1, 3, and 5 -year survival rate for both grafts (88% vs. 85%, 78% vs. 74%, 74% vs. 67%) and patients (90% vs. 87%, 80% vs. 77%, 76% vs. 70%) compared to those procured at 0200h. **Conclusion:** Procurement time correlates with length of CIT, with longest CIT for LT start time coinciding with first morning elective cases, when resources are most scarce. Scheduling of procurements through hospital independent procurements might mitigate this issue and improve patient outcomes.