# More meds, limited literacy reduces adherence to drug regimen by liver transplant patients

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New research reports that liver transplant recipients with less understanding of treatment information and improper use of medications may be more likely to have trouble following the prescribed regimen. According to the study published in *Liver Transplantation*, a journal of the American Association for the Study of Liver Diseases and the International Liver Transplantation Society, the patients' non-adherence is linked to adverse clinical outcomes, such as organ rejection or graft loss.

During the past 30 years, improvements in surgical techniques and advances in immunosuppressive drug therapies have help improve survival rates for those undergoing solid organ transplantation. Medical evidence suggests the effectiveness of immunosuppressives may be hindered by multidrug regimens that require strict adherence overtime, with non-adherence responsible for close to 50% of late acute rejections and 15% of graft losses in adults.

"This is the first study to investigate medication-taking behavior and evaluate regimen adherence and its clinical impact on liver transplant recipients," explains Dr. Marina Serper with the Hospital of the University of Pennsylvania in Philadelphia. "It is important to understand how crucial self-care behaviors, such as following treatment plans, could lead to re-hospitalization, graft rejection, and infection if post-transplant regimens are not followed."

For this study, the team enrolled 105 patients who underwent *Liver Transplantation* between 2011 and 2012 at two transplant centers in Chicago, Illinois and Atlanta, Georgia. The majority of study participants were middle-aged men, with 15% of the group having limited literacy. The average number of medications used by patients was 11, with 39% of the group having had a change in medication within the last month.

Results show that participants understood, on average, 86% of their entire medication regimen, which translated to knowing 90% of their immunosuppressive drug indications, 73% of transplant medications (non-immunosuppressives), and 85% of medications for chronic conditions. The score for demonstration of proper adherence to the drug therapy regimen was 78% for all medications, 66% for transplant immunosuppressive medications, 76% for transplant non-immunosuppressives and 84% for chronic disease medications. Self-reported non-adherence to the therapy regimen was 14% and based on tacrolimus levels that number more than doubles to 32% of participants.

Lower income, less time since transplant, a higher number of medications and limited literacy were associated with lower treatment knowledge scores, and more medications and limited literacy were linked to non-adherence to the regimen by tacrolimus levels. Dr. Serper concludes, "Our findings indicate that higher scores for treatment knowledge and demonstrated regimen use were independently associated with reduced post-transplant re-hospitalization (15% and 13%, respectively). By involving existing transplant center resources in cost-effective interventions that help patients properly manage their drug regimens, we could see an improvement in long term health of solid organ transplant recipients."

  **More information:** "Medication Misuse, Non-Adherence, and Clinical Outcomes Among Liver Transplant Recipients." Marina Serper, Rachel

E. Patzer, Peter P. Reese, Kamila Przytula, Rachel Koval, Daniela P. Ladner, Josh M. Levitsky, Michael M. Abecassis and Michael S. Wolf. *Liver Transplantation*; DOI: 10.1002/lt.24023

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