Nationwide UNOS Analysis of Mortality After Simultaneous Liver–Kidney Transplantation in Patients With HIV, 2005–2023

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Introduction

Background

- As people living with HIV (PLWH) live longer, they experience increasing morbidity from end-organ failure
- Simultaneous Liver-Kidney Transplantation data remain limited

Objective

- To evaluate SLK transplant outcomes in PLWH

Methodology

Data:

- Utilized the Spring 2023 version of UNOS SRTR data to identify patients with and without HIV who received a SLK transplant

Analysis:

- Data analysis was performed using R Version 2025.09.0+387, Vienna, Austria
- 1:5 Propensity score matching was performed, based on donor characteristics, age, gender, MELD score, hepatitis C status, transplant indication, DAA era (pre- and post- 2014), and transplant year
- Used Kaplan-Meier methods with log-rank testing and Cox proportional hazards regression, with analyses conducted separately by transplant era

Outcomes of interest:

- Primary: Overall mortality
- Secondary: Liver and Kidney Death-Censored Graft Failure

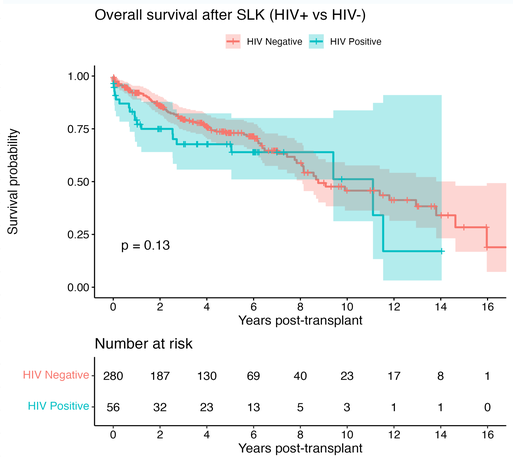
Results

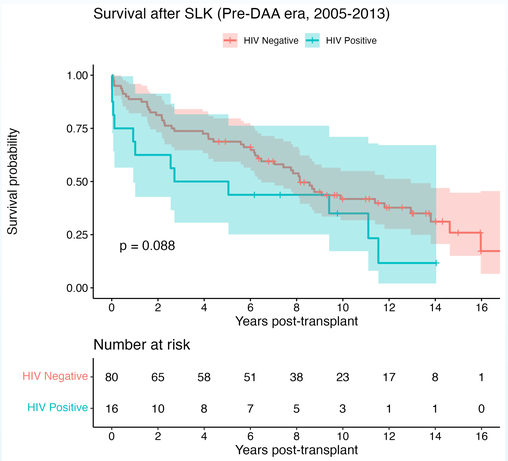
Characteristics of HIV-positive and HIV-negative SLK recipients (matched cohort)

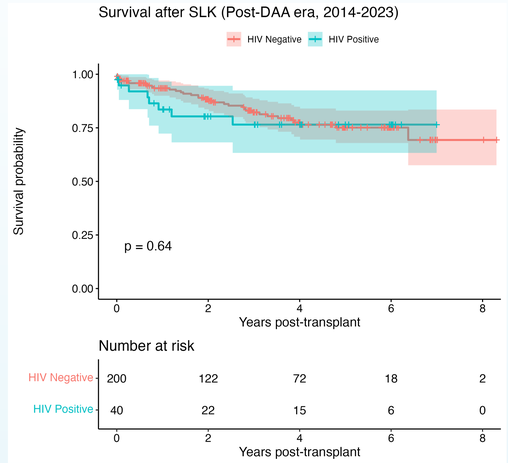
Characteristic	Negative/Unknown[1]	Positive[1]	p-value[2]
Donor age, years	31 (23, 44)	33 (22, 43)	0.6
Donor sex			0.9
Female	106 (38%)	20 (36%)	
Male	174 (62%)	36 (64%)	
Recipient BMI	26.7 (23.8, 30.4)	24.1 (21.8, 30.1)	0.014
Unknown	6	1	
Recipient age, years	58 (52, 63)	56 (51, 61)	0.14
Recipient sex			>0.9
Female	60 (21%)	12 (21%)	
Male	220 (79%)	44 (79%)	
Recipient race			0.8
White	86 (31%)	20 (36%)	
Black	107 (38%)	21 (38%)	
Hispanic/Latino	65 (23%)	10 (18%)	
Other	22 (7.9%)	5 (8.9%)	
Primary Liver Diagnosis			>0.9
Acute Liver Failure/Hepatitis	7 (2.5%)	1 (1.8%)	
Chronic Liver Disease	236 (84%)	49 (88%)	
Malignant Neoplasms	15 (5.4%)	2 (3.6%)	
Missing	13 (4.6%)	2 (3.6%)	
Other	9 (3.2%)	2 (3.6%)	
Primary Kidney Diagnosis			0.8
Diabetes	56 (20%)	8 (14%)	
Glomerular disease	38 (14%)	9 (16%)	
Hypertensive / vascular	53 (19%)	10 (18%)	
Polycystic / hereditary	7 (2.5%)	1 (1.8%)	
Hepatorenal syndrome	66 (24%)	12 (21%)	
Tubulointerstitial / other CKD	60 (21%)	16 (29%)	
HBV surface antigen			>0.9
Negative	223 (83%)	44 (83%)	
Positive	47 (17%)	9 (17%)	
Unknown	10	3	
HCV serology			>0.9
Negative	135 (48%)	27 (48%)	
Positive	145 (52%)	29 (52%)	
CMV serology			0.6
Negative	20 (8.0%)	5 (9.8%)	
Positive	229 (92%)	46 (90%)	
Unknown	31	5	
MELD score at transplant	24 (21, 30)	25 (21, 35)	0.6

[1] Median (Q1, Q3); n (%)

[2] Wilcoxon rank sum test; Fisher's exact test; Fisher's Exact Test for Count Data with simulated p-value (based on 2000 replicates)







Cox regression results (matched cohort; N=336 total, 56 HIV-positive)

Overall, stratified by DAA era, and HIV × era interaction

	HR (95% CI) (Overall)	HR (95% CI) (Pre-DAA)	HR (95% CI) (Post-DAA)	p (Overall)	p (Pre-DAA)	p (Post-DAA)	Interaction HR (95% CI)	Interaction p
Overall mortality	1.45 (0.86–2.45)	1.72 (0.87–3.41)	1.20 (0.49–2.92)	0.17	0.12	0.69	0.69 (0.22–2.13)	0.52
Kidney graft failure (28 events; 6 HIV+)	2.07 (0.81–5.29)	3.07 (1.00–9.45)	1.11 (0.13–9.46)	0.13	0.05	0.92	0.33 (0.03–3.79)	0.37
Liver graft failure (16 events; 2 HIV+)	0.85 (0.20–3.73)	1.35 (0.28–6.60)	NE	0.83	0.71		NE	NA

Post-DAA liver graft failure: NE = not estimable due to sparse/zero due to sparse/zero events (quasi separation). Interaction ratio is the ratio of post-DAA to pre-DAA hazard ratios

Discussion

Overall Mortality

- No significant difference in mortality between recipients with vs. without HIV
- Marginal increase in mortality among PLWH driven by Pre-DAA era

Graft Failure

- Kidney graft outcomes comparable by HIV status across eras
- Liver graft failure events were uncommon

Conclusion

- Our results support equitable access to SLK transplantation among PLWH
- Future research will compare outcomes to liver-only recipients
- Limited by small sample

References

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