Supplementary Appendix

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This appendix has been provided by the authors to give readers additional information about the work.

Supplementary Appendix for:
Safety of Kidney Transplantation from Donors with HIV under the HOPE Act
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Supplementary Table S1. Participants by site and donor HIV status

Transplant Centers	Total (N=198)	HIV D+/R+ (N=99)	HIV D-/R+ (N=99)
Mount Sinai Medical Center (NYMS)	55	29	26
Johns Hopkins Hospital (MDJH)	27	13	14
Emory University Hospital (GAEM)	19	13	6
MedStar Georgetown Transplant Institute (DCGU)	13	8	5
University of California San Francisco Medical Center (CASF)	11	7	4
NYU Langone Health (NYUC)	8	2	6
University of Alabama Hospital (ALUA)	8	6	2
Northwestern Memorial Hospital (ILNM)	7	3	4
NY Presbyterian/Columbia University Medical Center (NYCP)	6	2	4
University of Miami School of Medicine (FLJM)	4	2	2
Ochsner Foundation Hospital (LAOF)	4	2	2
University of California San Diego Medical Center (CASD)	4	3	1
University of Pittsburgh Medical Center (PAPT)	4	1	3
Yale New Haven Hospital (CTYN)	4	0	4
NY Presbyterian Hospital/Weill Cornell Medical Center (NYNY)	3	3	0
Rush University Medical Center (ILPL)	3	2	1
University of California at Los Angeles Medical Center (CAUC)	3	1	2
University of Maryland Medical Center (MDUM)	3	1	2
UT Southwestern Medical Center (TXSP)	3	0	3
Hahnemann University Hospital (PAHM)*	2	0	2
Hospital of the University of Pennsylvania (PAUP)	2	0	2
Indiana University Health (INIM)	1	0	1
Massachusetts General Hospital (MAMG)	1	0	1
Methodist Dallas Medical Center (TXMC)	1	0	1
University of Arkansas Medical Center (ARUA)	1	1	0
University of Cincinnati Medical Center (OHUC)	1	0	1

* Two participants were transferred to PAUP as PAHM closed during the trial

Supplementary Table S2. Opportunistic infection prophylaxis strategies at centers (N=26)

CMV Prophylaxis			
	Donor and Recipient CMV Status		
Antiviral strategy	**CMV D-/R-**	**CMV R+**	**CMV D+/R-**
ACV or vACV for 4-6w, no. centers/total centers	4/26	0/26	0/26
ACV or vACV for 3-6m, no. centers/total centers	19/26	1/26	0/26
vGCV for 3m, no. centers/total centers	1/26	20/26	1/26
vGCV for 6m, no. centers/total centers	1/26	5/26	24/26
vGCV for 9m, no. centers/total centers	0/26	0/26	1/26
Famciclovir, no. centers/total centers	1/26	0/26	0/26

ACV acyclovir; vACV valayclovir; w week; vGCV valgancylcovir; m month

Pneumocystis jirovecii prophylaxis	
Antibiotic regimen	**Number of Centers**
TMP SMX for 6m, no. centers/total centers	4/26
TMP SMX for 6m or CD4>200 if later, no. centers/total centers	3/26
TMP SMX for 1y, no. centers/total centers	4/26
TMP SMX for 1y or CD4>200 if later, no. centers/total centers	5/26
TMP SMX for life, no. centers/total centers	10/26

TMP SMX trimethoprim; m month

Supplementary Table S3. **Characteristics of kidney transplant recipients and donors according to donor HIV status, complete**

Characteristics	**HIV D+/R+**	**HIV D-/R+**	**SMD**
Recipients	**N=99**	**N=99**	
Age, years — median (IQR)	53 (45-60)	57 (50-63)	0.264
Female sex — no./total no. (%)	16/99 (16)	19/99 (19)	0.080
Race /ethnicity— no./total no. (%)			0.296
Black	72/99 (73)	69/99 (70)	
White, non-Hispanic	10/99 (10)	13/99 (13)	
Hispanic or Latino	10/99 (10)	15/99 (15)	
Other	7/99 (7)	2/99 (2)	
Hepatitis C antibody positive — no./total no. (%)	9/99 (9)	17/99 (17)	0.241
Among those, hepatitis C NAT positive — no./total no. (%)	1/9 (11)	6/17 (35)	0.598
Hepatitis B core antibody positive — no./total no. (%)	45/99 (45)	45/99 (45)	0
Hepatitis B surface antigen positive — no./total no. (%)	7/99 (7)	5/99 (5)	0.085
Cytomegalovirus antibody positive — no./total no. (%)*†	92/99 (93)	95/99 (96)	0.133
Prior opportunistic infection — no./total no. (%)	32/99 (32)	29/99 (29)	0.066
HIV RNA < 200 copies/mL at transplant — no./total no. (%)‡	98/99 (99)	98/99 (99)	0
CD4+ cells, count — median (IQR)	511 (375-652)	492 (362-686)	0.021
CD4+ cells, % — median (IQR)	32 (26-40)	31 (26-37)	0.174
Antiretroviral therapy (ART) — no./total no. (%)			
PI or cobicistat-containing ART	6/99 (6)	6/99 (6)	0
INSTI-containing ART	98/99 (99)	95/99 (96)	0.194
NNRTI-containing ART	31/99 (31)	39/99 (39)	0.170
Cause of kidney failure — no./total no. (%)			0.092
HIV-associated nephropathy	34/99 (34)	36/99 (36)	
Diabetes	23/99 (23)	25/99 (25)	
Hypertension	20/99 (20)	17/99 (17)	
Focal segmental glomerulosclerosis	8/99 (8)	8/99 (8)	
Other	14/99 (14)	13/99 (13)	
Preemptive transplant, no./total no. (%)	9/99 (9)	11/99 (11)	0.067
Years of renal replacement therapy — median (IQR)	4.1 (2.6-6.1)	4.8 (2.6-7.6)	0.359
Number of HLA mismatches (0-6) — median (IQR)†	5 (4-6)	5 (4-5)	0.261
Allograft cold ischemia, hours — median (IQR)†	20.0 (15.6-24.1)	18.4 (11.2-24.6)	0.147
Induction immunosuppression — no./total no. (%)			0.187
ATG/ATGAM	61/99 (62)	63/99 (64)	0.042
Basiliximab	34/99 (34)	33/99 (32)	0.021
ATG/ATGAM plus basiliximab	4/99 (4)	2/99 (2)	0.118
Alemtuzumab	0/99 (0)	1/99 (1)	0.143
IV steroids	96/99 (97)	96/99 (97)	0
Maintenance Immunosuppression — no./total no. (%)			
Tacrolimus	96/99 (97)	98/99 (99)	0.144
Azathioprine	1/99 (1)	2/99 (2)	0.083
Belatacept	2/99 (0)	0/99 (0)	0.203

Mycophenolate Mofetil/Mycophenolic acid	96/99 (97)	95/99 (96)	0.054
Steroids	77/99 (78)	82/99 (83)	0.127
Participation in CCR5 trial (NCT02741323)	30/99 (30)	23/99 (23)	0.160
Donors	**N=64**	**N=82**	
Age, yr. — median (IQR)	36 (28-45)	40 (30-49)	0.305
Female sex — no./total no. (%)	18/64 (28)	26/82 (32)	0.078
Race/ethnicity — no. /total no. (%)			0.480
Black	25/64 (39)	17/82 (21)	
White, non-Hispanic	30/64 (47)	47/82 (57)	
Hispanic/Latino	9/64 (14)	15/82 (18)	
Other	0/64 (0)	3/82 (4)	
Kidney donor profile index — median (IQR)	38 (26-54)	53 (35-69)	0.407
Donation after cardiac death — no./total no. (%)	10/64 (16)	19/82 (23)	0.191
Cause of death — no./total no. (%)			0.319
Anoxia	32/64 (50)	35/82 (43)	
Cerebrovascular accident/stroke	15/64 (23)	24/82 (29)	
Head trauma	17/64 (27)	20/82 (24)	
Other	0/64 (0)	3/82 (4)	
Hepatitis C antibody positive — no./total no. (%)	3/64 (5)	10/82 (12)	0.273
Hepatitis C RNA detectable — no./total no. (%)	2/64 (3)	8/82 (10)	0.273
Hepatitis B core antibody positive — no./total no. (%)	12/64 (19)	3/82 (4)	0.493
Hepatitis B surface antigen positive — no./total no. (%)	1/64 (2)	1/82 (1)	0.029
Cytomegalovirus antibody positive — no./total no. (%)	60/64 (94)	55/82 (67)	0.714
False positive HIV test — no./total no. (%)	N/A	27/82 (33)	N/A
False positive HIV antibody	N/A	23/82 (28)	N/A
False positive HIV nucleic acid test	N/A	4/82 (5)	N/A
HIV discovered at donation — no./total no. (%)	23/64 (36)	N/A	N/A
If HIV previously known, on ART at donation— no./total no. (%)	34/41 (83)	N/A	N/A
If on ART, HIV RNA < 400 — no./total no. (%)	25/34 (93)	N/A	N/A
If not on ART, HIV RNA, median (IQR)	25704 (12589-151356)	N/A	N/A
CD4+ cells, count — median (IQR)	210 (116-368)	N/A	N/A
CD4+ cells, % — median (IQR)	28 (19.3-38.7)	N/A	N/A

ATG indicates rabbit anti-thymocyte globulin, ATGAM equine anti-thymocyte globulin, HLA human leukocyte antigens, IQR interquartile range, SMD (absolute) standardized mean difference.

* 6 CMV D+/R- in HIV D+/R+ group and 3 CMV D+/R- in the HIV D-/R+ group

† Data obtained from Scientific Registry of Transplant Recipients: 2 Hepatitis 1 Cytomegalovirus antibody in HIV D+/R+; 2 cold ischemia time in HIV D-/R+ for recipients. Number of HLA mismatches for recipients and race/ethnicity for donors

Missing data in recipients: 1 CD4+ cell percentage in HIV D+/R+; 1 CD4+ cell percentage in HIV D-/R+

Missing data in donors: 4 HIV viral load (if not on ART) and 1 CD4+ cell count in HIV D+.

‡ 1 HIV D+/R+ with HIV RNA 423 copies/mL at transplant, day 9 post-transplant HIV RNA <20 copies/mL. 1 in HIV D-/R+ with HIV RNA 38679 copies/mL at transplant, day 30 post-transplant HIV RNA <40 copies/mL.

Supplementary Table S4. Deaths

Donor HIV type	Day since transplant	Cause of death	Functioning graft at death
HIV D+	88	Cardiac arrest	Yes
HIV D+	116	Aspiration due to metabolic encephalopathy	Yes
HIV D+	189	Death out of hospital, unknown cause, no autopsy	Yes
HIV D+	192	Death out of hospital, unknown cause, no autopsy	Yes
HIV D+	203	COVID-19	Yes
HIV D+	351	Esophageal squamous cell carcinoma	Yes
HIV D+	587	COVID-19	Yes
HIV D+	678	COVID-19	Yes
HIV D+	701	Liver failure due to metabolic associated liver disease	Yes
HIV D+	873	Colon cancer	Yes
HIV D+	981	Tonsillar squamous cell carcinoma	Yes
HIV D+	1138	Restrictive Pericarditis	Yes
HIV D-	115	COVID-19	Yes
HIV D-	132	Respiratory failure	Yes
HIV D-	133	Ruptured AV fistula	Yes
HIV D-	243	COVID-19	Yes
HIV D-	262	Opioid overdose	Yes
HIV D-	368	Pulmonary embolism	Yes
HIV D-	477	Esophageal carcinoma	Yes
HIV D-	548	COVID-19	Yes
HIV D-	619	COVID-19	No
HIV D-	645	Cardiac arrest	Yes
HIV D-	682	COVID-19	Yes

Supplementary Table S5. Graft failures

Donor HIV type	Days since transplant	Cause of graft loss
HIV D+	52*	Primary non-function
HIV D+	1265	Disseminated bartonella, hemophagocytic lymphohistiocytosis
HIV D+	1151	BK nephropathy
HIV D-	3*	Renal vein thrombosis
HIV D-	1*	Transplant graft nephrectomy due to bleed from biopsy site
HIV D-	1*	Renal vein thrombosis
HIV D-	90	Primary non-function
HIV D-	401	Rejection
HIV D-	502*	Rejection
HIV D-	71*	Primary non-function

* Date of nephrectomy was used as the date of graft failure for calculation

Supplementary Table S6. Allograft Rejection

Characteristics of rejection episodes	Overall (N=53)	HIV D+/R+ (N=21)	HIV D-/R+ (N=32)
Biopsy performed — no.	53	21	32
Recipients with rejection — no.	40	18	22
1 event	30	15	15
2 events	7	3	4
3 events	3	0	3
Protocol definition — no./total no.			
Clinically suspected and treated	48/53	19/21	29/32
Biopsy proven and treated	31/53	11/21	20/32
Biopsy proven and not treated	4/53	2/21	2/32
Borderline for rejection on biopsy	10/53	4/21	6/32
Other diagnoses on biopsy*	7/53	3/21	4/32
Non-viable tissue, evaluation not feasible	1/53	0/21	1/32
Rejection type if biopsy proven — no./total no.			
Cellular	34/35	13/13	21/22
Antibody mediated†	5/35	1/13	4/22
Non-adherence reported — no./total no.	5/53	1/21	4/32
Type of treatment received — no./total no.			
Steroids only	25/53	11/21	14/32
ATG only	1/53	0/21	1/32
IVIG only	4/53	2/21	2/32
ATG + steroids	6/53	2/21	4/32
ATG + steroids + IVIG	1/53	0/21	1/32
Steroids + IVIG	3/53	1/21	2/32
Steroids + IVIG + rituximab	1/53	1/21	0/32
Steroids + IVIG + rituximab + plasmapheresis	1/53	0/21	1/32
ATG + IVIG	1/53	1/21	0/32
ATG + IVIG + plasmapheresis	2/53	0/21	2/32
ATG + steroids + IVIG + plasmapheresis	1/53	1/21	0/32
ATG + steroids + IVIG + rituximab + plasmapheresis	2/53	0/21	2/32
No treatment‡	5/53	2/21	3/32
DSA detected at rejection§ — no./total no.	12/34	6/15	6/19

* Arteriosclerosis, infarct, arteriolar thrombotic microangiopathy, microvascular inflammation, hemorrhage, transplant glomerulopathy, diabetic glomerulopathy and focal segmental glomerulosclerosis

† 1 HIV D+/R+ and 3 HIV D-/R+ biopsy showed simultaneous antibody mediated rejection and T cell mediated rejection.

‡ 1 HIV D-/R+ underwent nephrectomy

§ Donor specific HLA antibodies (DSA) were not tested at the time of rejection: 6 in HIV D+/R+ group and 13 in HIV D-/R+

Supplementary Table S7. **Post-transplant outcomes in observational arm**

	Observational arm: HIV D-/R+	
Events	**1-year (N=9)**	**3-year (N=4)**
Death — no./total no.	0/9	0/4
Graft failure — no./total no.	0/9	0/4
Rejection — no./total no.	0/9	0/4

Data obtained from the Scientific Registry of Transplant Recipients.

Supplementary Table S8. Opportunistic infections

Characteristics	Overall (N=198)		HIV D+/R+ (N=99)		HIV D-/R+ (N=99)	
	Recipients with event — no./total no.	*Total no. of event*	*Recipients with event — no./total no.*	*Total no. of event*	*Recipients with event — no./total no.*	*Total no. of event*
Type of opportunistic infection		19		11		8
CMV disease*	2/198	2	2/99	2	0/99	0
Esophageal candidiasis	5/198	6	2/99	3	3/99	3
Kaposi's sarcoma	3/198	3	0/99	0	3/99	3
Cryptosporidium	2/198	2	1/99	1	1/99	1
Chronic HSV ulcers	2/198	2	2/99	2	0/99	0
Bartonella henselae	1/198	1	1/99	1	0/99	0
Disseminated VZV	1/198	1	1/99	1	0/99	0
Histoplasmosis	1/198	1	1/99	1	0/99	0
Cryptococcal meningitis	1/198	1	0/99	0	1/99	1
Requiring hospitalization	8/198	10	6/99	8	2/99	2
Related to graft failure	1/198	1	1/99	1	0/99	0
Related to death	0/198	0	0/99	0	0/99	0
Days to infection, median (IQR)	420 (115-643)		494(179-768)		264 (108-804)	

* 1 recipient was CMV D+/R- (probable CMV colitis) and 1 was CMV D+/R+ (probable CMV pneumonia)

Supplementary Table S9. Cancers

	Overall (N=15)	HIV D+/R+ (N=9)	HIV D-/R+ (N=6)
Types of cancers — no. of events			
Renal cell carcinoma	2	0	2
Kaposi's sarcoma	3	0	3
Esophageal cancer	2	1	1
Skin cancer (non-melanoma)	4	4*	0
Prostate cancer	1	1	0
Duodenal neuroendocrine tumor	1	1	0
Colon cancer	1	1	0
Oral cavity and pharynx cancer	1	1	0
Related to death — no. of events	4	3	1

* One participant had two separate non-melanoma skin cancers.

Supplementary Table S10. HIV breakthrough events

Number of events	Overall (N=17)	HIV D+/R+ (N=13)	HIV D-/R+ (N=4)
Recipients with event — no.	14	10	4
Contributing factor — no./total no.			
Nonadherence	11/17	9/13	2/4
Resistance	0/17	0/13	0/4
Medication interaction	3/17	3/13	0/4
Other*	3/17	1/13	2/4
ART changed at transplant due to donor-related concerns? — no./total no.	0/17	0/13	0/4
Days from transplant to HIV breakthrough, median (IQR)	319 (214-537)	319 (245-685)	307 (143-434)
Peak viral load— median (IQR)	8540 (1940-47800)	8540 (3956-47800)	15695 (1517-1804750)
Days from peak to VL <200† — median (IQR)	28 (12-46)	32 (12-49)	20 (10-36)
Blood collected— no./total no.	6/17	4/13	2/4

* Suspected lab error n=1 in HIV D+/R+ and HIV D-/R+; recurrent bacterial infection n=1 in HIV D-/R+.

Supplementary Table S11. **Characteristics of participants with possible donor-derived HIV-superinfection.**

Characteristics	
Follow-up time on study, status	182 weeks, alive
Age	32 years
Sex	Male
Race	Black
HIV Acquisition risk factor	Male who has sex with males
ART pre-transplant	Dolutegravir, tenofovir, lamivudine
CD4 at transplant, 13, 26, 52 weeks	553 cells, 874 cells, 431 cells, 315 cells
HIV RNA at transplant, 13, 26, 52 weeks	< 20 copies/mL all
Any HIV VL 50-200 copies?	No
Any HIV breakthrough	No
Any ART changes?	Bictegravir, tenofovir, emtricitabine post-transplant
Induction immunosuppression	ATG, IV steroids
Maintenance immunosuppression	Tacrolimus, MMF, steroids
Post transplant events	Acute cellular rejection 1B at week 13, rejection at week 104
Donor HIV RNA	1920 copies/mL
Donor on ART	Yes

Supplementary Table S12. Representativeness of Study Participants

Category	
Disease, problem, or condition under investigation	End stage kidney disease (ESKD) in people with HIV
Special considerations related to	
Sex and gender	Among people with HIV (PWH), the prevalence of ESKD is higher in men than women in the United States. In national studies of PWH and ESKD, approximately 70% are male (1,2). We are not aware of any nationally representative data describing gender identity among PWH and ESKD.
Age	In national studies of PWH and ESKD in the United States, the median age is around 50 years old (1,2).
Race or ethnic group	ESKD disproportionately affects people identified as Black in the United States. In national studies, approximately 70-75% of PWH and ESKD are Black and 7-10% are Latino (1,2).
Overall representativeness of this study	In this study, we had a slightly higher proportion of male participants (83%) compared to what has been reported in studies of PWH and ESKD (70%). The median age of study participants (53 years) was similar to the median age reported among PWH and ESKD in national studies (50 years) in the United States. We had a similar proportion of participants with Black race (71%), compared to national studies of PWH and ESKD and a slightly higher proportion of Latino participants (13%) which may reflect a growing population in the United States.

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Supplementary Table S13. Serious Adverse Event, system organ class details

System organ class of serious adverse event	HIV D-/R+ (N=99)	HIV D+/R+ (N=99)	p-value*
	Recipients with event — no.	*Recipients with event — no.*	
Blood and lymphatic system disorders	0	5	0.06
Cardiac disorders	4	2	0.68
Endocrine disorders	3	6	0.50
Gastrointestinal disorders	11	11	>0.99
General disorders	2	8	0.10
Hepatobiliary disorders	0	1	>0.99
Immune system disorders	15	12	0.68
Infections	49	49	>0.99
Injury, poisoning, and procedural complications	8	10	0.81
Investigations	5	4	>0.99
Metabolism and nutrition disorders	10	9	>0.99
Musculoskeletal and connective tissue disorders	2	1	>0.99
Neoplasms benign, malignant, and unspecified	1	4	0.37
Nervous system disorders	3	4	>0.99
Psychiatric disorders	1	1	>0.99
Renal and urinary disorders	22	23	>0.99
Reproductive system and breast disorders	1	0	>0.99
Respiratory, thoracic and mediastinal disorders	8	8	>0.99
Skin and subcutaneous tissue disorders	1	0	>0.99
Surgical and medical procedure	2	0	0.50
Vascular disorders	23	9	0.01

* Unadjusted p-value obtained from Fisher's exact test

Supplementary Table S14. Serious adverse events, episode details.

Serious adverse event, N=total no. of episodes	HIV D+/R+ (N=206)	HIV D-/R+ (N=222)
Blood and lymphatic system disorders, no.		
Anemia	2	0
Febrile neutropenia	2	0
Neutropenia	1	0
Cardiac disorders, no.		
Acute myocardial infraction	0	1
Atrial flutter	0	1
Cardiac arrest	0	1
Myocardial infarction	1	0
Myocardial ischemia	0	1
Pericarditis	1	0
Endocrine disorders, no.		
Diabetic ketoacidosis	2	0
Hyperglycemia	3	3
Diabetes mellitus	2	0
Gastrointestinal disorders, no.		
Abdominal pain	0	3
Aphthous ulcers	1	0
Constipation	0	2
Diarrhea	4	1
Fistula of small intestine	1	0
Gastritis	1	0
Gastroenteritis	3	0
Incarcerated inguinal hernia	0	1
Esophageal carcinoma	0	1
Oral candidiasis	1	0
Pancreatitis acute	1	0
Pancreatitis necrotising	0	1
Peritonitis	0	1
Postoperative ileus	0	1
Small intestinal obstruction	0	5
Vomiting	1	3
General disorders, no.		
Chest pain	1	0
Death	4	2
Pyrexia	2	0
Ulcer (Right lower extremity ulceration)	1	0
Hepatobiliary disorders, no.		
Hepatic failure	1	0
Immune system disorders, no.		
Kidney transplant rejection	9	9
Transplant rejection	3	10
Infections, no.		
Adenovirus infection	0	2
Bacteremia	1	2
Bacterial sepsis	1	0
Bronchitis	0	1

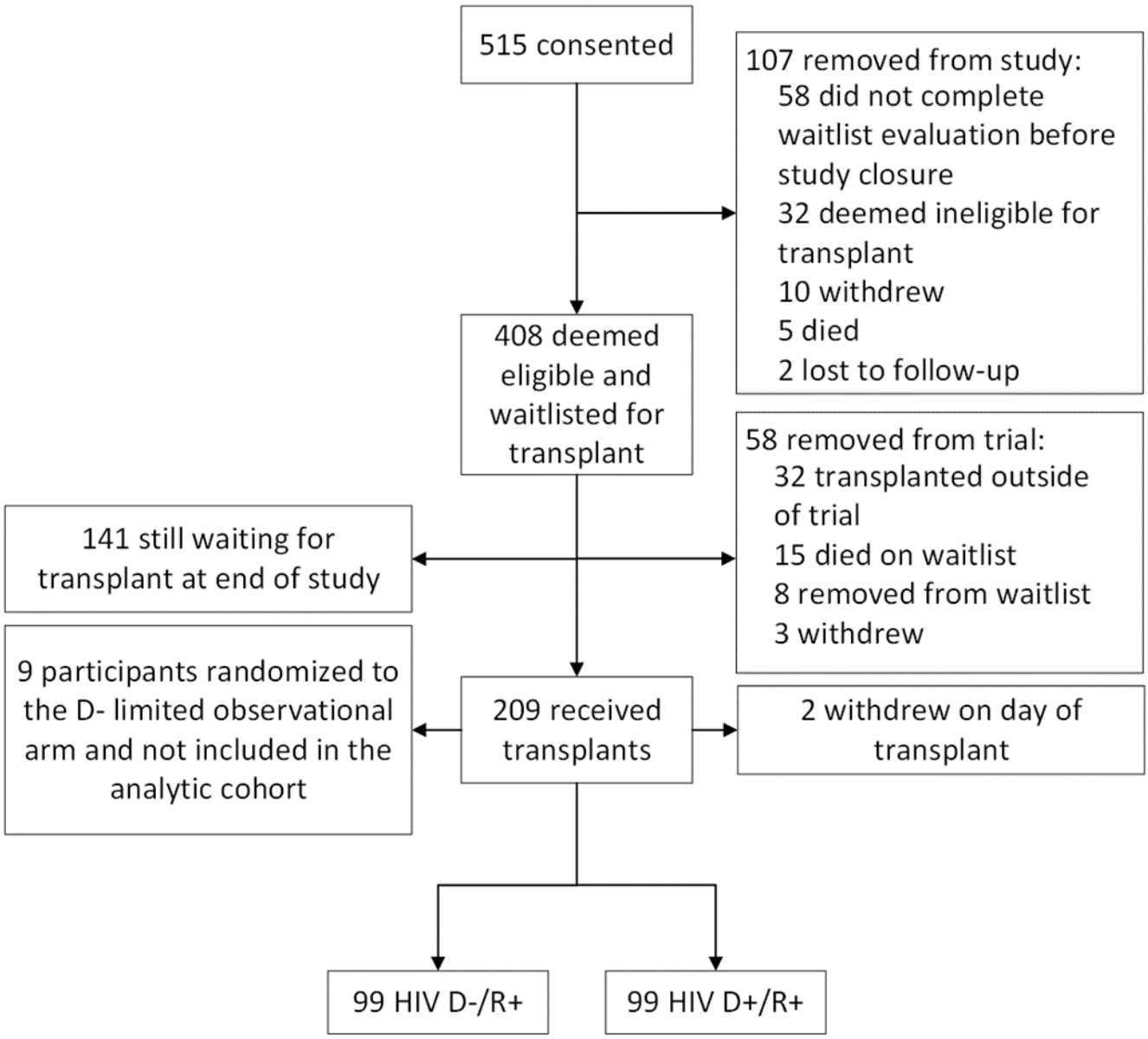
Cellulitis	0	2
Clostridium difficile colitis	0	1
Clostridium difficile infection	1	1
COVID-19	38	33
Cryptosporidiosis infection	1	1
CMV (Cytomegalovirus) viremia	3	1
Device related infection	1	0
Enterococcal bacteremia	0	1
Histoplasmosis	1	0
HIV viremia (breakthrough)	3	2
Influenza	2	0
Kaposi's sarcoma	0	1
Lower respiratory tract infection	0	1
Meningitis cryptococcal	0	1
Monkeypox	0	1
Esophageal candidiasis	2	0
Osteomyelitis	0	2
Parvovirus B19 infection	1	0
Parvovirus infection	0	1
Pneumonia	0	1
Pneumonia pseudomonal	1	0
Postoperative wound infection	0	3
Pseudomonas infection	1	0
Pyelonephritis	2	2
Rhinovirus infection	0	1
Rotavirus infection	1	0
Sepsis	4	4
Shigella infection	1	0
Tooth infection	1	0
Urinary tract infection	5	8
Urinary tract infection bacterial	1	0
Urinary tract obstruction	1	0
Urosepsis	2	0
Varicella zoster virus infection	1	0
Viral upper respiratory tract infection	1	0
Injury, poisoning, and procedural complications, no.		
Complications of transplanted kidney	1	0
Delayed graft function	6	2
Graft loss	1	1
Post procedural urine leak	0	1
Toxicity to various agents	1	2
Transplant failure	0	1
Urinary tract stoma complication	0	1
Vascular pseudoaneurysm	1	0
Wound hematoma	1	0
Wound infection staphylococcal	1	0
Investigation, no.		
Bartonella test positive	1	0
Blood creatinine increased	2	3
Drug trough level (increased tacrolimus level)	0	1
Hemoglobin decreased	1	0

Transaminases increased	0	1
Metabolism and nutrition disorders, no.		
Dehydration	1	0
Diabetes mellitus	1	0
Fluid overload	0	2
Hyperglycemia	4	3
Hyperkalemia	2	1
Hypocalcemia	0	1
Hyponatremia	1	1
Hypophosphatemia	0	1
Metabolic acidosis	0	1
Musculoskeletal and connective tissue disorders, no.		
Lower limb fracture	1	0
Osteomyelitis	0	1
Pain in extremity	0	1
Neoplasms benign, malignant, and unspecified (incl. cysts and polys), no.		
Brain cancer metastatic	1	0
Colon cancer stage III	1	0
Kaposi's sarcoma	0	1
Prostate cancer	1	0
Squamous cell carcinoma	1	0
Nervous system disorders, no.		
Cerebellar stroke	1	0
Headache	1	0
Meningitis bacterial	0	1
Metabolic encephalopathy	0	1
Neuropathy peripheral (from diabetes)	1	0
Spinal cord abscess	1	0
Syncope	0	1
Psychiatric disorders, no.		
Anxiety	1	0
Mental status changes	0	1
Renal and urinary disorders, no.		
Acute kidney injury	8	9
Hematuria	0	2
Hydronephrosis	0	4
Nephrolithiasis	0	2
Obstructive nephropathy	1	0
Perinephric abscess	1	0
Perinephric collection	1	0
Polyomavirus-associated nephropathy	1	0
Pyelonephritis	4	4
Renal cell carcinoma	0	1
Renal graft infection	1	0
Renal tubular injury	1	1
Tubulointerstitial nephritis	0	1
Ureteral necrosis	1	0
Ureteral stenosis	0	1
Urinary tract infection	2	0
Urinary tract obstruction	1	1

Urosepsis	6	8
Reproductive system and breast disorders, no.		
Pelvic hematoma	0	1
Respiratory, thoracic and mediastinal disorders, no.		
Acute respiratory failure	1	0
Aspiration	1	0
Chest pain	1	1
Dyspnea	1	3
Influenza	0	1
Pneumonia	1	2
Pneumonia aspiration	1	0
Pulmonary fibrosis	1	0
Pulmonary oedema	1	0
Respiratory failure	0	1
Tonsil cancer	1	0
Skin and subcutaneous tissue disorders, no.		
Diabetic foot	0	1
Surgical and medical procedure, no.		
Nephrectomy	0	2
Vascular disorders, no.		
Acute myocardial infraction	1	0
Arteriovenous fistula site complication	0	1
Arteriovenous fistula thrombosis	1	0
Deep vein thrombosis	0	5
Gastrointestinal hemorrhage	0	3
Hematoma	2	1
Hematuria	0	2
Hypertension	1	1
Hypertensive crisis	1	3
Hypotension	0	3
Ischemia	0	1
Pelvic venous thrombosis	1	0
Pulmonary embolism	0	1
Renal hematoma	0	1
Renal vein thrombosis	0	2
Renovascular hypertension	0	1
Small intestinal hemorrhage	1	0
Superior vena cava syndrome	0	1
Syncope	1	0

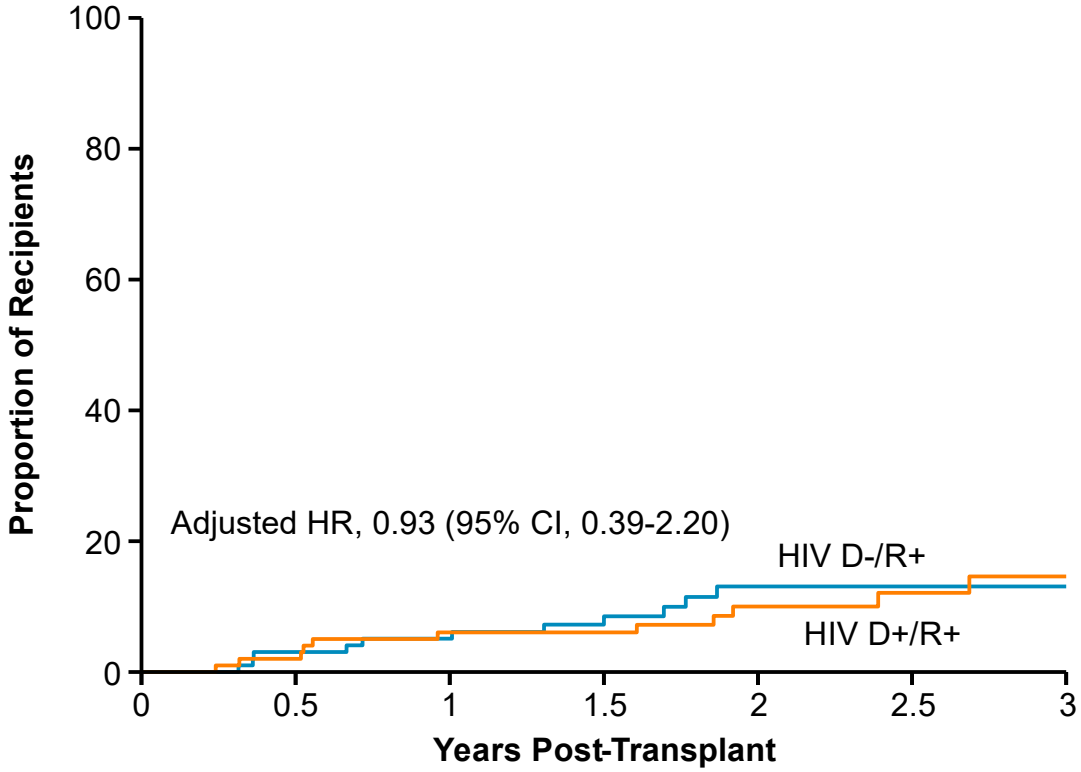
MedDRA version 21.0 was used for events coding.

Supplementary Figure S1. **Eligibility, group assignment, and follow-up**



Supplementary Figure S2. **Kaplan-Meier curves for subcomponents of the primary outcome**

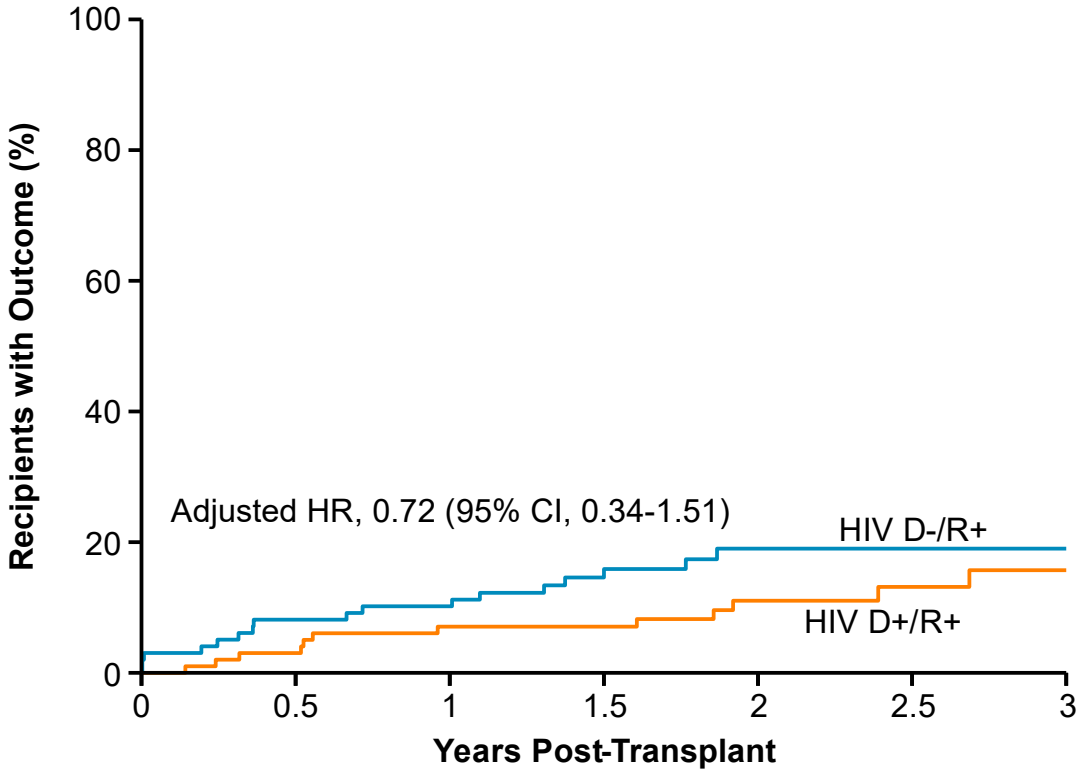
A) Time to death



No. at Risk

HIV D-/R+	99	95	93	73	52	42	28
HIV D+/R+	99	97	93	88	59	40	29

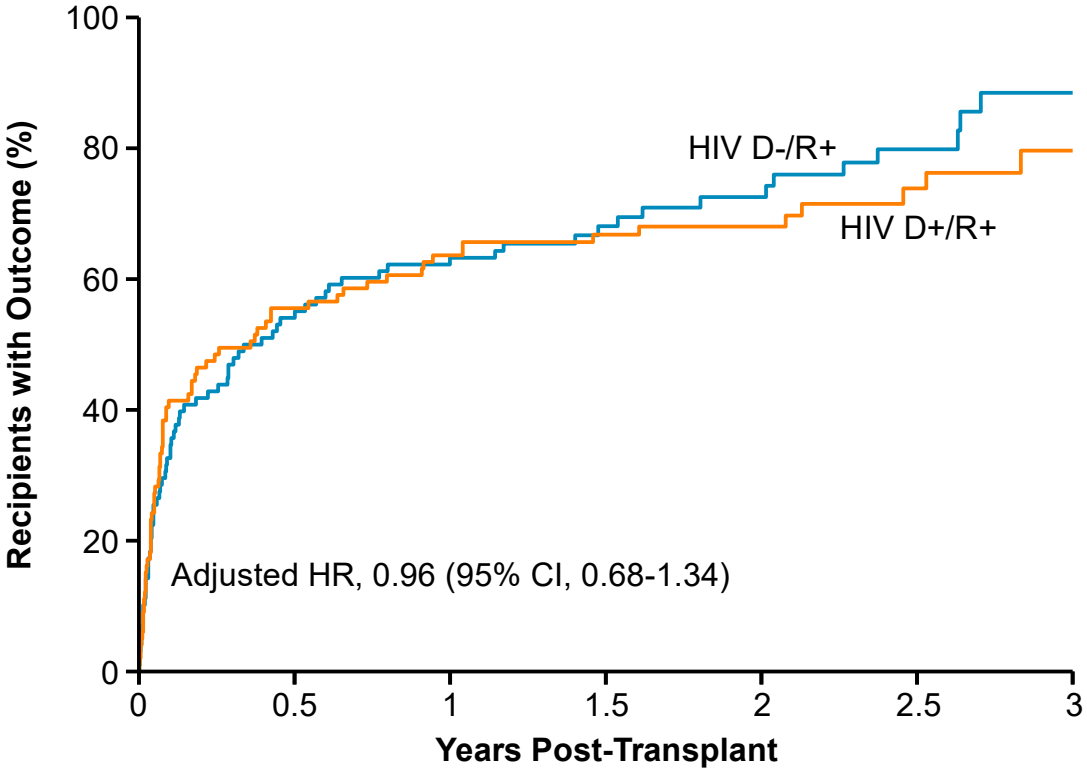
B) Time to death or graft failure



No. at Risk

HIV D-/R+	99	90	88	66	49	40	27
HIV D+/R+	99	96	92	87	58	39	28

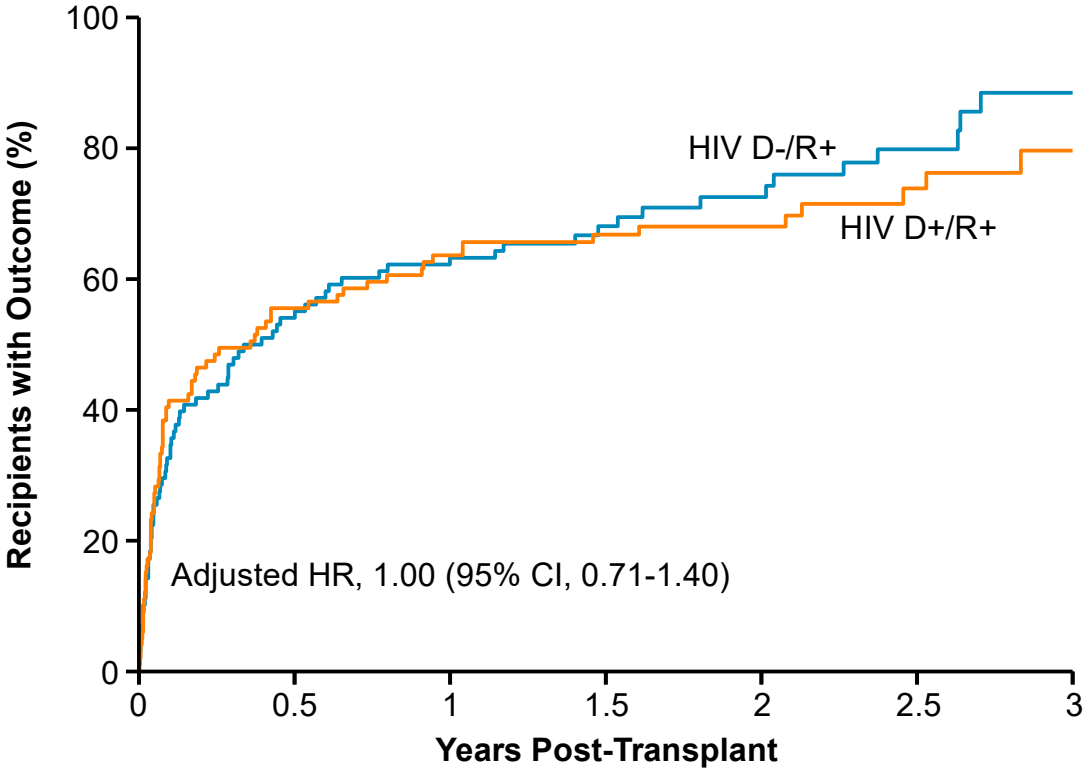
C) Time to death, graft failure, or SAE



No. at Risk

HIV D-/R+	99	45	36	23	16	9	3
HIV D+/R+	99	44	36	29	22	11	6

D) Time to death, graft failure, SAE, or opportunistic infection

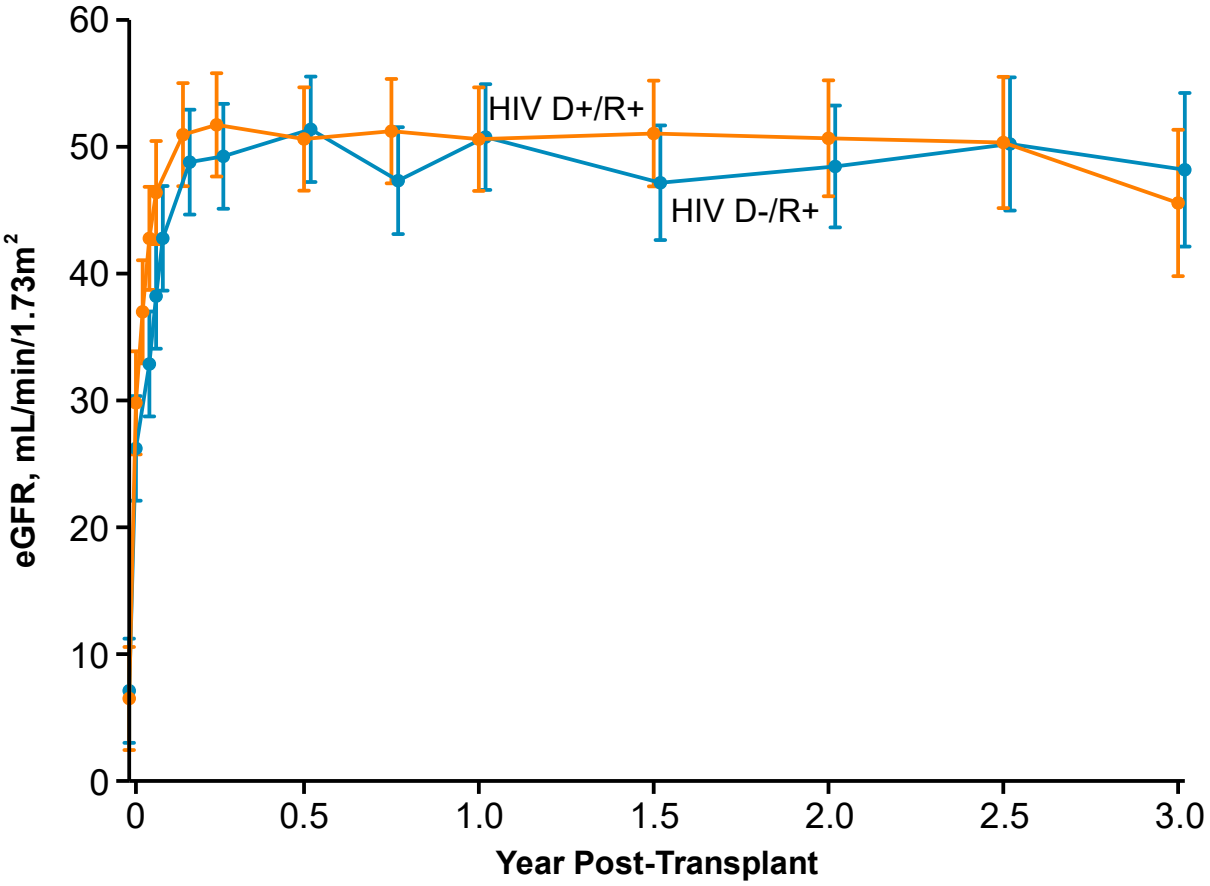


No. at Risk

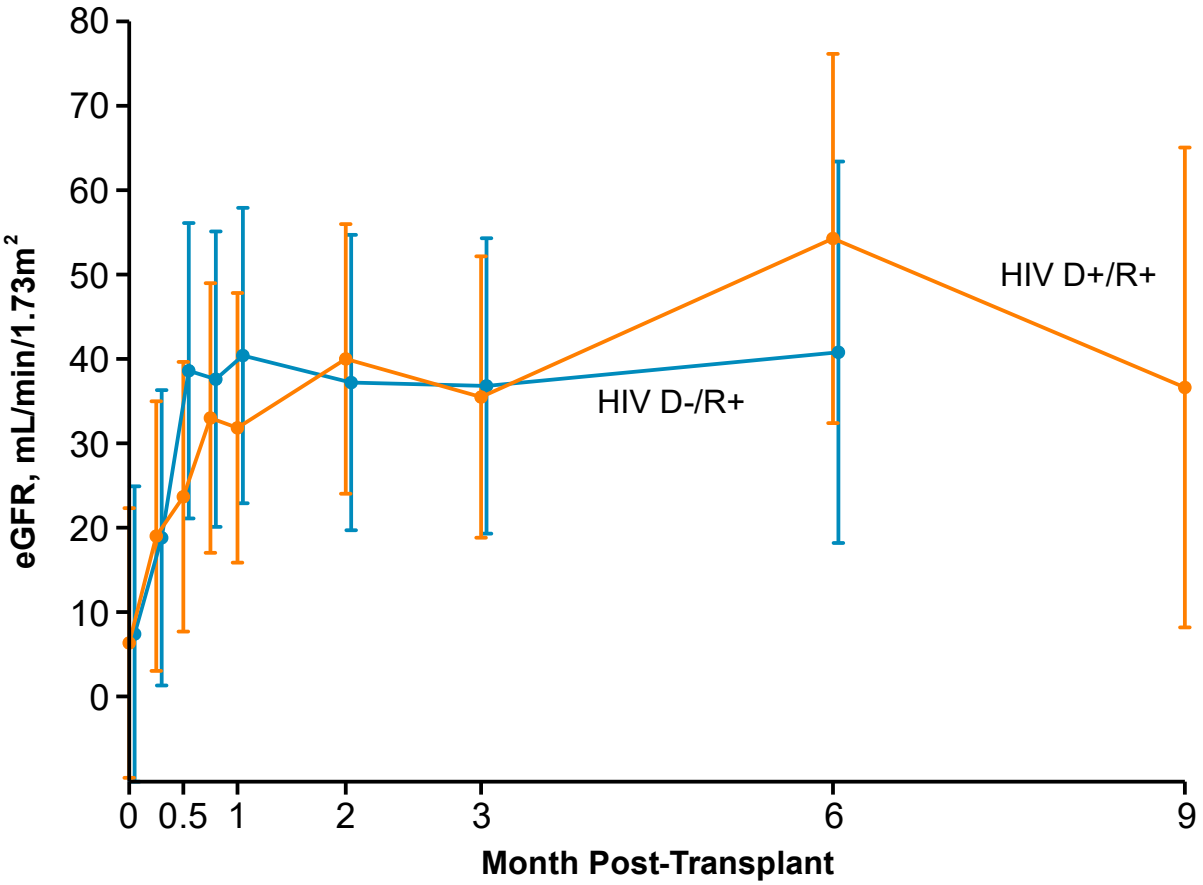
HIV D-/R+	99	45	36	23	16	9	3
HIV D+/R+	99	44	36	29	22	11	6

Supplementary Figure S3. **Graft function represented by post-transplant eGFR trajectory**

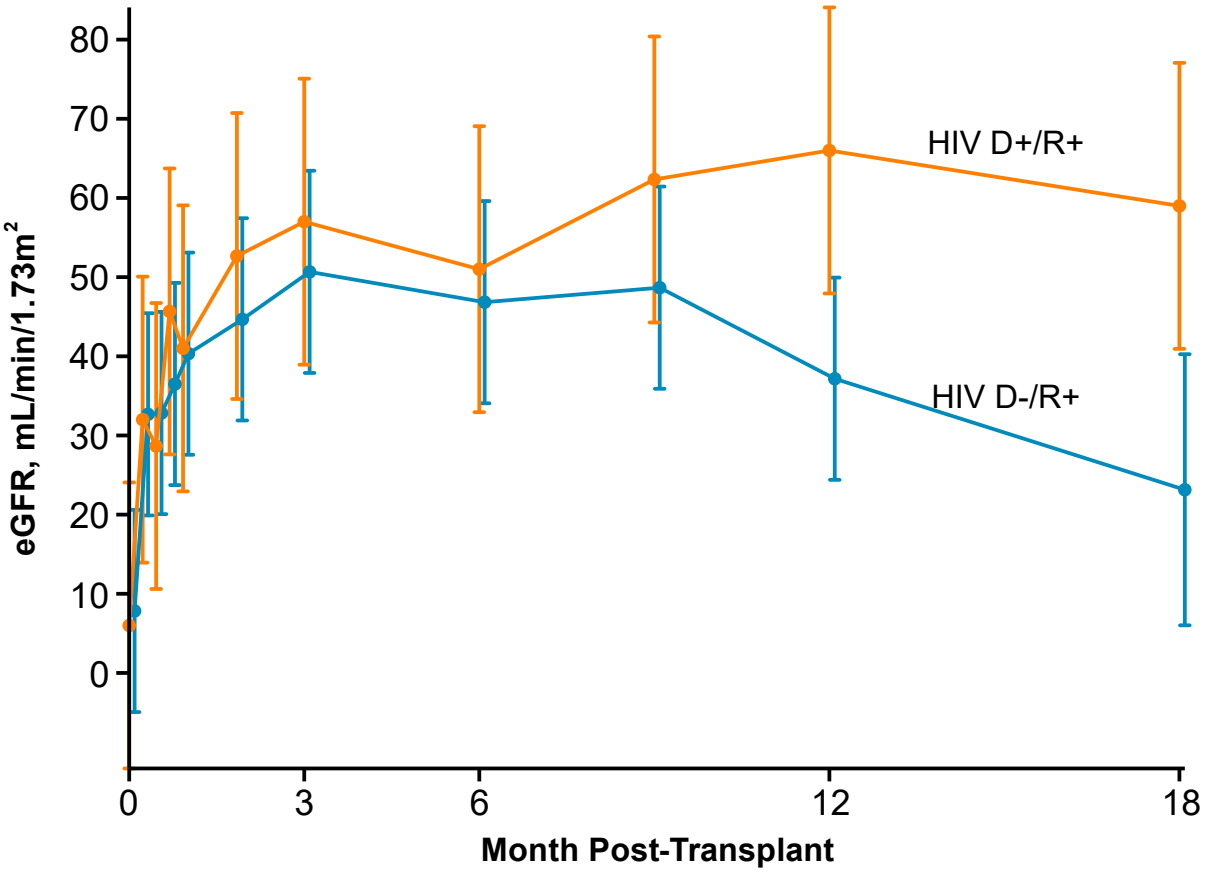
A) Recipients who survived at least two years or through last follow up (N=178)



B) Recipients who died in the first year of follow up (N=11)

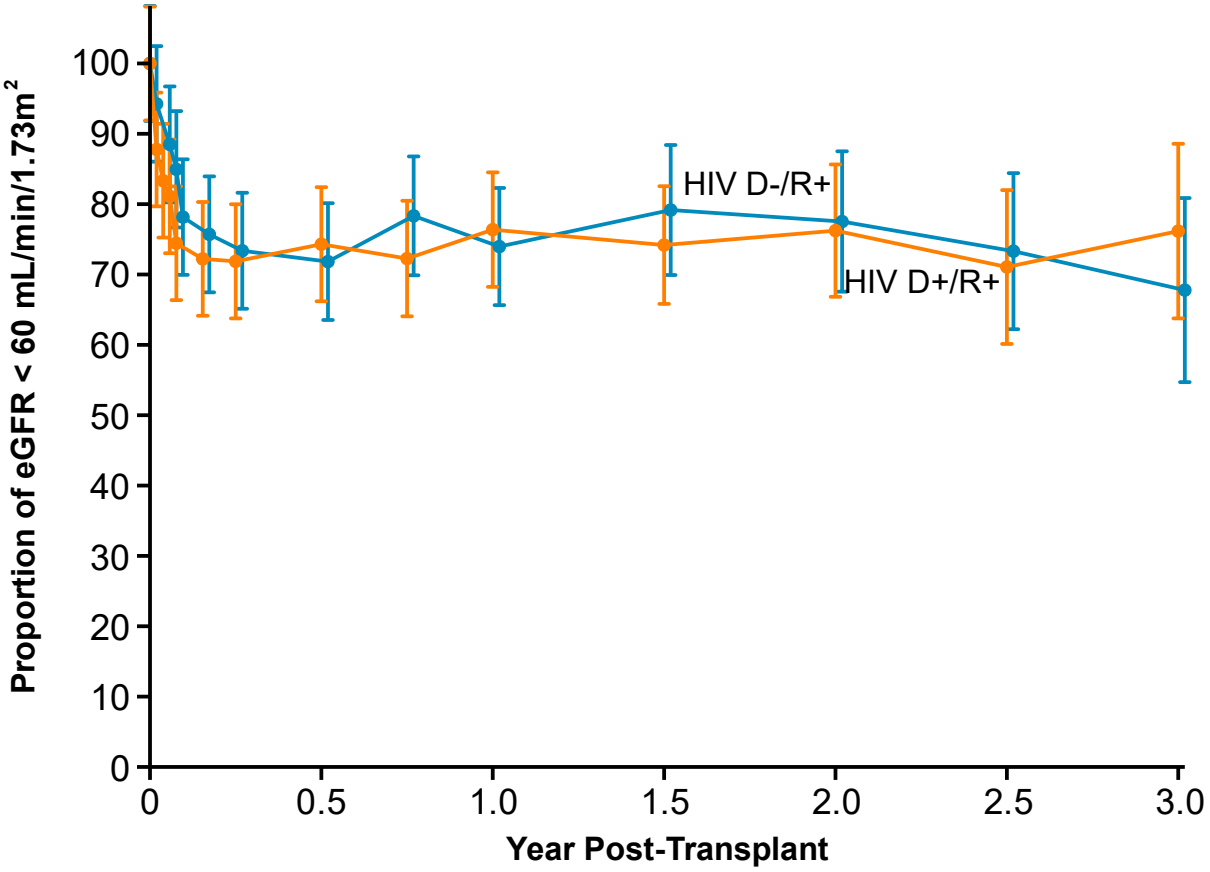


C) Recipients who died in the second year of follow up (N=9)

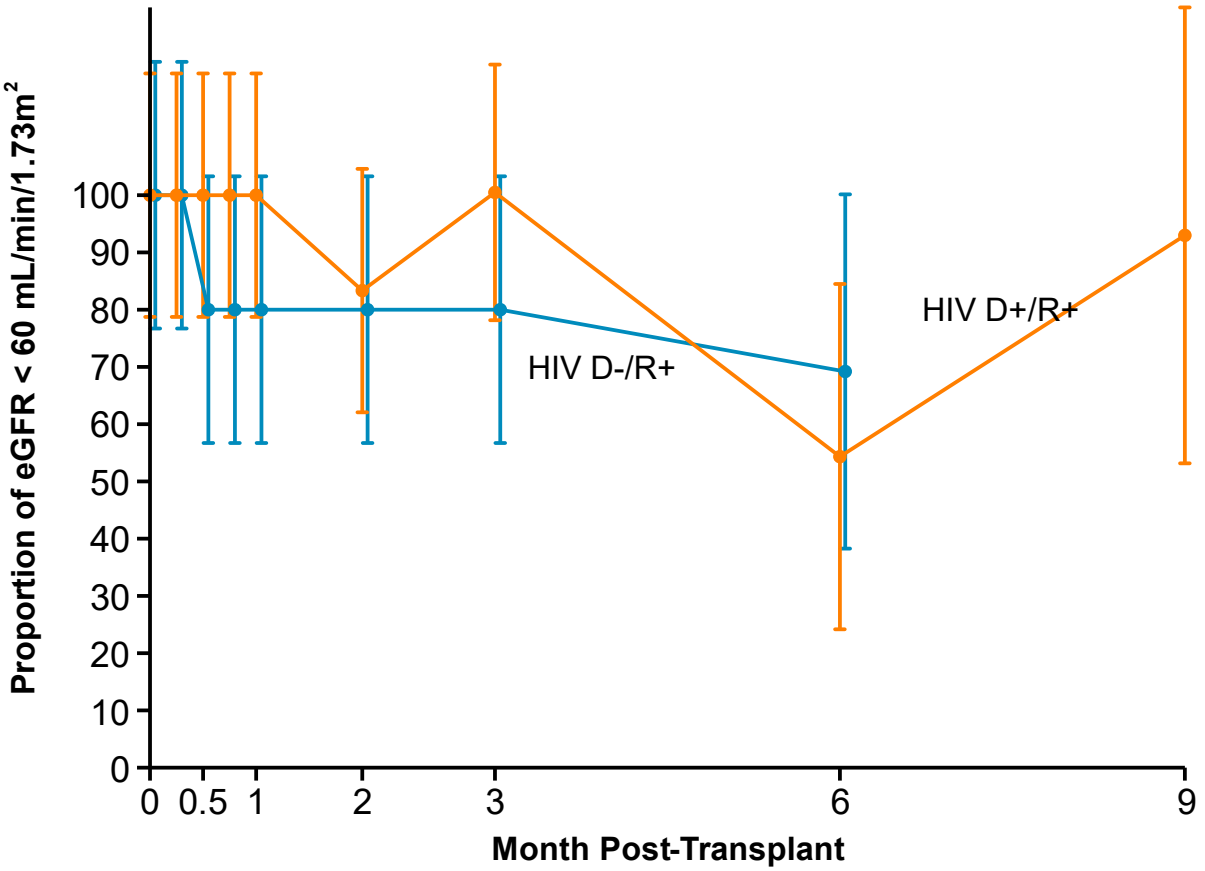


Supplementary Figure S4. **Proportion of recipients with eGFR < 60 ml/min/1.73m^2**

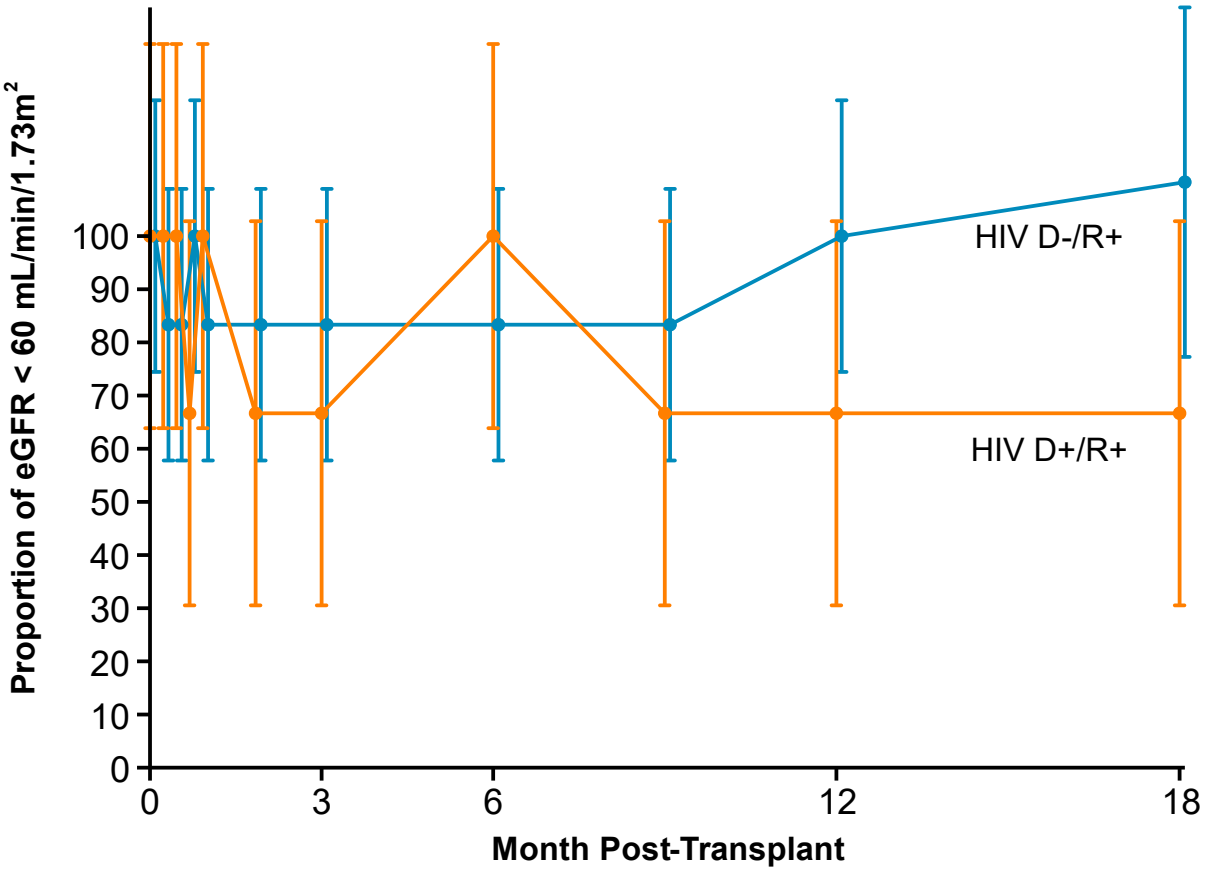
A) Recipients who survived at least two years or through last follow up (N=178)



B) Recipients who died in the first year of follow up (N=11)



C) Recipients who died in the second year of follow up (N=9)



Supplementary Figure S5. **Neighbor-joining phylogenetic tree of site-directed next-generation sequencing data for pol gene from a kidney recipient at baseline (red), week 13 (blue) week 26 (green), and week 104 (purple). These data suggest that at week 26 the recipient's PBMC DNA contained either a previously undetected minor variant indicating a dual-infection or a superinfection from the donor or other source. Sequences could not be amplified for the gp41 region at any time point, or from this recipient's donor, therefore the recipient was classified as a potential HIV-superinfection. HIV-1 subtype reference sequences are shown in black.**