

Supplemental Online Content

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This supplemental material has been provided by the authors to give readers additional information about their work.

eTable 1. Characteristics of all deceased donors receiving vs. not receiving dialysis with kidney procured

Donor characteristics ^a		Donors receiving dialysis (N=805)	Donors not receiving dialysis (N=56,871)	Standardized mean difference
Age, year		35.2 (12.2)	41.5 (14.7)	0.46
Female sex		306 (38%)	22816 (40.1%)	-0.043
Black race ^c		133 (16.5%)	8337 (14.7%)	0.051
BMI, kg/m ²		29.8 (7.1)	28.4 (6.8)	0.21
Admission eGFR, ml/min/1.73m ²		63.6 (31.1)	85.8 (25.6)	-0.78
Serum creatinine, mg/dL, median (IQR)	Admission	1.4 (1, 2)	1 (0.8, 1.3)	0.71
	Peak	4.7 (2.6, 6.7)	1.4 (1, 1.8)	1.5
	Terminal	2.7 (1.5, 4.3)	1 (0.7, 1.4)	1.07
Dialysis indication	AKI	663 (82.4%)	0	NA
	Intoxication	83 (10.3%)	0	
	Other ^b	59 (7.3%)	0	
Dialysis modality	Hemodialysis	313 (38.9%)	0	NA
	CRRT	456 (56.6%)	0	
	Both	25 (3.1%)	0	
	Unknown	11 (1.4%)	0	
Duration of dialysis	≤3 days	578 (71.8%)	0	NA
	4-7 days	147 (18.3%)	0	
	> 7 days	46 (5.7%)	0	
	Unknown	34 (4.2%)	0	
Number of vasopressors and inotropes, median (IQR)		1 (0, 1)	0 (0, 1)	0.21
Hypertension		206 (25.6%)	19125 (33.6%)	0.18
Diabetes		85 (10.6%)	5921 (10.4%)	-0.0048
Donation after cardiac death		56 (7%)	8357 (14.7%)	-0.25
Stroke as cause of death		91 (11.3%)	17820 (31.3%)	-0.5
Hepatitis C status		21 (2.6%)	2967 (5.2%)	-0.13
KDPI		43.7 (23.7)	48.6 (28.4)	0.19
Number of kidney biopsies, median (IQR)		2 (2, 2)	2 (0, 2)	<0.001
Number of kidneys transplanted per donor	0	282 (35%)	8438 (14.8%)	0.48
	1	77 (9.6%)	5377 (9.5%)	0.0038
	2	446 (55.4%)	43056 (75.7%)	-0.44
Year of transplant	2010-2014	200 (24.8%)	27211 (47.8%)	-0.49
	2015-2016	240 (29.8%)	13855 (24.4%)	0.12
	2017-2018	365 (45.3%)	15795 (27.8%)	0.37

Abbreviation: BMI, body mass index; eGFR, estimated glomerular filtration rate; KDPI, kidney donor profile index.

a. Descriptive variables are presented as mean (standard deviation), median (IQR), and N (proportion).

b. Other includes dialysis for severe hyperkalemia, acidosis, hypervolemia, hyperammonemia, and other electrolyte abnormalities without laboratory evidence of stage 2-3 AKI.

c. Race as reported by donor family and electronic health records

eTable 2. Characteristics of deceased donors receiving dialysis with vs. without kidney transplanted

Donor characteristics ^a		Donors receiving dialysis with at least one kidney transplanted (N=523)	Donors receiving dialysis without kidney transplanted (N=282)	Standardized mean difference
Age, year		32.9 (10.8)	39.6 (13.3)	-0.56
Female sex		207 (39.6%)	99 (35.1%)	0.093
Black race^c		78 (14.9%)	55 (19.5%)	-0.12
BMI, kg/m²		29.5 (7.1)	30.5 (7.1)	-0.15
Admission eGFR, ml/min/1.73m²		65.9 (31)	59.3 (30.8)	0.21
Serum creatinine, mg/dL, median (IQR)	Admission	1.4 (1, 2)	1.4 (1.1, 2.2)	-0.19
	Peak	4.2 (2.1, 6.3)	5.3 (3.7, 7.1)	-0.39
	Terminal	2.3 (1.2, 4)	3.1 (2, 4.6)	-0.27
Dialysis indication	AKI	400 (76.5%)	263 (93.3%)	-0.48
	Intoxication	72 (13.8%)	11 (3.9%)	0.35
	Other^b	51 (9.8%)	8 (2.8%)	0.29
Dialysis modality	Hemodialysis	205 (39.2%)	108 (38.3%)	0.018
	CRRT	294 (56.2%)	162 (57.4%)	-0.025
	Both	15 (2.9%)	10 (3.5%)	-0.038
	Unknown	9 (1.7%)	2 (0.7%)	0.092
Duration of dialysis	≤3 days	376 (71.9%)	202 (71.6%)	0.0058
	4-7 days	104 (19.9%)	43 (15.2%)	0.12
	> 7 days	22 (4.2%)	24 (8.5%)	-0.18
	Unknown	21 (4%)	13 (4.6%)	-0.029
Number of vasopressors and inotropes used, median (IQR)		0 (0, 1)	1 (0, 1)	-0.25
Number of kidneys placed on pump, median (IQR)		0 (0, 1)	0 (0, 0)	0.45
Hypertension		100 (19.1%)	106 (37.6%)	-0.42
Diabetes		39 (7.5%)	46 (16.3%)	-0.28
Donation after cardiac death		39 (7.5%)	17 (6%)	0.057
Stroke as cause of death		37 (7.1%)	54 (19.1%)	-0.36
Hepatitis C status		11 (2.1%)	10 (3.5%)	-0.087
Year of transplant	2010-2014	145 (27.7%)	55 (19.5%)	0.19
	2015-2016	148 (28.3%)	92 (32.6%)	-0.094
	2017-2018	230 (44%)	135 (47.9%)	-0.078

Abbreviation: BMI, body mass index; CRRT, continuous renal replacement therapy; eGFR, estimated glomerular filtration rate.

a. Descriptive variables are presented as mean (standard deviation), median (IQR), and N (proportion).

b. Other includes dialysis for severe hyperkalemia, acidosis, hypervolemia, hyperammonemia, and other electrolyte abnormalities without laboratory evidence of stage 2-3 AKI.

c. Race as reported by donor family and electronic health records

eTable 3. Recipient kidney function at 6 and 12 months after kidney transplant from matched donors receiving vs. not receiving dialysis

Recipient eGFR ^a , ml/min/1.73m ²	Recipients of matched donors receiving dialysis, mean (SD), N	Recipients of matched donors not receiving dialysis, mean (SD), N	Adjusted coefficient for % difference ^b (95% CI)
6 months	63.3 (21.4), N= 912	64.4 (21.8), N= 879	-0.33% (-4.02%, 3.51%)
12 months	64.7 (21), N=888	65.1 (22.2), N=853	0.51% (-3.26%, 4.42%)

a. For recipients who developed graft failure before the 6- and 12-month timepoint, eGFR was imputed as 10 ml/min/1.73m². For recipients who died before the 6- and 12-month timepoint, their last eGFR was carried forward. A total of 153 (7.8%) and 203 (10.4%) recipients had missing 6- and 12-month eGFR and did not have graft failure, thus were not included in this analysis.

b. Multiple linear regression models adjusted for cold ischemic time, recipient age, BMI, diabetes as the cause of recipient ESKD, preemptive transplant status, previous kidney transplant, HLA mismatch level, panel reactive antibody categories (0%, 1-20%, 21-80%, and >80%), donor admission eGFR. Sandwich estimators are used to account for pairs of donor kidneys. In these models, eGFR was log₂ transformed, and coefficients were converted to percentage difference for interpretation.

eTable 4. Recipient kidney function at 6 and 12 months after kidney transplant from matched donors receiving vs. not receiving dialysis using alternative imputation approaches

eGFR imputation methods to account for recipient deaths	No imputation (i.e. For recipients that died, no eGFR was carried forward)		
Recipient eGFR ^a , ml/min/1.73m ²	Recipients of matched donors receiving dialysis, mean (SD), N	Recipients of matched donors not receiving dialysis, mean (SD), N	Adjusted coefficient for % difference ^b (95% CI)
6 months	63.3 (21.4), N= 912	64.3 (21.8), N= 877	-0.24% (-3.93%, 3.6%)
12 months	64.7 (21), N=887	65.3 (22), N=845	0.2% (-3.55%, 4.08%)
eGFR imputation methods to account for recipient deaths	Imputed as 1ml/min/1.73m ²		
Recipient eGFR ^c , ml/min/1.73m ²	Recipients of matched donors receiving dialysis, mean (SD), N	Recipients of matched donors not receiving dialysis, mean (SD), N	Adjusted coefficient for % difference ^b (95% CI)
6 months	63.3 (21.4), N= 912	64.2 (22), N= 879	0.67% (-3.22%, 4.71%)
12 months	64.6 (21.1), N=888	64.7 (22.8), N=853	3.82% (-0.97%, 8.83%)

a. For recipients who developed graft failure before the 6- and 12-month timepoint, eGFR was imputed as 10 ml/min/1.73m². Recipients who died before the 6- and 12-month timepoint were not included even if they had eGFR measured or developed graft failure and died at these timepoints.

b. Multiple linear regression models adjusted for cold ischemic time, recipient age, BMI, diabetes as the cause of recipient ESKD, preemptive transplant status, previous kidney transplant, HLA mismatch level, panel reactive antibody categories (0%, 1-20%, 21-80%, and >80%), donor admission eGFR. Sandwich estimators are used to account for pairs of donor kidneys. In these models, eGFR was log₂ transformed, and coefficients were converted to percentage difference for interpretation.

c. For recipients who developed graft failure before the 6- and 12-month timepoint, eGFR was imputed as 10 ml/min/1.73m². For recipients who died before the 6- and 12-month timepoint, eGFR was imputed as 1 ml/min/1.73m².

eTable 5. Recipient kidney function decline after kidney transplantation from matched donors receiving vs. not receiving dialysis

		Median (IQR) number of eGFR measurements per person	Median (IQR) duration from transplant to last eGFR measurements (year)	Annual eGFR decline ^{a,b}	
				% change per year	Difference between group (95% CI)
Recipients of matched donors not receiving dialysis (N=917) ^c		3 (2, 5)	2 (1, 4)	-4.48%	Reference
Recipients of donors receiving dialysis (n=944) ^c		4 (2, 5)	2.4 (1.1, 4)	-3.2%	1.28% (-0.66%, 3.25%)
Stratified by dialysis indication	AKI (N=720)	3.5 (2, 5)	2.2 (1.1, 3.9)	-2.5%	1.97% (-5.8%, 4.12%)
	Intoxication (N=133)	5 (3, 6)	3.2 (2, 5)	-6.48%	-2.01% (-0.13%, 1.43%)
	Other (N=91)	3 (2, 4)	2 (1, 2.9)	-2.02%	2.45% (-5.33%, 7.86%)
Stratified by dialysis modality	HD (N=376)	4 (3, 5)	2.8 (1.6, 4)	-4.78%	-0.31% (-6.79%, 2.17%)
	CRRT (N=529)	3 (2, 5)	2 (1, 3.8)	-1.93%	2.54% (-2.61%, 4.97%)
	Both (N=24)	4 (2.75, 5.25)	3 (1.3, 4.1)	-3.1%	1.37% (-6.64%, 10.07%)
	Unknown (N=15)	6 (4.5, 9)	5.7 (3.4, 8.7)	-0.54%	3.94% (-4.55%, 13.18%)
Stratified by dialysis duration	≤3 days (N=689)	4 (2, 5)	2.6 (1.1, 4)	-3.48%	1.01% (-1.08%, 3.13%)
	4-7 days (N=181)	3 (2, 5)	2 (1, 3.9)	-0.5%	3.99% (0.39%, 7.72%)
	>7 days (N=39)	4 (2.5, 5.5)	2.9 (1.1, 4.1)	-6.91%	-2.42% (-8.55%, 4.12%)
	Unknown (N=35)	4 (3, 6)	3.1 (1.4, 5)	-5.15%	-0.66% (-6.98%, 6.09%)

a. Linear mixed-effects models are used to estimate kidney function decline over time, interaction terms between donor dialysis status and time are used to determine the difference in the rate of kidney function decline between recipients from donors receiving dialysis vs. matched donors not receiving dialysis. The fixed-effects coefficients of time factor in linear mixed-effects models represent % change per year in recipients of matched donors not receiving dialysis, and the linear combination of the fixed-effects coefficients of time and time-dialysis interactions represent % change per year in recipients of donors receiving dialysis.

b. For recipients who developed graft failure, eGFR was imputed as 10 ml/min/1.73m² at the time of graft failure; for recipients who developed primary nonfunctioning, eGFR was imputed as 10 ml/min/1.73m² at the time of transplant.

c. In the UNOS Kidney-Pancreas Individual Follow-up data released in July 2023, 73 (7.4%) recipients of matched donors not receiving dialysis and 10 (1.0%) recipients of matched donors receiving dialysis had no follow up creatinine, did not develop graft failure and did not die before last follow-up, thus, were excluded from the longitudinal analysis.

eTable 6. Recipient outcomes after kidney transplantation from matched donors receiving vs. not receiving dialysis stratified by donor dialysis modality and duration

Recipient outcomes		Recipients from matched donors not receiving dialysis (N=990)	Recipients from matched donors receiving dialysis (N=539)							
			Stratified by dialysis modality ^a				Stratified by dialysis duration ^a			
			HD (N=379)	CRRT (N=534)	Both (N=25)	Unknown (N=16)	≤ 3 days (N=698)	4-7 days (N=181)	>7 days (N=40)	Unknown (N=35)
DGF	N (%)	244 (24.6%)	195 (51.5%)	344 (64.4%)	17 (68%)	9 (56.2%)	393 (56.3%)	132 (72.9%)	22 (55%)	18 (51.4%)
	aOR ^b (95% CI)	Reference	3.01 (2.21, 4.09)	5.24 (3.98, 6.9)	7.56 (2.84, 20.11)	3.5 (1.01, 12.14)	3.8 (2.95, 4.9)	6.91 (4.59, 10.38)	3.87 (1.69, 8.9)	2.91 (1.13, 7.55)
All-cause graft failure	N (%)	153 (15.5%)	61 (16.1%)	69 (12.9%)	5 (20%)	3 (18.8%)	109 (15.6%)	15 (8.3%)	6 (15%)	8 (22.9%)
	Incidence, per 1000 py	46.9	45.8	41.2	56.5	28.3	46.1	27	43	56.8
	aHR ^b (95% CI)	Reference	0.98 (0.71, 1.36)	0.85 (0.62, 1.15)	0.94 (0.34, 2.61)	0.64 (0.23, 1.8)	0.98 (0.75, 1.27)	0.49 (0.27, 0.88)	0.88 (0.35, 2.2)	1.27 (0.6, 2.7)
Death-censored graft failure	N (%)	67 (6.8%)	34 (9%)	35 (6.6%)	2 (8%)	1 (6.2%)	55 (7.9%)	10 (5.5%)	3 (7.5%)	4 (11.4%)
	Incidence, per 1000 py	20.6	25.5	20.9	22.6	9.4	23.3	18	21.5	28.4
	aHR ^b (95% CI)	Reference	1.34 (0.87, 2.06)	1.1 (0.72, 1.68)	1.35 (0.37, 4.92)	0.45 (0.06, 3.56)	1.23 (0.85, 1.79)	0.9 (0.45, 1.81)	1.04 (0.34, 3.19)	1.51 (0.51, 4.48)
Mortality	N (%)	102 (10.3%)	33 (8.7%)	41 (7.7%)	4 (16%)	3 (18.8%)	66 (9.5%)	7 (3.9%)	3 (7.5%)	5 (14.3%)
	Incidence, per 1000 py	30.8	24	23.8	42.9	28.3	27	12.3	21.1	34.9
	aHR ^b (95% CI)	Reference	0.76 (0.5, 1.15)	0.73 (0.49, 1.09)	0.82 (0.26, 2.55)	1.11 (0.39, 3.2)	0.85 (0.62, 1.18)	0.3 (0.12, 0.73)	0.68 (0.22, 2.09)	1.18 (0.51, 2.71)

a. Outcomes in subgroups of recipients of kidneys from matched donors receiving different modalities or durations of dialysis were compared with recipients from matched donors not receiving dialysis.

b. Logistic and Cox proportional hazard regression models are adjusted for: cold ischemic time, recipient age, BMI, diabetes as the cause of recipient ESKD, preemptive transplant status, previous kidney transplant, HLA mismatch level, panel reactive antibody categories (0%, 1-20%, 21-80%, and >80%), and donor admission eGFR. Sandwich estimators are used to account for pairs of donor kidneys.

eTable 7. Recipient outcomes after kidney transplantation from all donors receiving and not receiving dialysis

Recipient Groups		Recipient Outcomes							
		DGF		All-cause graft failure		Death-censored graft failure		Death	
		N (%)	aOR (95% CI) ^a	per 1,000 py	aHR (95% CI) ^a	per 1,000 py	aHR (95% CI) ^a	per 1,000 py	aHR (95% CI) ^a
Recipients of all donors not receiving dialysis (N=91,487)		23465 (25.6%)	Reference	55.2		27.6	Reference	34.9	Reference
Recipients of all donors receiving dialysis^b (n=969)		577 (59.5%)	4.87 (4.16, 5.71)	42.9	0.88 (0.74, 1.05)	22.5	1 (0.79, 1.26)	24.3	0.76 (0.61, 0.96)
Stratified by dialysis indication^c	AKI (N=737)	504 (68.4%)	7.19 (5.99, 8.63)	42.9	0.87 (0.7, 1.08)	20.9	0.95 (0.72, 1.26)	24.4	0.76 (0.58, 0.99)
	Intoxication (N=138)	30 (21.7%)	0.93 (0.56, 1.53)	42.2	0.83 (0.53, 1.31)	24.6	1.03 (0.57, 1.85)	20.3	0.68 (0.37, 1.24)
	Other (N=94)	43 (45.7%)	2.62 (1.59, 4.32)	40.4	1.04 (0.67, 1.6)	33	1.29 (0.74, 2.27)	31.5	0.92 (0.51, 1.67)
Stratified by dialysis modality^c	HD (N=387)	200 (51.7%)	3.44 (2.67, 4.44)	45	0.93 (0.71, 1.22)	25.1	1.1 (0.78, 1.55)	23.6	0.75 (0.53, 1.06)
	CRRT (N=541)	351 (64.9%)	6.19 (5.04, 7.61)	41.5	0.85 (0.67, 1.09)	21.3	0.95 (0.69, 1.33)	23.5	0.75 (0.54, 1.04)
	Both (N=25)	17 (68%)	9.25 (3.35, 25.52)	56.5	0.93 (0.39, 2.22)	22.6	1.1 (0.38, 3.23)	42.9	0.89 (0.33, 2.4)
	Unknown (N=16)	9 (56.2%)	4.58 (1.41, 14.85)	28.3	0.6 (0.22, 1.61)	9.4	0.37 (0.05, 2.57)	28.3	1.1 (0.4, 3.05)
Stratified by dialysis duration^c	≤ 3 days (N=701)	396 (56.5%)	4.45 (3.69, 5.37)	46	0.96 (0.78, 1.17)	23.2	1.04 (0.79, 1.36)	27	0.87 (0.68, 1.12)
	4-7 days (N=188)	138 (73.4%)	7.82 (5.55, 11.03)	28.2	0.52 (0.31, 0.87)	19.4	0.81 (0.45, 1.48)	11.9	0.3 (0.13, 0.71)
	>7 days (N=42)	24 (57.1%)	4.71 (2.28, 9.73)	41.5	0.92 (0.36, 2.37)	20.8	0.96 (0.3, 3.01)	20.4	0.72 (0.23, 2.2)
	Unknown (N=38)	19 (50%)	3.25 (1.34, 7.88)	51.7	1.06 (0.51, 2.2)	25.9	1.09 (0.4, 2.95)	31.8	1.02 (0.45, 2.3)

a. Logistic and Cox proportional hazard regression models are adjusted for: donor age, sex, Black race, admission eGFR, BMI, hypertension, diabetes, dcd status, stroke as cause of death, Hepatitis C serostatus, year of transplant (before or after 2015), cold ischemic time, recipient age, BMI, diabetes as the cause of recipient ESKD, preemptive transplant status, previous kidney transplant, HLA mismatch level, panel reactive antibody categories (0%, 1-20%, 21-80%, and >80%). Sandwich estimators are used to account for pairs of donor kidneys.

b. Among recipients of donors receiving dialysis, 3 recipients received kidney transplantation from 2 unmatched donors receiving dialysis and not included in the primary matched analysis.

c. Outcomes in subgroups of recipients of kidneys from matched donors receiving dialysis for different indications, different modalities or durations were compared with recipients from matched donors not receiving dialysis.

eTable 8. Recipient kidney function decline after kidney transplantation from all donors receiving vs. not receiving dialysis

Recipient Groups		Median (IQR) number of eGFR measurements per person	Median (IQR) duration from transplant to last eGFR measurements (year)	Annual eGFR decline ^{a, b}	
				% change per year	Difference between group (95% CI)
Recipients of all donors not receiving dialysis ^c (N=85,850)		4 (3, 6)	3.1 (1.8, 5.4)	-5.53%	Reference
Recipients of all donors receiving dialysis ^c (n=959)		4 (2, 5)	2.4 (1.1, 4)	-3.01%	2.52% (1.18%, 3.87%)
Stratified by dialysis indication	AKI (N=734)	3 (2, 5)	2.2 (1.1, 3.9)	-2.3%	3.23% (-5.64%, 4.8%)
	Intoxication (N=134)	5 (3, 6)	3.1 (2, 4.9)	-6.3%	-0.78% (1.68%, 2.31%)
	Other (N=91)	3 (2, 4)	2 (1, 2.9)	-1.96%	3.57% (-3.77%, 8.8%)
Stratified by dialysis modality	HD (N=384)	4 (3, 5)	2.8 (1.6, 4)	-4.5%	1.03% (-7.36%, 3.03%)
	CRRT (N=536)	3 (2, 5)	2 (1, 3.7)	-1.86%	3.67% (-0.81%, 5.59%)
	Both (N=23)	4 (2.75, 5.25)	3 (1.3, 4.1)	-2.73%	2.79% (-5.05%, 11.28%)
	Unknown (N=15)	6 (4.5, 9)	5.7 (3.4, 8.7)	-0.11%	5.42% (-2.67%, 14.17%)
Stratified by dialysis duration	≤3 days (N=692)	4 (2, 5)	2.5 (1.1, 4)	-3.19%	2.34% (0.79%, 3.91%)
	4-7 days (N=188)	3 (2, 5)	2 (1, 3.8)	-0.63%	4.9% (1.61%, 8.29%)
	>7 days (N=41)	4 (3, 5)	2.5 (1.1, 4)	-6.58%	-1.06% (-6.93%, 5.19%)
	Unknown (N=38)	4 (3, 6)	3.1 (1.5, 5)	-5.1%	0.43% (-5.39%, 6.61%)

a. Linear mixed-effects models are used to estimate kidney function decline over time, interaction terms between donor dialysis status and time are used to determine the difference in the rate of kidney function decline between recipients from donors receiving dialysis vs. matched donors not receiving dialysis. The fixed-effects coefficient of time factor in linear mixed-effects models represents % change per year in recipients of matched donors not receiving dialysis, and the linear combination of the fixed-effects coefficients of time and time-dialysis interactions represent % change per year in recipients of donors receiving dialysis.

b. For recipients who developed graft failure, eGFR was imputed as 10 ml/min/1.73m² at the time of graft failure; for recipients who developed primary nonfunctioning, eGFR was imputed as 10 ml/min/1.73m² at the time of transplant.

c. In the UNOS Kidney-Pancreas Individual Follow-up data released in July 2023, 5,637 (6.2%) recipients of donors not receiving dialysis and 10 (1.0%) recipients of donors receiving dialysis had no follow up creatinine and did not develop graft failure before 1/31/2020, thus, were excluded from the longitudinal analysis