SUPPLEMENTAL APPENDIX

Table S1. Karnofsky Performance Score definitions[1] and application in this study

	KPS	Definition
Normal	100	Normal; no complaints; no evidence of disease
	90	Able to carry on normal activity; minor signs or symptoms of disease
	80	Normal activity with effort; some sign or symptoms of disease
Capable of self-care	70	Cares for self; unable to carry on normal activity or do active work
Requires assistance	60	Requires occasional assistance, but is able to care for most personal needs
	50	Requires considerable assistance and frequent medical care
Disabled	40	Disabled; requires special care and assistance
	30	Severely disabled; hospitalization is indicated, although death not imminent
	20	Very sick; hospitalization necessary; active support treatment is necessary
	10	Moribund; fatal processes progressing rapidly
	0	Dead

1. O'Toole DM, Golden AM. Evaluating cancer patients for rehabilitation potential. *West J Med.* 1991;155(4):384–387.

Table S2. SPKT Candidates 2006-2019: Baseline traits overall and within each functional status level

		Functional Status			
Baseline Characteristics at Listing	**Overall**	**Normal activity**	**Capable of Self-Care**	**Requires assistance**	**Disabled**
	N=16 822	N = 10 428	N = 3953	N = 2083	N = 358
Age, years			[a]	[b]	
18 to 30	12.2	11.5	12.8	14.6	14.3
31 to 44	51.2	51.4	51.5	50.6	48.0
45 to 59	34.8	35.2	34.4	33.1	36.3
≥60	1.8	2.0	1.3	1.7	1.4
Sex					
Male	58.6	58.8	58.6	57.9	59.5
Female	41.4	41.3	41.4	42.2	40.5
Race			[c]	[c]	
White	62.3	64.4	59.4	57.0	63.4
African American	21.7	20.0	23.8	26.5	22.4
Hispanic	12.8	12.3	13.6	14.3	9.5
Other	3.2	3.4	3.2	2.2	4.8
Highest level of education			[c]	[c]	[c]
College or higher	53.3	57.3	47.4	45.5	44.4
Grade/High school	41.7	37.1	48.7	50.2	46.4
Missing	5.1	5.6	3.9	4.3	9.2
Employment status			[c]	[c]	[c]
Working	35.5	49.5	13.1	13.2	5.0
Not working	61.5	46.7	85.3	85.3	93.9
Missing	2.9	3.8	1.6	1.6	1.1
Health insurance type			[c]	[c]	[c]
Private	48.3	58.1	33.5	31.2	27.4
Public	51.3	41.5	66.2	68.6	72.1
Missing	0.4	0.4	0.3	0.2	0.6
Body mass index, kg/m^2			[b]	[b]	[a]
<18.5	1.7	1.6	1.7	2.1	3.4
18.5 to 24.9	42.3	41.1	44.0	44.3	45.3
25 to 30	44.5	44.9	44.1	43.8	41.9
>30	11.1	12.0	9.6	9.7	9.2
Missing	0.4	0.5	0.5	0.1	0.3
Comorbid conditions					
Cerebral vascular disease	2.1	1.6	2.7[c]	3.3[c]	2.8
Peripheral vascular disease	10.3	7.5	11.7[c]	17.7[c]	32.7[c]

COPD	0.4	0.3	0.3	0.6	0.6
Coronary artery disease	4.1	3.5	5.8 ‡	4.0	1.7
ABO blood type					
A	35.4	35.5	35.3	34.6	37.4
AB	3.7	3.6	3.8	4.5	3.1
B	13.2	13.4	13.3	12.4	12.9
O	47.7	47.6	47.6	48.6	46.7
Previous transplant[d]	7.6	7.5	7.7	7.4	10.1
Listing year			[c]	[c]	[c]
2006 to 2010	42.1	46.1	38.6	31.9	21.8
2011 to 2013	26.5	25.0	29.2	29.1	26.3
2014 to 2016	21.0	18.5	23.3	25.6	40.8
2017 to 2019	10.5	10.5	8.9	13.4	11.2

% are **column percentages**, reflecting trait distributions overall and within each functional status group. P values for comparison vs. normal functional status: [a]0.002 to <0.05; [b]0.0001 to <0.002; [c]<0.0001.

Functional status levels are based on Karnofsky Performance score at listing: normal activity, 80 to 100; capable of self-care, 70; requires assistance, 50 to 60; disabled, 10 to 40.

[d]Previous transplant may include transplant

Table S3. Distribution of functional status levels by baseline traits at transplant, among U.S. SPKT recipients, 2006–2019.

Baseline Characteristics at Transplant	Functional Status				P-value for Chi-square test
	Normal activity	Capable to Self-Care	Requires assistance	Disabled	
	N = 5957	N = 2552	N = 1466	N = 341	
	%	%	%	%	
Age, years					
18 to 30	56.2	26.2	15.1	2.5	0.37
31 to 44	57.3	25.1	14.2	3.4	Reference
45 to 59	58.5	24.1	14.1	3.3	0.65
≥60	63.5	21.3	11.4	3.8	0.29
Sex					
Male	57.6	24.9	14.1	3.4	Reference
Female	58.0	24.4	14.4	3.2	0.91
Race					
White	59.5	23.1	14.0	3.4	Reference
African American	52.4	27.8	16.8	3.0	<.0001
Hispanic	58.1	27.6	11.5	2.9	0.001
Other	57.7	26.3	11.2	4.7	0.17
Highest level of education					
College or higher	60.7	23.6	13.0	2.8	<.0001
Grade/High school	52.8	26.6	16.4	4.2	Reference
Employment status					
Working	80.3	13.1	6.3	0.4	Reference
Not working	43.7	31.9	19.3	5.2	<0.0001
Health insurance type					
Private	69.9	18.4	9.7	2.0	<0.0001
Public	48.7	29.5	17.6	4.3	Reference
Body mass index, kg/m^2					
<18.5	56.5	20.8	19.0	3.7	0.27
18.5 to 24.9	56.4	25.4	15.1	3.2	Reference
25 to 30	58.4	25.0	13.7	3.0	0.18
>30	58.9	24.4	12.6	4.1	0.04
Comorbid conditions					
Cerebral vascular disease	61.7	23.5	12.9	2.0	0.06
Peripheral vascular disease	52.0	24.4	20.4	3.2	<0.0001
COPD	47.5	28.5	16.7	7.4	0.56
Coronary artery disease	69.0	13.8	13.8	3.5	0.12
Duration of dialysis, months					
None (preemptive)	72.6	16.0	9.6	1.8	<0.0001
0 to 24	56.1	25.4	14.8	3.7	Reference
25 to 60	52.1	29.0	15.6	3.3	0.002

>60	51.1	26.9	17.1	5.0	0.04
ABO blood type					
A	58.0	24.5	14.0	3.5	Reference
AB	60.8	23.9	13.0	2.3	0.47
B	59.0	23.3	14.7	3.0	0.64
O	56.9	25.4	14.4	3.4	0.72
Most recent PRA level					
<10	64.0	22.0	11.8	2.3	Reference
10 to 79	60.5	24.8	11.7	3.0	0.10
≥80	54.5	22.4	19.2	3.9	0.01
Missing	46.7	29.5	18.7	5.1	<0.0001
HLA mismatches					
Zero A, B, DR	46.6	29.6	17.1	6.8	Reference
Zero DR	60.7	19.4	15.9	4.0	0.05
Other mismatch	57.7	25.0	14.1	3.2	0.09
Previous transplant[a]	61.9	20.7	12.9	4.5	0.10
KDPI					
<20	58.9	24.6	13.4	3.1	Reference
20 to 85	59.0	24.0	13.4	3.6	0.53
>85	64.3	7.1	28.6	0.0	0.20
Unknown	46.7	28.5	21.5	3.4	<0.0001
Cold ischemia time, hours					
<12	56.7	25.0	15.0	3.2	Reference
13 to 24	58.6	23.9	14.1	3.5	0.23
25 to 36	62.6	25.3	5.1	7.1	0.009
>36	75.7	5.4	8.1	10.8	0.001
Transplant year					
2006 to 2010	67.1	20.0	11.0	1.9	Reference
2011 to 2013	59.7	23.9	13.5	3.0	<0.0001
2014 to 2016	50.7	30.1	14.4	4.8	<0.0001
2017 to 2019	43.3	29.7	22.0	5.0	<0.0001

% reflect **row percentages** of functional status levels among patients in each baseline group.

Functional status levels are based on Karnofsky Performance score at transplant: normal activity, 80 to 100; capable of self-care, 70; requires assistance, 50 to 60; disabled, 10 to 40.

[a]previous transplant may include transplant history of kidney, liver, pancreas, heart or other organ types before the current transplant.

COPD, chronic obstructive pulmonary disease; PRA, panel-reactive antibody. SPKT, simultaneous pancreas-kidney transplantation.

Table S4. Adjusted association of SPKT with mortality after listing, partitioned within and after 30 days of transplant event.

	Death Risk over 5 years after being listed
	aHR (95%CL)
Time-varying SPKT exposures	
Risk within 30d of SPKT *vs* continued waiting – Normal activity	1.75 (1.25–2.45)[b]
Risk within 30d of SPKT *vs* continued waiting – Capable of self-care	1.93 (1.19–3.14)[a]
Risk within 30d of SPKT *vs* continued waiting – Requires assistance	1.45 (0.68–3.09)
Risk within 30d of SPKT *vs* continued waiting – Disabled	2.20 (0.68–7.08)
Risk after 30d of SPKT *vs* continued waiting – Normal activity	0.30 (0.26–0.34)[c]
Risk after 30d of SPKT *vs* continued waiting – Capable of self-care	0.34 (0.28–0.41)[c]
Risk after 30d of SPKT *vs* continued waiting – Requires assistance	0.27 (0.20–0.37)[c]
Risk after 30d of SPKT *vs* continued waiting – Disabled	0.48 (0.26–0.88)[a]
Baseline Characteristics at the Time of Listing	
Age, years	
18 to 30	1.09 (0.96–1.25)
31 to 44	Reference
45 to 59	1.16 (1.06–1.27)[b]
≥60	1.28 (0.94–1.76)
Female	1.06 (0.98–1.16)
Race	
White	Reference
African American	0.89 (0.80–0.99)[a]
Hispanic	0.62 (0.54–0.72)[c]
Other	0.65 (0.49–0.85)[b]
Highest level of education	
College or higher	0.91 (0.83–0.99)[a]
Grade/High school	Reference
Missing	1.12 (0.94–1.33)
Employment status	
Working	Reference
Not working	1.55 (1.39–1.74)[c]
Missing	1.97 (1.59–2.44)[c]
Health insurance type	
Private	0.99 (0.90–1.09)
Public	Reference

Missing	1.21 (0.65–2.26)
Body mass index, kg/m^2	
<18.5	1.58 (1.24–2.01)[b]
18.5 to 24.9	Reference
25 to 30	0.90 (0.82–0.98)[a]
>30	0.82 (0.71–0.94)[a]
Missing	1.42 (0.89–2.27)
Comorbid conditions	
Hypertension	1.15 (1.05–1.27)[a]
Cerebral vascular disease	1.32 (1.05–1.65)[a]
Peripheral vascular disease	1.21 (1.07–1.37)[a]
COPD	1.66 (1.06–2.58)[a]
Coronary artery disease	1.46 (1.24–1.71)[c]
ABO blood type	
A	Reference
AB	1.25 (1.01–1.55)[a]
B	1.00 (0.87–1.14)
O	0.96 (0.88–1.05)
Previous transplant[d]	1.25 (1.11–1.42)[b]
Listing year	
2006 to 2010	Reference
2011 to 2013	0.86 (0.79–0.95)[a]
2014 to 2016	0.66 (0.57–0.75)[c]
2017 to 2019	0.69 (0.52–0.91)[a]

P values: [a]0.002 to 0.05, [b]0.0001 to <0.002, [c]<0.0001. Inclusion of kidney transplant alone did not impact estimates due to the rarity of the exposure (n=20)

Functional status levels are based on Karnofsky Performance Score at listing: normal activity, 80 to 100; capable of self-care, 70; requires assistance, 50 to 60; disabled, 10 to 40.

[d]Previous transplant may include transplant history of kidney, liver, pancreas, heart or other organ types before the current transplant.

aHR, adjusted hazard ratio. CL, confidence limit. COPD, chronic obstructive pulmonary disease. SPKT, simultaneous pancreas-kidney transplant.