

Definition and Analysis of Textbook Outcome: A Novel Quality Measure in Kidney Transplantation

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Table S1. Characteristics of recipients and donors included in training and validation datasets.			
Characteristic^a	Training Set N = 373	Validation Set N = 183	P-value
Age (years)	54 (43-62)	53 (44-61)	0.3
Sex			0.5
Female	164 (44%)	75 (41%)	
Male	209 (56%)	108 (59%)	
Race			0.8
Caucasian/White	159 (43%)	80 (44%)	
Non-White	214 (57%)	103 (56%)	
Ethnicity (Hispanic)	10 (3%)	8 (4%)	0.3
Panel reactive antibody (%)			
Class I	0 (0-13)	0 (0-12)	0.7
Class II	0 (0-0)	0 (0-0)	0.3
Etiology of kidney disease			0.9
Type 2 diabetes mellitus	90 (24%)	40 (22%)	
Hypertensive nephrosclerosis	66 (18%)	32 (18%)	
Polycystic kidney disease	38 (10%)	15 (8%)	
Focal segmental glomerulosclerosis	36 (10%)	17 (9%)	
IgA nephropathy	21 (6%)	12 (7%)	
Calcineurin inhibitor nephrotoxicity	14 (4%)	11 (6%)	
Systemic lupus erythematosus	12 (3%)	9 (5%)	
Other	96 (26%)	47 (26%)	
History of prior transplant	59 (16%)	24 (13%)	0.4
Donor type			0.7
Donation after brain death donor	189 (51%)	98 (54%)	
Donation after circulatory death donor	75 (20%)	32 (18%)	
Living donor	109 (29%)	53 (29%)	
Human leukocyte antigen mismatches	4 (3-5)	4 (3-5)	0.8
^a Presented as median (interquartile range) for continuous variables and frequency (proportion) for categorical variables.			

Table S2. Operative characteristics among living donor kidney transplant recipients only, stratified by achievement of a textbook outcome (TO).			
Characteristic^a	Achieved TO N = 89 (55%)	Failed TO N = 74 (45%)	P-value
Cold ischemic time (minutes)	78 (61-118)	92 (66-127)	0.2
Warm ischemic time (minutes)	27 (23-31)	28 (24-32)	0.4
Total ischemic time (minutes)	105 (87-144)	119 (92-156)	0.2
Estimated blood loss (mL)	100 (100-200)	100 (100-200)	>0.9
Transfusion requirement (units)			
Packed red blood cells	0 (0-0)	0 (0-0)	0.2
Machine perfusion used	0 (0%)	0 (0%)	
Donor serologies			
Epstein-Barr virus positive	83 (93%)	69 (93%)	>0.9
Cytomegalovirus positive	46 (52%)	31 (42%)	0.2
Human leukocyte antigen mismatches	3 (3-5)	4 (3-5)	0.06
Graft laterality			>0.9
Right	4 (4%)	4 (5%)	
Left	85 (96%)	70 (95%)	
Dual	0 (0%)	0 (0%)	
Ureteral stent used	52 (58%)	46 (62%)	0.5
Drain placed in the operating room	14 (16%)	19 (26%)	0.12

^a Presented as median (interquartile range) for continuous variables and frequency (proportion) for categorical variables.

Table S3. Operative characteristics among deceased donor kidney transplant recipients only, stratified by achievement of a textbook outcome (TO).

Characteristic^a	Achieved TO N = 156 (40%)	Failed TO N = 238 (60%)	P-value
Cold ischemic time (minutes)			
All kidneys	1191 (924-1528)	1214 (956-1566)	0.3
Non-pumped kidneys only	834 (616-1119)	1002 (689-1205)	0.2
Warm ischemic time (minutes)	28 (23-33)	30 (24-34)	0.12
Missing	0 (0%)	1 (0.4%)	
Total ischemic time (minutes)	1218 (947-1557)	1244 (985-1599)	0.3
Missing	0 (0%)	1 (0.4%)	
Estimated blood loss (mL)	100 (100-200)	150 (100-200)	<0.01
Missing	1 (0.6%)	3 (1.3%)	
Transfusion requirement (units)			
Packed red blood cells	0 (0-0)	0 (0-0)	0.4
Missing	0 (0%)	1 (0.4%)	
Fresh frozen plasma	0 (0-0)	0 (0-0)	0.3
Missing	0 (0%)	1 (0.4%)	
Machine perfusion used	127 (81%)	199 (84%)	0.6
US Public Health Service increased risk for disease transmission donor	63 (40%)	70 (29%)	0.02
Extended criteria donor	19 (12%)	36 (15%)	0.4
Missing	1 (0.6%)	0 (0%)	
Donor serologies			
Epstein-Barr virus positive	152 (97%)	228 (96%)	0.8
Missing	0 (0%)	2 (0.8%)	
Cytomegalovirus positive	95 (61%)	154 (65%)	0.4
Kidney Donor Profile Index (%)	48 (26-66)	56 (34-71)	0.048
Missing	1 (0.6%)	0 (0%)	
Human leukocyte antigen mismatches	4 (3-5)	4 (4-5)	0.051
Missing	1 (0.6%)	0 (0%)	
Graft laterality			0.5
Right	79 (51%)	130 (55%)	
Left	75 (48%)	103 (43%)	
Dual	2 (1%)	5 (2%)	
Ureteral stent used	95 (61%)	178 (75%)	<0.01
Drain placed in the operating room	32 (21%)	65 (27%)	0.13

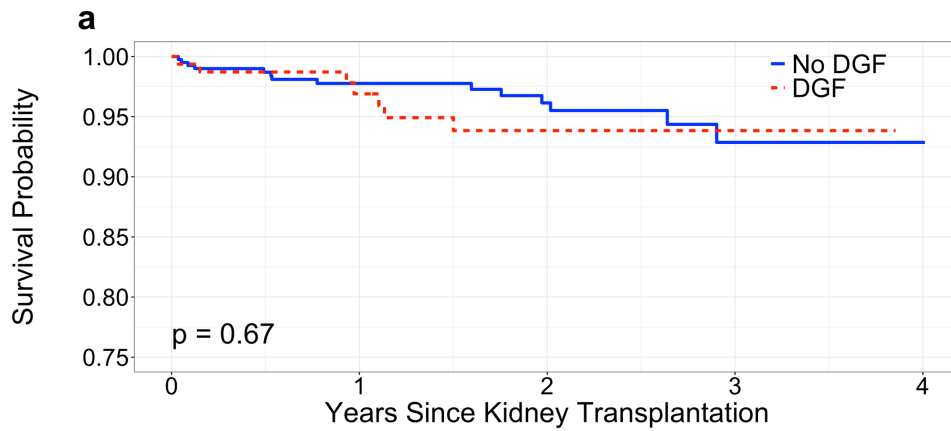
^a Presented as median (interquartile range) for continuous variables and frequency (proportion) for categorical variables.

Table S4. Achievement of textbook outcome (TO) by donor organ type.^a				
Donor Type	Total N	Achieved TO (N (%))	Post Hoc Comparisons	
			Living Donor	DBD Donor
All donor types	557	245 (44%)		
Living donor	163	89 (55%)		
Deceased donor (DBD or DCD)	394	156 (40%)		
DBD	287	121 (42%)	0.011	
DCD	107	35 (33%)	<0.01	0.08

DBD, donation after brain death; DCD, donation after circulatory death.
^a ANOVA p-value for comparison of means between living, DBD, and DCD donors = 0.0012

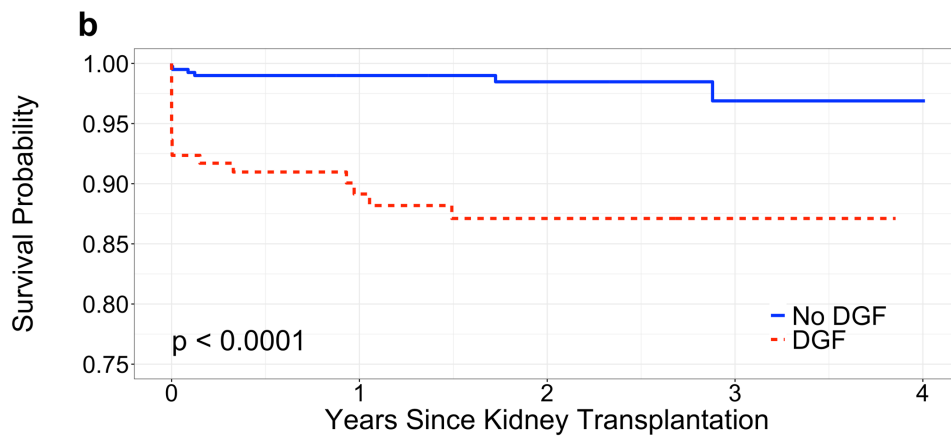
Table S5. Financial Implications of textbook outcome (TO).			
Financial Characteristic	Achieved TO N = 243 (44%)	Failed TO N = 311 (56%)	P-value
Total charge (\$), median (IQR)	257,587 (218,013-340,601)	311,204 (253,262-437,649)	<0.0001
Transplant charge (\$), median (IQR)	182,964 (155,245-213,906)	213,604 (176,077-263,730)	<0.0001

Figure S1. Kaplan-Meier survival analysis of the entire patient cohort stratified by delayed graft function (DGF). (a) Patient survival. (b) Graft survival. (c) Rejection-free survival.



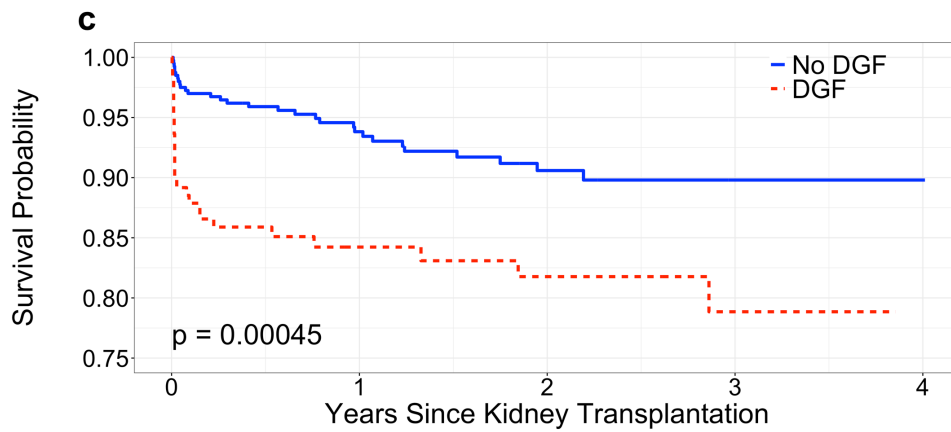
Number at risk

No DGF	400	261	155	56	1
DGF	157	105	71	27	0



Number at risk

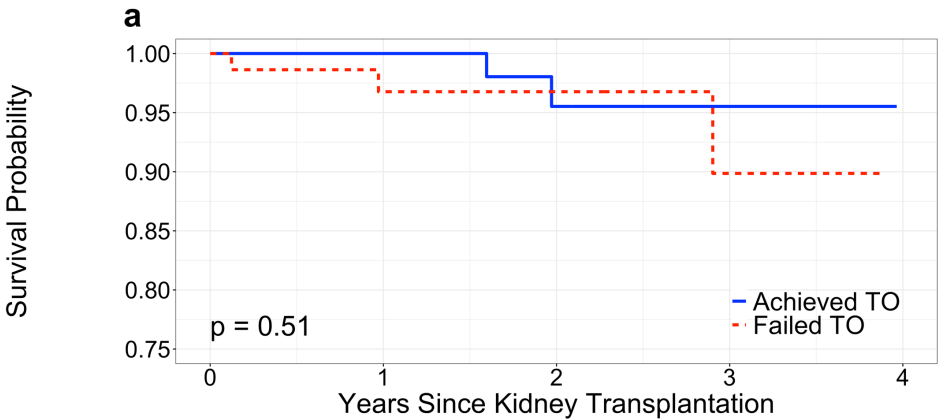
No DGF	400	261	154	54	1
DGF	157	96	66	26	0



Number at risk

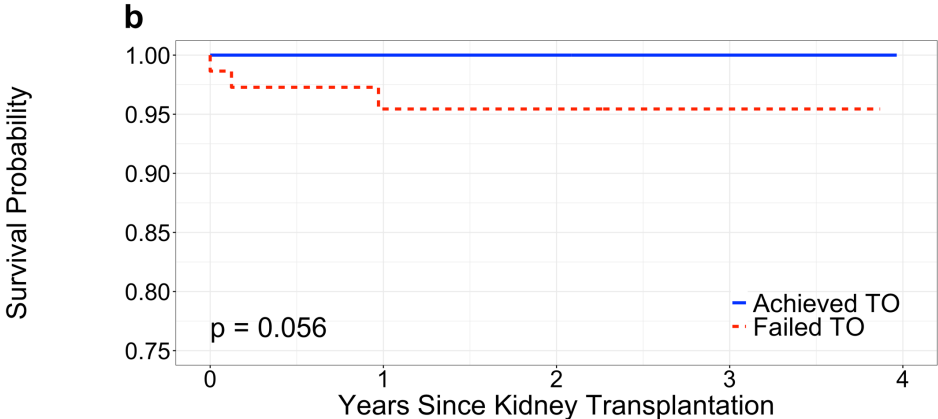
No DGF	400	244	141	48	1
DGF	157	87	57	22	0

Figure S2. Kaplan-Meier survival analysis of living donor kidney transplant recipients stratified by achievement of textbook outcome (TO). (a) Patient survival. (b) Graft survival. (c) Rejection-free survival.



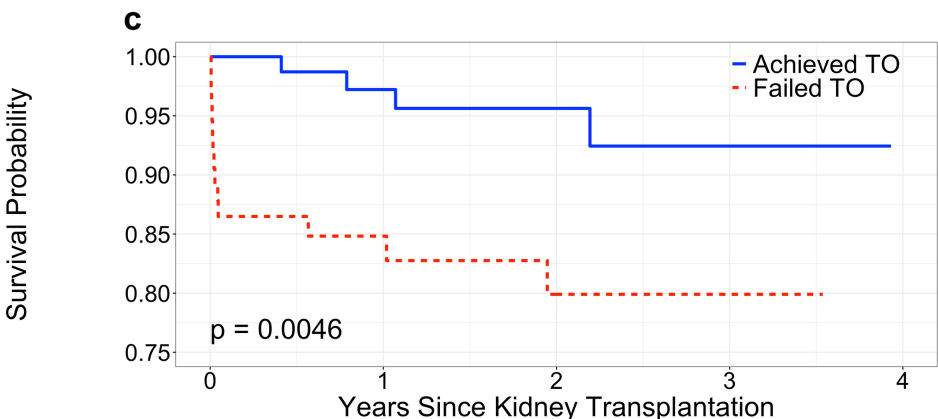
Number at risk

Achieved TO	89	64	37	14	0
Failed TO	74	49	30	13	0



Number at risk

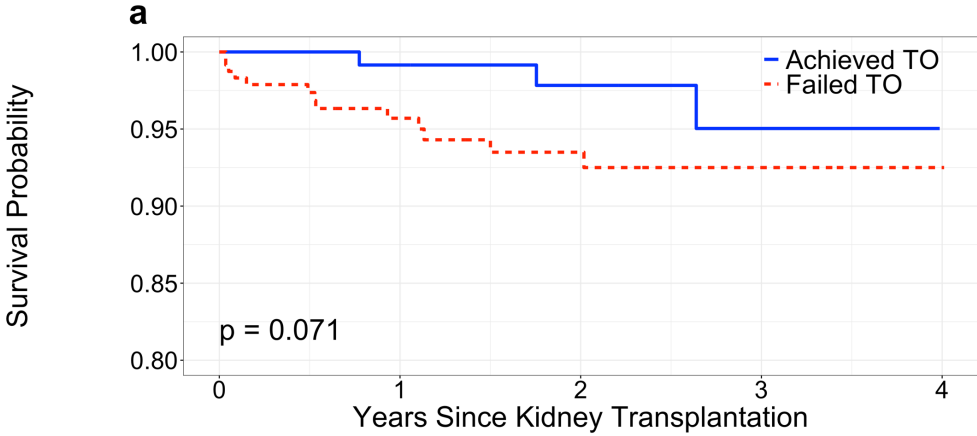
Achieved TO	89	64	37	14	0
Failed TO	74	49	30	13	0



Number at risk

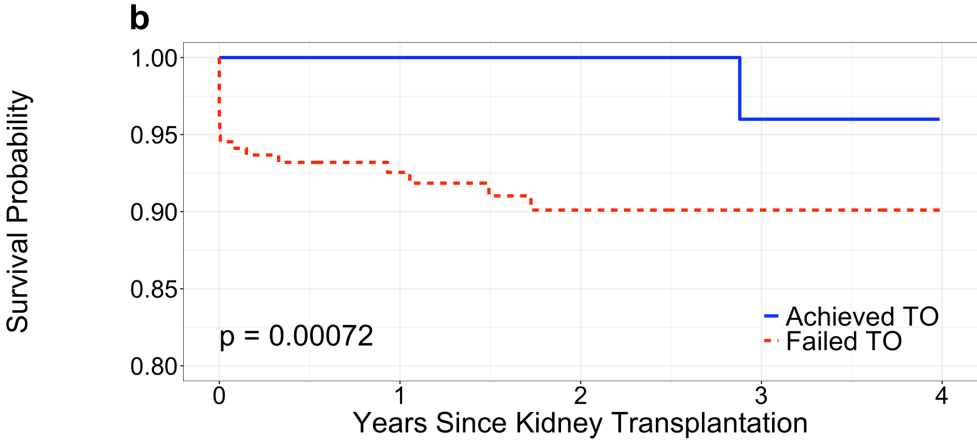
Achieved TO	89	62	36	12	0
Failed TO	74	41	23	10	0

Figure S3. Kaplan-Meier survival analysis of deceased donor kidney transplant recipients stratified by achievement of textbook outcome (TO). (a) Patient survival. (b) Graft survival. (c) Rejection-free survival.



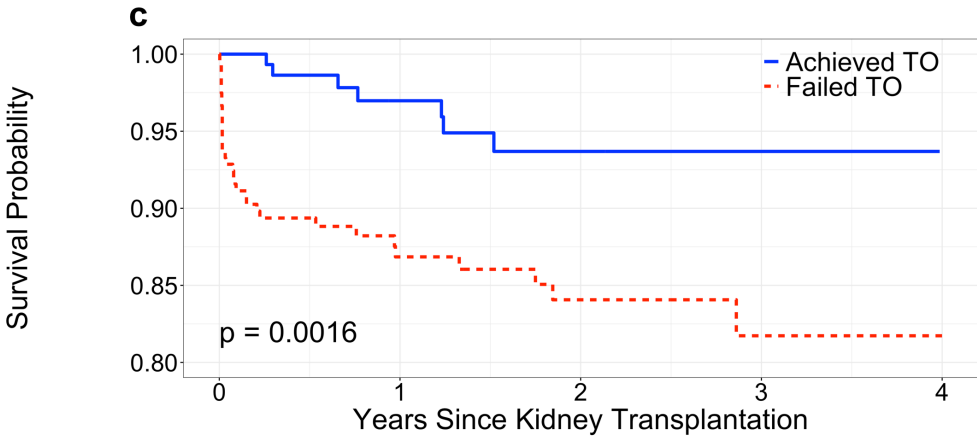
Number at risk

Achieved TO	156	106	64	23	0
Failed TO	238	147	95	33	1



Number at risk

Achieved TO	156	106	64	22	0
Failed TO	238	138	89	31	1



Number at risk

Achieved TO	156	102	59	21	0
Failed TO	238	126	80	27	1