

Supplemental Table S1: Characteristics of Transplant Centers Non-Affiliated with Medical Schools vs. Affiliated

Characteristic	Non-Affiliated	Affiliated	p-value
	n (%)	n (%)	
Organ Transplanted:			
Kidney	35 (100)	121 (100)	
Pancreas	18 (51)	85 (70)	0.038
Liver	9 (26)	61 (50)	0.01
Heart	6 (17)	49 (41)	0.011
Lung	2 (6)	34 (28)	0.005
Other	0 (0)	8 (7)	0.2
On site HLA lab	16 (46)	93 (77)	<0.001
HLA lab accredited by ASHI	33 (97)	115 (95)	0.823
Patients Enrolled in a Formal Research Protocol			0.037
None	14 (40)	22 (18)	
1-10%	9 (26)	34 (28)	
11-25%	8 (23)	33 (27)	
26-50%	1 (3)	10 (8)	
>50%	3 (9)	10 (8)	
Dedicated Pharmacist for Inpatient and/or Outpatient	29 (57)	116 (67)	0.181
Dedicated Consultant Physicians for Kidney Transplant Recipients	33 (65)	141 (82)	0.011
Physician Extender (CNP or PA) on Inpatient Service	23 (45)	102 (59)	0.08
Supplemental Table 1: Physician Extender (CNP or PA) on Outpatient Service	23 (45)	91 (53)	0.346
Primary MD in the ICU is the Transplant Surgeon	25 (49)	78 (45)	0.62
Primary MD in the ICU is an Intensivist	4 (8)	60 (35)	<0.001
Initial Contact MD for After-Hours Questions is Attending Transplant Physician or Surgeon	18 (35)	37 (21)	0.043
FTE Clinical Research Coordinators			0.081
None	18 (53)	38 (31)	
0.5 FTE	4 (12)	12 (10)	
1.0 FTE	6 (18)	19 (16)	
1.5 FTE	2 (6)	15 (12)	

≥2.0 FTE	4 (12)	37 (31)	
Offer ABO incompatible Transplants			0.009
ABO-incompatible	3 (9)	2 (2)	
Cross-match positive	6 (17)	28 (23)	
Both	2 (6)	30 (25)	
Neither	24 (69)	61 (50)	
Participate in PKE and LPE Programs			0.333
Neither	15 (45)	49 (41)	
PKE	12 (36)	34 (28)	
LPE	1 (3)	2 (2)	
Both PKE and LPE	5 (15)	35 (29)	
Offer Laparoscopic Living Donor Nephrectomy	33 (94)	113 (94)	1
Proportion of Living Donor Nephrectomy are Laparoscopic			0.455
None	1 (3)	6 (5)	
1-10%	0 (0)	8 (7)	
11-25%	2 (6)	3 (3)	
26-50%	2 (6)	6 (5)	
>50%	29 (85)	92 (80)	
Electronic Medical Record			
No EMR used	8 (23)	19 (16)	0.335
EMR for laboratory data	25 (71)	99 (83)	0.15
EMR for diagnostic imaging data	21 (60)	91 (76)	0.066
EMR for medical history data	22 (63)	84 (70)	0.424
EMR for physician order entry	12 (34)	55 (46)	0.225
EMR for consultation notes	21 (60)	71 (59)	1
Formal Evaluation of Short- and Long-Term Outcomes	30 (86)	112 (93)	0.152
Use Induction Therapy in Essentially All Patients	26 (74)	99 (83)	0.288
Typical First-Line Maintenance Immunosuppression on Low-Risk Patients Includes:			
Cyclosporine	4 (11)	23 (19)	0.447
Tacrolimus	33 (94)	110 (91)	0.734
Mycophenolate Mofetil	34 (97)	115 (95)	1
Azathioprine	2 (6)	0 (0)	0.049
Sirolimus	4 (11)	9 (7)	0.49
Corticosteroids	22 (63)	76 (63)	1
Other	0 (0)	6 (5)	0.339
For High-Risk Patients, Typical First-Line Maintenance Immunosuppression Includes:			
Cyclosporine	2 (6)	10 (8)	1

Tacrolimus	34 (97)	117 (97)	1
Mycophenolate Mofetil	34 (97)	115 (95)	1
Azathioprine	0 (0)	0 (0)	
Sirolimus	5 (14)	15 (12)	0.777
Corticosteroids	32 (91)	95 (79)	0.136
Formal Protocol for Post-Transplant Screening/Prevention for:			
Cardiovascular Disease	20 (57)	64 (53)	0.657
CMV	32 (91)	100 (83)	0.289
EBV	17 (49)	54 (45)	0.709
Influenza	18 (51)	55 (46)	0.587
BKV	21 (60)	76 (63)	0.72
Skin Cancer	17 (49)	55 (45)	0.745
Other Malignancies	17 (49)	47 (39)	0.303
Osteoporosis	19 (54)	71 (59)	0.643
Number of FTE Nephrologists (Answered by Medical Director)			
Mean	3.37	4.21	
Standard Deviation	2.61	3.95	
Number of FTE Nephrologists (Answered by Surgical Director)			
Mean	2.57	4.16	
Standard Deviation	1.66	7.37	
Proportion of Nephrologists with Full Time Academic Appointments (answered by Medical Director)			<0.001
None	22 (79)	14 (16)	
1-25%	1 (4)	3 (3)	
26-50%	1 (4)	1 (1)	
51-75%	1 (4)	3 (3)	
76-100%	3 (11)	68 (76)	
Proportion of Nephrologists with Full Time Academic Appointments (answered by Surgical Director)			<0.001
None	18 (78)	9 (11)	
1-25%	1 (4)	2 (2)	
26-50%	3 (13)	0 (0)	
51-75%	1 (4)	3 (4)	
76-100%	0 (0)	69 (83)	
Type of Research by Nephrologists (Answered by Medical Director)			0.001

None	7 (25)	7 (8)	
Clinical (1)	19 (68)	48 (53)	
Basic (2)	0 (0)	0 (0)	
Clinical and Basic (3)	2 (7)	35 (39)	
Type of Research by Nephrologists (Answered by Surgical Director)			0.021
None	6 (26)	6 (7)	
Clinical (1)	13 (57)	41 (49)	
Basic (2)	0 (0)	1 (1)	
Clinical and Basic (3)	4 (17)	35 (42)	
Proportion of Nephrologists who are Principal Investigators in Peer-Reviewed, Federally Funded Research (Answered by Medical Director)			0.011
None	21 (75)	41 (46)	
1-25%	2 (7)	27 (30)	
26-50%	1 (4)	13 (15)	
51-75%	3 (11)	7 (8)	
76-100%	1 (4)	1 (1)	
Proportion of Nephrologists who are Principal Investigators in Peer-Reviewed, Federally Funded Research (Answered by Surgical Director)			0.356
None	17 (74)	44 (53)	
1-25%	3 (13)	16 (19)	
26-50%	3 (13)	12 (14)	
51-75%	0 (0)	9 (11)	
76-100%	0 (0)	2 (2)	
Proportion of Nephrologists who are Principal Investigators in Industry Sponsored research (Answered by Medical Director)			0.453
None	10 (36)	19 (22)	
1-25%	10 (36)	26 (30)	
26-50%	4 (14)	18 (21)	
51-75%	2 (7)	14 (16)	
76-100%	2 (7)	11 (13)	
Proportion of Nephrologists who are Principal Investigators in Industry Sponsored research (Answered by Surgical Director)			0.076
None	11 (48)	20 (24)	
1-25%	1 (4)	18 (22)	
26-50%	6 (26)	17 (20)	
51-75%	1 (4)	13 (16)	
76-100%	4 (17)	15 (18)	

Proportion of Nephrologists who are Board Certified in Nephrology (Answered by Medical Director)			0.592
None	0 (0)	0 (0)	
1-25%	0 (0)	0 (0)	
26-50%	0 (0)	0 (0)	
51-75%	2 (7)	3 (3)	
76-100%	26 (93)	86 (97)	
Proportion of Nephrologists who are Board Certified in Nephrology (Answered by Surgical Director)			1
None	0 (0)	2 (2)	
1-25%	0 (0)	0 (0)	
26-50%	0 (0)	2 (2)	
51-75%	1 (4)	5 (6)	
76-100%	22 (96)	74 (89)	
Years that Nephrologists have worked at their Current Transplant Program			0.517
<1 Year	0 (0)	1 (1)	
1 to 3 years	1 (4)	10 (11)	
3 to 5 years	3 (11)	4 (4)	
5 to 10 years	7 (25)	18 (20)	
> 10 years	17 (61)	57 (63)	

FTE=Full Time Equivalent
PKE=Paired Kidney Exchange
LPE=List Paired Exchange

Supplemental Table S2: : Ordinal Logistic Model for Factors Associated with Center Volume*

Characteristic (n=151)**	Odds Ratio	95% Confidence Interval	p value
Center Performs Kidney Transplant Only	0.35	(0.16-0.76)	0.008
Patients Admitted to a Dedicated Transplant Unit or Kidney Ward	1.77	(0.94-3.32)	0.077
Desensitization Protocol	1.87	(0.96-3.63)	0.064
Ten Percent of Patients Enrolled in a Clinical Research Protocol	0.38	(0.19-0.76)	0.006
Use Electronic Medical Record	3.35	(1.37-8.18)	0.008
Dedicated Pharmacist for Inpatient and/or Outpatient	2.16	(1.11-4.20)	0.024
Transplant Nephrology Fellowship	5.04	(2.33-10.89)	<0.001

***Center Volume determined by kidney transplants conducted between 2000 and 2007.**

****All variables with $p < 0.1$ in the univariate analysis were eligible for multivariate modeling.**

****Variables with a frequency of greater than 90% for a single response were not eligible for multivariate modeling:**

- Is your HLA or tissue-typing laboratory accredited by the American Society for Histocompatibility and Immunogenetics (ASHI)?
- Does your kidney transplant program provide potential donors with the option of undergoing laparoscopic living donor nephrectomy?
- Estimate the year that your program first started performing laparoscopic living donor nephrectomies?
- Please estimate the proportion of living donor nephrectomies at your kidney transplant program that were performed laparoscopically over the last year?
- Does your kidney transplant team formally evaluate the program's short-term (≤ 1 year) and long-term (> 1 year) patient and allograft outcomes on a regular basis?
- What data source(s) does your program use to regularly review the outcomes of your kidney transplant recipients?
- Is your transplant nephrology fellowship AST/ASN-accredited?

Supplemental Table S3: Characteristics of Transplant Centers Conducting Multi-Organ Transplants vs. Kidney Transplant Alone

	Multi-Organ	Kidney Alone	p value
Characteristic:			
On site HLA lab	88 (78)	21 (48)	<0.001
HLA lab accredited by ASHI	106 (95)	42 (98)	1
Patients enrolled in a formal research protocol			<0.001
None	14 (12)	22 (51)	
1-10%	32 (28)	11 (26)	
11-25%	36 (32)	5 (12)	
26-50%	19 (17)	4 (9)	
>50%	12 (11)	1 (2)	
FTE Clinical Research Coordinators			0.001
None	31 (27)	25 (60)	
0.5 FTE	10 (9)	6 (14)	
1.0 FTE	22 (19)	3 (7)	
1.5 FTE	15 (13)	2 (5)	
≥2.0 FTE	35 (31)	6 (14)	
Offer ABO incompatible Transplants			0.012
Neither	54 (48)	31 (72)	
ABO-incompatible	3 (3)	2 (5)	
Cross-match positive	27 (24)	7 (16)	
Both	29 (26)	3 (7)	
Participate in PKE and LPE Programs			0.157
Neither	44 (40)	20 (48)	
PKE	33 (30)	13 (31)	
LPE	1 (1)	2 (5)	
Both PKE and LPE	33 (30)	7 (17)	
Offer Laparoscopic Living Donor Nephrectomy	111 (98)	35 (83)	0.002
Proportion of Living Donor Nephrectomy are Laparoscopic			0.196
None	3 (3)	4 (10)	
1-10%	5 (5)	3 (8)	
11-25%	3 (3)	2 (5)	
26-50%	7 (6)	1 (3)	
>50%	92 (84)	29 (75)	
Electronic Medical Record			
No EMR used	14 (12)	13 (30)	0.009

EMR for laboratory data	95 (85)	29 (67)	0.015
EMR for diagnostic imaging data	86 (77)	26 (60)	0.042
EMR for medical history data	81 (72)	25 (58)	0.089
EMR for physician order entry	51 (46)	16 (37)	0.349
EMR for consultation notes	72 (64)	20 (47)	0.044
Formal Evaluation of short- and long-term outcomes	104 (93)	38 (88)	0.367
Use Induction Therapy in Essentially All Patients			0.294
Hardly, if ever used (0)	1 (1)	1 (2)	
High Risk (1)	23 (20)	5 (12)	
Induction Therapy is used in essentially all of our patients (2)	89 (79)	36 (86)	
Typical First-Line Maintenance Immunosuppression on Low-Risk Patients Includes:			
Cyclosporine	19 (17)	8 (19)	0.792
Tacrolimus	105 (92)	38 (88)	0.358
Mycophenolate Mofetil	109 (96)	40 (93)	0.354
Azathioprine	0 (0)	2 (5)	0.075
Sirolimus	9 (8)	4 (9)	0.754
Corticosteroids	73 (65)	25 (58)	0.456
Other	4 (4)	2 (5)	0.668
For High-Risk Patients, Typical First-Line Maintenance Immunosuppression Includes:			
Cyclosporine	9 (8)	3 (7)	1
Tacrolimus	110 (97)	41 (95)	0.616
Mycophenolate Mofetil	110 (97)	39 (91)	0.092
Azathioprine	0 (0)	0 (0)	
Sirolimus	13 (12)	7 (16)	0.425
Corticosteroids	91 (81)	36 (84)	0.647
Other	1 (1)	2 (5)	0.184
Formal Protocol for Post-Transplant Screening/Prevention for:			
Cardiovascular Disease	63 (56)	21 (49)	0.439
CMV	96 (85)	36 (84)	0.849
EBV	47 (42)	24 (56)	0.121
Influenza	52 (46)	21 (50)	0.693
BKV	73 (65)	24 (57)	0.394
Skin Cancer	53 (47)	19 (44)	0.761
Other Malignancies	44 (39)	20 (47)	0.39
Osteoporosis	66 (58)	24 (56)	0.77
Number of FTE Nephrologists (Answered by Medical Director)			
Mean	4.07	3.82	

Standard Deviation	3.88	3.08	
Number of FTE Nephrologists (Answered by Surgical Director)			
Mean	3.88	6.59	
Standard Deviation	3.6	6.66	
Proportion of Nephrologists with Full Time Academic Appointments (answered by Medical Director)			0.057
None	21 (24)	15 (52)	
1-25%	3 (3)	1 (3)	
26-50%	2 (2)	0 (0)	
51-75%	4 (5)	0 (0)	
76-100%	58 (66)	13 (45)	
Proportion of Nephrologists with Full Time Academic Appointments (answered by Surgical Director)			0.103
None	18 (22)	9 (36)	
1-25%	1 (1)	2 (8)	
26-50%	2 (2)	1 (4)	
51-75%	3 (4)	1 (4)	
76-100%	57 (70)	12 (38)	
Type of Research by Nephrologists (Answered by Medical Director)			<0.001
None	4 (5)	10 (33)	
Clinical	52 (59)	15 (50)	
Basic	0 (0)	0 (0)	
Clinical and Basic	32 (36)	5 (17)	
Type of Research by Nephrologists (Answered by Surgical Director)			<0.001
None	1 (1)	11 (44)	
Clinical	45 (56)	9 (36)	
Basic	1 (1)	0 (0)	
Clinical and Basic	34 (42)	5 (20)	
Proportion of Nephrologists who are Principal Investigators in Peer-Reviewed, Federally Funded Research (Answered by Medical Director)			0.107
None	41 (47)	21 (70)	
1-25%	24 (28)	5 (17)	
26-50%	10 (12)	4 (13)	
51-75%	10 (12)	0 (0)	
76-100%	2 (2)	0 (0)	
Proportion of Nephrologists who are Principal Investigators in Peer-Reviewed, Federally Funded research (Answered by Surgical Director)			0.222

None	42 (52)	19 (76)	
1-25%	15 (19)	4 (16)	
26-50%	13 (16)	2 (8)	
51-75%	9 (11)	0 (0)	
76-100%	2 (2)	0 (0)	
Proportion of Nephrologists who are Principal Investigators in Industry Sponsored research (Answered by Medical Director)			0.107
None	18 (21)	11 (37)	
1-25%	24 (28)	12 (40)	
26-50%	18 (21)	4 (13)	
51-75%	15 (18)	1 (3)	
76-100%	11 (13)	2 (7)	
Proportion of Nephrologists who are Principal Investigators in Industry Sponsored Research (Answered by Surgical Director)			<0.001
None	15 (19)	16 (64)	
1-25%	15 (19)	4 (16)	
26-50%	21 (26)	2 (8)	
51-75%	14 (17)	0 (0)	
76-100%	16 (20)	3 (12)	
Proportion of Nephrologists who are Board Certified in Nephrology (Answered by Medical Director)			0.452
None	0 (0)	0 (0)	
1-25%	0 (0)	0 (0)	
26-50%	0 (0)	0 (0)	
51-75%	3 (3)	2 (7)	
76-100%	84 (97)	28 (93)	
Proportion of Nephrologists who are Board Certified in Nephrology (Answered by Surgical Director)			0.338
None	2 (2)	0 (0)	
1-25%	0 (0)	0(0)	
26-50%	1 (1)	1 (4)	
51-75%	6 (7)	0 (0)	
76-100%	72 (89)	24 (96)	
Years that the Survey Responder has worked at their Current Transplant Program			0.373
<1 Year	2 (2)	3 (12)	
1 to 3 years	10 (12)	2 (8)	
3 to 5 years	5 (6)	2 (8)	
5 to 10 years	25 (31)	6 (24)	
> 10 years	39 (48)	12 (48)	

Supplemental Table S4: Characteristics of Transplant Centers Across the 11 OPTN Regions

Characteristic	p value	1	2	3	4	5	6	7	8	9	10	11
		n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Organ Transplanted:												
Kidney		12 (100)	22 (100)	16 (100)	19 (100)	21 (100)	7 (100)	13 (100)	10 (100)	11 (100)	12 (100)	13 (100)
Pancreas	0.834	8 (67)	15 (68)	10 (63)	11 (58)	17 (81)	5 (71)	10 (77)	7 (70)	6 (55)	6 (50)	8 (62)
Liver	0.45	7 (58)	9 (41)	8 (50)	4 (21)	12 (57)	3 (43)	8 (62)	5 (50)	4 (36)	6 (50)	4 (31)
Heart	0.623	3 (25)	5 (23)	6 (38)	4 (21)	9 (43)	4 (57)	5 (39)	4 (40)	3 (27)	6 (50)	6 (46)
Lung	0.616	1 (8)	3 (13)	4 (25)	3 (16)	7 (33)	1 (14)	4 (31)	2 (20)	2 (18)	5 (42)	4 (31)
Other	0.463	0 (0)	1 (5)	0 (0)	0 (0)	3 (14)	1 (14)	1 (8)	1 (10)	1 (9)	0 (0)	0 (0)
On site HLA lab	0.865	8 (67)	13 (59)	13 (81)	13 (68)	16 (76)	4 (57)	11 (85)	6 (60)	7 (64)	9 (75)	9 (69)
HLA lab accredited by ASHI	0.39	11 (92)	20 (91)	16 (100)	19 (100)	21 (100)	6 (86)	10 (83)	10 (100)	11 (100)	12 (100)	12 (92)
Patients enrolled in a formal research protocol	0.045											
None		1 (8)	5 (23)	5 (31)	9 (47)	3 (14)	1 (14)	2 (15)	4 (40)	1 (9)	0 (0)	5 (38)
1-10%		4 (33)	7 (32)	1 (6)	6 (32)	5 (24)	4 (57)	2 (15)	1 (10)	4 (36)	5 (42)	4 (31)
11-25%		2 (17)	7 (32)	8 (50)	3 (16)	8 (38)	2 (29)	4 (31)	2 (20)	2 (18)	1 (8)	2 (15)
26-50%		4 (33)	1 (5)	2 (13)	1 (5)	2 (10)	0 (0)	4 (31)	3 (30)	1 (9)	4 (33)	1 (8)
>50%		1 (8)	2 (9)	0 (0)	0 (0)	3 (14)	0 (0)	1 (8)	0 (0)	3 (27)	2 (17)	1 (8)
Dedicated Pharmacist for Inpatient and/or Outpatient	0.248	14 (10)	21 (14)	17 (12)	11 (8)	17 (12)	7 (5)	15 (10)	9 (6)	8 (6)	14 (10)	12 (8)
Dedicated Consultant Physicians for Kidney Transplant Recipients	0.506	18 (10)	22 (13)	20 (11)	18 (10)	19 (11)	8 (5)	11 (6)	13 (7)	13 (7)	16 (9)	16 (9)

Physician Extender (CNP or PA) on Inpatient Service	<0.001	13 (10)	19 (15)	15 (12)	4 (3)	14 (11)	5 (4)	12 (10)	11 (9)	16 (11)	7 (6)	9 (7)
Physician Extender (CNP or PA) on Outpatient Service	0.01	9 (8)	16 (14)	14 (12)	7 (6)	14 (12)	3 (3)	11 (10)	10 (8)	14 (12)	6 (5)	10 (9)
Primary MD in the ICU is the Transplant Surgeon	0.305	6 (6)	18 (17)	11 (11)	14 (14)	8 (7)	3 (3)	9 (9)	6 (6)	8 (7)	9 (9)	11 (11)
Primary MD in the ICU is an Intensivist	0.23	10 (16)	9 (14)	6 (9)	3 (5)	10 (16)	2 (3)	5 (8)	6 (9)	5 (8)	4 (6)	4 (6)
Initial Contact MD for After-Hours Questions is Attending Transplant Physician or Surgeon	0.602	4 (7)	7 (13)	7 (13)	6 (11)	7 (13)	2 (4)	2 (4)	1 (2)	6 (11)	7 (13)	6 (11)
FTE Clinical Research Coordinators	0.164											
None		1 (8)	7 (32)	4 (25)	13 (68)	6 (29)	3 (43)	3 (23)	5 (50)	5 (45)	3 (25)	6 (50)
0.5 FTE		3 (25)	4 (18)	2 (13)	0 (0)	2 (10)	1 (14)	1 (8)	1 (10)	0 (0)	1 (8)	1 (8)
1.0 FTE		3 (25)	6 (27)	1 (6)	4 (21)	1 (5)	1 (14)	2 (15)	0 (0)	3 (27)	2 (17)	2 (17)
1.5 FTE		1 (8)	2 (9)	3 (19)	1 (5)	6 (29)	1 (14)	1 (8)	0 (0)	1 (9)	0 (0)	1 (8)
≥2.0 FTE		4 (33)	3 (14)	6 (38)	1 (5)	6 (29)	1 (14)	6 (46)	4 (40)	2 (18)	6 (50)	2 (17)
Offer ABO incompatible Transplants	0.128											
ABO-incompatible		5 (42)	15 (68)	11 (69)	16 (84)	7 (33)	4 (57)	4 (31)	5 (50)	4 (36)	8 (67)	6 (46)
Cross-match positive		0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	1 (14)	1 (8)	0 (0)	0 (0)	1 (8)	1 (8)
Both		2 (17)	4 (18)	4 (25)	2 (11)	7 (33)	0 (0)	3 (23)	3 (30)	2 (18)	2 (17)	5 (38)
Neither		5 (42)	3 (14)	1 (6)	1 (5)	6 (29)	2 (29)	5 (38)	2 (20)	5 (45)	1 (8)	1 (8)
Participate in PKE and LPE Programs	<0.001											
PKE		0 (0)	10 (45)	10 (63)	5 (28)	15 (75)	2 (29)	4 (31)	6 (60)	2 (20)	2 (17)	8 (62)
LPE		2 (17)	8 (37)	5 (31)	10 (56)	3 (15)	1 (14)	4 (31)	4 (40)	2 (20)	7 (58)	0 (0)
Both PKE and LPE		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (29)	0 (0)	0 (0)	0 (0)	1 (8)	0 (0)

Neither		10 (83)	4 (18)	1(6)	3 (17)	2 (10)	2 (29)	5 (38)	0 (0)	6 (60)	2 (17)	5 (38)
Offer Laparoscopic Living Donor Nephrectomy	0.814	12 (100)	20 (91)	14 (88)	18 (95)	19 (90)	7 (100)	13 (100)	9 (90)	10 (100)	12 (100)	12 (92)
Proportion of Living Donor Nephrectomy are Laparoscopic	0.629											
None		0 (0)	2 (10)	1 (7)	1 (5)	1 (5)	0 (0)	1 (8)	1 (10)	0 (0)	0 (0)	0 (0)
1-10%		0 (0)	0 (0)	2 (14)	2 (11)	0 (0)	1 (14)	0 (0)	0 (0)	1 (9)	1 (9)	1 (8)
11-25%		0 (0)	0 (0)	0 (0)	2 (11)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (17)
26-50%		1 (8)	1 (5)	0 (0)	3 (16)	0 (0)	0 (0)	1 (8)	0 (0)	1 (9)	0 (0)	1 (8)
>50%		11 (92)	17 (85)	11 (79)	11 (58)	18 (90)	6 (86)	11 (85)	9 (90)	9 (82)	10 (91)	8 (67)
Electronic Medical Record												
No EMR used	0.921	2 (17)	4 (18)	3 (19)	5(26)	2 (10)	1 (14)	1 (8)	2 (20)	3 (27)	1 (8)	3 (23)
EMR for laboratory data	0.883	10 (83)	17 (77)	13 (81)	13 (68)	17 (85)	5 (71)	12 (92)	8 (80)	8 (73)	11 (92)	10 (77)
EMR for diagnostic imaging data	0.999	9 (75)	17 (77)	11 (69)	13 (68)	15 (75)	5 (71)	9 (69)	8(80)	7(64)	9(75)	9(69)
EMR for medical history data	0.136	8 (67)	12 (55)	12 (75)	9 (47)	17 (85)	5 (71)	11 (85)	8 (80)	5 (45)	10 (83)	9 (69)
EMR for physician order entry	0.807	7 (58)	8 (36)	7 (43)	5 (26)	9 (45)	2 (29)	7 (54)	5 (50)	6 (55)	6 (50)	5 (38)
EMR for consultation notes	0.053	6 (50)	8 (36)	11 (69)	10 (53)	17 (85)	5 (71)	11 (85)	6 (60)	4 (36)	7 (58)	7 (54)
Formal Evaluation of short- and long-term outcomes	0.027	12 (100)	21 (100)	16 (100)	17 (89)	20 (95)	6 (86)	11 (85)	8 (80)	7 (64)	11 (92)	13 (100)
Academic Status of Transplant Center	0.003	12 (100)	19 (86)	11 (69)	8 (42)	16 (76)	4 (57)	11 (85)	7 (70)	11 (100)	11 (92)	11 (85)
Use Induction Therapy in Essentially All Patients												
Hardly, if ever used	0.804	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (9)	0 (0)
High Risk		2 (17)	2 (9)	4 (25)	5 (26)	5 (24)	2 (29)	1 (8)	2 (20)	2 (18)	1 (9)	2 (15)

Induction Therapy is used in essentially all of our patients		10 (83)	20 (91)	12 (75)	13 (68)	16 (76)	5 (71)	12 (92)	8 (80)	9 (82)	9 (82)	11 (85)
Typical First-Line Maintenance Immunosuppression Includes:												
Cyclosporine	0.518	0 (0)	3 (14)	1 (6)	5 (26)	6 (29)	2 (29)	3 (23)	1 (10)	1 (9)	2 (17)	3 (23)
Tacrolimus	0.346	12 (100)	21 (95)	16 (100)	16 (84)	20 (95)	6 (86)	11 (85)	10 (100)	10 (91)	9 (75)	12 (92)
Mycophenolate Mofetil	0.399	11 (92)	21 (95)	16 (100)	17 (89)	21 (100)	7 (100)	13 (100)	10 (100)	10 (91)	10 (83)	13 (100)
Azathioprine	0.201	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	1 (14)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Sirolimus	0.017	0 (0)	0 (0)	0 (0)	5 (26)	1 (5)	0 (0)	1 (8)	2 (20)	3 (27)	1 (8)	0 (0)
Corticosteroids	0.007	8 (67)	11 (50)	10 (63)	15 (79)	16 (76)	6 (86)	9 (69)	3 (30)	8 (73)	2 (17)	10 (77)
Other	0.522	1 (8)	0 (0)	0 (0)	2 (11)	2 (10)	0 (0)	0 (0)	0 (0)	0 (0)	1 (8)	0 (0)
For High-Risk Patients, Typical First-Line Maintenance Immunosuppression Includes:												
Cyclosporine	0.761	0 (0)	2 (9)	0 (0)	1 (5)	3 (14)	1 (14)	1 (8)	1 (10)	0 (0)	2 (17)	1 (8)
Tacrolimus	0.014	12 (100)	21 (95)	16 (100)	18 (95)	21 (100)	7 (100)	13 (100)	10 (100)	11 (100)	9 (75)	13 (100)
Mycophenolate Mofetil	0.528	11 (92)	21 (95)	15 (94)	19 (100)	21 (100)	7 (100)	13 (100)	9 (90)	11 (100)	10 (83)	12 (92)
Azathioprine	<0.001											
Sirolimus	0.42	0 (0)	0 (0)	3 (19)	4 (21)	3 (14)	1 (14)	1 (8)	3 (30)	2 (18)	1 (8)	2 (15)
Corticosteroids	0.141	10 (83)	16 (73)	13 (81)	17 (89)	20 (95)	7 (100)	11 (85)	8 (80)	8 (73)	6 (50)	11 (85)
Other	0.599	1 (8)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	1 (8)	0 (0)
Formal Protocol for Post-Transplant Screening/Prevention for:												
Cardiovascular Disease	0.929	7 (58)	12 (55)	7 (44)	10 (53)	11 (53)	4 (57)	10 (77)	5 (50)	6 (55)	5 (42)	7 (54)
CMV	0.873	10 (83)	19 (86)	13 (81)	16 (84)	20 (95)	7 (100)	11 (85)	8 (80)	8 (73)	10 (83)	10 (77)

EBV	0.621	8 (67)	11 (52)	6 (36)	6 (32)	10 (48)	5 (71)	6 (46)	5 (50)	4 (36)	6 (50)	4 (31)
Influenza	0.72	7 (58)	11 (50)	5 (31)	10 (53)	11 (52)	2 (29)	8 (67)	5 (50)	4 (36)	6 (50)	4 (33)
BKV	0.005	9 (75)	18 (82)	11 (69)	10 (53)	12 (57)	4 (57)	12 (92)	7 (70)	1 (9)	7 (58)	6 (50)
Skin Cancer	0.909	7 (58)	10 (45)	6 (38)	8 (42)	10 (48)	3 (43)	9 (69)	4 (40)	5 (45)	5 (42)	5 (38)
Other Malignancies	0.926	6 (50)	7 (32)	5 (31)	9 (47)	9 (43)	4 (57)	7 (54)	3 (30)	4 (36)	5 (42)	5 (39)
Osteoporosis	0.779	10 (83)	13 (59)	8 (50)	11 (58)	12 (57)	5 (71)	7 (54)	6 (60)	7 (64)	5 (42)	6 (46)

Supplemental Table S5: Characteristics of Transplant Centers with Resources through Group Practice vs. Departmental Structure

		Group Practice (No)	Departmental Structure (Yes)	Other	p value
		n (%)	n (%)	n (%)	
Center Characteristic					
Organ Transplanted					
Kidney		39 (100)	81 (100)	33 (100)	1
Pancreas		27 (69)	52 (64)	23 (70)	0.789
Liver		16 (41)	41 (51)	13 (39)	0.436
Heart		8 (21)	35 (43)	12 (36)	0.053
Lung		6 (15)	23 (28)	7 (21)	0.272
Other		2 (5)	6 (7)	0 (0)	0.073
On site HLA lab		20 (51)	68 (84)	20 (61)	<0.001
HLA lab accredited by ASHI		37 (95)	75 (94)	33 (100)	0.616
Patients enrolled in a formal research protocol					0.329
None		10 (26)	14 (17)	10 (30)	
1-10%		11 (28)	19 (23)	12 (36)	
11-25%		10 (26)	27 (33)	4 (12)	
26-50%		4 (10)	15 (18)	4 (12)	
>50%		4 (10)	6 (7)	3 (9)	
Dedicated Pharmacist for Inpatient and/or Outpatient		76 (68)	69 (61)	0 (0)	0.328
Dedicated Consultant Physicians for Kidney Transplant Recipients		83 (74)	91 (81)	0 (0)	0.199
Physician Extender (CNP or PA) on Inpatient Service		64 (57)	61 (54)	0 (0)	0.686
Physician Extender (CNP or PA) on Outpatient Service		61 (54)	53 (47)	0 (0)	0.285
Primary MD in the ICU is the Transplant Surgeon		56 (50)	47 (42)	0 (0)	0.228
Primary MD in the ICU is an Intensivist		26 (23)	38 (34)	0 (0)	0.076
Initial Contact MD for After- Hours Questions is Attending Transplant Physician or Surgeon		35 (31)	20 (18)	0 (0)	0.02

FTE Clinical Research Coordinators					0.072
None		15 (39)	26 (32)	13 (39)	
0.5 FTE		5 (13)	4 (5)	7 (21)	
1.0 FTE		7 (18)	12 (15)	5 (15)	
1.5 FTE		1 (3)	14 (17)	2 (6)	
≥2.0 FTE		10 (26)	25 (31)	6 (18)	
Offer ABO incompatible Transplants					0.516
Neither		23 (59)	40 (49)	21 (64)	
ABO-incompatible		1 (3)	2 (2)	2 (6)	
Cross-Match Positive		7 (18)	19 (23)	7 (21)	
Both		8 (21)	20 (25)	3 (9)	
Participate in PKE and LPE Programs					
Neither		13 (33)	38 (48)	12 (38)	0.639
PKE		13 (33)	23 (29)	10 (31)	
LPE		0 (0)	2 (3)	1 (3)	
Both PKE and LPE		13 (33)	17 (21)	9 (28)	
Offer Laparoscopic Living Donor Nephrectomy		38 (97)	74 (93)	31 (94)	0.563
Proportion of Living Donor Nephrectomy are Laparoscopic					0.505
None		2 (5)	4 (5)	1 (3)	
1-10%		0 (0)	5 (7)	3 (9)	
11-25%		0(0)	3 (4)	1 (3)	
26-50%		4 (10)	3 (4)	1 (3)	
>50%		33 (85)	60 (80)	26 (81)	
Electronic Medical Record					
No EMR used		9 (23)	11 (14)	6 (19)	0.417
EMR for laboratory data		29 (74)	69 (85)	24 (75)	0.265
EMR for diagnostic imaging data		27 (69)	62 (77)	21 (66)	0.444
EMR for medical history data		26 (67)	59 (73)	19 (59)	0.368
EMR for physician order entry		15 (38)	39 (48)	12 (37)	0.453
EMR for consultation notes		23 (59)	51 (63)	17 (53)	0.625
Formal Evaluation of short- and long-term outcomes		36 (95)	74 (91)	30 (91)	0.783
Affiliation with a Medical School		24 (62)	74 (91)	21 (64)	<0.001
Use Induction Therapy					0.31
Hardly, if ever used		0 (0)	1 (1)	1 (3)	
High Risk		9 (24)	10 (12)	8 (24)	

Induction Therapy is used in essentially all of our patients		29 (76)	70 (86)	24 (73)	
Typical First-Line Maintenance Immunosuppression Includes:					
Cyclosporine		5 (13)	13 (16)	8 (24)	0.414
Tacrolimus		36 (92)	79 (98)	26 (79)	0.003
Mycophenolate Mofetil		36 (92)	78 (96)	32 (97)	0.552
Azathioprine		0 (0)	1 (1)	1 (3)	0.527
Sirolimus		3 (8)	7 (9)	2 (6)	0.897
Corticosteroids		24 (62)	52 (64)	21 (63)	0.96
Other		3 (8)	1 (1)	2 (6)	0.18
For High-Risk Patients, Typical First-Line Maintenance Immunosuppression Includes:					
Cyclosporine		3 (8)	7 (9)	2 (6)	0.897
Tacrolimus		37 (95)	80 (99)	32 (97)	0.45
Mycophenolate Mofetil		35 (90)	78 (96)	33 (100)	0.1
Azathioprine		0 (0)	0 (0)	0 (0)	
Sirolimus		4 (10)	12 (15)	3 (9)	0.628
Corticosteroids		33 (85)	65 (80)	26 (79)	0.792
Other		3 (8)	0 (0)	0 (0)	0.011
Formal Protocol for Post-Transplant Screening/Prevention for:					
Cardiovascular Disease		25 (64)	41 (51)	18 (55)	0.38
CMV		33 (85)	69 (85)	29 (88)	0.913
EBV		22 (58)	39 (48)	10 (30)	0.062
Influenza		19 (50)	38 (48)	16 (48)	0.968
BKV		29 (74)	47 (59)	19 (58)	0.206
Skin Cancer		23 (59)	36 (44)	12 (36)	0.139
Other Malignancies		20 (51)	33 (41)	11 (33)	0.294
Osteoporosis		25 (64)	42 (52)	21 (64)	0.323
Number of years survey responder had worked at the transplant center.					0.195
<1 year		0 (0)	1 (2)	0 (0)	
1-3 years		5 (19)	4 (6)	2 (9)	
3-5 years		2 (7)	3 (5)	2 (9)	
5-10 years		4 (15)	11 (17)	9 (39)	
>10 years		16 (59)	46 (71)	10 (43)	

Proportion of Nephrologists with Full Time Academic Appointments (answered by Medical Director)					<0.001
None		15 (56)	10 (15)	10 (45)	
1-25%		1 (4)	1 (2)	2 (9)	
26-50%		2 (7)	0 (0)	0 (0)	
51-75%		0 (0)	3 (5)	1 (5)	
76-100%		9 (33)	51 (78)	9 (41)	
Proportion of Nephrologists with Full Time Academic Appointments (answered by Surgical Director)					0.004
None		11 (31)	5 (11)	11 (50)	
1-25%		2 (6)	1 (2)	0 (0)	
26-50%		3 (8)	0 (0)	0 (0)	
51-75%		0 (0)	3 (6)	1 (5)	
76-100%		20 (56)	38 (81)	10 (45)	
Type of Research by Nephrologists (Answered by Medical Director)					
None		4 (15)	5 (8)	3 (13)	0.485
Clinical		18 (67)	37 (57)	12 (52)	
Basic		0 (0)	0 (0)	0 (0)	
Clinical and Basic		5 (19)	23 (35)	8 (35)	
Type of Research by Nephrologists (Answered by Surgical Director)					0.373
None		6 (17)	4 (9)	2 (9)	
Clinical		17 (47)	23 (49)	13 (59)	
Basic		0 (0)	0 (0)	1 (5)	
Clinical and Basic		13 (36)	20 (43)	6 (27)	
Proportion of Nephrologists who are Principal Investigators in Peer-Reviewed, Federally Funded research (Answered by Medical Director)					0.388
None		17 (63)	31 (48)	13 (57)	
1-25%		3 (11)	22 (34)	4 (17)	
26-50%		3 (11)	7 (11)	3 (13)	
51-75%		3 (11)	5 (8)	2 (9)	
76-100%		1 (4)	0 (0)	1 (4)	

Proportion of Nephrologists who are Principal Investigators in Peer-Reviewed, Federally Funded research (Answered by Surgical Director)					0.528
None		20 (56)	25 (53)	15 (68)	
1-25%		6 (17)	11 (23)	2 (9)	
26-50%		6 (17)	5 (11)	4 (18)	
51-75%		4 (11)	5 (11)	0 (0)	
76-100%		0 (0)	1 (2)	1 (5)	
Proportion of Nephrologists who are Principal Investigators in Industry Sponsored research (Answered by Medical Director)					0.726
None		9 (33)	12 (18)	7 (32)	
1-25%		7 (26)	22 (34)	7 (32)	
26-50%		5 (19)	12 (18)	4 (18)	
51-75%		3 (11)	12 (18)	1 (5)	
76-100%		3 (11)	7 (11)	3 (14)	
Proportion of Nephrologists who are Principal Investigators in Industry Sponsored research (Answered by Surgical Director)					0.698
None		12 (33)	12 (26)	7 (32)	
1-25%		4 (11)	9 (19)	5 (23)	
26-50%		10 (28)	9 (19)	4 (18)	
51-75%		4 (11)	9 (19)	1 (5)	
76-100%		6 (17)	8 (17)	5 (23)	
Proportion of Nephrologists who are Board Certified in Nephrology (Answered by Medical Director)					0.529
None		0 (0)	0 (0)	0 (0)	
1-25%		0 (0)	0 (0)	0 (0)	
26-50%		0 (0)	0 (0)	0 (0)	
51-75%		0 (0)	3 (5)	1 (4)	
76-100%		27 (100)	62 (95)	22 (96)	
Proportion of Nephrologists who are Board Certified in Nephrology (Answered by Surgical Director)					0.972
None		1 (3)	1 (2)	0 (0)	
1-25%		0 (0)	0 (0)	0 (0)	

26-50%		1 (3)	1 (2)	0 (0)	
51-75%		2 (6)	2 (4)	1 (5)	
76-100%		32 (89)	43 (91)	21 (95)	
Number of FTE Nephrologists					
Mean		5.2	3.4	2.5	
Standard Deviation		9.91	4.3	1.73	