

Paired Exchange Results Quarterly Report

Q2 Results 2019

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Message from the Founder & CEO



We are pleased to report a strong first half, with 352 KPD transplants facilitated—9% more than were completed during the same period last year. Our DASH platform has reached a run rate of over 40,000 donor contacts per year, representing a 60% year-over-year growth rate. Our Donor Shield product is operational in six centers and has reached a run rate of approximately 300 cases per year.

After a successful pilot across 11 centers, the Family Voucher Program is now open to all NKR Member Centers. The Family Voucher Program no longer restricts voucher donations to people with impaired kidney function and allows up to 5 healthy family members to receive vouchers. We now have 20 Member Centers participating in the Family Voucher Program. Voucher donors now represent the majority of NKR chain starts.

The Family Voucher Program has been an enormous success. Early data indicates that approximately 95% of non-directed donors are converting to the Family Voucher Program when given the option, and there is evidence that the program is attracting new donors who would not have previously considered donating.

We are now providing reimbursement for up to \$2,000 in qualified travel and lodging costs for all NKR donors and their travelling companions. Additionally, we recently removed the income cap for donor travel and lodging reimbursements so that all donors can participate in this program regardless of their income.

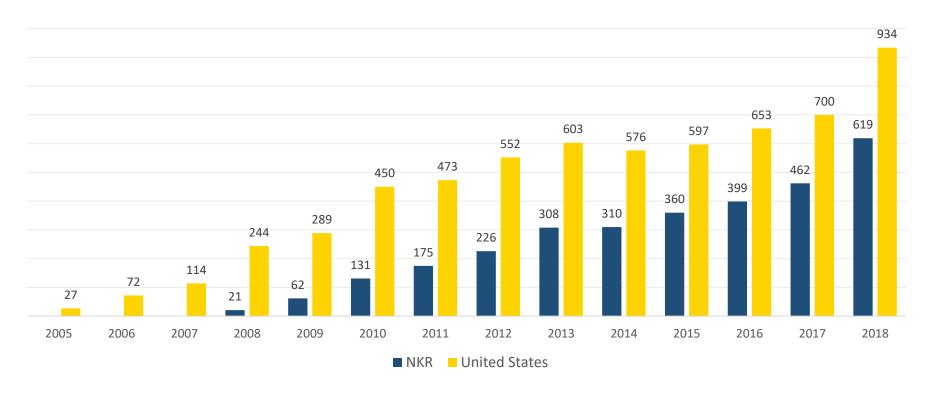
We are pleased to announce that we are now publishing a detailed Outcomes Report with each SRTR data update, approximately every 6 months. You can access the full Outcomes Report here.

As always, we thank our Member Centers for their ongoing dedication and efforts, which have enabled us to continue breaking records and achieving new milestones.

Thank you for your support and keep up the great work!

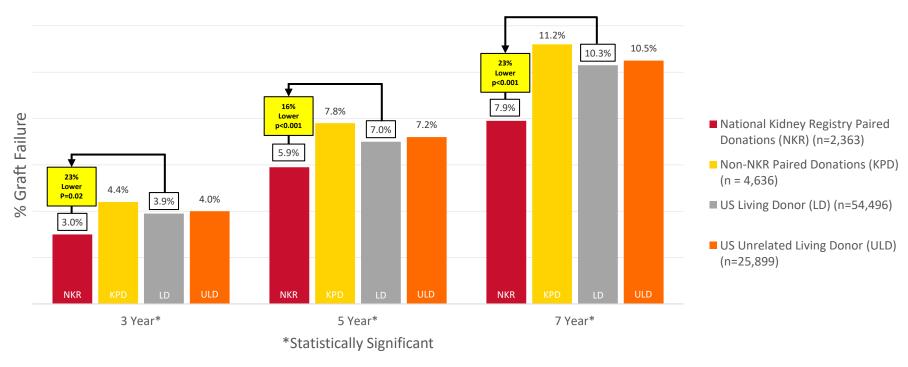
Sincerely,
Garet Hil
Founder & CEO
National Kidney Registry
Living Kidney Donor

NKR Leading U.S. KPD Growth



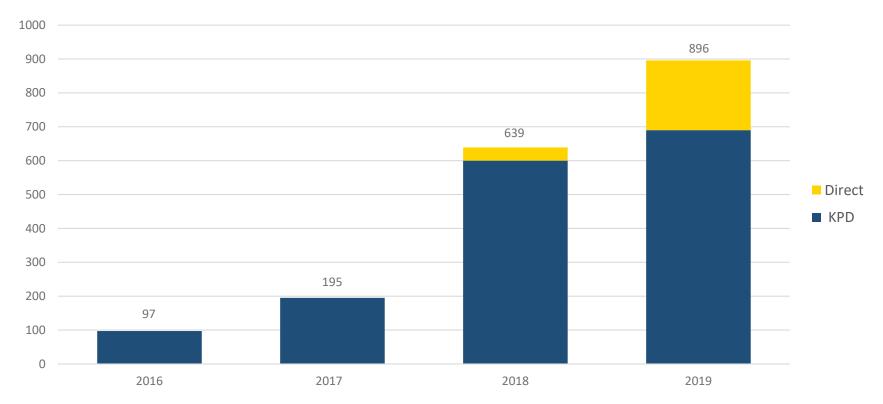
*Organ Procurement and Transplantation Network. https://optn.transplant.hrsa.gov/

Death Censored Graft Failure Comparisons

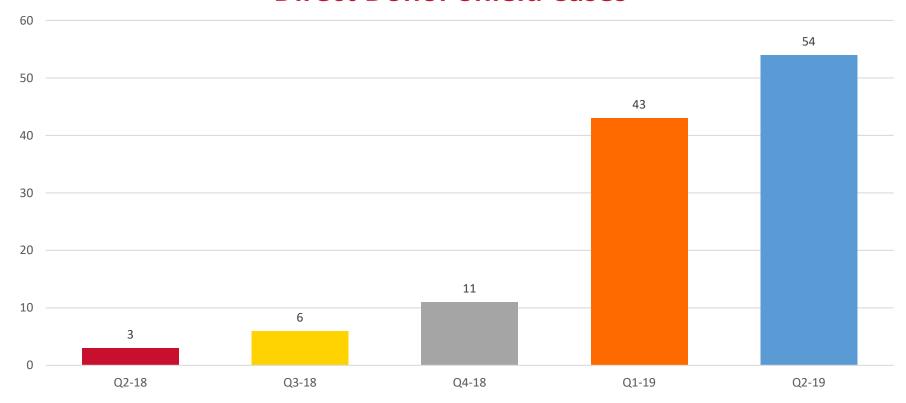


Provided courtesy of Johns Hopkins University School of Medicine, Department of Surgery *Not including CHIP patients;
Kaplan-Meier GS Rates for Transplants Performed: 02/2008-06/2018 with follow-up through 2/28/2019 https://www.srtr.org/

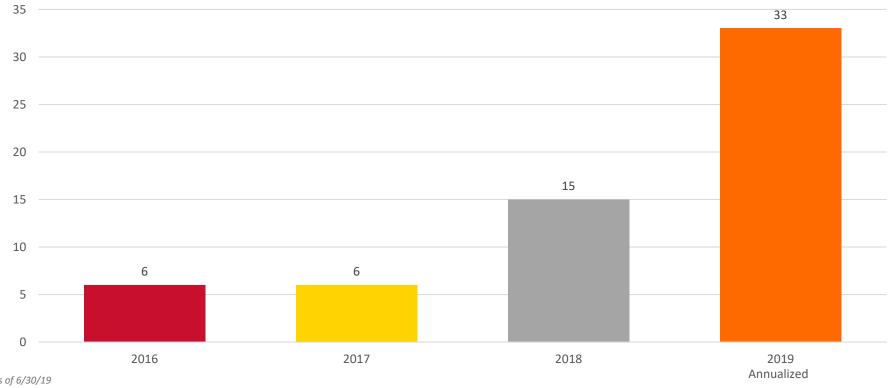
Donor Shield Cases



Direct Donor Shield Cases



A2 to O Transplants Facilitated

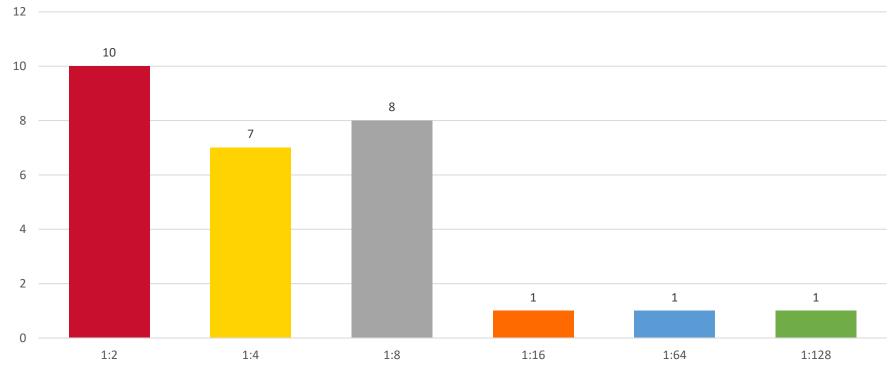


^{*} As of 6/30/19

^{*}This can be A2-O, A2-B and A2B-B transplants



Anti-A Titer Ratios for Patients Accepting A2 Donors

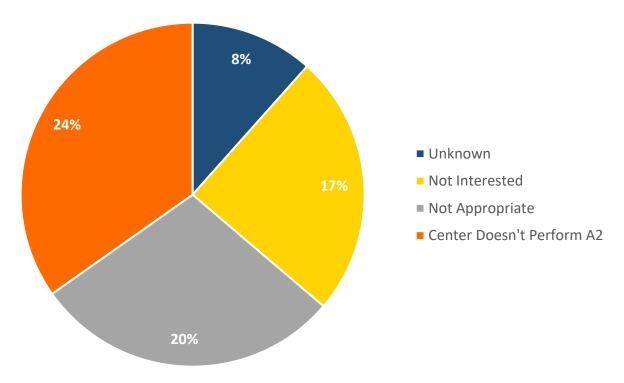


*Includes transplanted patients from 12/04/18 to 7/18/19 and all exportable patients as of 6/30/19 Note: Ratios vary based on center specific criteria for A2 to O blood group matching



Opportunities to Increase A2 to O Transplants

Active O Recipients Without Titers Recorded

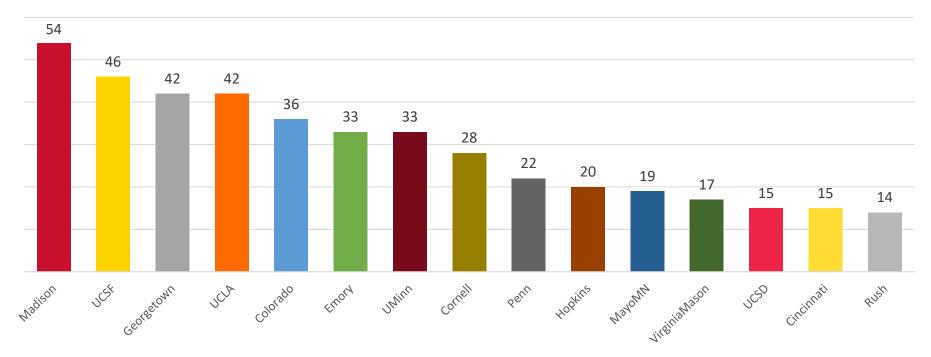






Top Centers

Transplants Last 12 Months



*As of 7/22/19



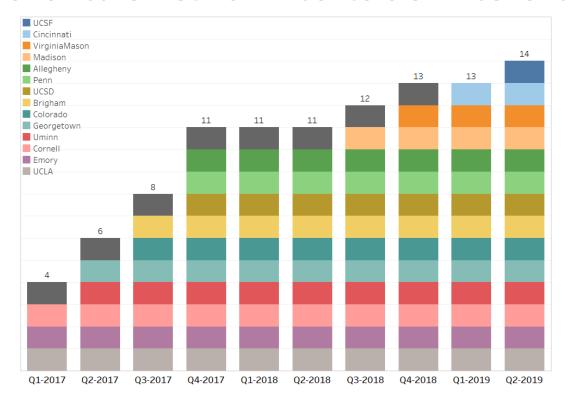
NKR Member Centers



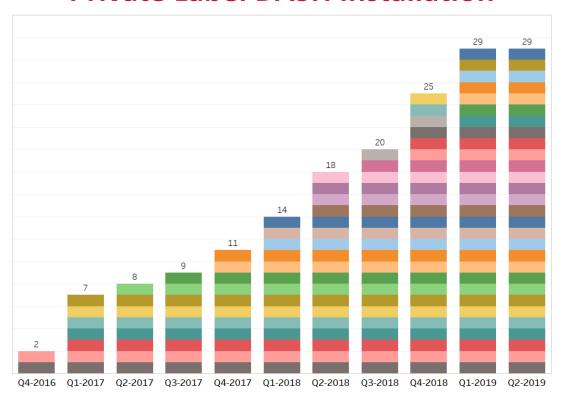
*As of 7/15/19



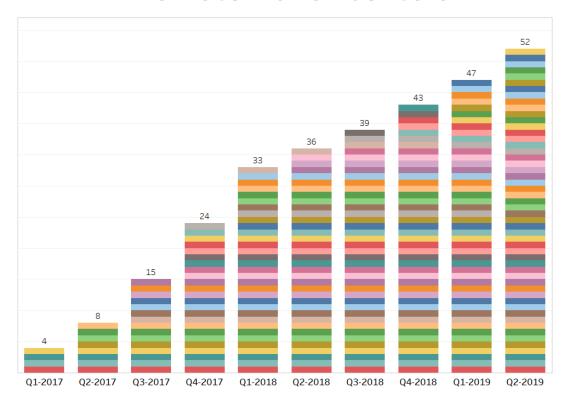
Donor Care Network® Centers of Excellence



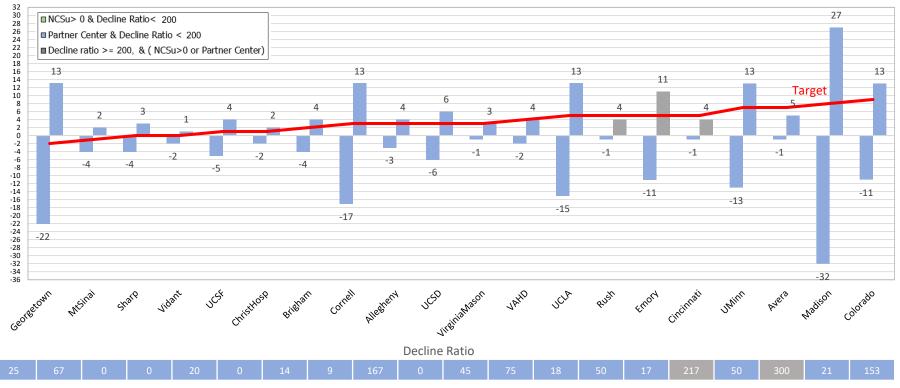
Private Label DASH Installation



Remote Donor Centers



Partner Center Chain End Targets

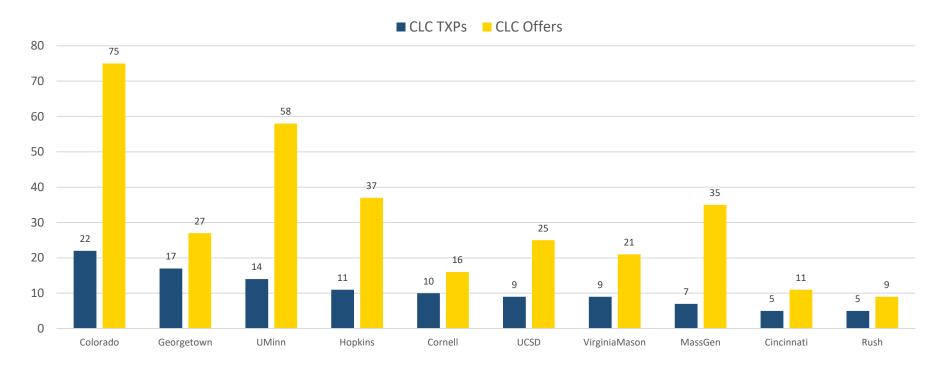


^{*} https://clc.kidneyregistry.org/WebForm1.aspx?ReportKeyPass=ag5Ghnf76Tghd765GFtre&NcsSummary=1&Sort=DefaultSort&Supress=1 Accessed 7/31/19 at 10:48 ET



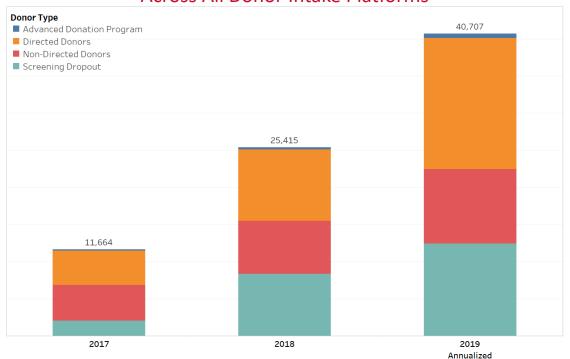
Top Center Liquidity Contributors

CLC Driven Match Offers - 7/18 - 6/19



Donor Contacts

Across All Donor Intake Platforms

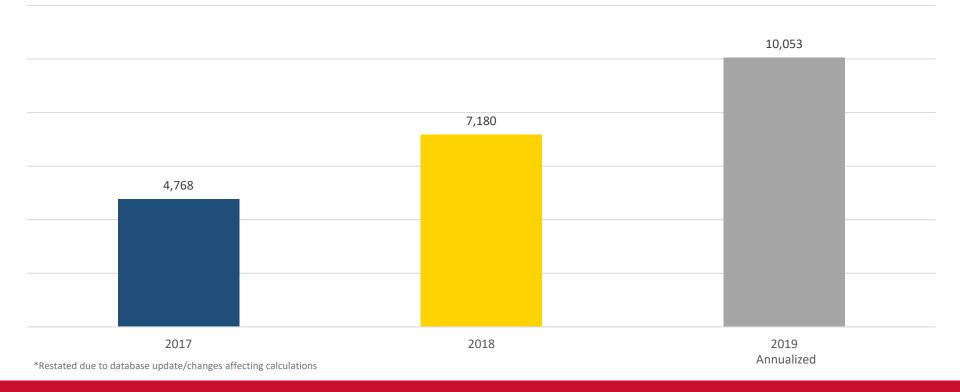


*Year 2017 Restated due to database update/changes affecting calculations



Non-Directed Donor Contacts

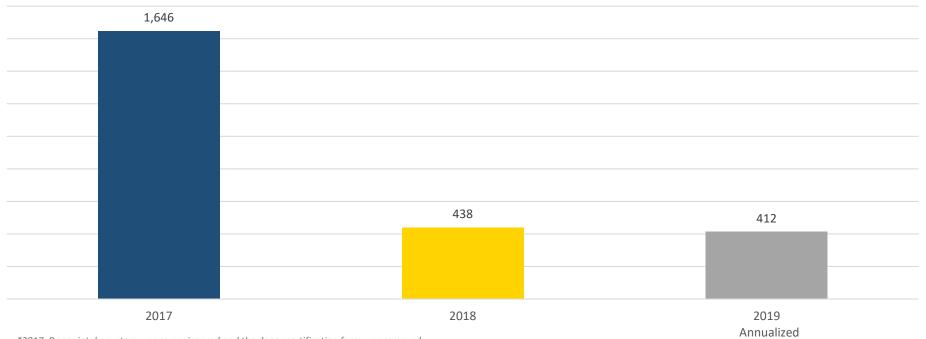
Across All DASH





Non-Directed Donor Referrals

Referred to NKR Member Centers



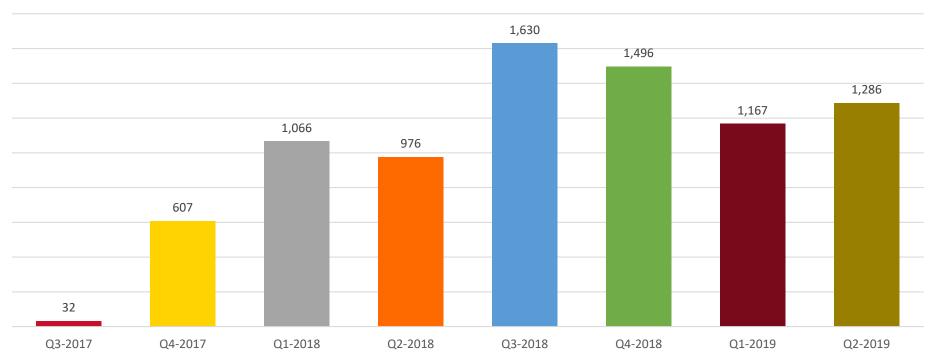
*2017: Donor intake system was re-engineered and the donor certification form was removed

*2018: Pre-workup labs were implemented which screened out candidates not willing to complete 24-hour urine test



Pre-Workup Labs

24 Hour Urine Jugs Shipped

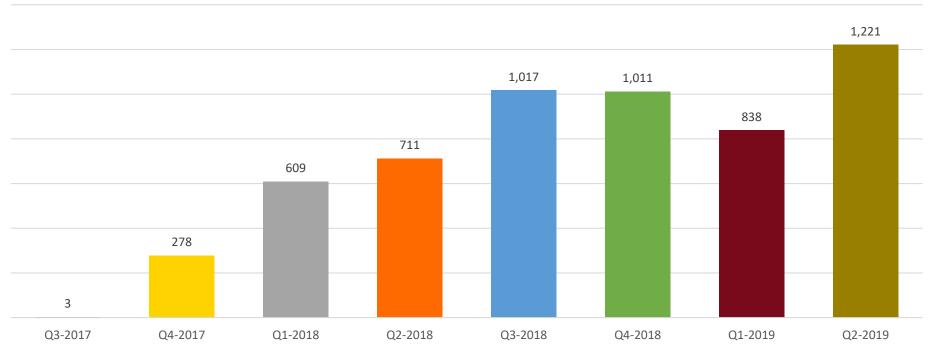


^{*} Restated due to database update/changes affecting calculations



Pre-Workup Labs

Scripts Uploaded

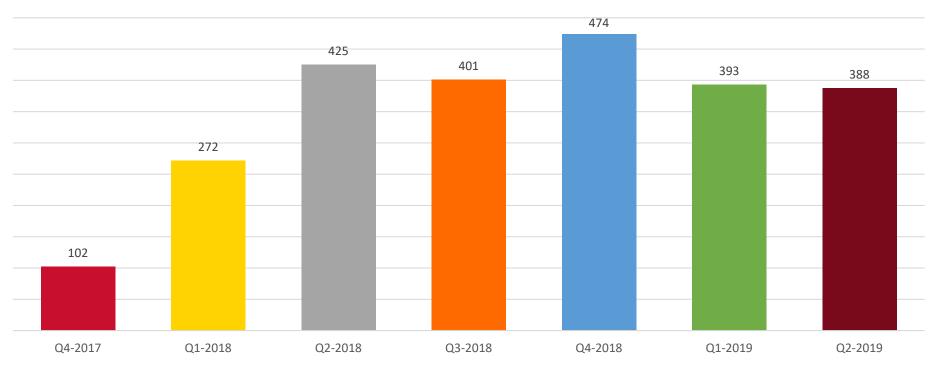


^{*} Restated due to database update/changes affecting calculations



Pre-Workup Labs

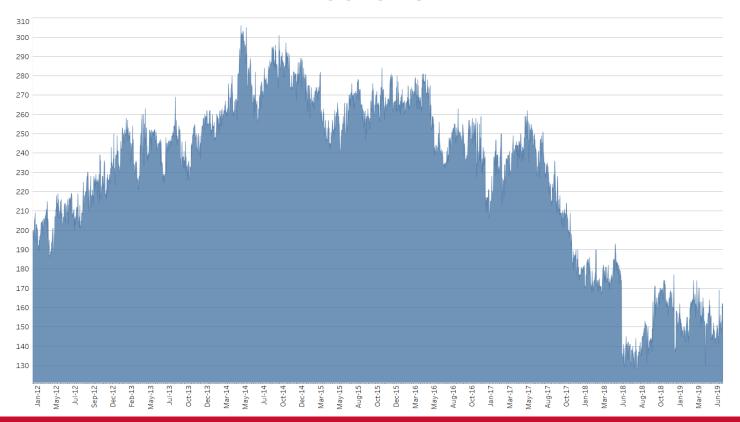
Results Uploaded



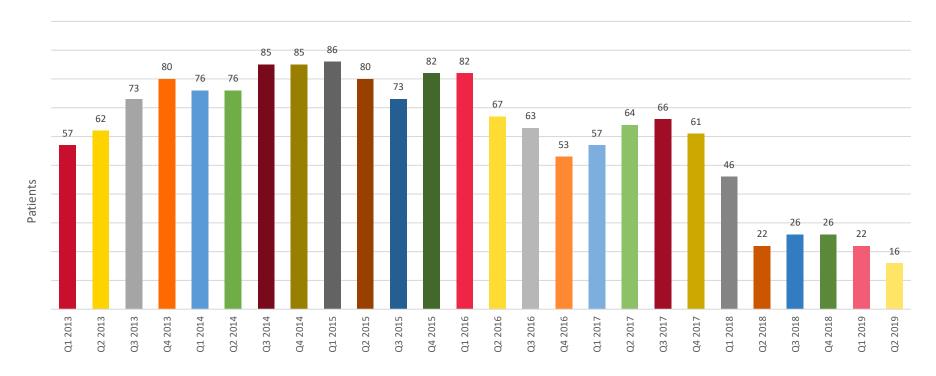
^{*} Restated due to database update/changes affecting calculations



Pool Size

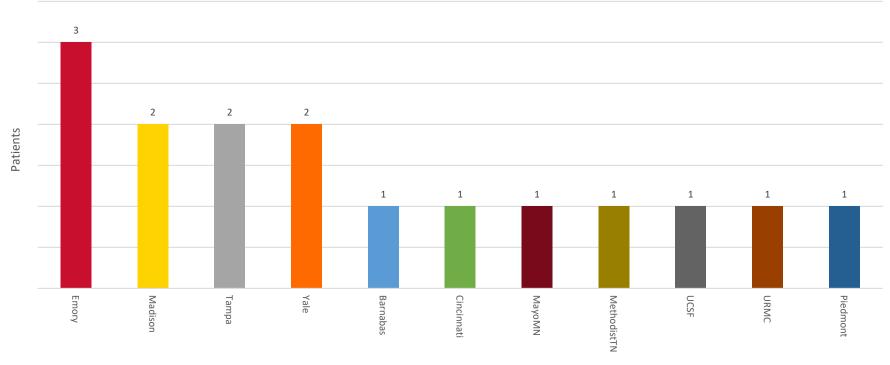


Patients Waiting > 1 Year by Quarter



^{*} As of 7/22/19

Patients Waiting > 1 Year by Center

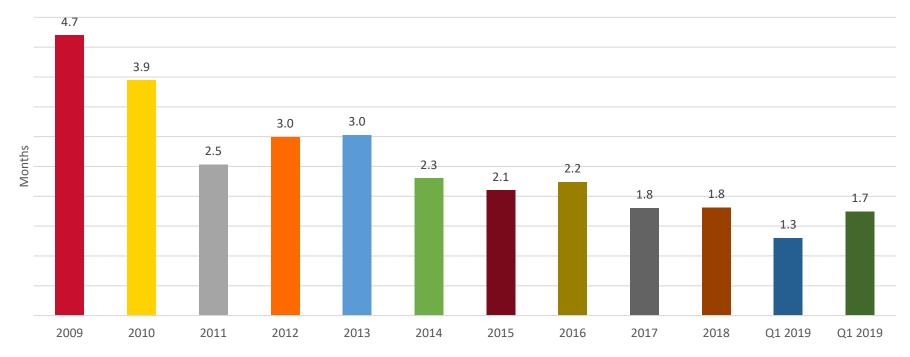






Transplanted Patient Median Wait Time

Wait times of patients transplanted during prior 12 months

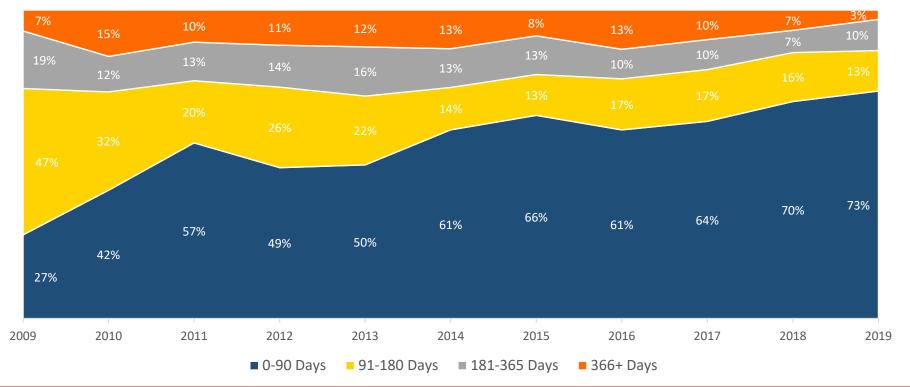


* As of 6/30/19



Wait Time Distribution

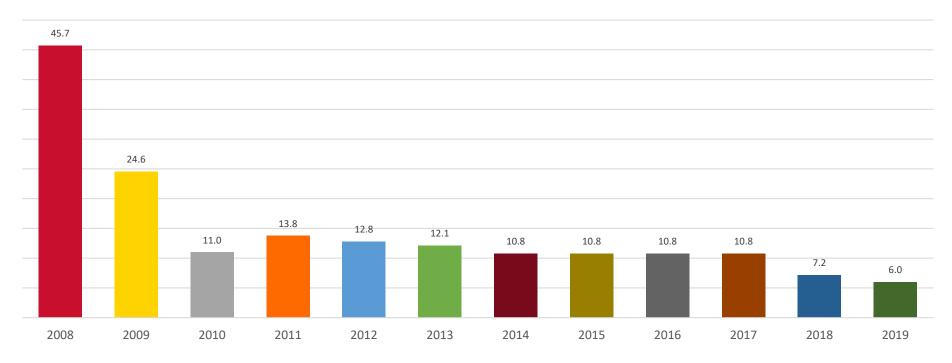
Transplanted Pairs





Unmatched Patient Mean Wait Time

(months)

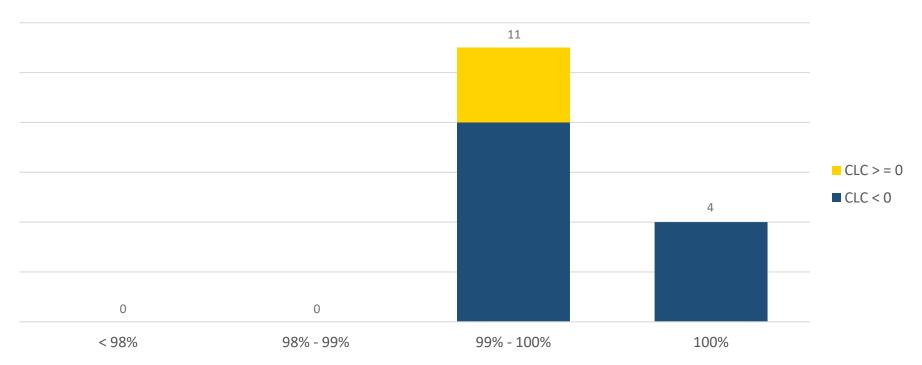


^{*} As of 6/30/19



Unmatched Target Pairs

Waiting more than 12 Months



* As of 7/15/19



Pairs waiting > 1 Year

Due to Unfavorable Blood Type Combination

#	R Alias	R ABO	D ABO	МНР	cPRA4	R Age	D Age	PMPc	Wait (Months)	CLCu	
There are no patients wait >1 year in this category											

As of 7/22/19, excludes patients matched since close of prior quarter

Pairs waiting > 1 Year

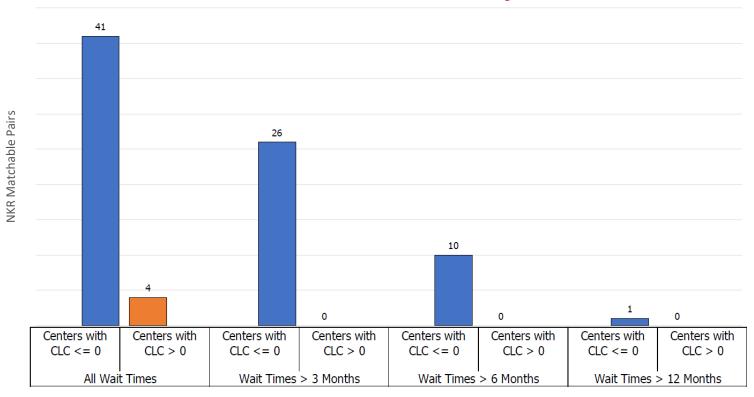
Due to High cPRA

#	R Alias	R ABO	D ABO	cPRA4	R Age	D Age	PMPc	Wait (Months)	Туре
1	STESCA	В	В	100.00%	45	42	0	23	Standard
2	TC400574	О	О	100.00%	60	49	0	19	Standard
3	H903961717	0*	A1 O	100.00%	23	53 24	0	19	Standard
4	ADGO111180	0*	0 0	100.00%	38	39 55	0	16	Standard
5	P901134196	В	A1	100.00%	53	38	0	13	Standard
6	AH6321	0	0	100.00%	38	39	0	13	Standard
7	BOCKJRE	Α	0	100.00%	45	55	NA	16	ADP
8	GM8784	В	0	99.98%	24	32	0	43	Standard
9	LANDBRE	0	0	99.98%	30	55	0	20	Standard
10	R324744	0	0	99.98%	46	64	NA	16	ADP
11	JAJ07378	В	0 A1 0	99.96%	40	48 38 37	0	71	Standard
12	UC06142609	0	0 A1	99.96%	67	50 42	0	34	Standard
13	JH12662998	0	0	99.96%	23	57	0	14	Standard
14	KATPAR	В	В	99.96%	32	43	0	14	Standard
15	R203DV	0	0	99.94%	50	49	0	19	Standard
16	CR02221971	0	A1	99.92%	47	46	0	22	Standard
17	DEKEDRE	0	0	99.90%	48	36	0	29	Standard
18	WG2276674	0	0	99.86%	46	39	0	15	Standard
19	MATFRI	AB	a	99.82%	15	38	NA	14	ADP

As of 7/31/19, excludes patients matched since close of prior quarter



Pair Wait Time Analysis

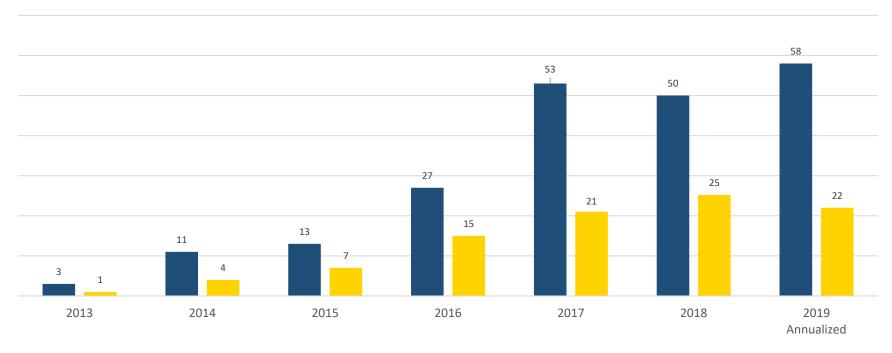


*As of 7/15/19, 06:14 AM



Compatible Pairs Transplanted

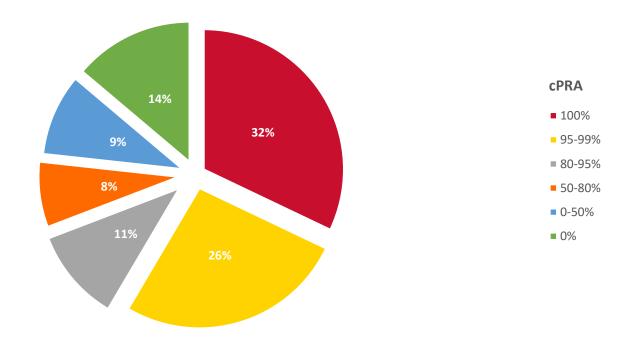
■ Compatible Pairs ■ Favorable Blood Type Combos



* As of 6/30/19

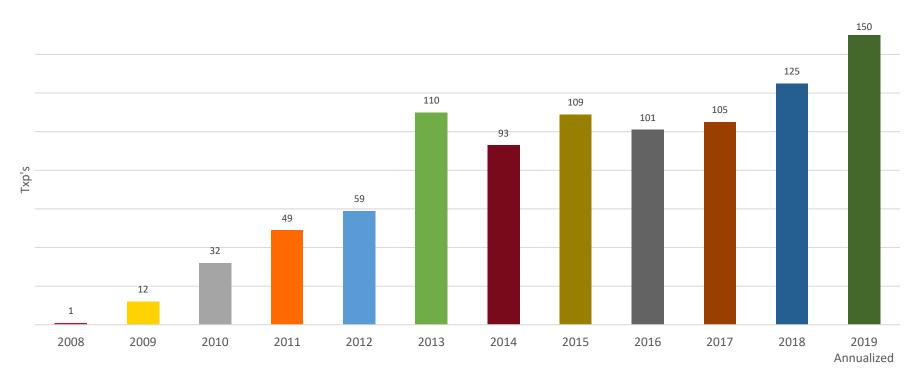


Pool Composition by cPRA





Transplanted Patients with cPRA > 80%

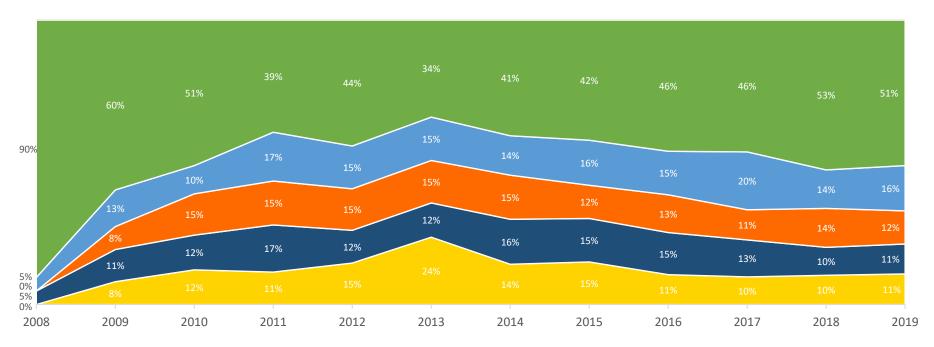


* As of 6/30/19



Transplanted Patients by cPRA





^{*} As of 6/30/19



Great HLA Matches

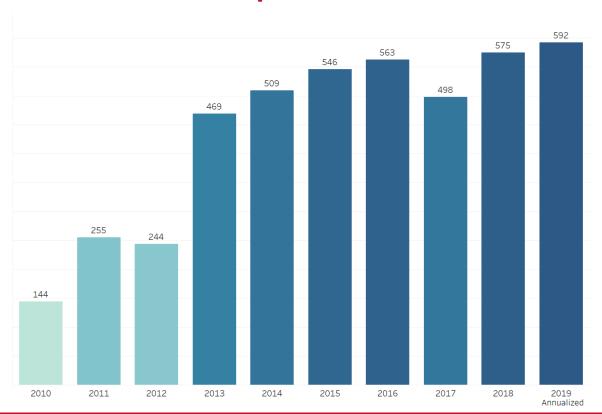
Zero Mismatch

Count	Recipient Center	Swap#	TXP Date	Donor ABO	Recipient ABO	NKR cPRA	Wait Time In Months	Donor Age ATOT	Recipient Age ATOT	HLA Points
1	Ulowa	1739	7/17/2019	А	А	100	2	49	32	100
2	UMinn	1468	11/1/2018	Α	AB	100	12	49	51	100
3	Piedmont	1295	6/12/2018	0	0	100	2	29	61	100
4	Cornell	1266	4/4/2018	В	AB	0	1	68	63	100
5	Penn	1227	2/14/2018	0	0	7	3	58	26	100
6	WalterReed	1203	2/8/2018	Α	AB	100	5	61	40	100
7	Maine	1157	1/3/2018	Α	Α	100	9	54	52	100
8	Hartford	1191	1/3/2018	0	0	0	9	46	59	100
9	Hopkins	1019	6/1/2017	Α	AB	0	2	40	55	100
10	Brigham	1026	5/24/2017	Α	Α	95	2	58	33	100
11	ChristHosp	952	1/18/2017	Α	Α	99	1	57	34	100
12	UMinn	928	11/8/2016	Α	Α	100	4	66	12	100
13	Cincinnati	884	8/31/2016	Α	Α	73	1	28	40	100
14	OSU	509	8/30/2016	Α	Α	91	1	38	67	100
15	SCarolina	459	2/11/2016	Α	Α	100	3	64	53	100
16	Madison	442	12/22/2015	Α	Α	97	6	22	63	100
17	UMinn	440	11/19/2015	0	0	100	5	23	20	100
18	UCLA	357	2/17/2015	Α	Α	100	34	39	52	100
19	Emory	351	12/11/2014	Α	Α	100	5	25	33	100
20	Hopkins	330	11/13/2014	Α	0	96	1	41	38	100
21	Loyola	324	8/5/2014	Α	Α	100	1	37	55	100
22	Madison	674	1/9/2014	0	Α	99	5	29	33	100
23	Barnabas	182	10/3/2012	А	Α	92	4	51	50	100
24	Barnes	105	3/31/2011	Α	Α	100	7	60	32	100
25	UCSF	58	6/15/2010	Α	Α	100	6	47	58	100

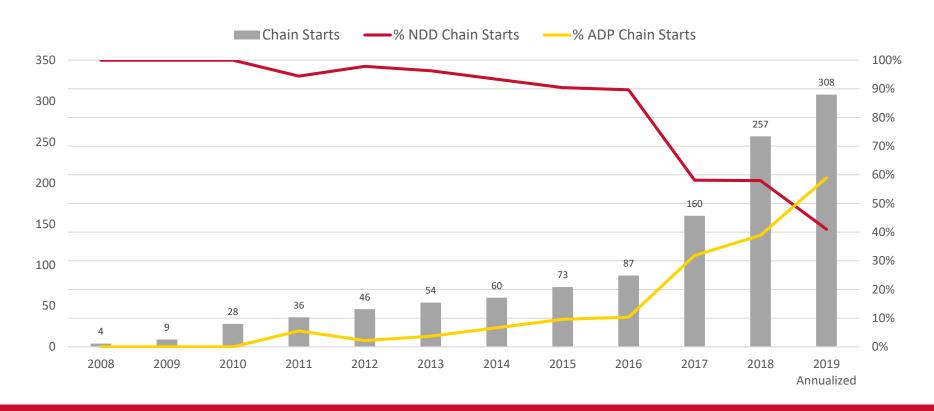
^{*} As of 6/30/19



New Exportable Pairs



Chains Started

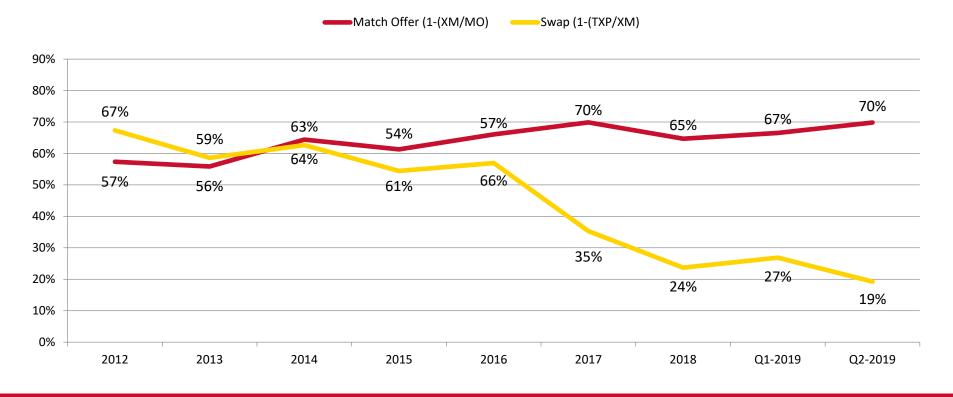




Chain and Loop Statistics

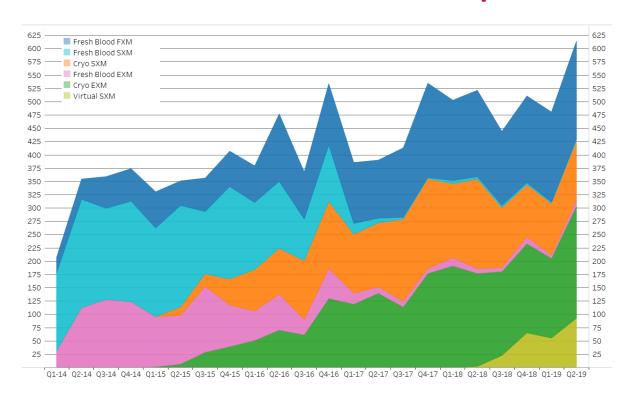
Category	Count	Mean Length	Transplants
Ended	937	3.29	3083
Broken	27	3.85	104
Active	6	1	6
Chain Total	970	3.29	3193
Loops	124	2.31	286
Total	1094	3.18	3479

Failure Rates

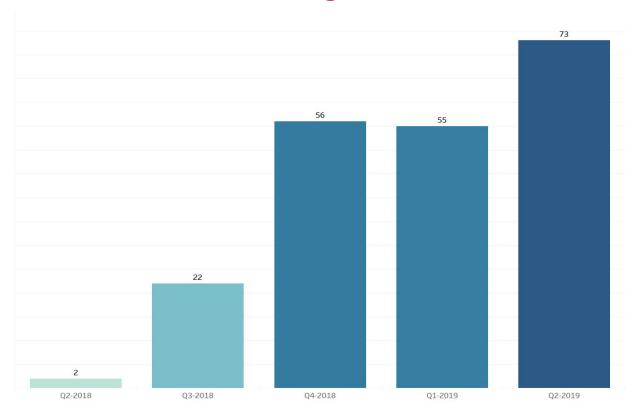




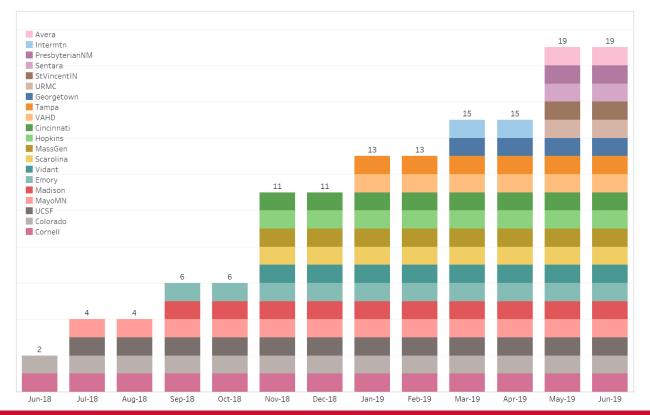
Streamlined Cross Matches Requested



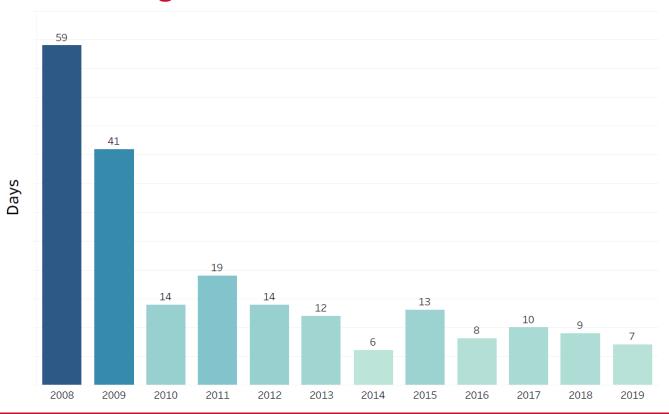
Virtual Screening Crossmatches



Centers Utilizing Virtual Screening Cross Matching



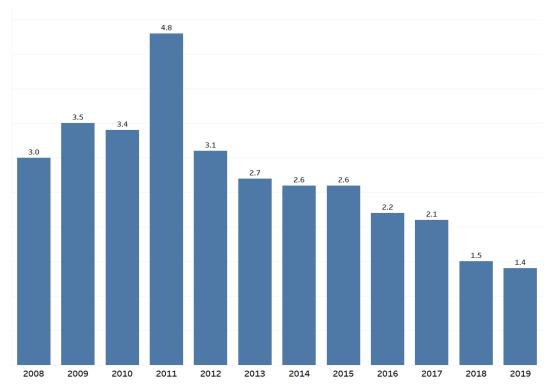
Bridge Donor Median Wait Times



Bridge Donor Wait Times

Year	Median	Mean	Max	Min
2008	59	53	77	16
2009	41	59	187	3
2010	14	51	385	2
2011	19	23	68	4
2012	14	29	314	2
2013	12	20	92	2
2014	6	11	97	2
2015	13	26	175	2
2016	8	14	71	2
2017	10	16	114	2
2018	9	13	46	2
2019	7	15	113	2

NKR Transplant per Bridge Donor



^{*}Restated due to a new database calculations and formula.

Summary Report: Broken Chains & Real Time Swap Failures

Year	# Chains	% Broken Chains	# Bridge Donors	# Real Time Swap Failures	# Broken Chains	% Bridge Donations Canceled ¹
2008	4	75%	9		3	33%
2009	9	22%	29	1	2	7%
2010	28	7%	61	-	2	3%
2011	36	0%	75		0	0%
2012	46	9%	54		4	7%
2013	55	5%	37	3	3	8%
2014	63	6%	49	2	4	8%
2015	83	1%	53	1	1	2%
2016	99	1%	68	1	1	3%
2017	160	2%	62	1	3	5%
2018	257	2%	64	2	4	6%
2019	*356	0%	*68	1	0	0%
Total	840	3%	532	12	27	5%

^{*}Annualized

¹Includes, donors who did not donate due to back outs, medical or surgical issues on the day of scheduled surgery. See following chart for further detail



Detail Report: Broken Chains & Real Time Swap Failures

#	Reason Given	Real Time Swap Failures	Broken Chains	Center	Date
1	Job Issues/ long wait time/ many failed XMs		✓	Cornell	5/1/2008
2	No Reason		✓	Cornell	8/21/2008
3	No Reason		✓	СРМС	11/19/2008
4	Donor sick for swap then reneged later	✓	✓	UTMC	6/9/2009
5	Medical		✓	UCSF	11/10/2009
6	Medical		✓	UCLA	3/16/2010
7	Second nuclear GFR test < 80 (79 down from 82)		✓	AGH	9/16/2010
8	No Reason		\checkmark	MethodistTX	2/3/2012
9	No Reason		✓	UCSF	4/4/2012
10	Medical		✓	UCLA	6/28/2012
11	Medical/Surgical		✓	Washington	11/5/2012
12	Aborted donor surgery	✓	\checkmark	СРМС	6/27/2013
13	Kidney declined by recipient surgeon	✓	✓	RWJ/UPenn	7/23/2013
14	Recipient Medical Issue	✓	✓	Porter	10/16/13
15	Kidney Declined by Recipient Surgeon	✓	✓	Porter/Jefferson	1/9/14
16	Medical		✓	UCLA	3/4/14



Detail Report: Broken Chains & Real Time Swap Failures Continued

#	Reason Given	Real Time Swap Failures	Broken Chains	Center	Date
17	Recipient Medical Issue	7	Loop	ChristHosp	3/11/14
18	Medical		✓	Hopkins	7/15/14
19	Medical		✓	Hopkins	10/9/14
20	Kidney Declined by Recipient Surgeon	✓	✓	Tampa/Hopkins	7/7/15
21	Kidney Declined by Recipient Surgeon	✓	:	Porter/Aurora St Lukes	3/17/16
22	Donor reneged		✓	Maryland	8/8/16
23	Donor reneged		✓	SCarolina	1/10/17
24	Kidney Declined by Recipient Surgeon	✓	✓	Indiana/UNC	9/27/2017
25	Donor Ruled Out- Medical Issue		✓	UMinn	8/23/2017
26	Donor reneged		✓	CC Florida	4/4/2018
27	Recipient became too sick for transplant	✓	✓	Loyola	6/19/2018
28	Late Stage Donor Decline		✓	Legacy	7/9/2018
29	Kidney Thrombosis		✓	CC Florida	8/14/2018
30	Donor Surgery Aborted; Donor Safety	✓		Cincinnati	11/6/18
31	Kidney Declined by Recipient Surgeon	✓	Loop	Emory/UCLA	1/24/19
	Total	12	27		

Advanced Donation Program (ADP)

Summary

Туре	Cases	Additional TXPs Facilitated	80%+ cPRA TXPs Facilitated	95%+ cPRA TXP Facilitated
Standard Voucher	163	392	94	45
Family Voucher	88	223	42	18
Swap Saver	39	91	32	14
Real-Time Swap Failure	6	12	5	1
Total	296	718	173	78

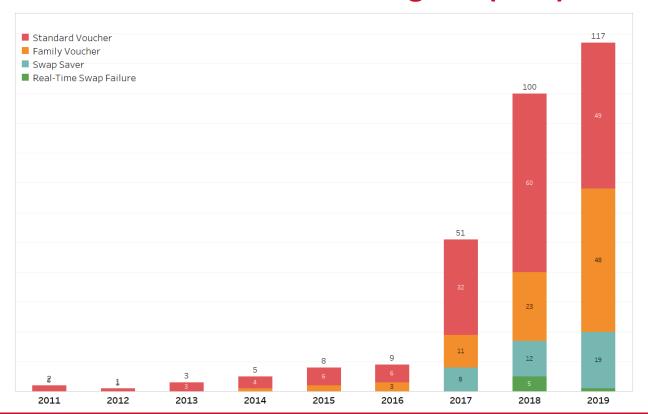
^{*}Standard – (includes former 'Short-Term') – At time of advanced donation the intended ADP Recipient is in need of transplant.

^{**}Family – (includes former 'Vouchers' - At time of advanced donation the intended ADP Recipient is not in need and may never be in need of transplant.

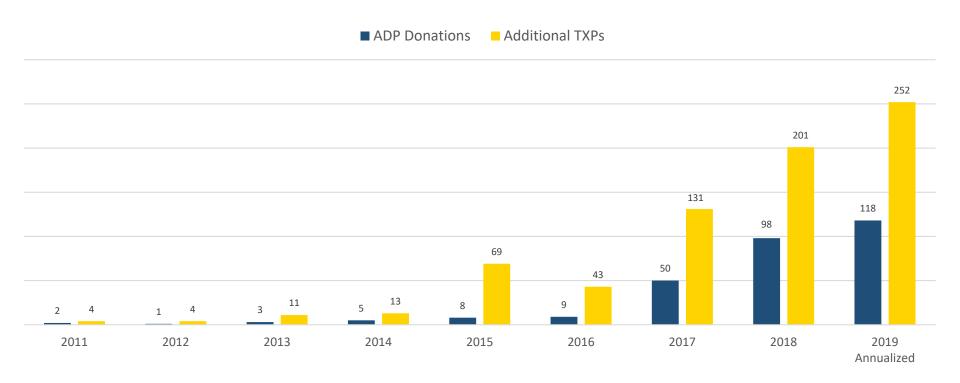
Note: Number of high cPRA cases recently restated due to an improved cPRA calculation in NKR database

^{***} As of 8/2/19

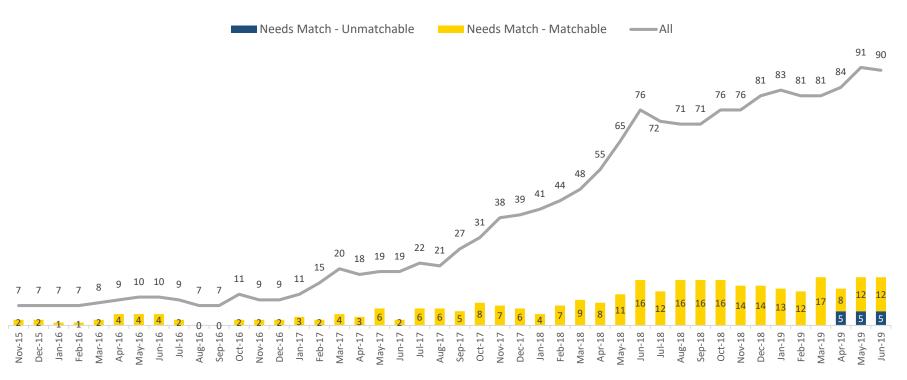
Advanced Donation Program (ADP)



ADP Donations & Additional TXPs Facilitated



ADP Recipients Pool

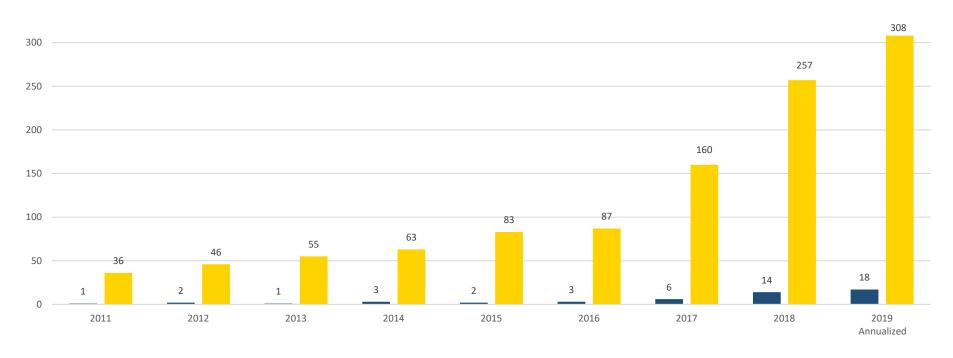


*As of 7/15/19, 11:03 AM ET

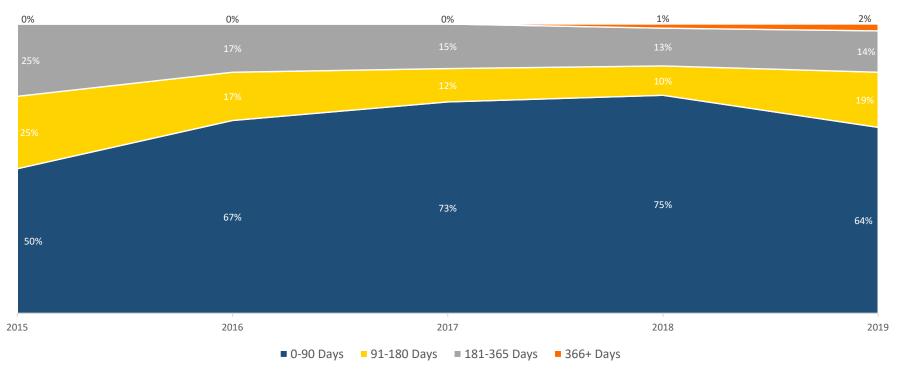


ADP Recipients Outstanding vs. Overall Chains Started





ADP Recipient Wait Time Distribution



^{*}Wait time count begins after the ADP donor has donated and recipient has been activated.



Program Stats

		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
1	Transplants Facilitated	21	62	131	175	226	308	310	360	399	462	619	352
2	Paired Transplants Facilitated	21	39	91	131	164	252	255	288	315	318	376	197
3	Chip Transplants Facilitated	0	23	40	44	62	56	55	72	84	144	245	155
4	Ending Unmatched Patient Pool	80	127	120	201	241	255	279	280	215	181	157	159
5	Cumulative Transplants	21	83	214	389	615	923	1233	1593	1992	2454	3075	3427
6	Cumulative Paired Transplants	21	60	150	280	526	777	1030	1316	1630	1946	2322	2519
7	Cumulative Chip Transplants	0	23	64	109	89	146	203	277	362	508	753	908
8	Cumulative Paired Patient Pool	101	210	334	590	805	1062	1351	1615	1877	2152	2514	2710
9	Percent of Pool Transplanted (Paired Recipients)	21%	40%	64%	66%	71%	76%	79%	84%	89%	92%	94%	94%
10	Enrolled Patient Mean Wait Time (years)	3.8	2.0	0.9	1.1	1.1	1.0	0.9	0.9	0.9	0.9	0.6	0.5
11	Transplanted Patient Mean Wait Time (months)	5.1	5.3	6.0	5.0	5.1	5.4	4.8	4.1	4.7	4.0	3.5	3.3
12	Transplanted Patient Median Wait Time (months)	5.3	5.3	3.9	2.5	3.0	3.0	2.3	2.1	2.2	1.8	1.8	1.3
13	Mean cPRA of Transplanted Patients	4.1%	25.9%	34.5%	40.3%	44.1%	54.0%	48.3%	48.9%	42.8%	41.9%	40.8%	43.2%
14	Number of Transplants Completed by cPRA												
15	100%	0	1	4	10	4	5	3	7	3	4	7	5
16	95-100%	0	4	12	10	29	68	41	47	39	41	57	33
17	80-95%	1	7	16	29	26	37	49	55	59	60	61	37
18	50-80%	0	5	19	27	33	46	48	42	53	49	85	41
19	0-50%	1	8	13	30	34	47	43	57	61	94	84	56
20	0%	19	37	67	69	100	105	126	152	184	214	327	180
21	Sub-total	21	62	131	175	226	308	310	360	399	462	621	352
22	Percent of Transplants Completed by cPRA												
23	100%	0%	2%	3%	6%	2%	2%	1%	2%	1%	1%	1%	1%
24	95-100%	0%	6%	9%	6%	13%	22%	13%	13%	10%	9%	9%	9%
25	80-95%	5%	11%	12%	17%	12%	12%	16%	15%	15%	13%	10%	11%
26	50-80%	0%	8%	15%	15%	15%	15%	15%	12%	13%	11%	14%	12%
27	0-50%	5%	13%	10%	17%	15%	15%	14%	16%	15%	20%	14%	16%
28	0%	90%	60%	51%	39%	44%	34%	41%	42%	46%	46%	53%	51%
29	Sub-total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
30	Number of Transplanted Patients with cPRA >80%	1	12	32	49	59	110	93	109	101	105	125	75
31	Percent of Transplanted Patients with cPRA >80%	5%	19%	24%	28%	26%	36%	30%	30%	26%	23%	20%	21%



Program Stats, Continued

		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
32	Number of Unmatched Patients by cPRA												
33	100%				79	73	83	81	80	80	63	54	51
34	95-99%				73	73	61	61	53	37	32	33	42
35	80-95%				15	15	24	19	22	12	14	9	17
36	50-80%				14	11	14	13	25	13	8	9	12
37	0-50%				14	10	22	37	35	28	16	19	15
38	0%				50	59	51	68	65	45	48	33	22
39	Sub-total				245	241	255	279	280	215	181	157	159
40	Percent of Unmatched Patients by cPRA												
41	100%				32%	30%	33%	29%	29%	37%	35%	34%	32%
42	95-99%				30%	30%	24%	22%	19%	17%	18%	21%	26%
43	80-95%				6%	6%	9%	7%	8%	6%	8%	6%	11%
44	50-80%				6%	5%	5%	5%	9%	6%	4%	6%	8%
45	0-50%				6%	4%	9%	13%	13%	13%	9%	12%	9%
46	0%				20%	24%	20%	24%	23%	21%	27%	21%	14%
47	Sub-total				100%	100%	100%	100%	100%	100%	100%	100%	100%
48	Number of Transplants Completed by Wait Time												
49	< 6 months	21	42	74	106	180	232	243	298	327	392	555	323
50	6-12 months	0	10	14	19	24	44	35	38	30	37	37	22
51	1-2 years	0	4	15	14	20	25	27	22	32	29	25	4
52	2+ years	0	0	2	2	2	7	5	2	10	4	4	3
53	Sub-total Sub-total	21	56	105	141	226	308	310	360	399	462	621	352
54	Percent of Transplants Completed by Wait Time												
55	< 6 months	100%	75.0%	70.5%	75.2%	79.6%	75.3%	78.4%	82.8%	82.0%	84.8%	89.4%	91.8%
56	6-12 months	0.0%	17.9%	13.3%	13.5%	10.6%	14.3%	11.3%	10.6%	7.5%	8.0%	6.0%	6.3%
57	1-2 years	0.0%	7.1%	14.3%	9.9%	8.8%	8.1%	8.7%	6.1%	8.0%	6.3%	4.0%	1.1%
58	2+ years	0.0%	0.0%	1.9%	1.4%	0.9%	2.3%	1.6%	0.6%	2.5%	0.9%	0.6%	0.9%
59	Sub-total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
60	Total Chains Started	4	9	28	36	46	55	63	83	99	160	257	175
61	Total Loops Completed	0	3	2	3	12	24	17	15	7	15	16	2
62	Number of broken chains	3	2	2	0	4	3	4	1	2	3	2	0
63	Bridge Donors Held	9	29	61	75	54	37	49	53	68	62	66	68
64	Percent of broken chains	33%	7%	3%	0%	7%	8%	8%	2%	3%	5%	3%	0%