

Paired Exchange Results Quarterly Report

As of December 31, 2014

Join Us For The 3rd Annual

Future Directions in Paired Exchange

Friday June 19th 2015

New York City

*See enclosed brochure for more details about all
NKR hosted events for June 18th & 19th, 2015*

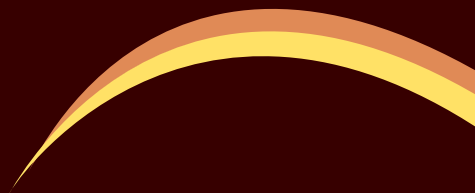


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Message From the Founder

We facilitated 310 transplants in 2014, up slightly over the 308 transplants facilitated in 2013. Growth slowed in 2014 due primarily to stagnation in new pair enrollment. Other factors that are holding back growth in transplants facilitated include swap failures which are predominantly driven by unacceptable cross matches and the understaffing of KPD coordinator positions at a number of member centers.

Our greatest opportunity to reduce swap failures and increase transplants is the implementation of cryo-preserved donor lymphocytes for use in exploratory and screening cross matching. This innovative new process will not only reduce swap failures by increasing the availability and speed of exploratory cross matches but will improve donor convenience by reducing the number and frequency of donor blood draws. Our cryo cross match pilot program went live in December and will be available to all centers in the first half of 2015. We are excited about the enormous positive impact this will deliver to donors and highly sensitized patients.

This past year saw 11 compatible pairs enter NKR swaps, improving the compatible patients' tissue compatibility with the donated kidney and facilitating 39 additional transplants. We are seeing a growing interest in compatible pairs participation in swaps as the benefits of improving the donor-recipient match become well understood and our ability to improve the match escalates.

Our patient outcomes continue to outstrip the national averages. We are conducting research to determine why NKR-facilitated transplants have superior outcomes compared to the typical living donor transplant. We believe the superior outcomes may be related to better matching and we continued to see great matches in 2014, including 4 that were 100 HLA match points (0 mismatched antigens) and 9 matches above 80 HLA match points.

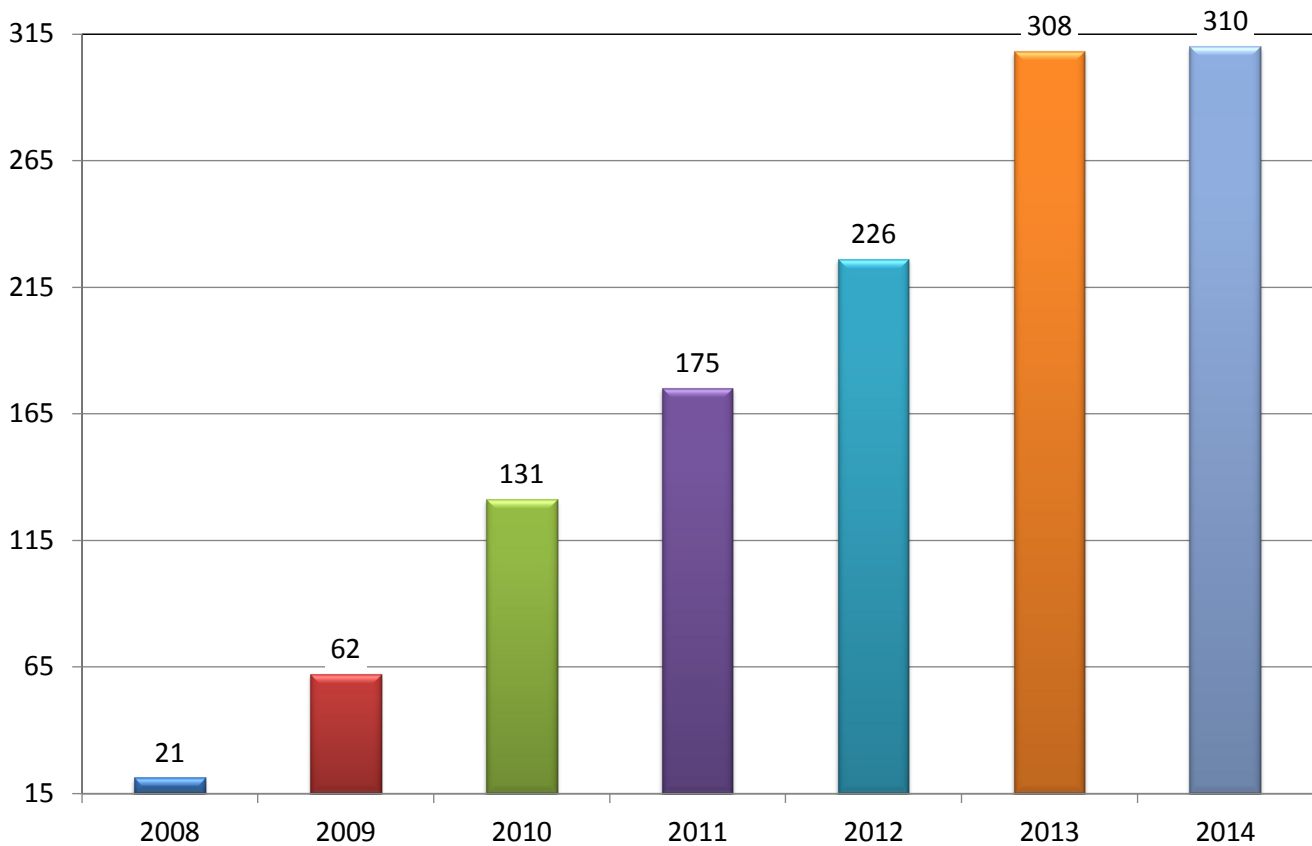
None of this success would be possible without the effort and dedication of the medical professionals at our member centers. Thank you and keep up the great work.

Sincerely,

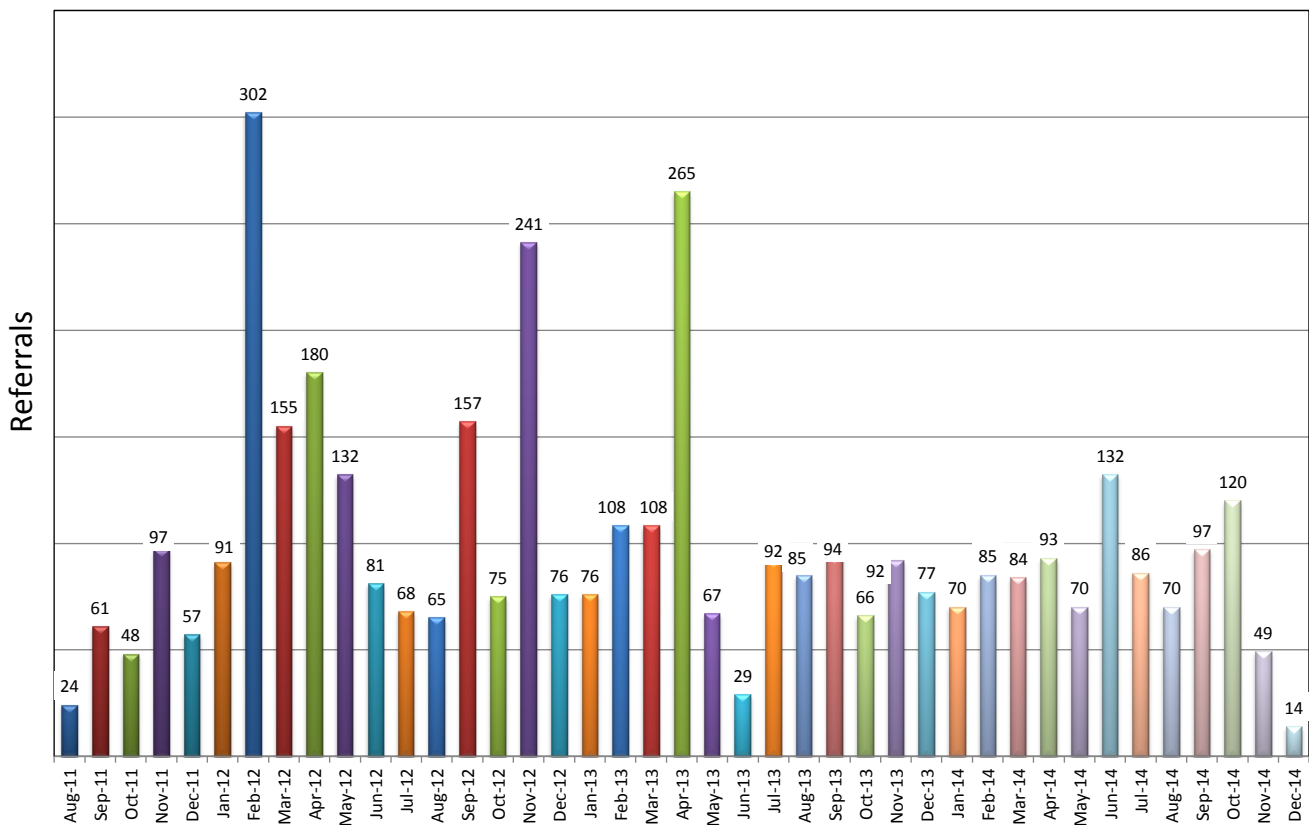
A handwritten signature in blue ink, appearing to read 'G Hil', with a stylized flourish at the end.

Garet Hil
Founder & CEO
National Kidney Registry

Transplants Facilitated

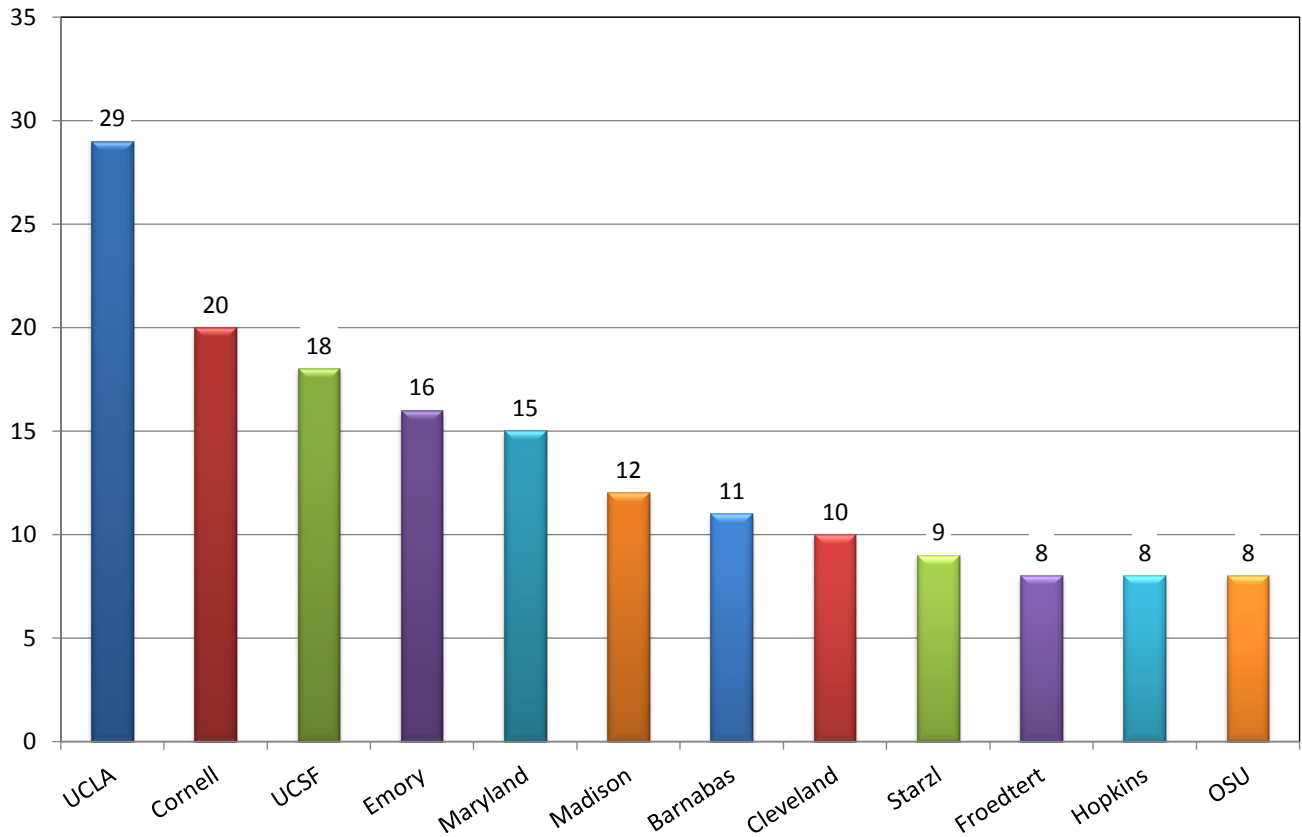


Patient Referrals To NKR Member Centers



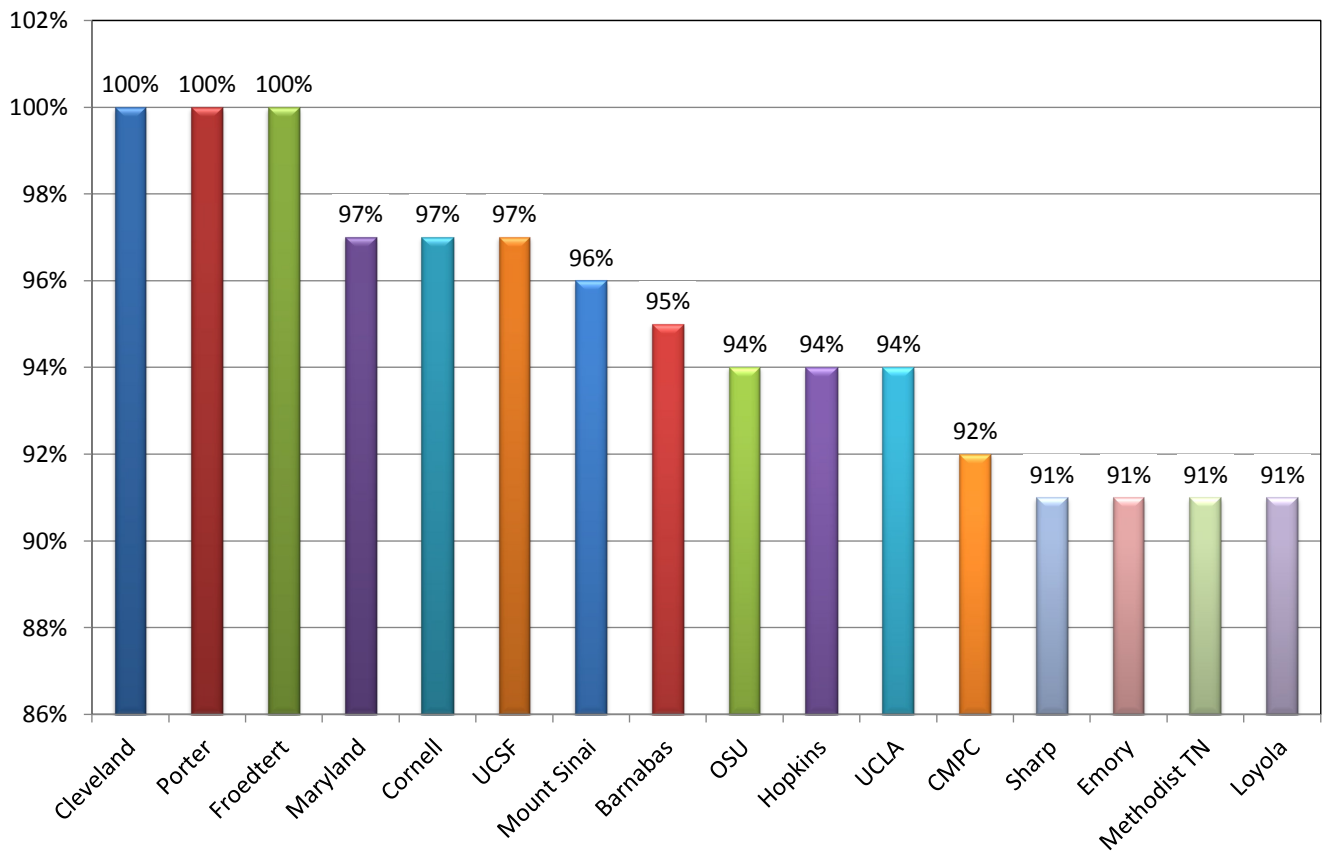
Top Centers

Transplants in Last 12 Months



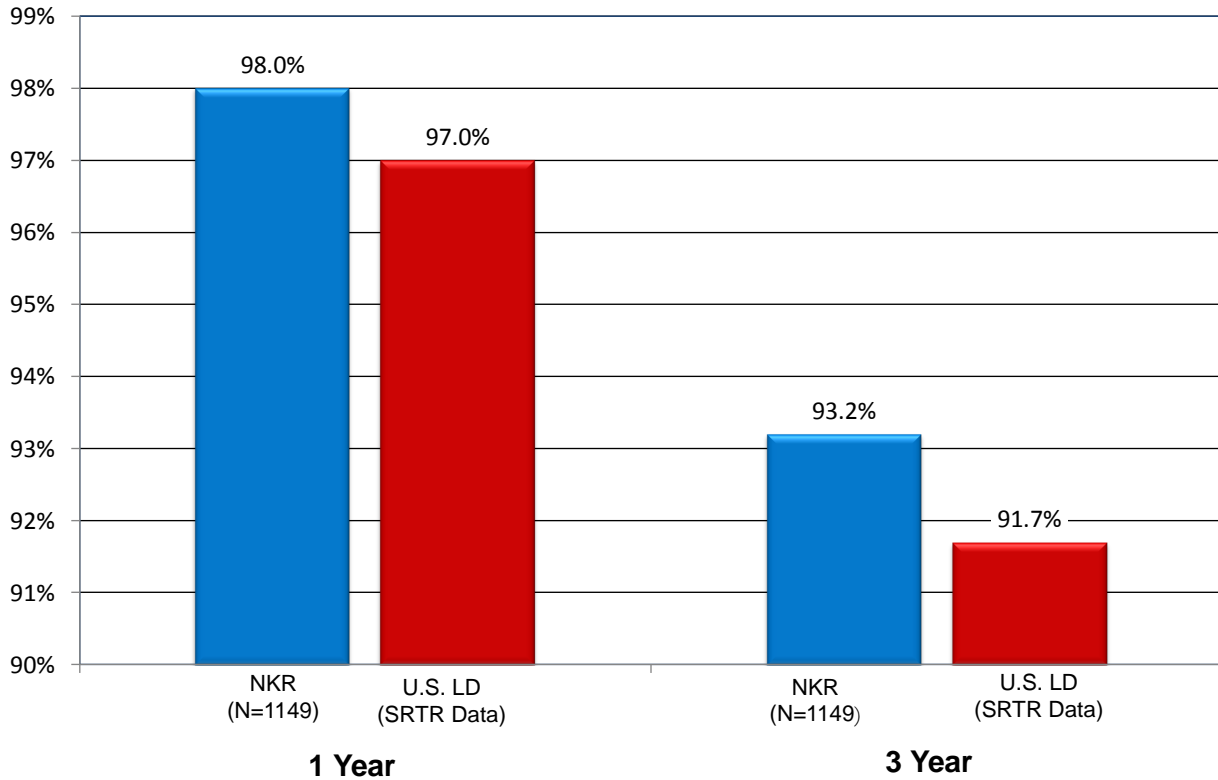
Success Rate of Top Centers

Patients Matched/Transplanted



Graft Survival

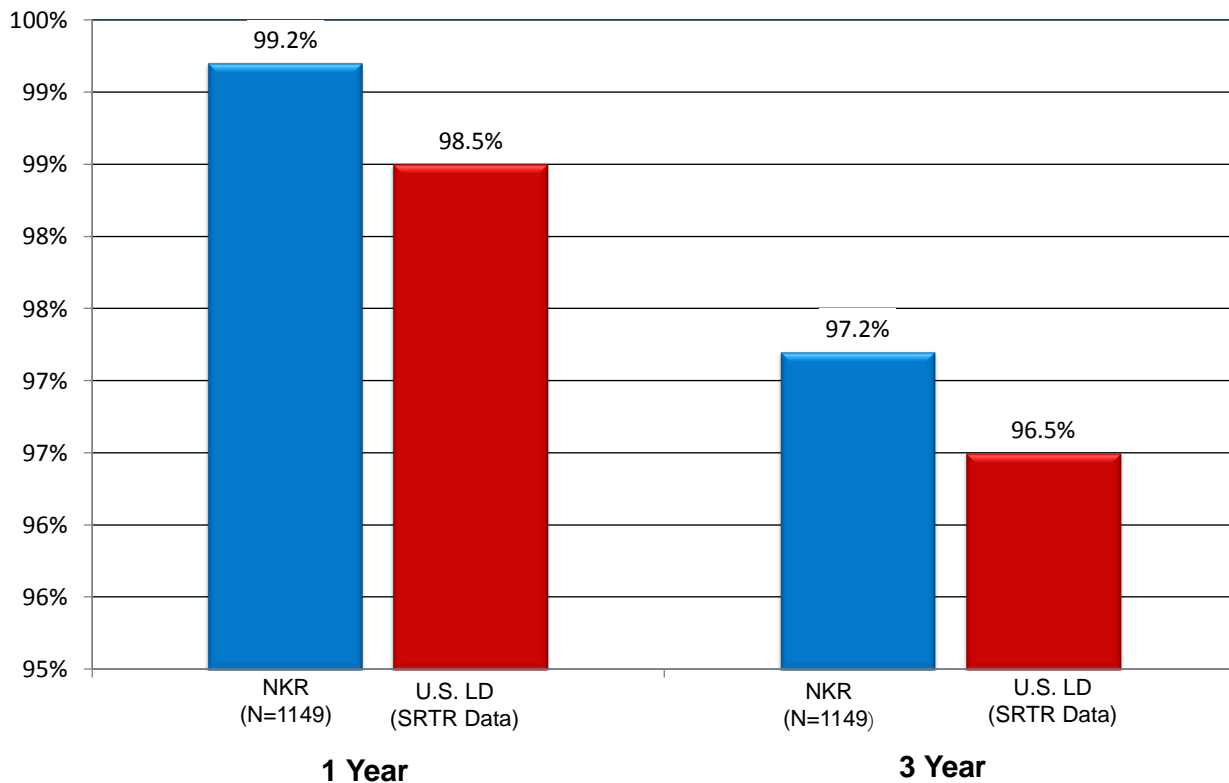
NKR Transplants vs. U.S. Living Donor Transplants
As of 12/31/2014



**NKR Kaplan-Meier GS calculations provided courtesy of UCLA Departments of Nephrology and Urology.

Patient Survival

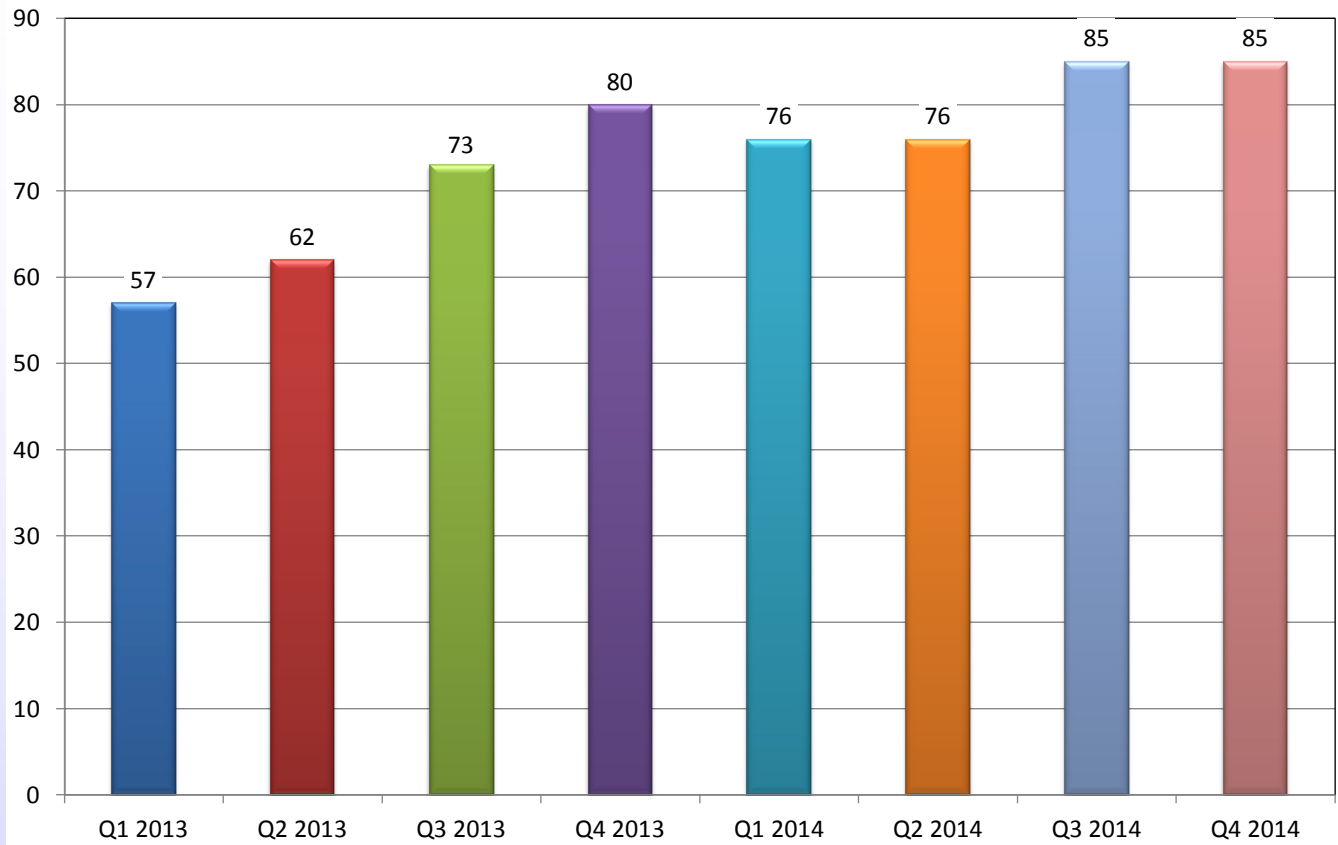
NKR Transplants vs. U.S. Living Donor Transplants
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**NKR Kaplan-Meier PS calculations provided courtesy of UCLA Departments of Nephrology and Urology.

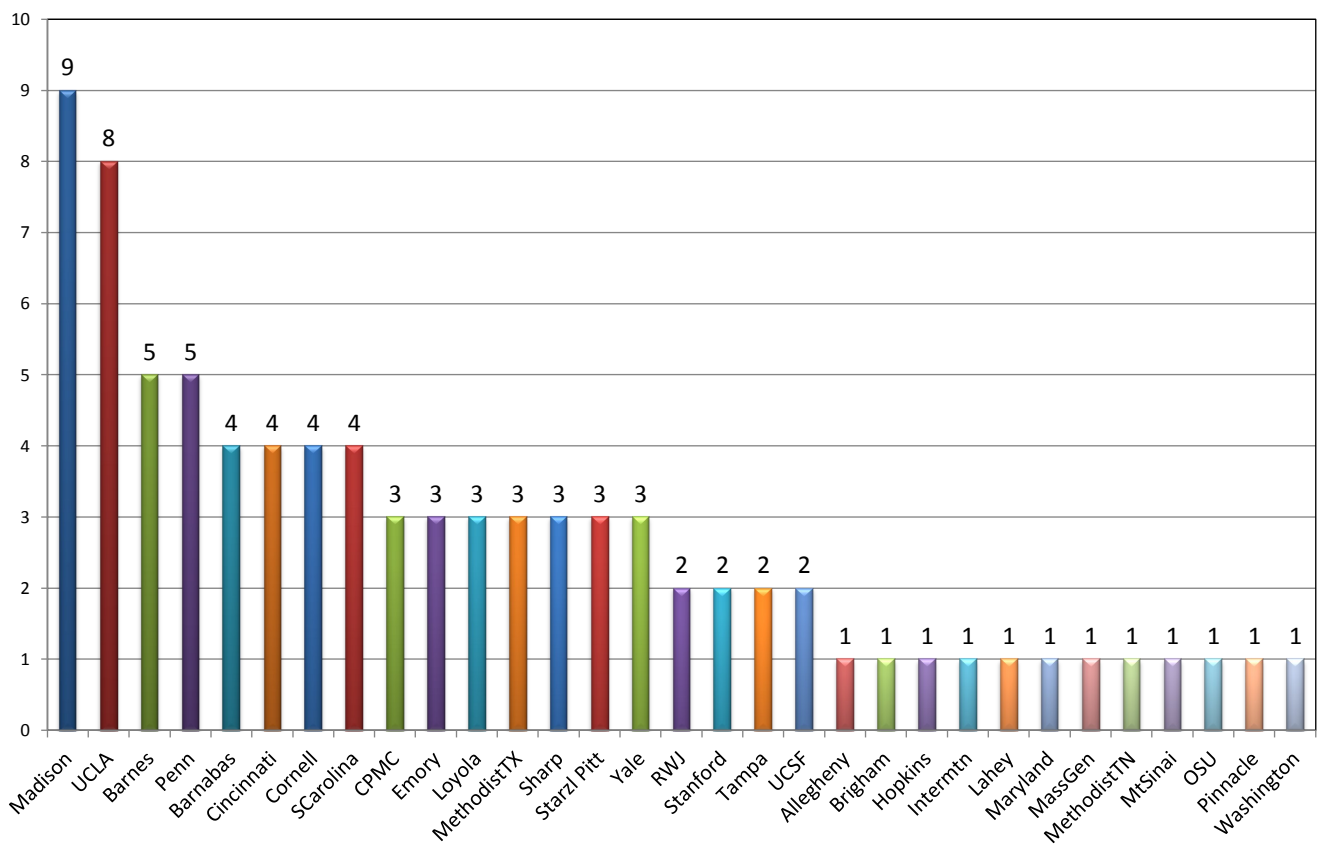
Patients Waiting > 1 Year

As of 12/31/2014



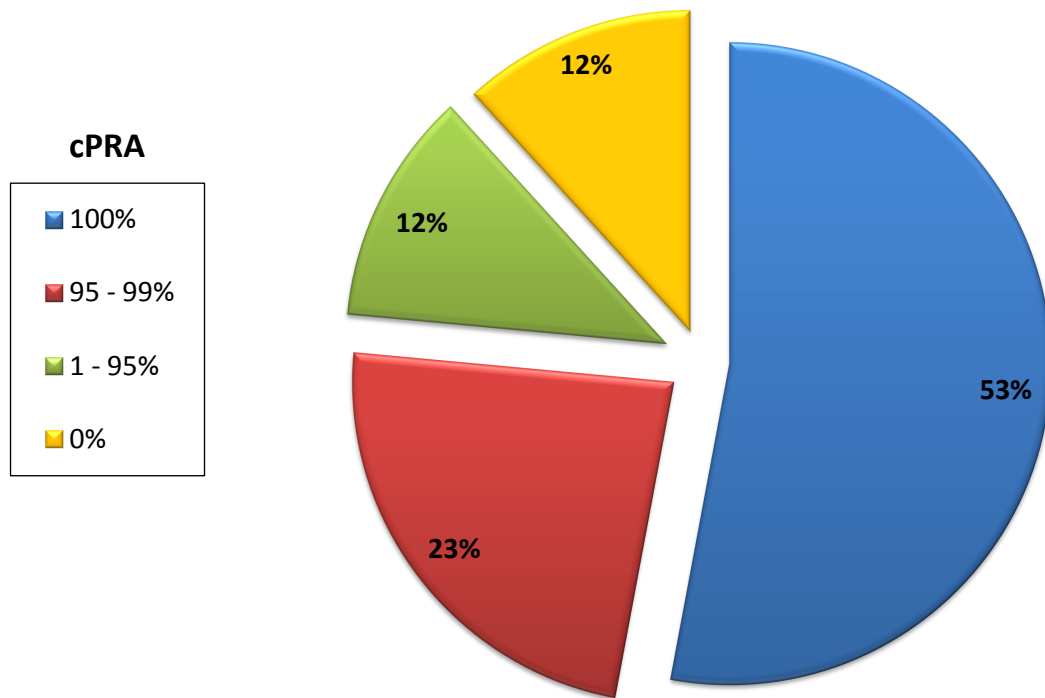
Patients Waiting > 1 Year by Center

As of 12/31/2014



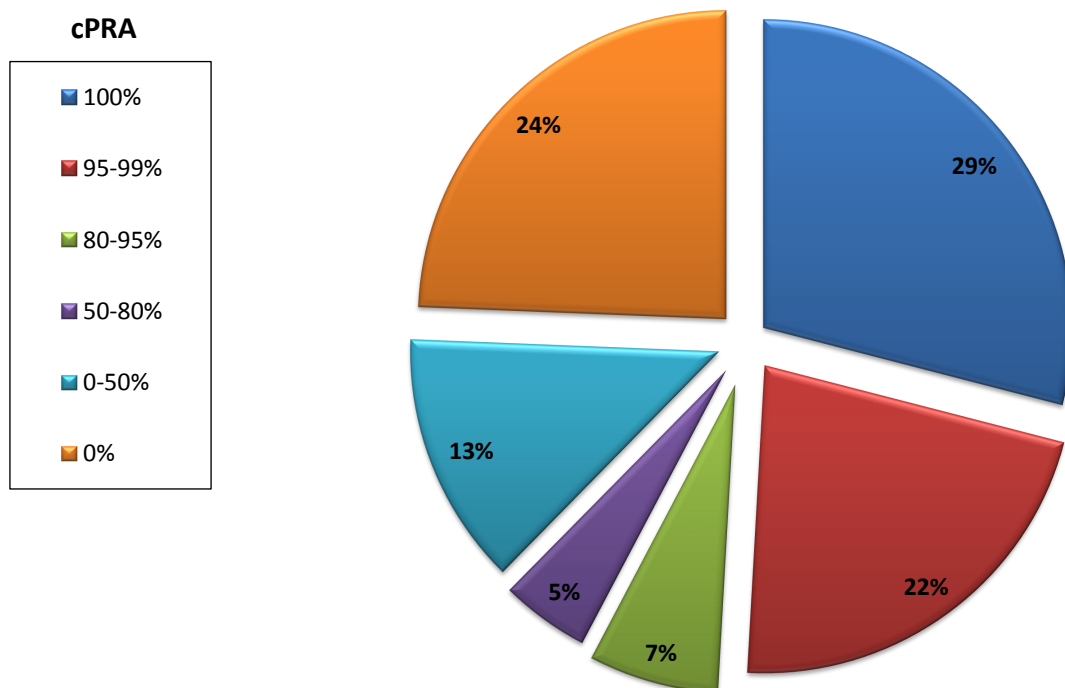
Patients Waiting > 1 Year by cPRA

As of 12/31/2014



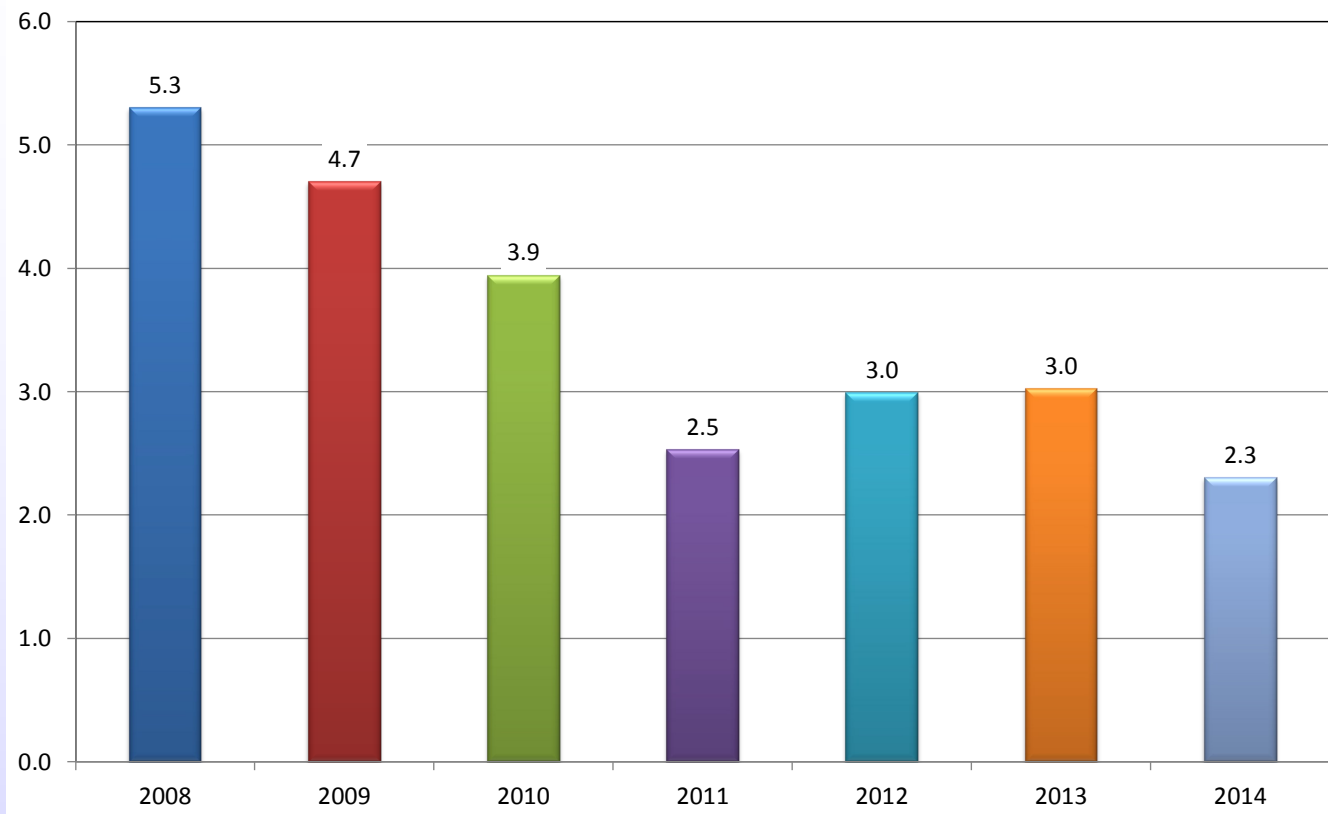
Pool Composition by cPRA

As of 12/31/2014



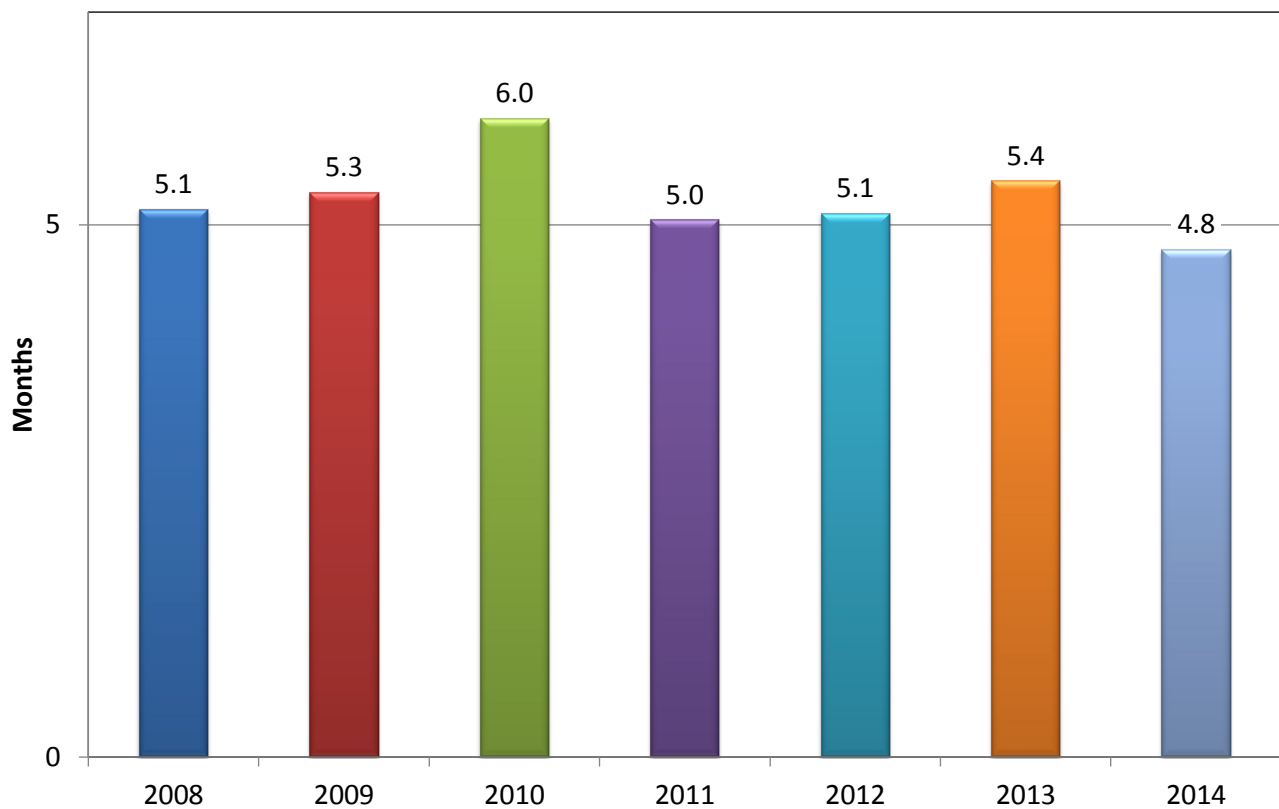
Transplanted Patient Median Wait Time

Wait times of patients transplanted during the year
As of 12/31/2014

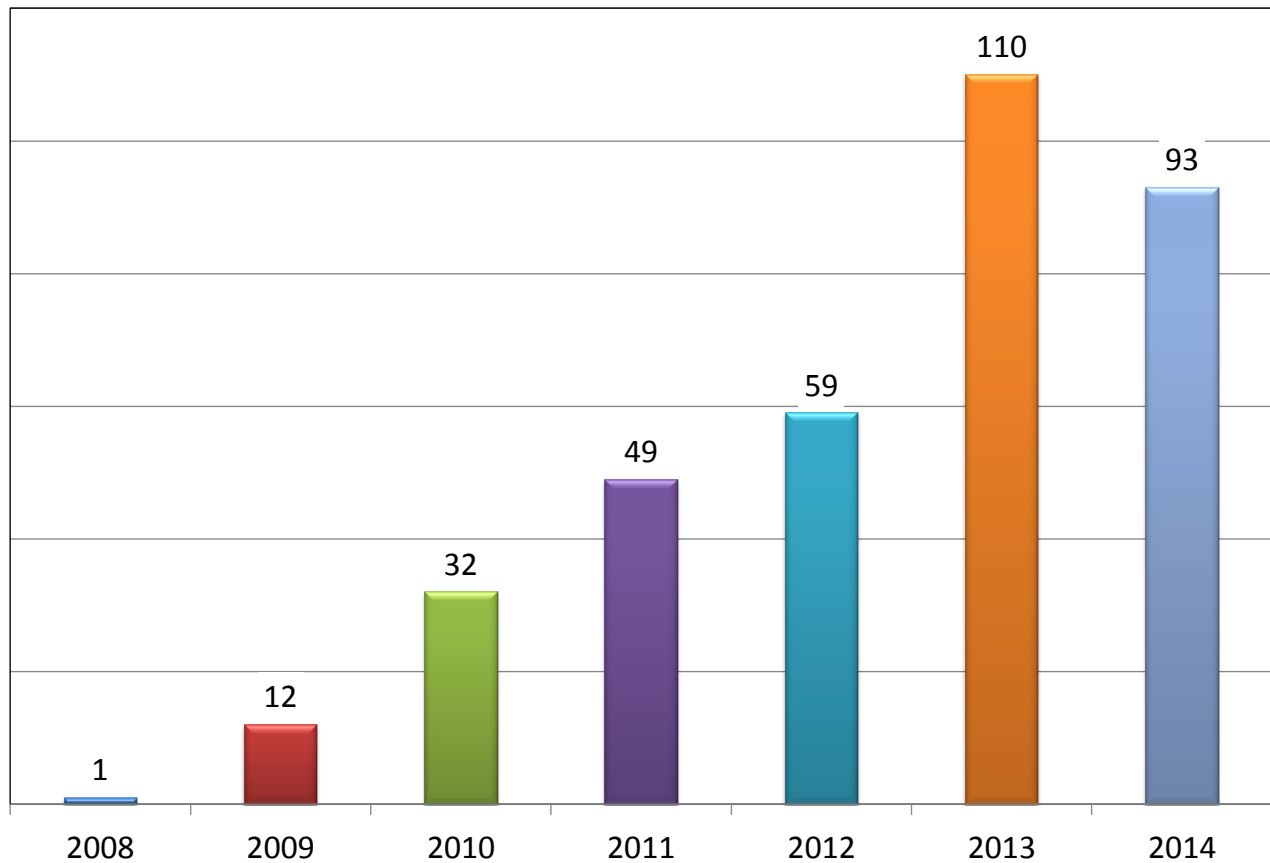


Transplanted Patient Mean Wait Time

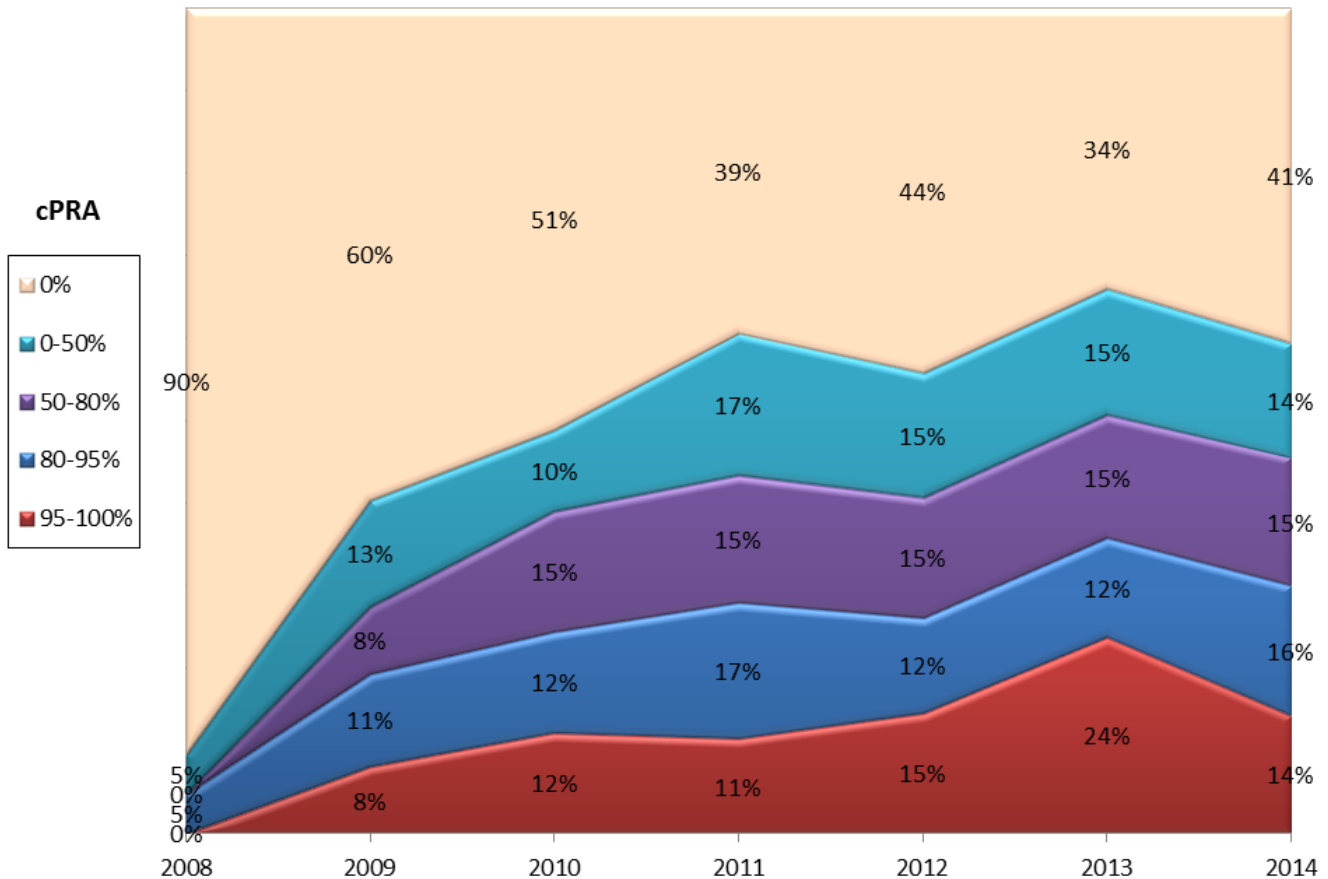
As of 12/31/2014



Transplanted Patients with cPRA > 80%

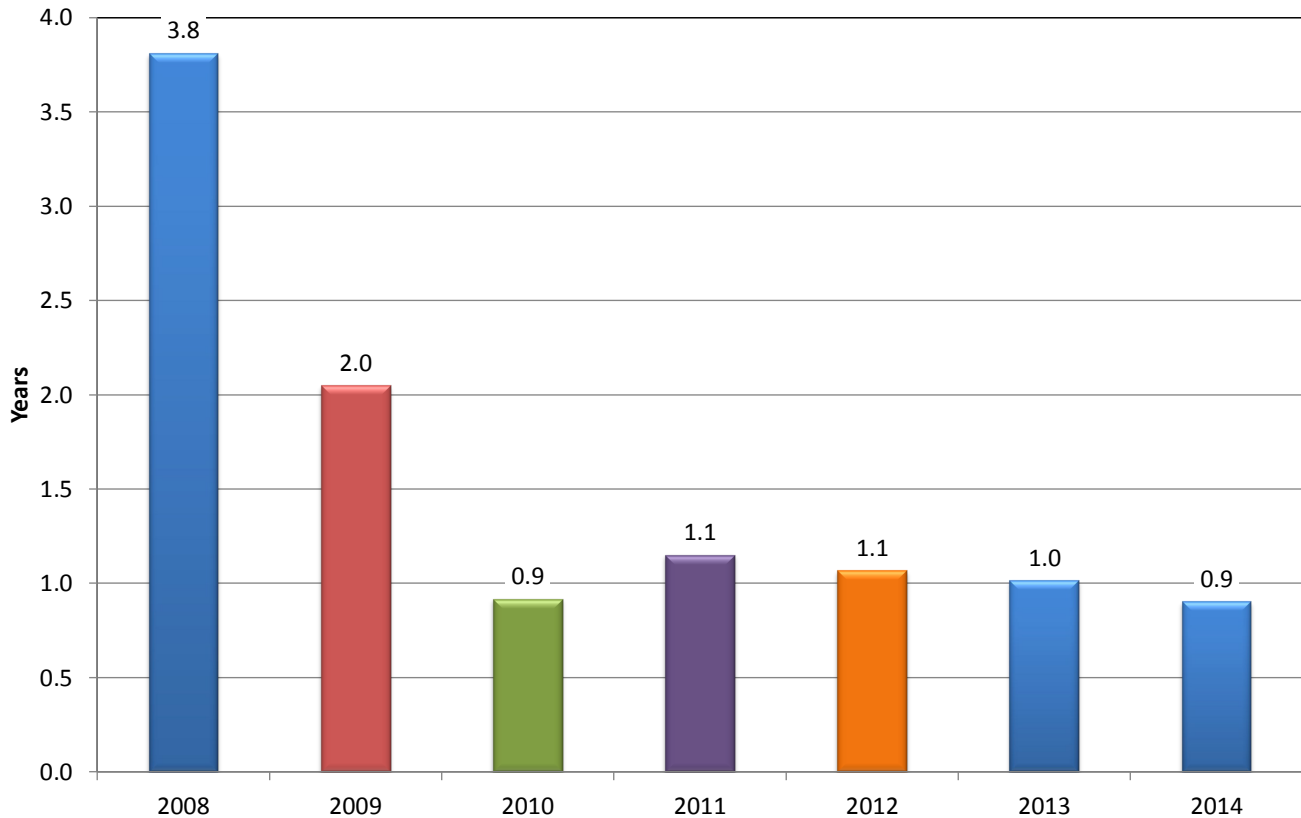


Transplanted Patients by cPRA



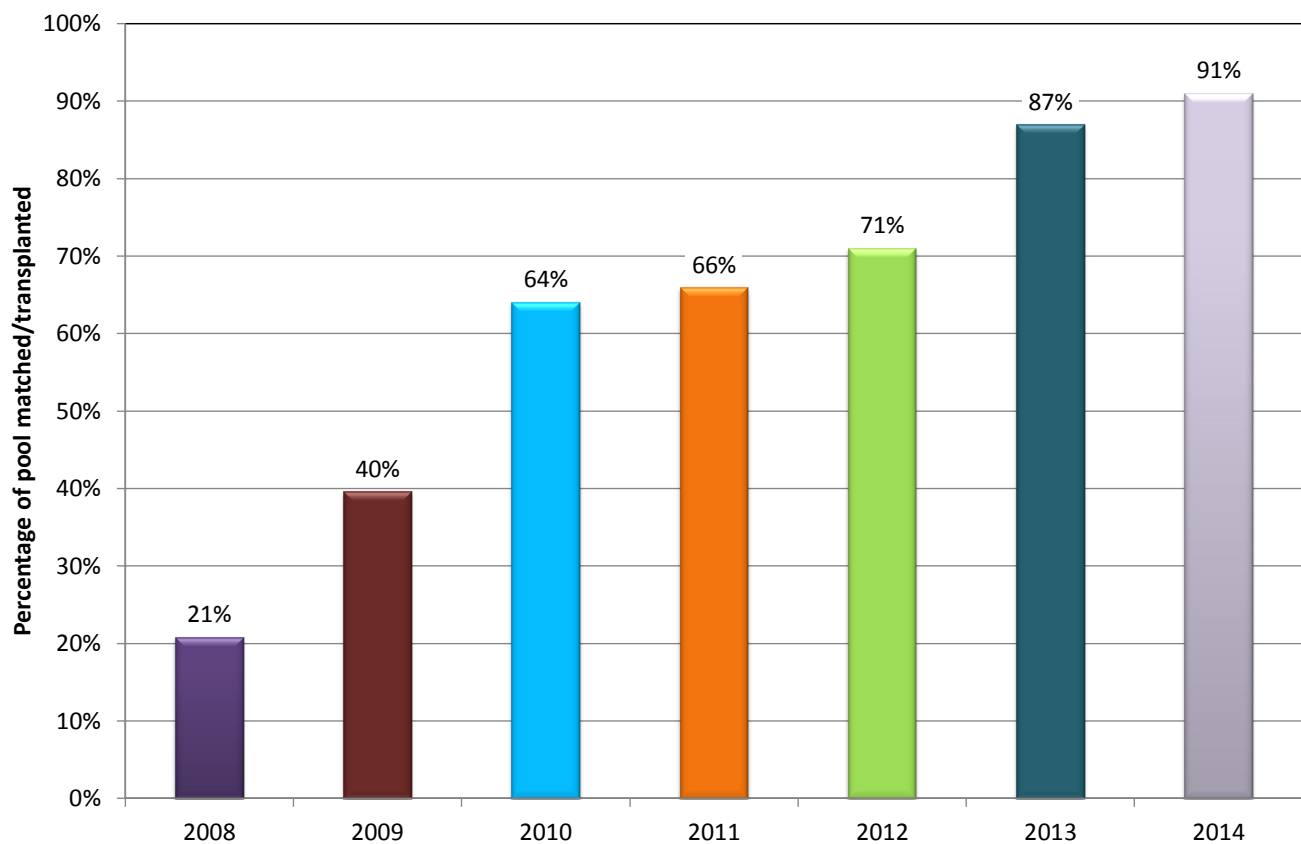
Enrolled Patient Mean Wait Time

Ending unmatched patient pool/annual transplant run rate
As of 12/31/2014

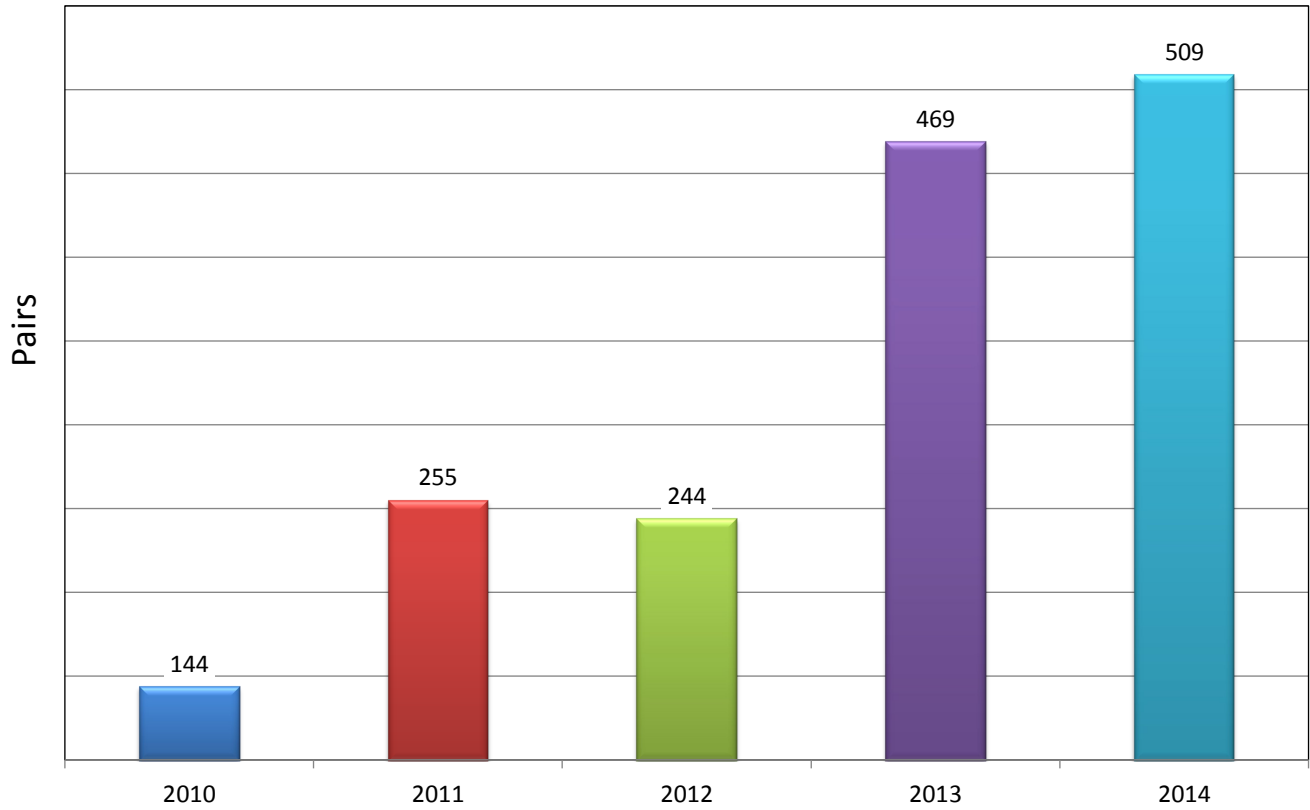


Percent of Pool Matched/Transplanted

As of 12/31/2014

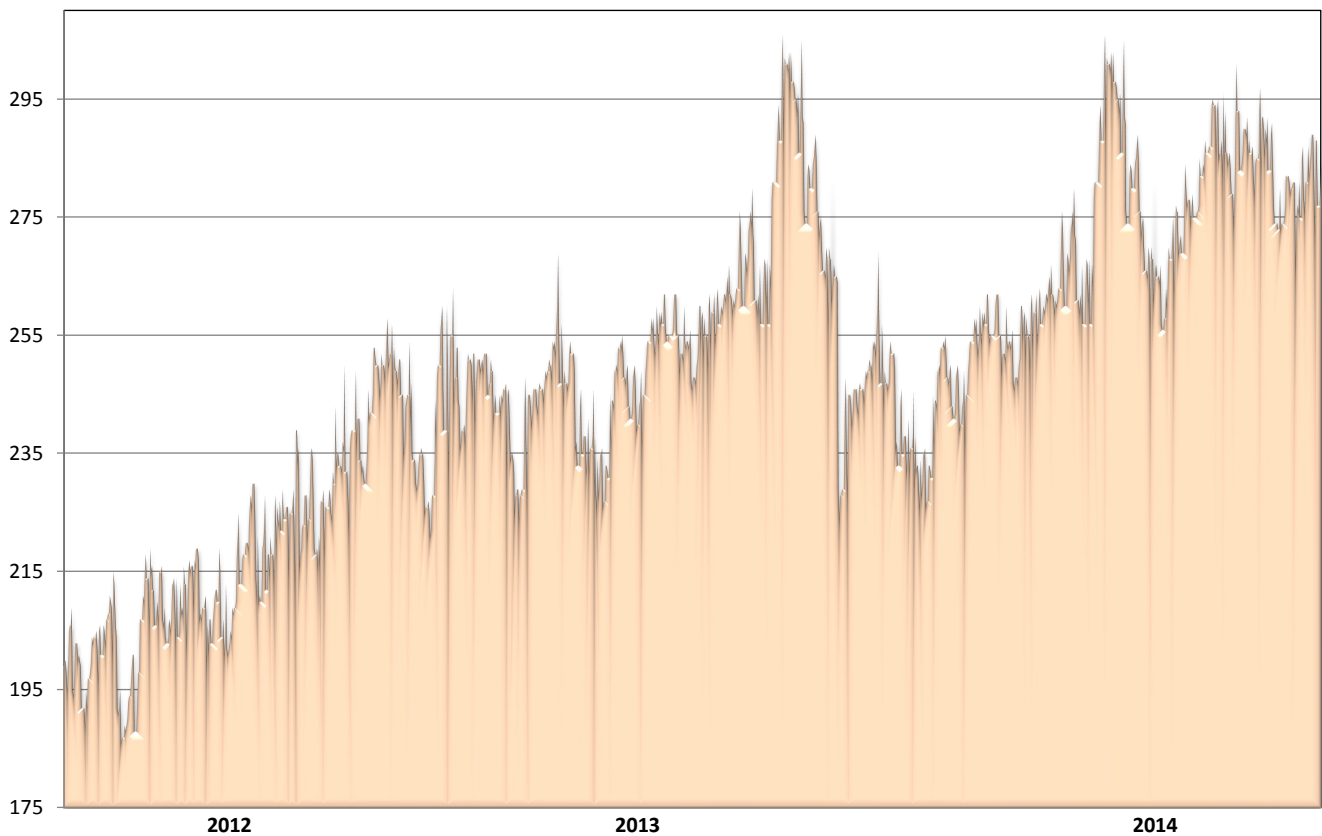


New Pair Enrollments



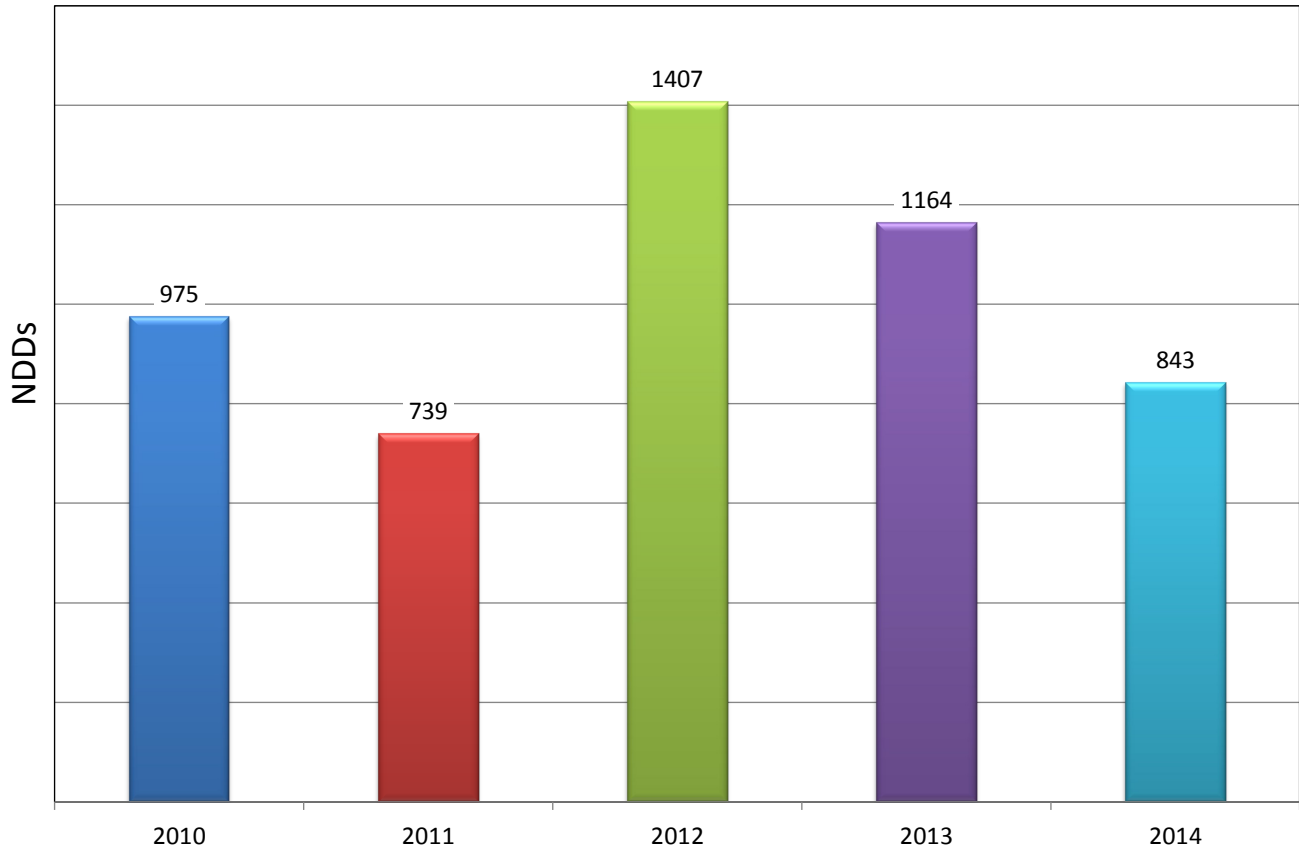
Pool Size - Unmatched Recipients

1/1/2012 - 12/31/2014

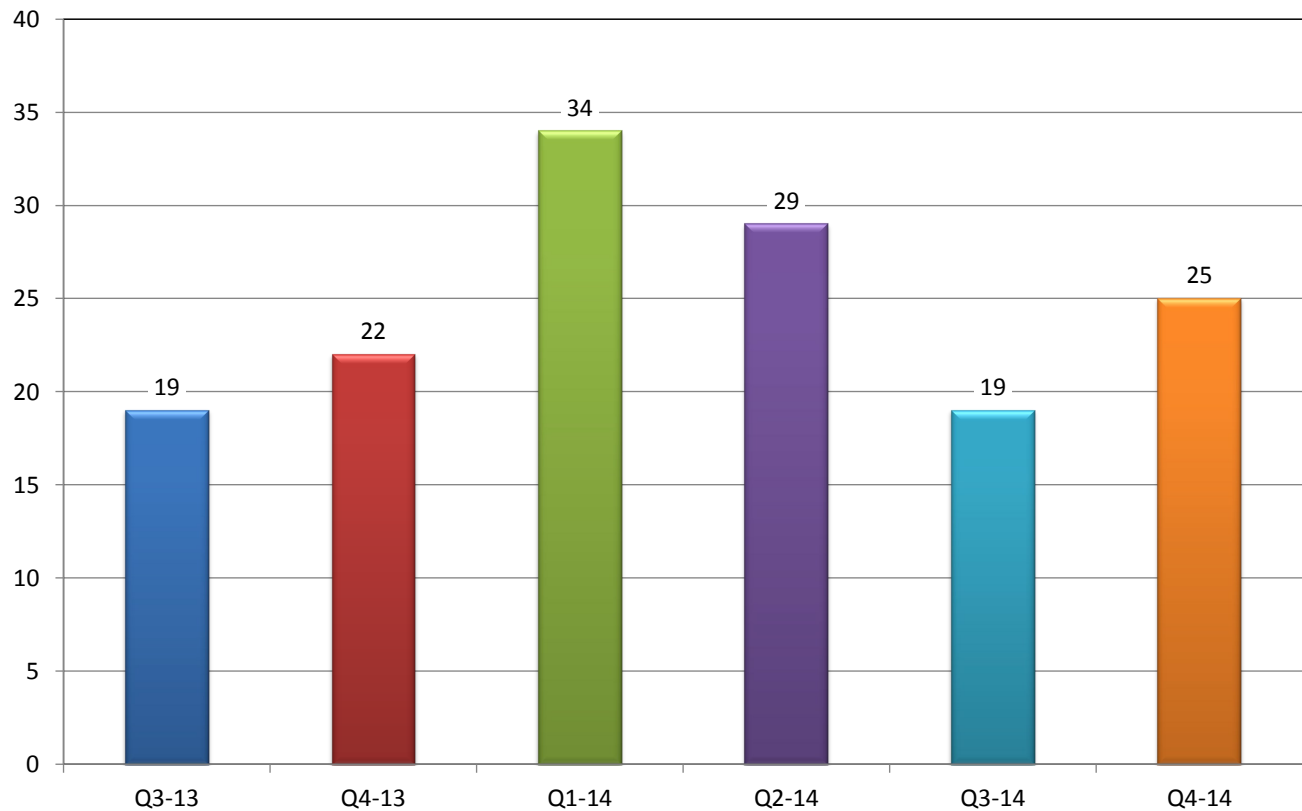


NDD Registrations

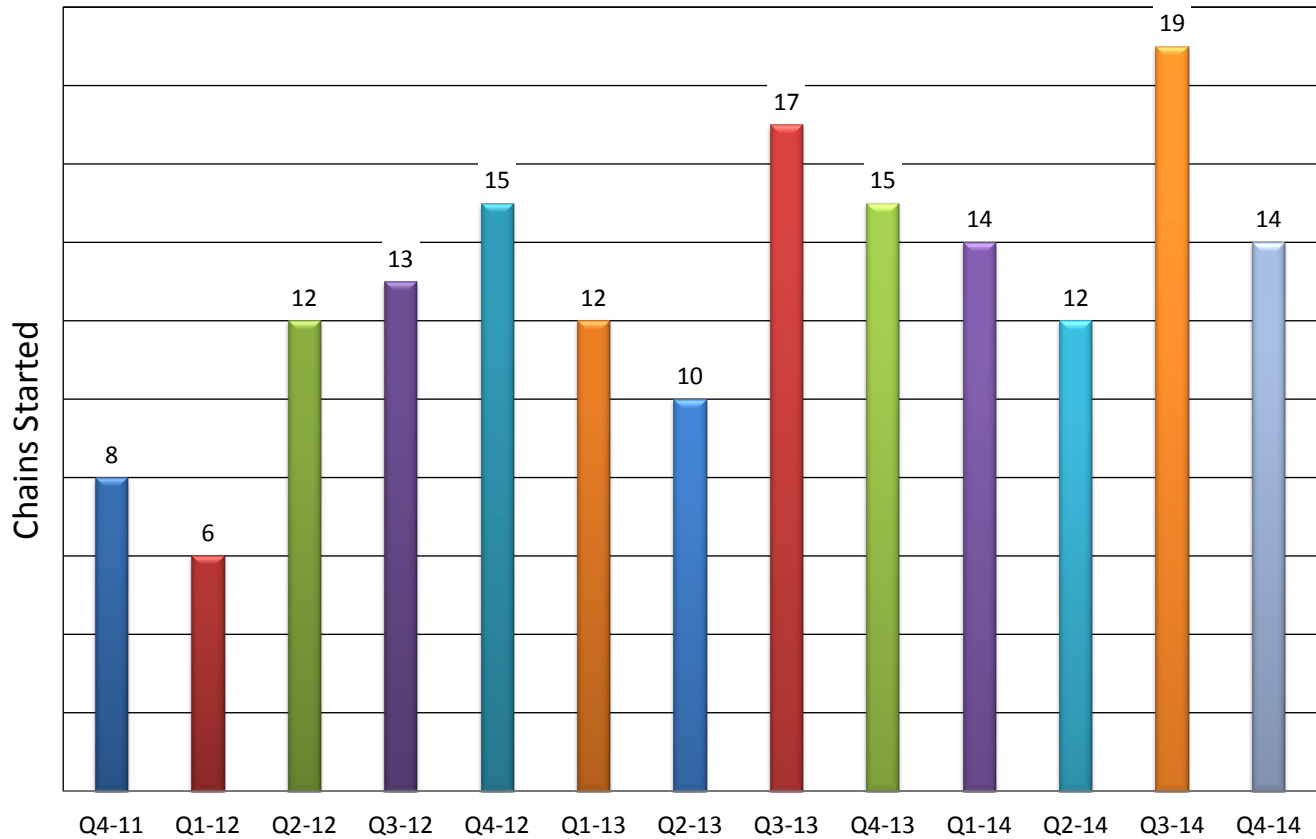
NKR Web Site



NDD Referrals To NKR Member Centers



Chains Started



Chain & Loop Length Statistics

Category	Count	Mean Length	Transplants
Ended	218	4.63	1009
Broken	18	4.17	75
Active	1	5	5
Chain Total	237	4.59	1089
Loops	63	2.29	144
Total	300	4.11	1233

Great HLA Matches

> 80 Match Points

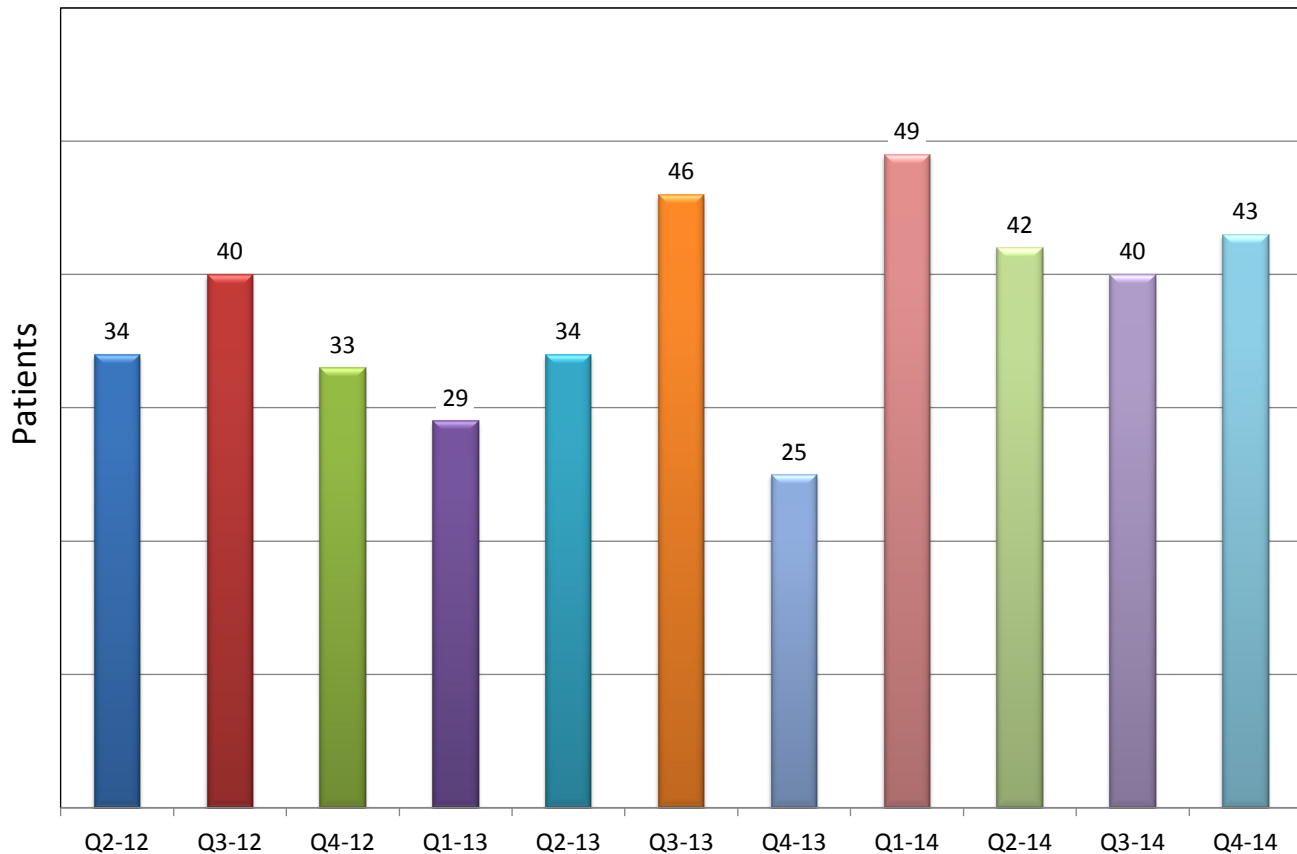
Count	Recipient Center	Swap #	XP Date	Donor ABO	Recipient ABO	NKR cPRA	Wait Time In Months	Donor Age ATOT	Recipient Age ATOT	HLA Points
1	Emory	351	12/11/2014	A	A	100	5	25	33	100
2	Hopkins	330	11/13/2014	A	O	96	1	41	38	100
3	Loyola	324	8/5/2014	A	A	100	1	37	55	100
4	Madison	674	1/9/2014	O	A	99	5	29	33	100
5	Barnabas	182	10/3/2012	A	A	92	4	51	50	100
6	Barnes	105	3/31/2011	A	A	100	7	60	32	100
7	UCSF	58	6/15/2010	A	A	100	6	47	58	100
8	MethodistTN	266	1/29/2014	A	A	89	2	44	66	90
9	Barnabas	266	1/16/2014	O	O	99	23	54	67	90
10	Madison	221	4/30/2013	O	O	99	17	45	52	90
11	Barnabas	187	12/4/2012	A	A	94	2	48	45	90
12	VAHD	161	6/12/2012	O	O	100	7	29	62	90
13	MethodistTX	124	12/7/2011	A	A	99	14	39	68	90
14	UCLA	124	8/31/2011	O	O	100	12	33	22	90
15	CPMC	115	6/22/2011	B	B	33	1	44	62	90
16	Starzl Pitt	109	4/21/2011	A	A	70	2	59	49	90
17	Barnabas	330	11/13/2014	O	O	96	2	33	49	85
18	PorterAH	322	9/3/2014	O	O	27	5	29	24	85
19	Barnabas	304	7/17/2014	O	O	99	1	53	62	85
20	Cornell	733	7/8/2014	A	A	0	1	57	67	85
21	Barnes	266	1/16/2014	A	A	100	13	33	40	85
22	SCarolina	266	1/14/2014	O	O	89	3	55	44	85
23	UCLA	659	10/24/2013	O	O	100	25	54	56	85
24	Penn	199	12/11/2012	B	B	87	5	47	52	85
25	Madison	169	7/25/2012	B	B	97	3	30	62	85
26	UCLA	538	5/22/2012	A	O	88	7	28	12	85
27	Intermtn	118	6/29/2011	O	O	96	16	27	27	85
28	Allegheny	62	5/6/2010	A	A	0	5	60	70	85
29	Madison	332	11/4/2014	O	O	96	20	63	42	80
30	UCLA	258	10/3/2013	A	A	98	1	47	36	80
31	CPMC	19	7/31/2009	A	A	0	5	51	54	80

Compatible Pairs Transplanted

#	Recipient Center	Recipient Alias	XP Date	Recipient ABO	Paired Donor ABO	Donor ABO	Recipient Age	Paired Donor Age	Donor Age	Age Advantage	Donor HLA Pts	Paired Donor HLA Pts	HLA Points Advantage	Paired Donor Relationship	Additional XP's	Additional XP's cPRA >80
1	Hopkins	KAAS1021	10/3/2013	A	O	A	19	65	38	27	25	50	-25	Other	2	0
2	Cornell	TRAC78	11/20/2013	O	O	O	34	37	59	-22	75	25	50	Spouse	3	1
3	Cleveland	RCCF23	12/18/2013	O	O	O	43	41	55	-14	25	0	25	internet friend	4	2
4	Maine	MOOD082970	1/28/2014	A	O	A	43	40	53	-13	75	10	65	Spouse	4	0
5	UCLA	R4037	1/29/2014	A	A	A	7	34	37	-3	60	50	10	Mother	3	0
6	Dartmouth	RW022168	4/9/2014	O	O	O	45	37	43	-6	35	50	-15	Friend	2	1
7	Stanford	SUR2220	4/23/2014	O	O	O	29	66	24	42	25	50	-25	Father	2	0
8	Cornell	BLUMC10	4/23/2014	O	O	O	3	24	43	-19	0	0	0	Cousin	0	0
9	Madison	HAWKR	4/28/2014	O	O	O	62	57	39	18	45	10	35	Friend	6	2
10	Barnabas	GEOKOC	6/11/2014	B	O	B	69	57	41	16	10	40	-30	Significant Other	3	0
11	UCSF	RCV275	8/26/2014	O	O	O	28	57	22	35	10	85	-75	Father	5	1
12	MassGen	GCAR	8/28/2014	A	O	A	69	51	33	18	60	0	60	niece through marriage	4	1
13	Emory	AL2140339	9/30/2014	A	A	A	18	52	37	15	50	65	-15	Father	2	0
14	Loyola	R113KU8885	11/11/2014	A	O	A	42	43	48	-5	25	25	0	Spouse	8	3
Totals															48	11

Patients Deleted

As of 12/31/2014



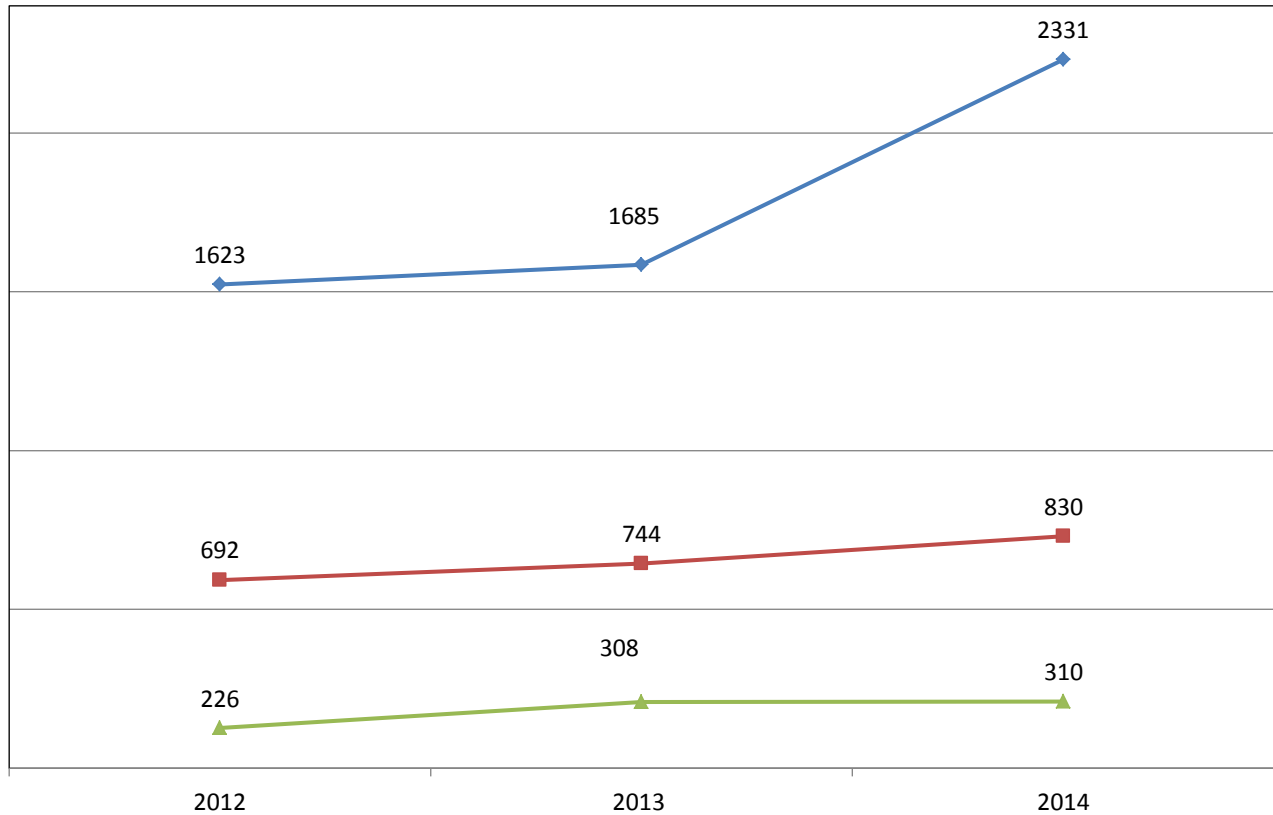
New System Innovations

Fourth Quarter 2014

1. *Cryo-preserved donor Lymphocytes in cross matching - capabilities for use and shipment*
2. *Optional high resolution donor antigen Information fields available for each antigen*
3. *Primary transplant coordinator is assignable for each paired recipient*
4. *Historical declines and accepts data tabs added to donor record*
5. *Advance donation program (ADP)Info available in member center homepage*
6. *When recording screening XM Results, you can now also record the donor cleared with one click*
7. *On board courier (OBC) - fixed costs provided*
8. *GPS number added to pending swaps page*
9. *Added transportation costs to the pending swaps page*
10. *Enhanced desensitization protocol post transplant data capture*
11. *Donor surveillance email enhancements*
12. *Forecasted Center Liquidity Contribution for CLC scores*
13. *Banner notification and hyperlink on paired donor page for accessing bridged donors*
14. *Enhanced swap commencement emails*

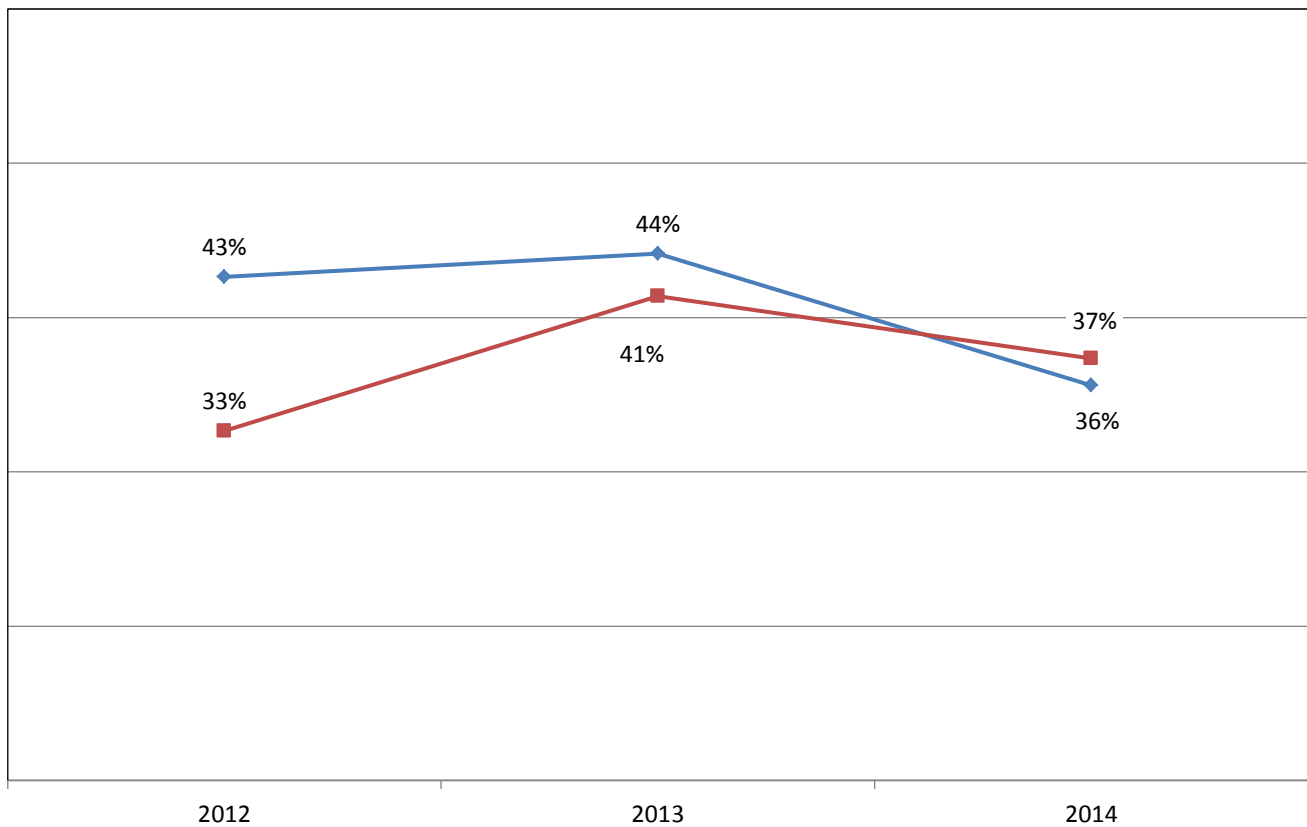
Process Volume

◆ Individual Matches Offered ■ XMs Requested ▲ Transplants Facilitated



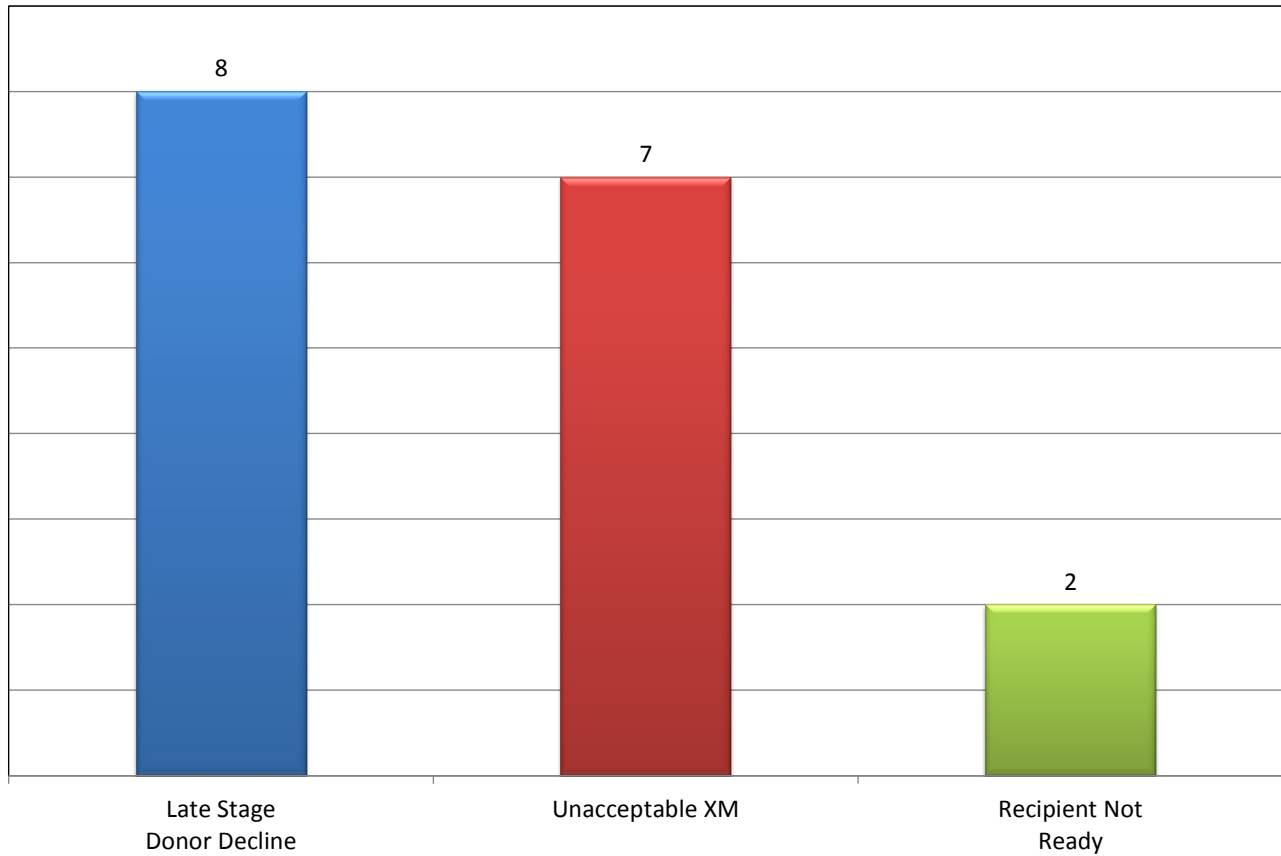
Match Success Rates

◆ Individual Offers to XMs ■ XMs to Transplants



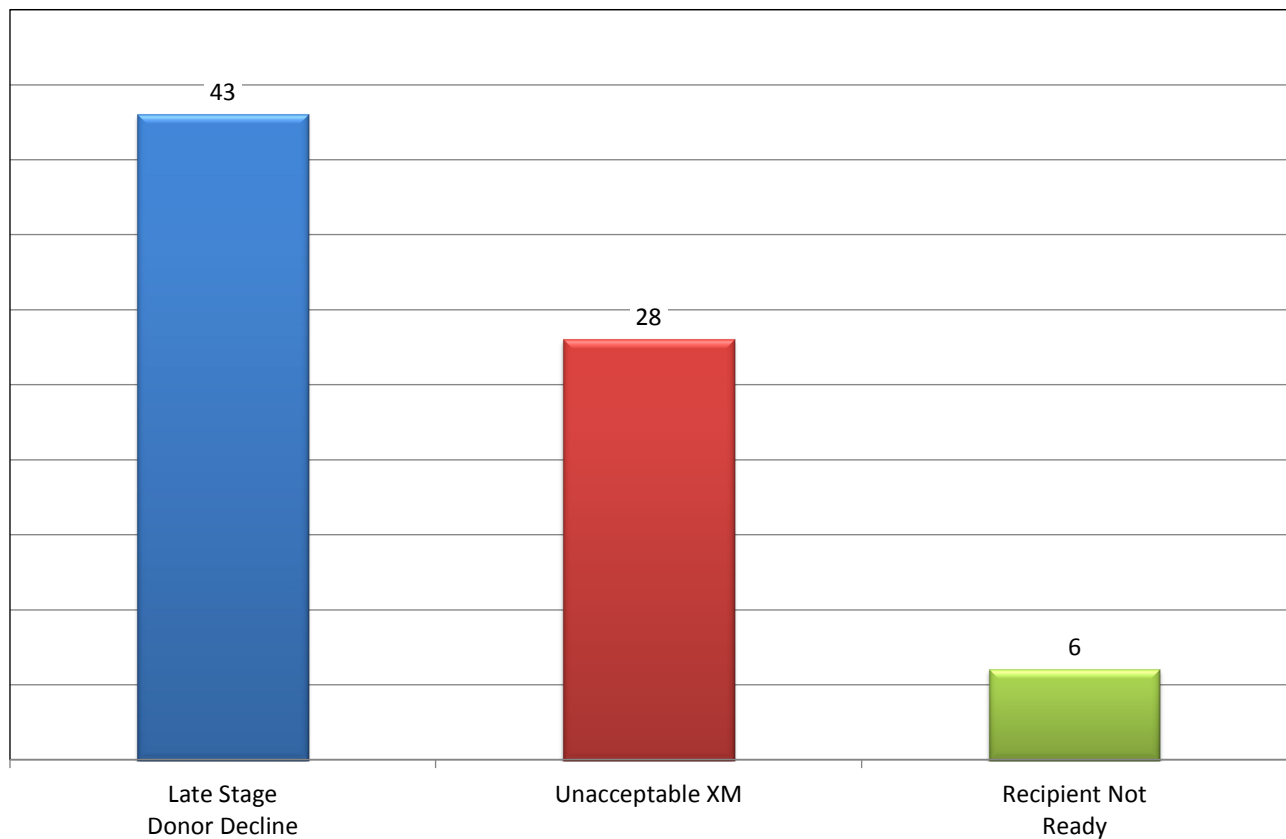
Swap Failures by Primary Root Cause

Q4 2014



Transplants Impacted by Primary Root Cause

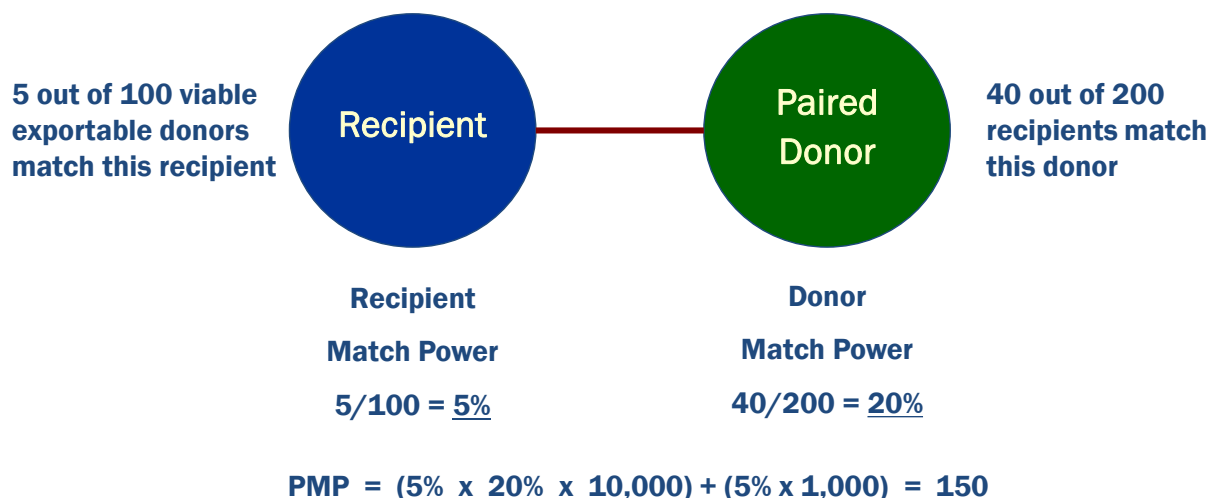
Q4 2014



Pair Match Power is the Key to Understanding Wait Time

Pair Match Power (a.k.a. PMP) along with pair blood type combination is the most accurate predictor of paired exchange wait time and should be used by patients and clinicians to develop individual matching strategies for all pairs enrolling in the NKR program

How is PMP Calculated



NKR Wait Times

Matching Ease	ABO Combination	PMPc
1-Very Easy	Any	> 125
2-Easy	Favorable	31 to 125
3-Hard	Favorable	1 to 30
4-Very Hard	Unfavorable	31 to 125
5-Ext Hard	Unfavorable	1 to 30
6-No Match	Any	0

ABO Combination: Patients with a non-O blood type are favorable. Patients with an O blood type who are paired to at least 1 exportable donor with an O blood type are favorable. All others are unfavorable and CHIP patients are excluded from this population.

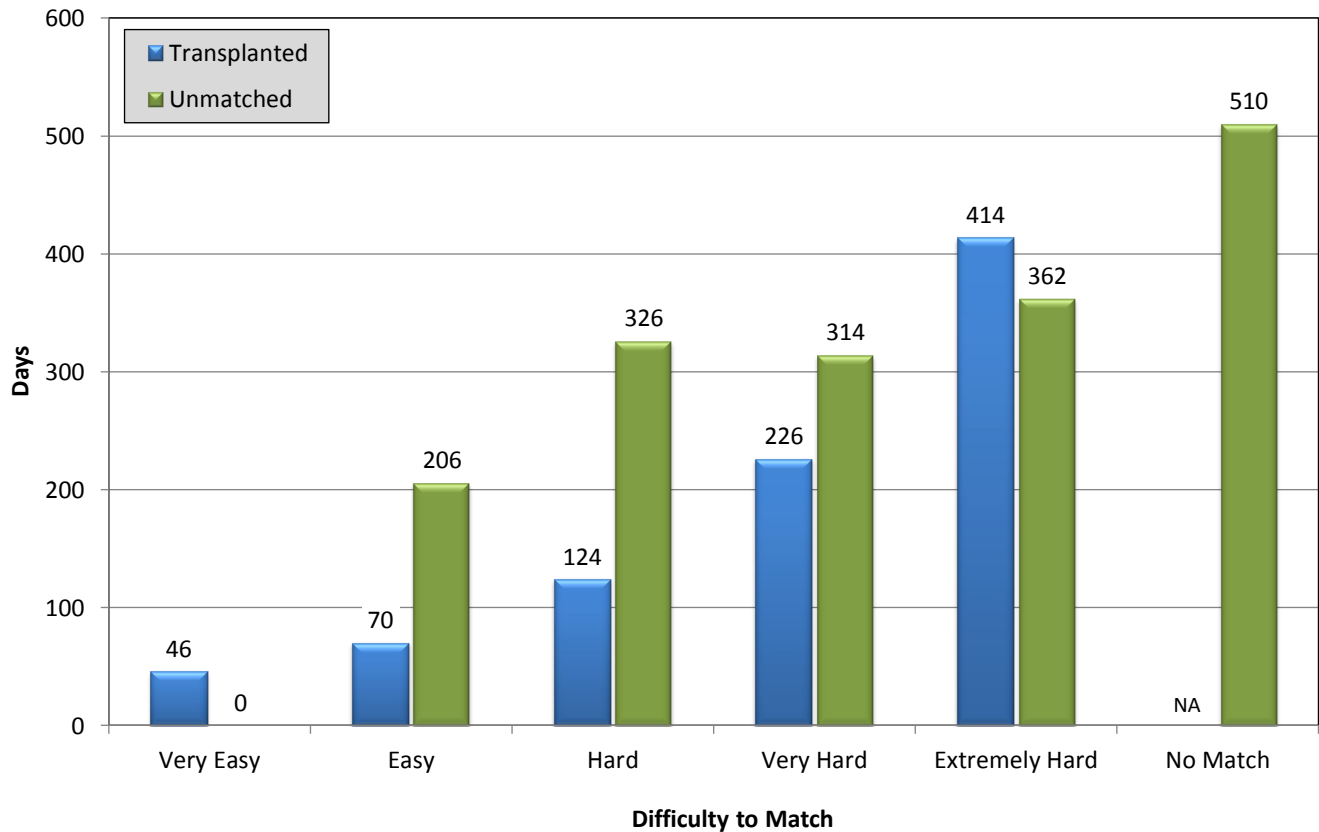
Paired Transplants Completed Between 1/1/2014 and 12/31/2014

Match Ease	Pairs	%	Mean	Median	Std Dev	Range Min	Range Max
1-Very Easy	93	37	67	46	73	8	439
2-Easy	67	27	108	70	111	6	674
3-Hard	47	19	193	124	201	22	1055
4-Very Hard	36	14	257	226	169	23	623
5-Ext Hard	7	3	449	414	240	42	770
6-No Match	0	---	---	---	---	---	---
7-ALL	250	100	140	68	161	6	1055

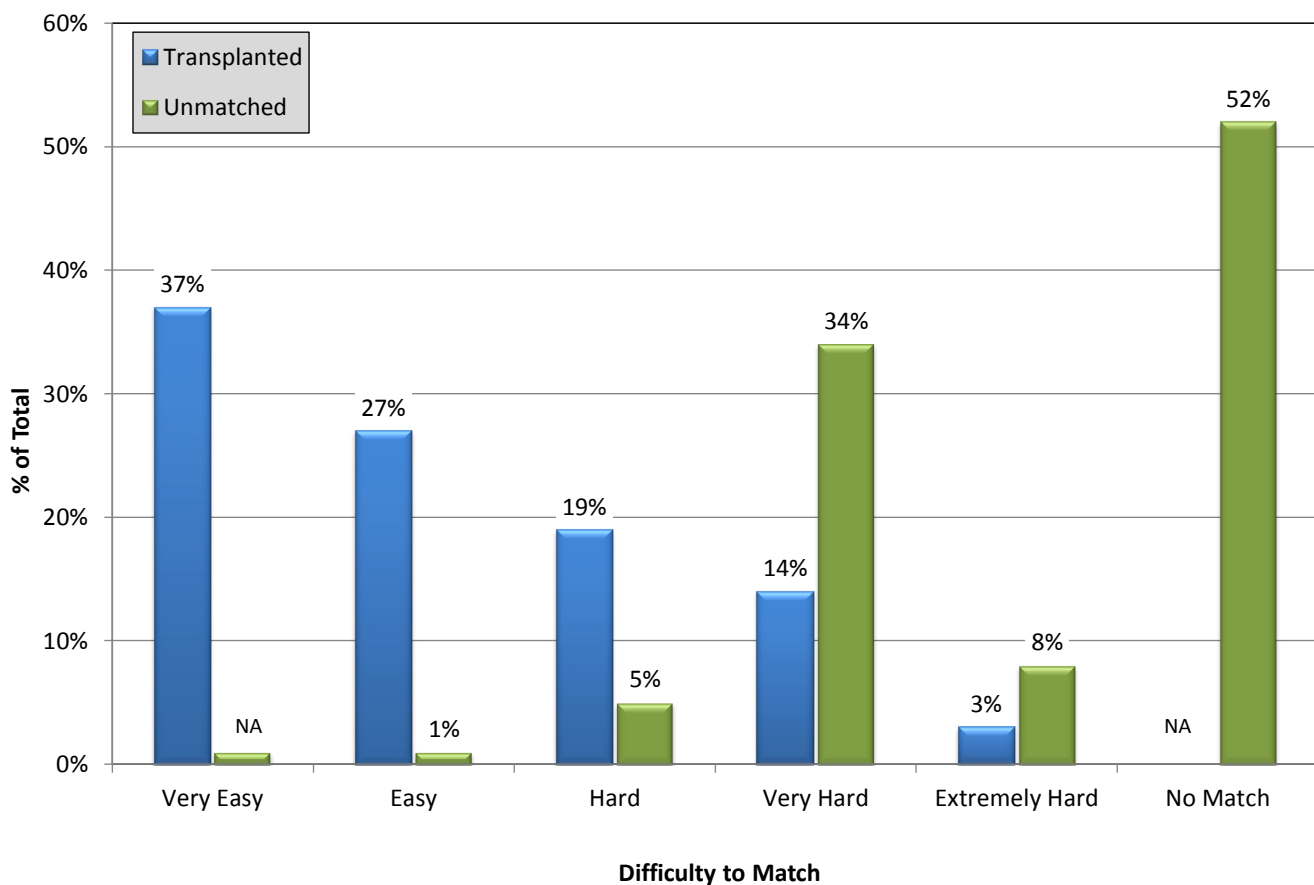
Paired Patients Waiting 6 Months or Greater as of 12/31/2014

Match Ease	Pairs	%	Mean	Median	Std Dev	Range Min	Range Max
1-Very Easy	1	1	230	230	0	230	230
2-Easy	1	1	206	206	0	206	206
3-Hard	7	5	321	326	82	218	466
4-Very Hard	52	34	348	314	123	191	639
5-Ext Hard	12	8	429	362	190	227	802
6-No Match	80	52	596	510	331	205	1790
7-ALL	153	100	481	395	285	191	1790

Median Wait Time Analysis



Population Wait Time Analysis



Broken Chains & Real Time Swap Failures - Detail

<i>Year</i>	<i># Bridge Donors</i>	<i># Real Time Swap Failures</i>	<i># Broken Chains</i>	<i>% Broken Per Year</i>
2008	9		3	33%
2009	29	1	2	7%
2010	61		2	3%
2011	75		0	0%
2012	54		4	7%
2013	37	3	3	8%
2014	49	2	4	8%
Total Bridge Donors	314	6	18	

Summary of Broken Chains & Real Time Swap Failures

<i>#</i>	<i>Reason Given</i>	<i>Real Time Swap Failures</i>	<i>Broken Chains</i>	<i>Center</i>	<i>Date</i>
1	Job Issues/ long wait time/ many failed XMs		✓	Cornell	5/1/2008
2	No Reason		✓	Cornell	8/21/2008
3	No Reason		✓	CPMC	11/19/2008
4	Donor Reneged	✓	✓	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		✓	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	✓	✓	CPMC	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
17	Recipient Medical Issue	✓		ChristHosp	3/11/14
18	Medical		✓	Hopkins	7/15/14
19	Medical		✓	Hopkins	10/9/14
	Totals	6	18		

NKR Program Statistics

As of 12/31/2014

		2008	2009	2010	2011	2012	2013	2014
1	Transplants Facilitated	21	62	131	175	226	308	310
2	Paired Transplants Facilitated	21	39	91	131	164	252	255
3	Chip Transplants Facilitated	0	23	40	44	62	56	55
4	Ending Unmatched Patient Pool	80	127	120	201	241	255	279
5	Cumulative Transplants	21	83	214	389	615	923	1233
6	Cumulative Paired Transplants	21	60	150	280	526	777	1030
7	Cumulative Chip Transplants	0	23	64	109	89	146	203
8	Cumulative Paired Patient Pool	101	210	334	590	805	1062	1351
9	Percent of Pool Transplanted (Paired Recipients)	21%	40%	64%	66%	71%	87%	91%
10	Enrolled Patient Mean Wait Time (years)	3.8	2.0	0.9	1.1	1.1	1.0	0.9
11	Transplanted Patient Mean Wait Time (months)	5.1	5.3	6.0	5.0	5.1	5.4	4.8
12	Transplanted Patient Median Wait Time (months)	5.3	5.3	3.9	2.5	3.0	3.0	2.1
13	Mean cPRA of Transplanted Patients	4.1%	25.9%	34.5%	40.3%	44.1%	54.0%	48.3%
14	Number of Transplants Completed by cPRA							
15	100%	0	1	4	10	4	5	3
16	95-100%	0	4	12	10	29	68	41
17	80-95%	1	7	16	29	26	37	49
18	50-80%	0	5	19	27	33	46	48
19	0-50%	1	8	13	30	34	47	43
20	0%	19	37	67	69	100	105	126
21	Sub-total	21	62	131	175	226	308	310
22	Percent of Transplants Completed by cPRA							
23	100%	0%	2%	3%	6%	2%	2%	1%
24	95-100%	0%	6%	9%	6%	13%	22%	13%
25	80-95%	5%	11%	12%	17%	12%	12%	16%
26	50-80%	0%	8%	15%	15%	15%	15%	15%
27	0-50%	5%	13%	10%	17%	15%	15%	14%
28	0%	90%	60%	51%	39%	44%	34%	41%
29	Sub-total	100%	100%	100%	100%	100%	100%	100%
30	Number of Transplanted Patients with cPRA >80%	1	12	32	49	59	110	93
31	Percent of Transplanted Patients with cPRA >80%	5%	19%	24%	28%	26%	36%	30%

NKR Program Statistics

As of 12/31/2014

		2008	2009	2010	2011	2012	2013	2014
32	Number of Unmatched Patients by cPRA (12/31/2014)							
33	100%				79	73	83	81
34	95-99%				73	73	61	61
35	80-95%				15	15	24	19
36	50-80%				14	11	14	13
37	0-50%				14	10	22	37
38	0%				50	59	51	68
39	Sub-total				245	241	255	279
40	Percent of Unmatched Patients by cPRA (12/31/2014)							
41	100%				32%	30%	33%	29%
42	95-99%				30%	30%	24%	22%
43	80-95%				6%	6%	9%	7%
44	50-80%				6%	5%	5%	5%
45	0-50%				6%	4%	9%	13%
46	0%				20%	24%	20%	24%
47	Sub-total				100%	100%	100%	100%
48	Number of Transplants Completed by Wait Time (12/31/2014)							
49	< 6 months	21	42	74	106	180	232	243
50	6-12 months	0	10	14	19	24	44	35
51	1-2 years	0	4	15	14	20	25	27
52	2+ years	0	0	2	2	2	7	5
53	Sub-total	21	56	105	141	226	308	310
54	Percent of Transplants Completed by Wait Time (12/31/2014)							
55	< 6 months	100%	75.0%	70.5%	75.2%	79.6%	75.3%	78.4%
56	6-12 months	0.0%	17.9%	13.3%	13.5%	10.6%	14.3%	11.3%
57	1-2 years	0.0%	7.1%	14.3%	9.9%	8.8%	8.1%	8.7%
58	2+ years	0.0%	0.0%	1.9%	1.4%	0.9%	2.3%	1.6%
59	Sub-total	100%	100%	100%	100%	100%	100%	100%
60	Total Chains Started	4	9	28	36	46	55	63
61	Total Loops Completed	0	3	2	3	12	24	2
62	Number of broken chains	3	2	2	0	4	3	4
63	Bridge Donors Held (2014)	9	29	61	75	54	37	49
64	Percent of broken chains	33%	7%	3%	0%	7%	8%	8%



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