



Heart & Lung Transplant Policy and Process Review

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Director Pre-Service Review

Health Plan of Nevada

Increasing Focus on the Lack of Coverage for Heart & Lung Transplant

Increased number of patients receiving maximum therapy for heart failure and/or lung disease

Authorization requests to health plan

Benefit delineation between Medicaid and Commercial products more apparent with improved disease management and referral for transplant consultation



NV 2019 Population c/w Organ Receipt as of 1/31/21

Census.gov 2019 NV population quick facts	
Race and Hispanic Origin	
White alone, percent	73.9%
Black or African American alone, percent(a)	10.3%
American Indian and Alaska Native alone, percent(a)	1.7%
Asian alone, percent(a)	8.7%
Native Hawaiian and Other Pacific Islander alone, percent(a)	0.8%
Two or More Races, percent	4.6%
Hispanic or Latino, percent(b)	29.2%
White alone, not Hispanic or Latino, percent	48.2%

NV Transplant recipients	1988 To Date		2021		2020		2019	
All Ethnicities	1,725		14		91		43	
White	755	43.77%	3	21.43%	22	24.18%	16	37.21%
Black	313	18.14%	1	7.14%	14	15.38%	3	6.98%
Hispanic	370	21.45%	3	21.43%	32	35.16%	17	39.53%
Asian	231	13.39%	7	50.00%	18	19.78%	6	13.95%
American Indian/Alaska Native	7	0.41%	0	0.00%	0	0.00%	0	0.00%
Pacific Islander	32	1.86%	0	0.00%	0	0.00%	1	2.33%
Multiracial	17	0.99%	0	0.00%	5	5.49%	0	0.00%



Transplant Procedures 2020, 2021 YTD- All Lines of Business

ORGAN	2020	HPN	POS	SHL	SHO	MCD	2021	HPN	POS	SHL	SHO	MCD
LIVER	17	8	1		2	6						
HEART	4	1	1		2							
LUNG	3	1	1		1							
KIDNEY	30	12	4	5	8	1	8	3	2	2	1	
OTHER												
PANCREAS	1	1										
TOTAL	55	23	7	5	13	7	8					



Utilization Pre & Post Transplant Claims (pharm& medical) 2018-2020

- Lung transplant admission
- Paid claims \$223,155
- ALOS 13.7 days

- Heart transplant admission
- Paid claims \$586,407 (with COB)
- \$748,086 (without COB)
- ALOS 64.3 days

1 Year Prior		1 Year Post	
Admissions	1.16	Admissions	0.33
\$ Cost	\$232,426	\$ Cost	\$170,080

1 Year Prior		1 Year Post	
Admissions	1.6	Admissions	0.7
\$ Cost	\$163,328	\$ Cost	\$77,375



Length of Stay Increases Risk of Catastrophic Claims

ELECTIVE (n=2) 13.7 ALOS LUNG TRANSPLANT \$223,155 AVG PAID	EMERGENT (n=10) 64.3 ALOS HEART TRANSPLANT \$748,086 AVG PAID
Patient notified of available organ while they are in stable condition	Patient hospitalized due to clinical instability prior to receiving organ (usually local hospital to OOA hospital transfer)
Patient receives organ on day of admission	Issues outside of transplant may have to be addressed (infection, failure of other organs, transplant evaluation) prior to listing; then, await organ
LOS limited to recovery from surgery	Length of stay includes pre-operative stabilization and resolution of other complications after the surgery
LOS 11-12 days due to minimal complications	LOS 30 – 90 days (dependent on number of days prior to transplant, recovery post transplant)



Low Volume Heart & Lung Transplant Referrals

Transplant Referrals as of 2-24-21

Organ	Total #	# Medicaid
Kidney	227	38
BMT	60	18
Liver	40	16
Heart	11	1(peds)
Lung	8	0
CAR-T	2	1
Total	348	74



LVAD vs Heart Transplant

- LVAD 5 year survival 54% (Average paid \$965K)
- Heart Transplant 5 year survival 77.8 - 79.1% (Average claims \$748K)
- Study of Heart Mate II (HM II) LVAD Outcomes-February 2004 to December 2010 (n=89).

OUTCOME	NUMBER
39	Expired
28	Received heart transplant
15	Remained on HM II
7	Received HM II Removal

# POST HM II	Survival Rate
1 YR	71%
2 YR	65%
3 YR	63%
4 YR	56%
5 YR	54%

- <https://pubmed.ncbi.nlm.nih.gov/28958073/>
- <https://academic.oup.com/ejcts/article/53/2/422/4102848>



Outcome for LVAD Approvals- Sierra

13 LVAD approvals 2016-2021; 3 Members received

- MCD 7
 - 6 adults in lieu of transplant evaluation (one received LVAD)
 - 1 peds bridge to TP {VAD January; Heart TP August}
- HPN/POS 5
 - 3 Approved as bridge to transplant (2 received heart transplant instead of LVAD; 1 received LVAD and is awaiting transplant)
 - 1 Change to plan of care; expired
 - 1 received LVAD as destination therapy; insurance termed
- SHL 1
 - 1 Approved, but no procedure. Deemed not a candidate for LVAD or heart transplant upon further evaluation



Advantages of Heart Transplant over LVAD

Increased number of patients receiving maximum therapy for heart failure and/or lung disease
\$200K less costly and 25% better survival rate than LVAD

Tertiary facility more likely to evaluate members with advanced illness leading to improved disease management

Improved member engagement



Heart/Lung Transplant Benefit Limitations

Heart Transplant

Heart Failure, Dilated Cardiomyopathy

- 2017 1 acute admission
- 2018 2 acute admissions
- 2019 8 acute admissions
- 2020 2 acute admissions
 - Approved for LVAD evaluation in lieu of transplant 3/16/21
 - Admitted locally 3-23 to 4/17/20
 - Expired 4/17/20

Cannot assert that member was not a transplant candidate because he was never evaluated for the option. Member would have been a candidate for outpatient therapy through transplant team or for acute to acute transfer for tertiary evaluation.

Lung Transplant

Cystic Fibrosis

- 2017 4 acute admissions
- 2018 2 acute admissions
 - Request for lung transplant denied per benefit
- 2019 2 acute admissions
- 2020 1 acute admission
- 2021 2 admissions. Currently admitted to UMC awaiting bed at Kindred. Newly ventilator dependent

Cannot assert that member was not a transplant candidate because she was never evaluated for the option. Member would have been a candidate for outpatient therapy through transplant team or for acute to acute transfer for tertiary evaluation.



Appendix

The following information is provided for your information only.

Please reach out if you have any questions.

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Heart Failure and Heart Transplant Statistics

6.2 million in US diagnosed with heart failure; 10% advanced disease

- 50% mortality within 5 years

3,658 heart transplants in US last year

- 77.8-79.1% five year survival (LVAD 54% five year survival)

• <https://www.heart.org/en/health-topics/heart-failure/living-with-heart-failure-and-managing-advanced-hf/advanced-heart-failure>

• https://www.cdc.gov/dhdsp/pubs/docs/sib_feb2015.pdf

• <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6512959/>

• <https://pubmed.ncbi.nlm.nih.gov/28958073/>



Health Disparity- Heart Failure

Race/Gender	Mortality Rate 100,000
African American Male	118.2
Non-Hispanic White Male	111.3
African American Female	86.0
Non-Hispanic White Female	80.4

¹<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2768392> Health Disparities in Advanced Heart Failure Treatment The Intersection of Race and Sex



UNOS Heart Transplant Survival Rates

Region	Recipient UNOS Status at Trans	Years	Number	Survival Rate	95% Confidence Interval
		Post Transplant	Functioning / Alive		
U.S.	Heart Status 1A	1 Year	6410	90.6	(89.9, 91.2)
U.S.	Heart Status 1B	1 Year	2571	91.2	(90.1, 92.2)
U.S.	Heart Status 2	1 Year	344	89.8	(86.3, 92.5)
U.S.	Heart Status 1A	3 Year	5092	84.7	(83.7, 85.5)
U.S.	Heart Status 1B	3 Year	2456	85.7	(84.4, 87.0)
U.S.	Heart Status 2	3 Year	440	88.5	(85.4, 91.0)
U.S.	Heart Status 1A	5 Year	3945	77.8	(76.6, 78.9)
U.S.	Heart Status 1B	5 Year	2309	78.7	(77.2, 80.1)
U.S.	Heart Status 2	5 Year	515	79.1	(75.8, 82.0)



Heart Transplant Outcomes by Ethnicity, US

Study of post transplant mortality 1987-2009; n=39,075. Increasing number of minorities receiving transplants.

Lower survival rate of African American c/w other ethnic groups (CHF 50% mortality in 5 years).

- Access to care
- Less likely to receive information about transplant
- Socioeconomic status
- Immunologic mechanisms

Race	1 Year Mortality	5 Year Mortality
White	13.2%	26.5%
Hispanic	13.6%	29.4%
Black	15.8%	36.7%

Alanna A. Morris, Evan P. Kransdorf, Bernice L. Coleman, Monica Colvin, Racial and ethnic disparities in outcomes after heart transplantation: A systematic review of contributing factors and future directions to close the outcomes gap, *The Journal of Heart and Lung Transplantation*, Volume 35, Issue ,2016, Pages 953-961, ISSN 1053-2498 <https://doi.org/10.1016/j.healun.2016.01.1231>. (<http://www.sciencedirect.com/science/article/pii/S1053249816012857>)



Health Disparity- Post Transplant UK

Median survival post-transplant 12.6 years

Survival rates years 1995-2014 (N=2384) based on Socioeconomic Status (SES). Most deprived (Lowest SES) SES **3.4 year shorter** survival than least deprived (Highest SES) despite universal medical and prescription coverage.

US survival rates could be interpreted similarly government plans associated with lower education level.

- **Medicare 8.6% lower 10 year survival than private insurance (increased mortality risk by 18%)**
- **Medicaid 10.0% lower 10 year survival than private insurance (increased mortality risk by 33%)**
- **College educated 7.0% higher 10 year survival rate (decreased mortality risk by 11%)**
- **Socioeconomic Disparities in Heart Transplantation a Universal Fix?** Eugene C. DePasquale, MD and Jon A. Kobashigawa, MDCirculation: Cardiovascular Quality and Outcomes, Volume 9, Issue 6, November 2016, Pages 693-694
<https://www.ahajournals.org/doi/epub/10.1161/CIRCOUTCOMES.116.003210>



Lung Disease and Lung Transplant Statistics

15.7 million in US diagnosed with COPD

- 64.3% mortality within 5 years

2,539 lung transplants in US last year

- 56% five year survival (COPD)

• <https://www.heart.org/en/health-topics/heart-failure/living-with-heart-failure-and-managing-advanced-hf/advanced-heart-failure>

• https://www.cdc.gov/dhdsp/pubs/docs/sib_feb2015.pdf

• <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6512959/>



Lung Transplant Outcome by Ethnicity, US

Retrospective study of post transplant mortality non-whites compared to white from October 1987 to February 2009; n=16,875 (14,858 whites; 2,017 non-whites)

Percentage of Non-white transplant recipients increased

- 8.8% before 1996
- 15.0% 2005 to 2009

Survival Rates **improved** for both groups due to improvement in quality of care post transplant

Race	Historical (1987-2000)	Current (2001-2009)
White	46.9%	52.6%
Non-white	40.9%	51.6%

Racial Disparities in Survival After Lung Transplantation; [Vincent Liu, MD](#); [David Weill, MD](#); [Jay Bhattacharya, MD, PhD](#) Arch Surg. 2011;146(3):286-293. doi:10.1001/archsurg.2011.4 <https://jamanetwork.com/journals/jamasurgery/fullarticle/406914>



UNOS LUNG Transplant Survival Rates

Region	Recipient	Years	Number Functioning /	Survival	95% Confidence
U.S.	Alpha-1 - Antitrypsin Deficien	1 Year	166	87.9	(82.3, 91.8)
U.S.	Cystic Fibrosis	1 Year	816	91.5	(89.5, 93.2)
U.S.	Emphysema/COPD	1 Year	1435	89.7	(88.1, 91.1)
U.S.	Idiopathic Pulmonary Fibrosis	1 Year	2354	87	(85.7, 88.2)
U.S.	Other Lung Disease	1 Year	928	87.4	(85.3, 89.3)
U.S.	Primary Pulmonary Hypertension	1 Year	121	81.2	(74.0, 86.6)
U.S.	Alpha-1 - Antitrypsin Deficien	3 Year	126	71.9	(64.7, 77.8)
U.S.	Cystic Fibrosis	3 Year	656	74.7	(71.7, 77.4)
U.S.	Emphysema/COPD	3 Year	1179	72.3	(70.1, 74.4)
U.S.	Idiopathic Pulmonary Fibrosis	3 Year	1742	68.2	(66.4, 70.0)
U.S.	Other Lung Disease	3 Year	576	70.5	(67.3, 73.5)
U.S.	Primary Pulmonary Hypertension	3 Year	92	68.4	(60.1, 75.4)
U.S.	Alpha-1 - Antitrypsin Deficien	5 Year	98	62.3	(54.4, 69.2)
U.S.	Cystic Fibrosis	5 Year	488	61.6	(58.3, 64.8)
U.S.	Emphysema/COPD	5 Year	912	56	(53.5, 58.3)
U.S.	Idiopathic Pulmonary Fibrosis	5 Year	1146	52.4	(50.3, 54.5)
U.S.	Other	5 Year	53	60.8	(50.0, 69.9)
U.S.	Other Lung Disease	5 Year	374	57.5	(53.7, 61.1)
U.S.	Primary Pulmonary Hypertension	5 Year	67	59.8	(50.5, 68.0)
U.S.	Retransplant/Graft Failure	5 Year	53	26.5	(20.7, 32.7)



Sierra Pre Vs. Post Adult Lung Transplant Utilization

Lung transplant cost \$223,155; ALOS 13.7 days

AVG # ADMITS 1 YEAR PRIOR	1.16	AVG # ADMITS 1 YEAR POST	0.33
AVG PHARM AND MED COST 1 YEAR PRIOR	\$232,426	AVG PHARM AND MED COST 1 YEAR POST	\$170,080



US Transplant Procedures 2020, 2021 YTD UNOS

ORGAN	2020	2021 YTD(1/31/21)
ALL SOLID ORGANS	39,035	3,128
LIVING DONOR	5,726	433
KIDNEY	22,817	1,802
LIVER	8,906	729
HEART	3,658	310
LUNG	2,539	200
KIDNEY/PANCREASE	827	68
HEART/LUNG	58	2

<https://optn.transplant.hrsa.gov/data/view-data-reports/national-data/>



UNOS/OPTN Processes to Ensure Equity

- Strategic goal to increase the number of transplants propels the drive to reduce the number of candidates excluded from receiving transplants
- Organ allocation policies reviewed routinely to ensure equity (Kidney allocation policy recently updated to increase equity)
- Strict listing and registration process for facilities; detailed reporting on facility and regional outcomes
- UNOS/OPTN Access to Transplant Score (ATS) - Database identifying disparities in transplant
 - Currently established for kidney and liver transplant;
 - More organs to be added

ATS FACTORS

- Donation Service Area
- Age
- Body mass index
- Ethnicity
- Urban/rural
- Community risk score
- Insurance type
- Gender
- Citizenship
- Blood type
- Other factors



UNOS perspective on health disparity

Donor Service Area largest impact on disparity of lung transplant.

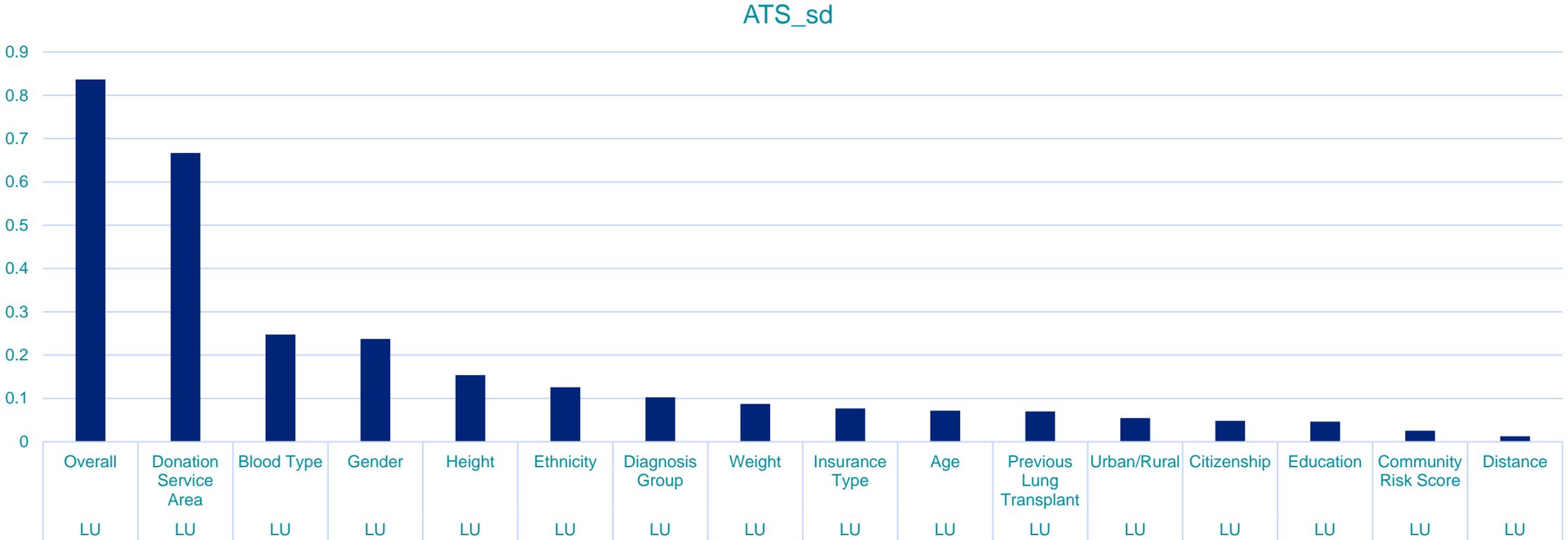
Factors below with half the impact of donor service area

- Gender
- Ethnicity
- Diagnosis group
- Age

<https://unos.org/news/in-focus/examining-equity-in-access-to-deceased-donor-lung-transplants/>



Variability in Access-to-Transplant Scores (ATS) Among Waitlisted Lung Candidates (04/01/2020 - 09/30/2020)



Donor Service Area Impact on Organ Allocation



UNOS/OPTN MAP

REGION 5

Region 5		
State	OPO	TXC
Arizona	1	5
California	4	21
Nevada	1	1
New Mexico	1	2
Utah	1	3

OPO : Organ Procurement Org.
 TXC : Transplant Center



Organ Allocation Policies vs. Transplant Referral Guidelines

Referral	Allocation
Criteria for heart transplant evaluation	Prioritization for organ distribution
Written by health plans	Written by UNOS/OPTN
https://healthplanofnevada.com/Provider/Transplant-Guidelines	 Adobe Acrobat Document
Pre-listing	Post-listing



Region 5 Organ Allocation- Ethnicity and State

Region 5 Transplant Data	1988 To Date		2021		2020		2019	
All Ethnicities	130,292		460		6,406		6,289	
White	63,480	48.72%	178	38.70%	2,576	40.21%	2,469	39.26%
Black	11,048	8.48%	51	11.09%	529	8.26%	502	7.98%
Hispanic	37,536	28.81%	148	32.17%	2,242	35.00%	2,310	36.73%
Unknown	35	0.03%	0	0.00%	0	0.00%	0	0.00%
Asian	13,509	10.37%	70	15.22%	780	12.18%	748	11.89%
American Indian/Alaska Native	2,196	1.69%	5	1.09%	110	1.72%	101	1.07%
Pacific Islander	1,295	0.99%	2	0.43%	62	0.97%	56	0.89%
Multiracial	1,193	0.92%	6	1.30%	107	1.67%	103	1.64%

OPTN Region 5 State Data	1988 to Date	2021(as of 1/31/21)	2020	2019
CA	90,167	307	4,393	4,326
AZ	15,146	50	865	975
UT	6,244	39	326	301
NV	4,364	26	289	199
NM	3,115	7	138	152



SRTR Facility Comparison Heart Transplant

Possible impact on length of Stay

- TP RATES- People transplanted per 100 years between 7/2018 and 3/2020
 - National 92.4
 - USC 166.2
 - Mayo 186.7
 - IHC 72.6
- Number of transplant July 2019 to June 2020
 - National 3,658 (91.2-89.8%) (Jan to December 2020)
 - USC 22 (100%)
 - UCLA 45 (93.2%)
 - Mayo 46 (95.0%)
 - IHC 19 (94.3%)
- Waitlist mortality Rates-People who died per 100 years of waiting at this hospital
 - National 9.2
 - USC 14.3
 - Mayo 4.1
 - IHC 14.8
- Time to transplant- Percentage of people who received a transplant within three years July 2014 to June 17
 - National 65.2%
 - USC 61.0%
 - Mayo 74.6%
 - IHC 69.1



SRTR Facility Comparison Lung Transplant

- TP RATES- People transplanted per 100 years between 7/2018 and 3/2020
 - National 189.5
 - USC 54.4
 - UCLA 165.9
 - St. Joseph's 872.3
 - University of Utah 445.9
- Waitlist mortality Rates-People who died per 100 years of waiting at this hospital
 - National 15.3
 - USC 15.3
 - UCLA 16.0
 - St Joseph's 9.8
 - University of Utah 0.0
- Number of transplant 7/2019 to 6/2020 (1 year survival)
 - National 2,539 (81.2-91.5%)(Jan to December 2020)
 - USC 39 (94.0%)
 - UCLA 107 (93.0%)
 - St. Joseph's 111 (93.2%)
 - University of Utah 9 (82.1%)
- Time to transplant- Percentage of people who received a transplant within three years July 2014 to June 17
 - National 78.4%
 - USC 43.2%
 - UCLA 88.1%
 - St. Joseph's 96.5%
 - University of Utah 85.7%



Useful Links for Transplant Data

Scientific Registry of Transplant Recipients (SRTR)

Find and compare transplant programs.

<https://www.srtr.org/>

United Network for Organ Sharing (UNOS)

Works with the Federal Government to manages the national organ transplant system. Website provides data trends, organ transplant policies, patient information, and much more!

<https://unos.org/about/>

Optum Centers of Excellence (COE)

The Optum Clinical Science institute uses strict COE criteria to evaluate transplant facilities nationally.

<https://www.myoptumhealthcomplexmedical.com/gateway/public/transplants/providers.jsp>





Questions/Suggestions

