

Since the first organ transplant was performed in Boston in 1954, organ transplantation has become a viable option for many individuals with chronic disease. Most recently, in July 2014, vascularized composite allografts (VCAs) were added to the list of organs available for transplant (VCAs are body parts such as hands, joints, face, etc.). Unfortunately, there are never as many organs available for transplant as there are patients in need. There are also questions of organ compatibility (blood and tissue types) and patient priority (access to organs based on greatest medical need) (United Network for Organ Sharing [UNOS], 2015b). A total of 11,777 people donated one or more organs from January through September 2016, yet 119,923 people were awaiting a transplant as of November 9, 2016 (Organ Procurement and Transplantation Network (OPTN), 2016).

ORGAN PROCUREMENT AND TRANSPLANTATION NETWORK (OPTN)

Due to the need to organize data and match donors with patients, the United Network for Organ Sharing (UNOS) developed an organ matching computer database in 1977. Revolutionizing and nationalizing the organ transplant network, this system facilitated access for both doctors and patients to information about organ availability and need (UNOS, 2015b). The Organ Procurement and Transplantation Network was established through a congressional act in 1984. “The act established the Organ Procurement and Transplantation Network (OPTN) to maintain a national registry for organ matching. The act also called for the network to be operated by a

private, non-profit organization under federal contract.” UNOS is the only organization under federal contract to operate the OPTN since its inception (OPTN, n.d.b).

TRANSPLANT RECIPIENTS

Patients with medical conditions that may warrant an organ transplant are referred by their physician to a transplant center. A “transplant team,” which typically includes a transplant coordinator, physician, surgeon, financial coordinator, insurance case manager, and social worker, evaluates the patient (Transplant Living, 2016b). If the patient is determined to be a good transplant candidate, his/her medical profile is added to the national organ transplant waiting list which is maintained by the OPTN and operates using UNOS computer databases. This waiting list is not a ranked list but rather a “pool” of transplant candidates (UNOS, 2015a).

ORGAN TRANSPLANT WAITING LIST		
<i>Organ Type</i>	<i>US</i>	<i>TX</i>
	As of 11/09/16	As of 11/04/16
Kidney	99,313	10,259
Liver	14,628	1,637
Lung	1,436	152
Heart	4,058	420
Kidney & Pancreas	1,836	108
Pancreas	968	44
Intestine	273	1
Heart & Lung	43	2
ALL	119,923	12,623
(OPTN, 2016)		

ORGAN DONORS

An organ donor is someone from whom at least one organ or tissue is recovered for the purpose of transplantation. Donors are designated either living or deceased. Living donors can give a kidney, or a portion of a lung, liver, pancreas or intestine (UNOS, 2015c).

ORGANS RECOVERED FOR TRANSPLANT JANUARY 1, 2016 – SEPTEMBER 30, 2016			
Organ	Living Donor	Deceased Donor	Total
Kidney	4,147	13,443	17,590
Liver	252	6,016	6,268
Lung	0	3,278	3,278
Heart	1	2,412	2,413
Pancreas	0	1,002	1,002
Intestine	0	120	120
ALL	4,400	26,271	30,671
(OPTN, 2016)			

Donor registries are confidential databases that provide access to authorized individuals confirming consent to organ donation. Until recently, not all donor registries were deemed “consensual.” First Person Consent legislation was required in order for a donor registry to be considered as giving consent to a hospital to harvest organs for transplantation. The Revised Uniform Anatomical Gift Act, effective September 1, 2009, now serves that purpose and a donor may give consent by authorizing a statement or symbol indicating the intent to donate on driver’s licenses and identification cards as well as wills and other documents (Statues, n.d.). All 50 states (and the District of Columbia) currently have donor registries, and they are all tied to the Department of Motor Vehicles for easy registration access to the public (U.S. Department of Health and Human Services [HHS], 2011). Additionally, the Act states that “in the absence of an express, contrary indication by the donor, a person other than the donor is barred from making, amending, or revoking an anatomical gift of a donor's body or part if the donor made an anatomical gift” (Statues, n.d.).

MATCHING DONORS AND RECIPIENTS

There are five steps involved in the process of matching a donor with a recipient:

- An organ is donated: organ size, blood type, tissue type, genetic information about the donor and the condition of the organ are reported in UNOS.
- UNOS computes a list of compatible patients: the computer ranks candidates by compatibility with the organ and other allocation policies.
- The most compatible candidate’s transplant center is notified.
- The transplant center’s team of doctors must refuse or accept the organ. This is decided on the basis of: medical criteria, organ condition, candidate condition, staff and patient availability, and organ transportation. By law, the medical team has only one hour to accept or decline the organ.
- The organ is either accepted or declined. If it is declined, it is offered to the next most compatible candidate, and so on until it is placed with a recipient.

(OPTN, 2015)

Each organ type has a different set of criteria for distribution taking into consideration the unique medical considerations involved.

Generally, priority is given to patients that are:

- Closest biological match
- Most urgent, medically
- Children
- Close proximity
- Longest wait time (often used as tie breaker)

(UNOS, 2015a)

Since the waiting list is a “pool” of candidates versus an actual list, waiting times for individuals can vary widely. The table below depicts how long current transplant candidates have been on the list:

TRANSPLANT WAITING TIME (ALL ORGANS) (AS OF NOVEMBER 4, 2016)		
	<i>National</i>	<i>Texas</i>
All time	131,183	12,623
< 30 days	4,698	503
30 to <90 days	8,256	827
90 days to < 6 months	10,262	963
6 months to < 1 year	16,889	1,649
1 year to < 2 years	26,568	2,470
2 years to < 3 years	20,206	1,901
3 years to < 5 years	24,890	2,502
5 or more years	19,414	1,808
(OPTN, 2016)		

As the table illustrates, almost 50% of those waiting for transplant have been waiting for two years or more. The primary reason for such a long waiting period is the shortage of organs available for transplantation. Every day, 22 people on the waiting list for an organ transplant die due to lack of available organs (OPTN, n.d.a). From January through September 2016, 4,337 people died awaiting an organ transplant, 422 of whom were in Texas (OPTN, 2016).

PATIENTS WHO DIED AWAITING TRANSPLANT JANUARY THROUGH SEPTEMBER 2016	
Organ	# of Patients
Kidney	2,967
Liver	914
Heart	244
Lung	129
Kidney & Pancreas	60
Pancreas	9
Heart & Lung	6
Intestine	8
Total	4,337*
*includes individuals awaiting multiple organs (OPTN, 2016)	

PEDIATRIC TRANSPLANTS

Children are not exempt from the need for an organ transplant. 5.8% of all the transplants from January through September 2016 were received by children under the age of 18. On November 4, 2016, 2,139 pediatric patients (ages 17 and below) were on the waiting list for one or more organs. During that same period,

pediatric transplants accounted for 2% of all transplants performed in the San Antonio area (OPTN, 2016). As a result of the Children's Health Act of 2000, the OPTN adopted several measures to address organ allocation to pediatric patients (General Accounting Office, 2001). Since then, many specific aspects of organ allocation to children were updated:

- Kidneys from donors less than 35 years old are offered to pediatric patients first
- Changes in liver allocations giving additional preference to pediatrics were made in 2012
- Pediatric donor lungs are now offered first to pediatric patients
- Pediatric candidates awaiting heart transplants are given priority and preferential allocation of all pediatric hearts since 2009

(HHS, 2013)

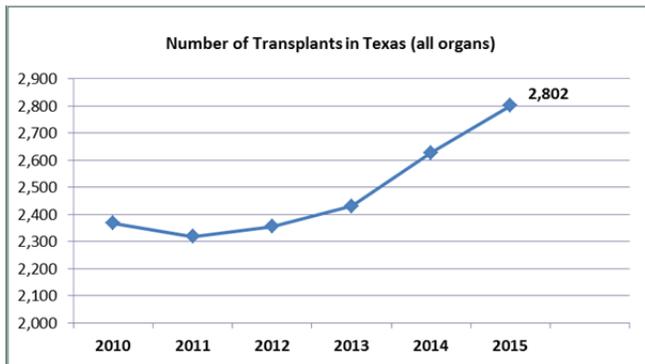
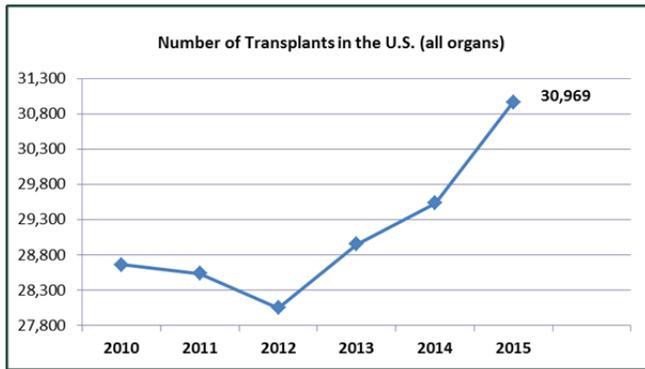
Typically, pediatric patients fare as well or better than adult patients. Five year survival rates for children less than one year old are the best among all types of renal transplants; children between 6-10 years have the best outcomes among liver recipients and the best five year survival rate of all heart transplants (OPTN, 2015).

TRANSPLANTS IN TEXAS

Since the year 2000, transplants both in Texas and in the United States have been steadily increasing, reducing the number of deaths in people awaiting transplants. In 2015, the national number of transplants performed reached an all-time high of 30,969.

Unfortunately, it came nowhere near reaching the 119,000 people on the waiting list (OPTN, 2016).

According to data from the OPTN (2016), the following graphs represent trends in the growth of transplant surgeries performed both nationally and in Texas from 2010 through 2015.



Currently, three of the 26 Texas facilities that actively perform organ transplants are in the San Antonio area:

- University Hospital (UH),
- Methodist Specialty and Transplant Hospital (MSTH)
- CHRISTUS Santa Rosa Medical Center (CSRMC).

TRANSPLANTS PERFORMED IN SAN ANTONIO JANUARY – SEPTEMBER 2016			
Center	Adult (Ages 18+)	Pediatric (Ages <1-17)	Total
CSRMC	5	0	5
MSTH	341	2	343
UH	145	19	164
Total	491	21	512

(OPTN, 2016)

SURVIVAL

Organ recipients who survive organ transplants are generally able to live normal lives with the aid of medications. One major risk associated with post-transplant patients is organ rejection, which occurs when the body of the patient does not recognize the new organ and considers it a threat. The body begins to attack it with white blood cells, attempting to destroy the organ as it would any other invader such as a virus. To reduce the likelihood of an organ being rejected, immunosuppressants are administered post-transplant surgery in order to stop the immune system (white blood cells) from attacking the organ. However, this does not exclude the possibility of the body ultimately rejecting the organ, infections, or other illnesses (Transplant Living, 2016a). Health precautions and regular doctor visits are essential to reduce the risk of further health complications.

AVERAGE SURVIVAL RATES ADULT TRANSPLANT PATIENTS		
Organ	1 Year	5 Years
Kidney- Deceased donor	94.3%	80.5%
Kidney- Living donor	97.9%	89.4%
Pancreas	94.2%	79.8%
Pancreas after Kidney	95.0%	84.6%
Liver- Deceased donor	86.2%	71.9%
Liver- Living donor	90.1%	77.6%
Intestine	78.6%	46.4%
Heart	87.1%	71.1%
Lung- Deceased donor	83.3%	47.3%
Lung- Living donor	85.8%	35.8%
Heart and Lung	65.2%	38.1%

(OPTN, 2016)

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