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Since the first organ transplant was performed in Boston in 1954, organ transplantation has become a viable option for many individuals with chronic disease. 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). A total of 14,399 people donated one or more organs in 2007, yet more than 100,000 people are currently awaiting a transplant (Organ Procurement and Transplantation Network (OPTN), 2008).

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, 2008). UNOS is now under federal contract to operate the Organ Procurement and Transplant Network (OPTN). OPTN was established through a congressional act in 1987 “to improve the effectiveness of the nation's organ procurement, donation and transplantation system by increasing the availability of and access to donor organs for patients with end-stage organ failure. The Act stipulated that the Network be a non-profit, private sector entity comprised of all U.S. transplant centers, organ procurement organizations and histocompatibility laboratories” (OPTN, 2003).

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, and social worker, evaluates the patient. 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 (Transplant Living, 2008b).

Organ Transplant Waiting List		
Organ Type	US	TX
	<i>As of 6/20/08</i>	<i>As of 6/13/08</i>
Kidney	76,299	6,322
Liver	16,212	1,489
Lung	2,111	159
Heart	2,600	297
Kidney & Pancreas	2,309	141
Pancreas	1,622	46
Intestine	235	4
Heart & Lung	103	9
ALL	101,491	8,467

(OPTN, 2008)

Organ Donors

An organ donor is “someone from whom at least one organ or tissue is recovered for the purpose of transplantation” (OPTN, 2003). Donors are designated either living or deceased.

Organs Recovered for Transplant 2006			
Organ	Living Donor	Deceased Donor	Total
Kidney	6,434	10,212	16,646
Liver	287	5,849	6,136
Lung	4	1,397	1,401
Heart	1	2,146	2,147
Pancreas		1,304	1,304
Intestine	3	57	60
ALL	6,729	20,965	27,694

(U.S. Department of Health and Human Services (USDHHS), 2007)

Donor registries are confidential databases that provide access to authorized individuals confirming consent to organ donation (OPTN, 2003). All but three states currently have donor registries, many of them tied to the Department of Motor Vehicles for easy registration access to the public (UNOS, 2007). It should also be noted that not all donor registries are deemed “consensual.” First Person Consent legislation is required in order for a donor registry to be considered as giving consent to a hospital to harvest organs for transplantation. In Texas, first person consent was recently accepted. In addition, the statewide donor registry commenced operations on September 1, 2006. (UNOS, 2007).

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.

(Transplant Living, 2008a)

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, 2008a)

Since the waiting list is a “pool” of candidates versus an actual list, waiting times for individuals can vary widely. OPTN (USDHHS, 2007b) reports waiting times as a function of the amount of time it takes to provide transplants for a percentage of the total number of new registrants (by organ). For example, in 2006, it took 368 days to provide kidney transplants to 25% of those waiting. Since the total number of registrations during that time was 31,495, this means that 7,873 individuals received transplants within one year of registration while 23,622 were still waiting. The 25th percentile of time to transplant is reported here because most organ specific groups did not reach the 50th percentile.

Time to Transplant 25th Percentile 2006		
Organ Type	Registrants	Days
Kidney	31,495	368
Liver	11,036	36
Lung	1,774	31
Heart	3,034	26
Kidney & Pancreas	1,671	132
Pancreas	404	111
Intestine	317	64
Heart & Lung	77	142

(USDHHS, 2007b)

The primary reason for such a long waiting period is the shortage of organs available for transplantation. Every day, 18 people on the waiting list for an organ transplant die as a result of complications with their malfunctioning organ (National Women’s Health Information Center, 2006). In 2006, 7,191 people died awaiting an organ transplant (USDHHS, 2007c).

Rate of Patients Who Died Awaiting Transplant in 2006	
Organ	Rate per 1,000 patients
Intestine	265.5
Heart	151.5
Heart and Lung	142.7
Liver	116.8
Pancreas and Kidney	97.4
Lung	97.2
Kidney	70.1
Pancreas	47.3
Pancreas after Kidney	30.8
Total	93.9

(USDHHS, 2007c)

Pediatric Transplants

Children are not exempt from the need for an organ transplant. In fact, the number of organs transplanted in pediatric patients grew 20% during the last decade. In 2006, 2,124 pediatric patients (ages 17 and below) were on the waiting list for one or more organs (USDHHS, 2007a). Pediatric transplants accounted for 5% of all transplants in the San Antonio area (USDHHS, 2006). 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). Some of the specific aspects of organ allocation to children were updated in 2004:

- Kidneys from donors less than 35 years old are offered to pediatric patients first
- Three changes in liver allocations were made, giving preference to pediatrics
- Pediatric donor lungs are now offered first to pediatric patients

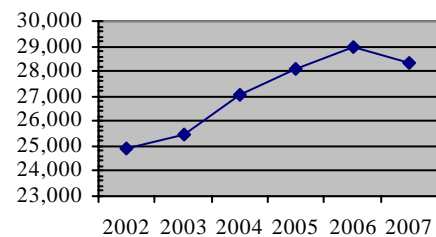
(USDHHS, 2006)

Typically, pediatric patients fare as well or better than adult patients. Five year survival rates for children less than 11 years old are the best among all types of renal transplants and children between 6-10 years have the best outcomes among liver recipients. Unfortunately, adolescent children (11-17 years) have the lowest five year survival rates across all organs and infants (0-1) have higher waiting list mortality (USDHHS, 2006).

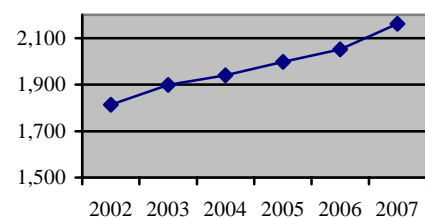
Transplants in Texas

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 2006, the national number of transplants performed reached an all time high of 28,291 but it came nowhere near the reaching the 98,263 people on the waiting list that year (OPTN, 2008). According to data from the OPTN (2008), the following graphs represent trends in the growth of transplant surgeries performed both nationally and in Texas.

Number of Transplants in the U.S. (all organs)



Number of Transplants in Texas (all organs)



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

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

Although Wilford Hall Medical Center and Brooke Army Medical Center were both listed as active transplant centers, transplants have not been performed at these facilities since 1997 and 2001, respectively.

Center	Adult (Ages 18+)	Pediatric (Ages <1-17)	Total
CSRMC	46	2	48
MSTH	195	1	196
UH	168	25	193
Total	409	28	437

(OPTN, 2008)

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, 2008c). Health precautions and regular doctor visits are essential to reduce the risk of further health complications.

Organ	1 year	5 years
Kidney- Deceased donor	90.0%	67.5%
Kidney- Living donor	97.3%	80.2%
Pancreas	80.1%	50.6%
Pancreas after Kidney	78.5%	58.1%
Liver-Deceased donor	82.3%	67.6%
Liver- Living donor	84.1%	68.6%
Intestine	73.4%	36.9%
Heart	87.3%	73.2%
Lung	82.3%	49.7%
Heart and Lung	75.0%	73.2%

(USDHHS, 2007)

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