

# Outlook of Organ Transplantation in Iran

## A Time for Quality Assessment

Alireza Heidary Rouchi,<sup>1</sup> Fatemeh Ghaemi,<sup>1</sup> Mohammad Aghighi<sup>2</sup>

<sup>1</sup>Department of Transplantation and Special Diseases, Ministry of Health and Medical Education, Tehran, Iran  
<sup>2</sup>Iranian Tissue Bank and Research Center, Tehran University of Medical Sciences, Tehran, Iran

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Organ transplantation as an undeniable life-saving therapeutic modality fundamentally requires infrastructure, devoted and trained professionals, and positive public attitude to be set up in a well-organized manner at the national level. In addition to sharing achievements and reviewing the increasing trend of transplanted organs in the past 12 years following legislations in Iran, this report raises some concerns from the point of transplantation outcome view.

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### INTRODUCTION

The vital importance of organ transplantation is a long-standing and widely debated issue and indeed it is an indisputable fact. There is no country in the world where has found a solution for organ shortage dilemma. The idea of finding a crucial remedy for organ shortage seems far-fetched at present. Nonetheless, reviewing the trend and finding the probable obstacles which prevent achieving the desired organ donation rate from deceased donors can be a realistic approach to shorten the ever-increasing distance between need and supply points. Moreover, to have an impartial sight on more than a decade activities on organ donation and transplantation from deceased donors can help involved professionals to upgrade the system and improve the survival rates.

### ORGAN DONATION

Following enactment of organ transplantation from deceased donors in 2000, data shows an almost favorable annual increasing trend in donation rate, while there is still a remarkably long distance between currently achieved and optimal donation rates. Having considered the data derived from the National Donation and Transplantation Registry of the Ministry of Health and Medical Education, the donation rate in the first year of legislation was 0.25 per million population (pmp), whereas

following 12 years of activities, the organ donation rate from heart-beating deceased donors was 5.6 pmp in 2011 (Table 1). This sluggish growth rate on the one hand and the huge gap between need and supply on the other hand (Table 2) require new and to some extent enforced interventions.

**Table 1.** Brain Death Donation Rate

Year	Donation Rate, PMP
2000	0.25
2001	0.6
2002	0.75
2003	1.25
2004	1.6
2005	1.7
2006	1.8
2007	2.3
2008	2.9
2009	2.9
2010	4.1
2011	5.6

**Table 2.** Patients on Waiting List and Organ Transplantation Procedures in 2011

Organ	Waitlisted Patients	Transplants
Kidney	17910	2273
Liver	1280	395
Heart	351	82
Lung	220	18
Pancreas	200	24

In 2011, the number of new cases diagnosed with end-stage renal disease (ESRD) was 4864 (64 pmp) and the number of kidney transplantations from all sources (living related, living unrelated, and deceased donors) was 2273 (30 pmp; Tables 3 and 4). Accordingly, we can think of 2 donation rates: first, the benchmark donation rate (35 pmp, as the highest achieved rate in the world, so far) to offer kidney allograft for all new ESRD cases (assuming that 95% of organ donors are kidney donors), and second, the optimal donation rate, as 16 pmp, to perform all current kidney transplantations (30 pmp) from deceased donors and terminate the ethically controversial program in which kidneys

**Table 3.** Donor Sources for Kidney Transplantation in 2011

Donor Source	Transplant, %
Deceased	34
Living related	6
Living unrelated	60

**Table 4.** Kidney Transplantation Procedures by Donor Source From 2000 to 2011

Year	Donor Source	
	Living	Deceased
2000	1389	32
2001	1550	70
2002	1585	96
2003	1473	167
2004	1563	207
2005	1721	209
2006	1615	243
2007	1600	311
2008	1545	381
2009	1740	401
2010	1636	592
2011	1502	771

**Table 5.** Dialysis Patients

Year	Dialysis Patients	
	Hemodialysis	Peritoneal Dialysis
2000	7830	133
2001	8310	85
2002	9344	132
2003	10228	235
2004	11250	496
2005	12921	680
2006	14216	986
2007	15592	1137
2008	16190	1150
2009	16475	1122
2010	18325	1393
2011	20988	1558

are recovered from living unrelated donors.<sup>1</sup>

This donation rate (16 pmp) will also supply all our real need for other organs, but still the never-disappearing waiting list for kidney transplantation will be growing steadily (considering 22 546 dialysis patients in 2011; 297 pmp; Table 5).<sup>1,2</sup>

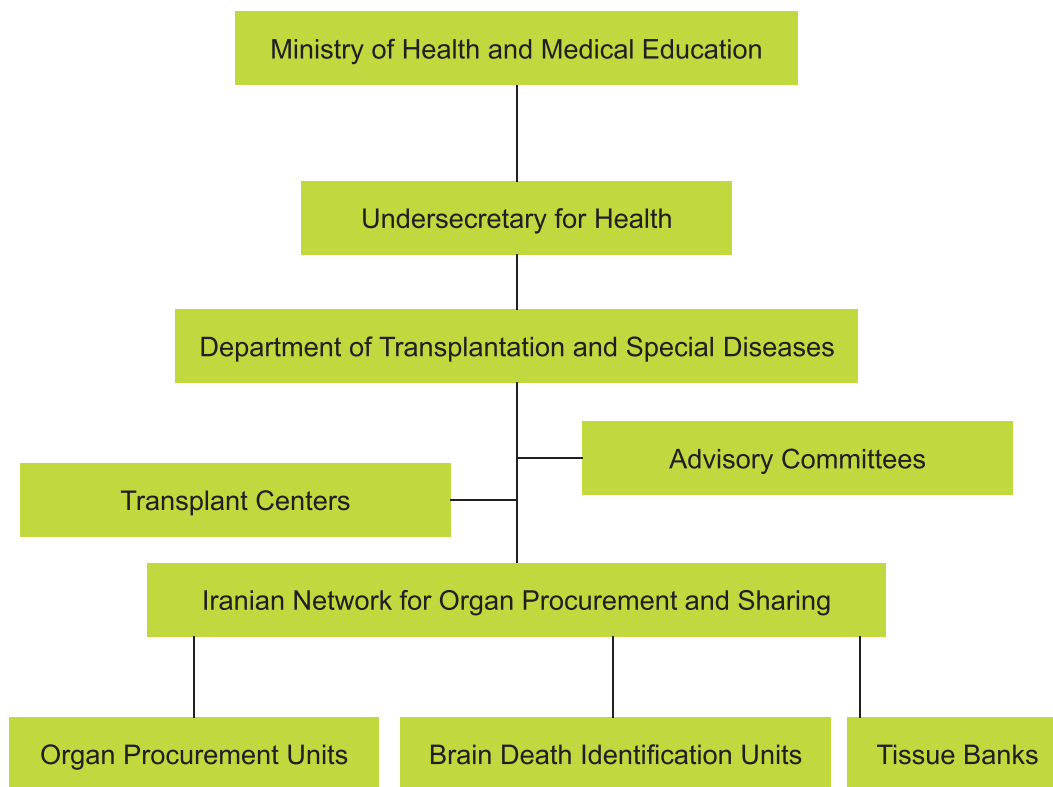
### BASICS OF ORGAN DONATION PROGRAM

To have a better insight into the currently functioning system on donation and transplantation, the organizational structure is shown in the Figure, which illustrates the different levels of a network involved in organ procurement and transplantation from deceased donors. The process starts from brain death identification units and then organ procurement units, which are in charge of donor identification, referral, brain death determination, donor evaluation, donor management, and eventually organ recovery.<sup>3</sup> This first step or trigger of the program is mainly dependent on 2 determinants: first, the number of possible brain-dead cases reported by intensive care units, which by itself is dependent on the presence of active organ procurement units in a province or medical university, and second, the refusal rate (the possibility of rejection of the option of donation by families).

Given these concerns, 2 figures come up to justify mostly the low donation rate. The first reason is there are many priorities for medical universities that make them less active in this program. Data shows that just 25% of all medical universities are active and have almost acceptable performance in organ procurement program. It simply means 75% of medical universities, regardless of their potentials to be an organ procurement unit, are inactive in this field. The second reason is the high refusal rate (73%),<sup>1</sup> in spite of continuous public awareness programs (locally and nationally) using different media.

### ORGAN TRANSPLANTATION

Table 6 shows the trend of organ transplantation since 2000. From the beginning up to and including 2011, a total of 31 838 kidney transplantation, 1607 liver transplantation, 421 heart transplantation, 76 lung transplantation, and 104 pancreas transplantation procedures are performed in the country. Regarding kidney transplant, data reveals the number of 15 100 recipients (2011)



Organizational Structure of Organ Procurement and Transplantation System

**Table 6.** Cadaveric Organ Transplantation From 2000 to 2011

Year	Brain Dead Donors	Kidney Transplant	Liver Transplant	Heart Transplant	Lung Transplant
2000	20	32	5	9	1
2001	43	70	16	14	4
2002	52	96	23	11	0
2003	87	167	49	21	2
2004	114	207	66	17	2
2005	118	209	61	16	4
2006	128	243	108	18	7
2007	165	311	162	37	3
2008	203	381	197	52	11
2009	212	401	210	46	7
2010	311	592	307	82	17
2011	380	742	350	65	22

with functioning allografts, while there is no such data available for other organs. This lack of reliable information concerning the outcome of transplantation of other organs unavoidably means an impaired follow-up program.

Having reviewed all previously shared data makes us raise some arguments merely aiming to improve the transplantation program in terms of better outcome:

1. In a 2001 national study conducted by the Ministry of Health of Iran on 12 605 kidney

recipients (received kidney from 1968 to 2000), the graft survival rates for the 1st, 2nd, and 3rd years were 89.1%, 87.67%, and 85.9%, respectively. Scarcely one can find published multi-center studies in this concern and for much longer time. The available studies are neither multi-center nor with representative samples to assess methodologically the quality of the program in terms of graft loss (survival rates) or rejection episodes.

2. Although there is little concern nowadays

about the degree of human leukocyte antigen mismatch if the ABO blood type and T-cell cross-match are compatible,<sup>3,4</sup> yet it is not academically “of no importance.” However, although it is not done as an important way of tissue compatibility, human leukocyte antigen compatibility has been proven during the past 20 years of experience of kidney transplantation by our transplant centers.

3. There is no study (in a long-term scheme) which proves whether or not the less lasting time of kidneys procured from deceased versus living donors is almost comparable to other experiences.
4. Lack of long-term follow-up is a repeating story for other organs like the kidney.

### CONCLUSIONS

Transparency, unbiased assessment of the process, sharing the pitfalls, finding appropriate solutions, and implementing the solution are all the steps of improving such an advanced multidisciplinary and complicated but rewarding life-donating program.

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### CONFLICT OF INTEREST

None declared.

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Correspondence to:

Fatemeh Ghaemi, MD

Department of Transplantation and Special Diseases, Ministry of Health and Medical Education, Tehran, Iran

E-mail: ghaemi@health.gov.ir

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