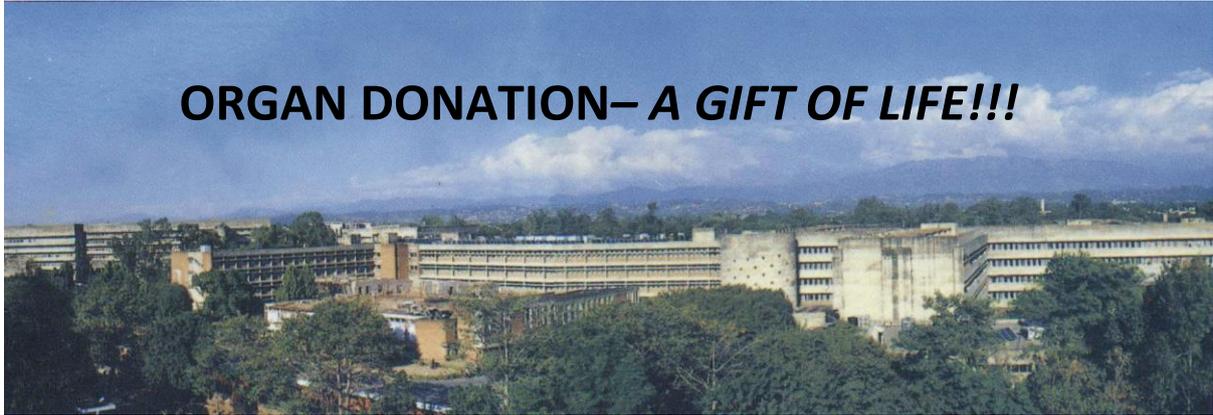


ORGAN DONATION– A GIFT OF LIFE!!!



¹RK Dhiman, ¹Ajay Duseja, ²SN Mathuriya, ³Sanjay Jain, ⁴Arunanshu Behera, ⁵Vivekanand Jha,
⁷Rohit Sapra, ⁸Sudeep Naidu, ⁹Sudhir Dewan, ⁶Ashish Sharma, ⁵Vinay Sakhuja

Departments of ¹Hepatology, ²Neurosurgery, ³Internal Medicine, ⁴Surgery, ⁵Nephrology and ⁶Renal
Transplant Surgery, Postgraduate Institute of Medical Education & Research, Chandigarh;
⁷Advocate; ⁸Army Hospital (R&R); ⁹MOHAN Foundation

Department of Hepatology

Postgraduate Institute of Medical Education & Research

Chandigarh

www.hepatologypgi.org

Tel: (0172) 2756335

In 1994, the Government of India passed the Transplantation of Human Organs Act that legalized the concept of brain death and, for the first time, facilitated organ procurement from heart beating, brain dead donors.

Organ donation takes healthy organs and tissues from one person for transplantation into another. Experts say that the organs from one donor can save or help as many as 50 people. Organs you can donate include: kidneys, heart, liver, pancreas, intestines, lungs, skin, bone and bone marrow, cornea, etc.

1. ORGAN DONATION IN INDIA

The success of solid organ transplantation today is mostly governed by the availability of

suitable organs. The limited supply of organ donors, whether living or deceased, is a pervasive problem in all areas of the world where solid organ transplantation is practiced.

Problem of Organ Shortage

In India the awareness on organ donation is very less but the need of organ is very much higher. Donating organs is a great deed as donating life to other. It is estimated that in India every year over 175,000 people are diagnosed to have kidney failure and would be needing a transplantation. Due to non-availability of organs only about 5,500 kidney transplants are done. The same thing happens for eye and other organ donations as well.

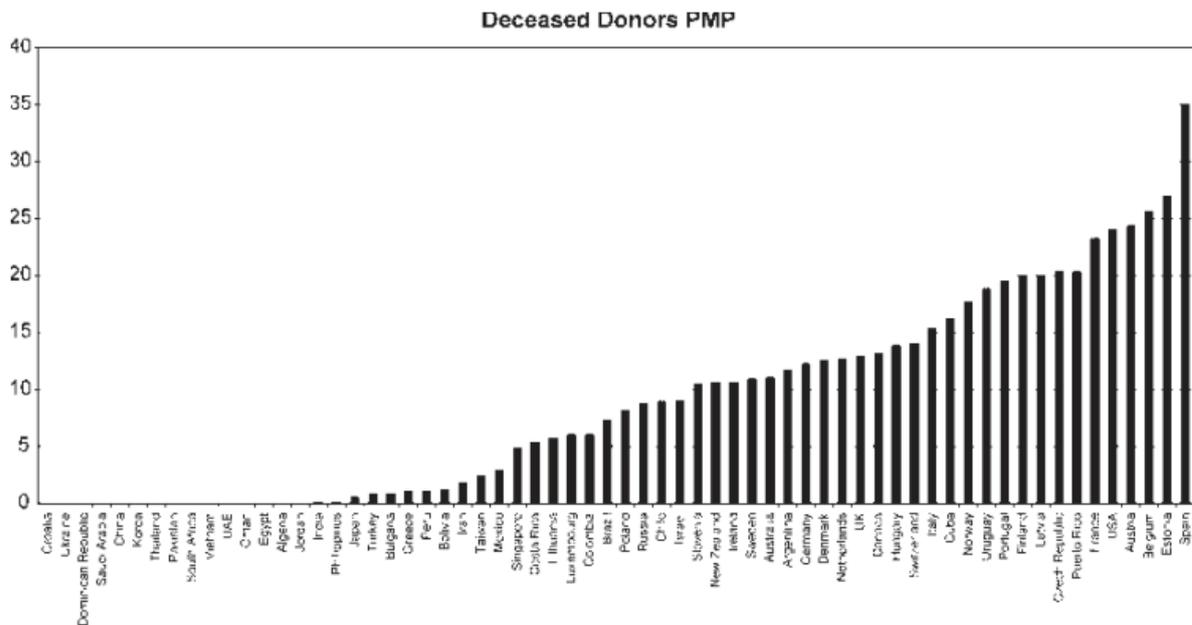


Figure: Rates of deceased donors per million population (PMP) by country for years 2004 to 2006. Note that many countries where deceased donor transplants are performed do not have publicly available results (Seminar Liv Dis 2009;29:19-38).

Organ shortages are a global problem, but Asia lags behind much of the rest of the world. The organ donation rate from dead bodies in India is estimated to be a minuscule 0.5 per lakh people, although India has among the world's highest number of deaths from road accidents. Hong Kong's organ donation rate is less than 50 per lakh, while it's 250 per lakh in the United States and 350 per lakh in Spain. The situation is likely to get worse. As India's population

lives longer, organ diseases and problems like diabetes, obesity and hypertension - the main causes of kidney and liver failure - are expected to rise, creating even greater demand for organ donations.

Liver transplantation is the only effective treatment for end-stage liver disease. The operative success rate is >95% and the 5-year survival is over 70-80%. At the same time more than 200 000 people die in India every year

from liver failure without any hope of receiving a transplant. There are a very small number of rich Indians who could spend Rs 20-30 lakh for a liver transplant in a private sector that is too with a living donor. A cadaveric liver transplant in a public sector should cost less than one-fourth the price of a liver transplantation in a private sector.

Why donate?

There are only few acts in life that are more noble than donating our organs after the death. Donating eyes after we are gone from this world is the closest that we can come to giving life to another individual. Eye donation is a wonderful legacy we can leave behind. Your eyes would continue to see the wonders of the world. Eye donation can give precious sight to two individuals. Instead of getting charred or returning to the dust after death, the your eyes can breathe life into others.

Similarly donating other organs such as liver, kidneys, heart, lungs, etc can be life saving because life is not possible without proper functioning of these organs. Donating these organs after the brain-death to needy-ones is equal to 'Donating a Life' to someone to whom you even do not know.

Misconceptions and Myths that Surround Organ Donation (Myo Clinic)

For years, myths and misconceptions have prevented people signing up as donors.

Myth: The organ donor's doctors will not try as hard to save them in an emergency situation.

Fact: The number one priority of the doctor is to save your life not somebody else. Also, the doctor taking care of you will have a specialty where he has no affiliation with the transplantation team.

Myth: The doctor will take out your organs before you are actually dead.

Fact: This is not true and the doctors actually have to take more precautions to see if donors are dead. There are guidelines that are followed before taking organ and tissue donations. These guidelines do not apply if you are not an organ donor.

Myth: If you are an organ or tissue donor you will not be able to have an open casket funeral.

Fact: Organ and tissue donation does not interfere with having an open casket funeral. The organs and tissues from a deceased donor are removed during an operation in an operation theatre and then the incisions are closed. The deceased body is treated with respect and guidelines are followed.

Myth: Organ donation is against my religion.

Fact: All major faiths support organ donation as a humanitarian act. Organ donation is not against any major religion. This includes Hinduism, Catholicism, Protestantism, Islam, and most branches of Judaism. Also, all major religions view organ donation as an act of charity. Hinduism and Buddhism also foster the spirit of selfless giving. Nothing in Hinduism prohibits a person from donating his or her organs.

Myth: The family of the deceased donor will have to pay all expenses towards organ donation.

Fact: Hospital does not charge towards expenses related to organ or tissue donation.

2. WHAT IS BRAIN DEATH?

Brain death literally means that all the functions which are fully governed by the brain are lost, which includes respiration as well, but at the same time other organs like liver, kidney and other viscera etc. keep functioning. Heart also maintains it's activity but at a lower ebb (due to loss of sympathetic tone and decreased myocardial contractility). Patient continues to sustain with these functions for some time with aid of the supportive measures i.e. assisted ventilation and circulatory maintenance on inotropes.

Death is defined as 'the irreversible loss of the capacity for consciousness (consciousness is essential to life) combined with irreversible loss of the capacity to breathe'. This concept of death incorporates both a philosophical and physiological approach. Death of the organism as a whole is sufficient, not death of the whole

organism (putrefaction). This emphasizes that all death is in fact brain-stem death. Diagnosis of brain-stem death is synonymous with eventual death of the whole organism.

To define that the patient does not have a brain function, the patient should be totally unresponsive. Apnea tests fulfilling all prerequisites, requirements and duration induces no spontaneous respiratory efforts. The diagnosis of brain-stem death requires fulfillment of three clinical criteria: 1. Establishment of a specified condition which has led to irreversible brain damage, 2. Exclusion of potentially reversible causes of coma and apnoea and 3. Absence of brain-stem reflexes.

The following factors are ruled out: posturing or seizures, metabolic factors including hypernatremia, hypothermia, depression drugs, remediable endocrine disturbances, muscle relaxants, neuro muscular blocking agents, and potential recoverable factors.

There had been many bedside signs and the investigations to prove that the patient is brain dead. Subsequently based on these signs and investigatory results criteria have been established by various countries. Almost all the functions of the brain to be assessed with the criteria formulated by different countries.

Brain stem reflexes to be assessed include following cranial nerve functions: 1. Pupillary responses to light, 2. Corneal reflex, 3. Vestibulo-ocular reflex, 4. Cranial motor response to pain, 5. Gag reflex and 6. Cough reflex

No respiration on standard apnea test fulfilling all requirements and criteria.

There are bit different criteria for brain death in infants and children

3. DECLARATION OF BRAIN DEATH

Declaration of brain death is a clinical judgment based on definite criteria of brain stem death as laid down in the Act. In adults, there are no published reports of recovery of neurologic

function after a diagnosis of brain death using the criteria. Presently, a team of four doctors as authorized by the hospital examine the person twice at a minimum interval of six hours before the declaration. These physicians are independent of the organ transplant team. The team comprises of a R.M.P. of the Hospital in which brain-stem death has occurred, a R.M.P. nominated from the panel of names approved by the Appropriate Authority, a neurologist/neurosurgeon nominated from the panel of names approved by Appropriate Authority and a R.M.P. treating the aforesaid deceased person. The components of the declaration include patient's details, details of any illness or accident that led to irreversible brain damage, timing of the illness or accident and timing of onset of irreversible coma.

Examination of patients includes exclusion of reversible causes of coma- intoxication (alcohol), depressant drugs, relaxants (neuromuscular blocking agents), primary hypothermia, hypovolaemic shock and metabolic or endocrine disorders. Tests for absent of brain stem functions include establishment of coma, cessation of spontaneous breathing, determination of pupillary size, absent pupillary light reflexes, absent Doll's head eyes movement, absent bilateral corneal reflexes, no motor response in any cranial nerve distribution, any responses to simulation of face limb of trunk, absent gag reflex, absent cough reflex (tracheal), absent eye movements on caloric testing bilaterally and performance of apnoea tests as specified. There should not be any respiratory movements on testing.

4. WHO CAN BE A ORGAN DONOR ?

Types of Organ Donation

Most people can be organ donors. Many people donate an organ upon their death or when they are brain dead. These people are called 'deceased organ donors'. But a person can donate certain organs while he or she is still living. These people are called 'living organ donors'.

Deceased Organ Donor

Most deceased organ donors are brain dead. These people have suffered complete and irreversible loss of all brain functions and thus are clinically and legally dead. Mechanical ventilation and medications keeps their heart beating and blood flowing to their organs. Deceased donor can donate any organ that is medically suitable for transplantation into a recipient.

Living Organ Donor

To be a living donor, a person must be in good health and must also be physically fit. He/she should be free from long-term diseases such as diabetes or high blood pressure, free from mental health problems and should be between the ages of 18 and 60. Living donors can donate a kidney, a lobe (part) of a lung, half of a liver (It will grow back to normal size in both the donor's and in the recipient's body over time), a section of intestine or a part of pancreas. There are Laws governing acceptability of a living donor in our country.

How Can You Be an Organ Donor?

If you are 18 years of age or older, you may become a donor by signing the donor card in the presence of two witnesses and carrying it with you at all times. If you are under 18, you may become a donor if your parent or legal guardian gives consent.

Deceased Donor - Surgical Removal of the Organs

In deceased organ donation, the donation of biological tissue or an organ of the human body, are removed in a surgical procedure following a determination, based on the donor's medical and social history, only the organs which are suitable for transplantation. One donor can benefit as many as 50 people. Needed organs include the heart, kidneys, pancreas, lungs, liver, and intestine. Tissues than can be transplanted to help others are heart valves, bone, bone marrow, skin, tendons, and corneas The removal of organs and tissues is a sterile surgical procedure performed in the operating room, just as any surgery is done. Donation neither disfigures the body nor changes the way a person looks. Donation costs nothing to the donor's family.

5. TRANSPLANT COORDINATOR

The needs of patients seeking transplants are diverse and complex, and best met by a multidisciplinary team. Collaboration is essential for a thorough evaluation and comprehensive care of the patient. The transplant coordinator is responsible for ensuring that all elements of evaluation and postoperative process are in place. Transplant coordinators take a central role and act as liaison among other team members. The goal is that the evaluation process is thorough, and the postoperative period uncomplicated.

The evaluation of potential transplant candidates begins before the initial visit. The transplant coordinator obtains information and develops evaluation plan. A bond is formed at this initial meeting between the potential recipient and the coordinator. The transplant coordinator is in a unique position to become acquainted with and understand the individual needs and preferences of the patient. Specific psychological/medical problems that may interfere with a successful transplant outcome are identified. Social support is assessed at this time. Family members, as well as potential donors, are encouraged to attend visits at the transplant centre. It is also the duty of the transplant coordinator to compile the results of the evaluation for presentation to the candidate selection committee. Education remains the most challenging and core responsibility of the transplant coordinator. This process begins at the initial meeting and continues through the life of the transplant. The transplant coordinator teaches the recipient about the need for immunosuppression, potential side effects and adverse reactions of anticipated medications. Most transplant centres require 3 months of follow-up care before transferring patients to the referring physician for continued care. The coordinator notifies potential candidates when their names are placed on the waiting list for an organ. Candidates are also evaluated periodically by the coordinator to assure ongoing candidacy. When an organ is offered to the transplant team, it is usually the transplant coordinator who notifies the potential candidate. At this time, it is important to assess

the patient for immediate contraindication to transplant and to notify the transplant physician.

Patient management issues are especially evident in the post-transplant period. Compliance with follow-up visits and medication is stressed. Before discharge, signs and symptoms of rejection, adverse reactions to medications, recommended routine screening, vaccine recommendation, exercise, and healthy living guidelines are reviewed. As the patient recovers, new information may be introduced. The transplant coordinator is available 24 hours per day at most transplant centres for physician and patient communication. Transplant coordinators have a diverse and challenging responsibility to provide continuous care to the transplant patient. They are an integral part of the transplant team. Many patient issues that are not evident to other team members come to the transplant coordinator's attention. For this reason the transplant coordinator serves a vital role and link in the success of the transplant process.

6. LEGISLATION AND REGULATION

The Transplantation of Human Organs & Tissues Act, 1994 (amended up to 2011) regulates the removal, storage, and transplantation of human organs and tissues for therapeutic purpose. The said Act prohibits and prevents commercial dealings in human organs.

The authority to sanction organ donation is vested with the donor himself, who being not less than 18 years of age, in writing in presence of minimum two witnesses, one of whom is a near relative, may authorize removal of any human organ or tissue or both after his death. Removal of any human organ or tissue or both can also be done in absence of written authority, provided the donor before his death and the near relative, after the death of donor express no objection in this regard.

In case of brain-stem death, removal can be undertaken after such death is certified by a Board of medical experts and if such person is less than 18 years of age, a written authority of either of the parents is obtained. Removal of any human organ or tissue or both should not be

carried out if the body is or is likely to be required for an inquest.

The Amending Act of 2011, casts a duty upon a Doctor working in a hospital to ascertain from the patient admitted in ICU or from his near relative if any prior authority for removal has been given and if no such authority has been given, then to make the patient or near relative aware of the option for donation. Now, grandfather, grandmother, grandson and granddaughter are included in the definition of 'near relative'.

In case of unclaimed bodies lying in a hospital or in a prison for more than 48 hours from time of death, the person in-charge of the hospital or prison may give authority for removal of any human organ or tissue or both if such person has reason to believe that the near relative of the deceased is not likely to come forward to claim the body.

Where death has been caused by accident or any other unnatural cause, the near relative can given authority for removal, provided the deceased person before his death had not revoked his authority or express any objection for removal and also provided such human organ or tissue is not required for post-mortem examination for medico-legal or pathological purposes.

The removed human organ or tissue is to be preserved as per current accepted scientific methods.

A living donor, who is not mentally challenged, may donate for transplantation his human organ or tissue or both to his near relative. However, where the donor or recipient being near relative is a foreign national or where the donation is for affection or attachment towards the recipient, such donation is permissible only upon prior approval of the Authorisation Committee. The human organ or tissue or both of a deceased donor may be transplanted into any needy recipient.

The Amending Act, 2011 also allows 'living donor swapping' in the case of near relative, to tide over biological incompatibility between the

donor and recipient, but with prior approval of the Authorisation Committee.

The Hospital or Tissue Bank must be registered under the Act for purpose of removal, storage or transplantation of human organs or tissues. Law prohibits removal or transplantation for non-therapeutic purpose and casts a duty upon the Doctor to explain all possible effects, complications and hazards of the process to the donor and recipient.

For the purposes of this Act, an Appropriate Authority and Advisory Committee have been appointed and constituted, wherein, the Appropriate Authority is empowered to grant, renew, suspend or cancel registration to a Hospital or Tissue Bank ; enforce prescribed standards ; inspect Hospitals or Tissue Banks and investigate complaint and take appropriate action. The Advisory Committee is to aid and advise the Appropriate Authority and maintain a national registry of donors and recipients.

7. DRIVING LICENSE: OPTION FOR ORGAN DONATION

World Health Organization (WHO) in its first ever Global Status Report on Road Safety in 2010 revealed that India registered over 1,30,000 roadside deaths annually; the country has overtaken China and now has the worst road traffic accident rate worldwide. In India alone, the death toll rose to 14 per hour in 2009 as opposed to 13 the previous year, according to the latest report of National Crime Records Bureau or NCRB. While trucks and two-wheelers were responsible for over 40 per cent of deaths, peak traffic during the afternoon and evening rush hours is the most dangerous time to be on the roads.

Driving license might be a mean to express the desire to be an 'Organ Donor'. Individuals should only be allowed to get new driving licence unless they answer a question about whether they want to donate their organs after death (Yes/No). This may not only improve awareness about organ donation but also 'Organ Donation' per se.

8. AORTA

The Director General Armed Forces Medical Services (India) approved the establishment of Armed Forces Organ Retrieval & Transplantation Authority (AORTA) at Army Hospital (RR) on 22 Mar 2007. The functions of AORTA include 24-hour referral service for organ donation, maintenance of donor registry, family counselling and support and coordination of organ retrieval and transplantation activity between various service hospitals and civilian organizations.

Organ Sharing

The liver, at least one kidney and the corneas could be utilized at AHRR. Departments of Gastroenterology and Nephrology may ensure that suitable recipients from each blood group are available at short notice. If no suitable recipient is available at AHRR, the Director of AORTA will contact other Service Hospitals / National bodies for the same. The organs will be handed over to other organizations / hospitals only after obtaining a handing /taking over certificate.

Pledging of Organs and Tissues

AORTA has opened an organ donor registry, wherein, one can pledge the organs during life. Carrying a donor card, like the ones shown here in English and Hindi, only represents an intent to donate. However, organ donation can only take place with the consent of the next of kin.

The office of AORTA is located at:-

Department of Gastroenterology
Level 5 , Army Hospital Research & Referral
Dhaura Kuan, New Delhi-110010
Tele: 233-38133
E-mail: aorta.ahrr@gmail.com

9. MOHAN FOUNDATION

MOHAN (Multi Organ Harvesting Aid Network) Foundation is a not-for-profit, non-governmental organization started to promote organ donation in 1997 in Chennai by philanthropists and medical professionals led by Dr. Sunil Shroff. It is a registered NGO and has offices in Chennai, Hyderabad, Visakhapatnam, Coimbatore, Chandigarh, Delhi NCR,

Bengaluru and USA. MOHAN Foundation was started by a group of like-minded and concerned medical and non-medical professionals committed to increasing the reach of the Transplantation of Human Organs Act.

MOHAN Foundation comprises four core groups that carry out the different activities of the foundation. These groups are: (i) Public Education for Organ Donation, (ii) Indian Transplant Newsletter (ITN), (iii) Patient Support Group (PSG) and INOS (Indian Network for Organ Sharing) in Tamil Nadu & Andhra Pradesh

Address: 6A, Industrial Area Phase-II, PANCHKULA 134113, Tel: +91-9779135408, 8437210055 Email:mohanfound@gmail.com, Website: www.mohanfoundation.org

10. ORGAN TRANSPLANTATION - A SUCCESS STORY

The first successful human renal allograft transplant was performed by Dr Murray in 1954 between identical twins. This led to development of a completely new field of organ transplant surgery in medical sciences. Not only this development has saved thousands of lives, it has also improved our understanding of immune mechanisms & infections, concept of death, organ preservation etc.

The kidney was the first and remains the commonest organ to be transplanted but with the passage of time, there has been an ever increasing list of organs which have been used successfully for transplantation. This list now

includes liver, heart, lungs, pancreas, small intestine, bone marrow, face, limb, joints, ovaries etc. The main reason for this evergrowing list is the success of the transplantation. With the advent of modern immunosuppressive drugs, the one year survival rates of most solid organ transplants exceed 90% and there are patients who have survived more than 30 years after heart transplant and kidney transplant. Majority of these patients are in the prime of their life. Along with the survival benefit, transplant also provides them freedom from the restrictions imposed by their medical illness and allows them to lead a normal productive life. These excellent survival rates and improved quality of life after transplantation has led to an explosive demand for organs which has not been matched by supply of organs. In US alone, there is a huge waiting list of 1 lakh patients awaiting transplants and the poor availability of organs remains the Achilles heel of transplantation. Unfortunately, the organs have to be obtained from humans and most of them can only be obtained after brain death before the cessation of circulation so that organs are in a healthy & usable condition. In future, organs might be grown in the lab or it might be possible to use organs from some animals but till that time, transplantation remains dependent of the altruistic act of organ donation.

In short, organ transplantation has made rapid strides in the last 60 years and changed its status from an experimental procedure to a well established treatment modality.