

Organ Transplantation, Types, Rules, Law, Challenges, UPSC Notes

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Transplantation is a surgical process to replace organs, tissues, or even cells with healthy ones from the same person or someone else. A **skin graft** is an example of a transplant from one part to another of the same person's body. Organ and tissue transplantation and donation can save lives or restore function to improve the quality of life. Transplantation between two persons is usually rejected due to the immune response from the recipient and he/she needs **immunosuppressive medication** for the rest of life.

Sushruta, the **father of surgery**, is credited with performing the first plastic surgery operations including full-thickness skin grafts around 600 BC. In modern medicine, the first verifiably documented skin transplant occurred in 1869.

About Organ Transplantation

Organ transplantations save lives in patients affected by terminal organ failures and improve quality of life. **Organs that can be transplanted include** the heart, kidneys, liver, lungs, intestine, and pancreas.

- **Risk of rejection:** A transplant between two people can cause a rejection process where the **immune system** of the recipient or host attacks the foreign donor organ or tissue and destroys it.
 - To reduce the risk of the donated organ/s being rejected, the recipient will almost certainly need to take immunosuppressive medication for the rest of their lives.
- **Factors considered in organ matching and allocation:** While the specific criteria differ for various organs, **matching criteria generally include:**
 - blood type and size of the organ(s) needed
 - time spent awaiting a transplant
 - the relative distance between the donor and recipient
 - the medical urgency of the recipient
 - the degree of immune-system match between donor and recipient.
- **Xenotransplantation:** Xenotransplantation is any procedure that involves the transplantation of cells, tissues, or organs from a **non-human animal source**.

Types of Organ Donation

There are two types of organ donations – **Living Organ Donations and deceased Organ Donations**.

- **Living Organ Donation:** This is when a doctor retrieves an organ from a healthy living person and transplants it into the body of a recipient who is suffering from end-stage **organ failure**.
 - This is commonly done in cases of liver or **kidney failure** (because the liver can regenerate and a donor can live on one kidney).
 - Living donors are classified as either close relatives or distant relatives/friends, and so on.
- **Deceased Organ Donation:** This is an organ donation from someone who has been declared brain dead by a team of authorised doctors.
 - When there is an irreversible loss of consciousness, the absence of **brain stem** reflexes, and the irreversible loss of the ability to breathe, a person is said to be brain stem dead.
 - In India, organ donation after death is only permitted in cases of **brain stem death**.

Organ Transplantation in India

Every year, India performs the third-highest number of transplants in the world. Despite this, only 4% of patients in need of a liver, heart, or kidney transplant receive one.

- **Status of Organ Transplantation in India:** According to the Health Ministry, the number of donors (including the deceased) increased only slightly from 6,916 in 2014 to approximately 16,041 in 2022.
 - With over **three lakh** patients on the waiting list and at least 20 people dying each day waiting for an organ, India's scarcity of organ donations, particularly deceased donations, has taken a heavy toll.
- Capacity for undertaking rare transplants e.g. Pancreas, Intestine, hand, limbs, Lung, and Uterus has developed within the country, besides a significant enhancement in capacities for undertaking relatively common transplants of the Kidney, Liver, and Heart.
- **Organ Allocation in India:** In India, health is a state subject, and each state has its own **Nodal Agency** in charge of human organ allocation.

- Nodal agencies are linked to all state transplant hospitals, with each hospital having its website linked to the State Nodal Agency. Hospital waiting lists for all organs are automatically linked to the **State Nodal Agency**.
- The State Nodal Agency needs to be linked to the concerned **Regional Organ & Tissue Transplant Organisation (ROTO)** which in turn is to be linked to the **National Organ & Tissue Transplant Organisation (NOTTO)**. This will form the **National Waiting-List Registry**.

Steps taken by the Government

- **National Organ Transplant Program (NOTP):** The **Directorate General of Health Services** is implementing the National Organ Transplant Programme to carry out the activities as per the amendment Act.
 - The objectives include training manpower, promoting organ donation from deceased persons, establishing new and strengthening the existing organ transplant infrastructure facilities, and establishing and operationalising the Digital National Organ & Tissue Donation and Transplant Registry.
- **Legal Framework:**
 - Transplantation of Human Organs Act (THOA) was enacted in 1994.
 - The Act was amended in 2011. The amended Act is now named the **Transplantation of Human Organs and Tissues Act (THOTA), 1994**.
 - The purpose of the Act is to regulate the removal, storage, and transplantation of human organs for therapeutic purposes and to prevent commercial dealings in human organs and tissues.
 - The Act recognises **Brain Stem death** as a **legal death** in India.
- **National Organ Transplantation Guidelines:** The Government of India has adopted the policy of “**One Nation, One Policy**” for Organ Donation and Transplantation.
 - **No requirement of domicile:** The policy removes the requirement of domicile of the state for registration of patients requiring organ transplantation from deceased donors. Such patients can now register for organ transplantation in any state in the country.
 - **No upper age limit:** The upper age limit of **65 years** for eligibility for registration to receive deceased donor organs has now been removed. Now, a person of any age can register to receive a deceased donor organ.
 - **No registration fees:** The ministry has also requested that states not impose any fees on patients seeking registration for organ transplantation, as it violates the **2014 Transplantation of Human Organs and Tissues Rules**.
- **National Organ & Tissue Transplant Organisation:** It was established under the **National Organ Transplant Program**.
 - It is mandated to establish a network for organ procurement and distribution and to maintain a national registry for surveillance of organ donation and transplantation in the country.
 - It has components of national networking, a national registry, a **national-level biomaterials centre**, and a facility for cadaver organ and tissue retrieval operation theatre (in Safdarjung Hospital, New Delhi).

- **Organ Retrieval Banking Organization:** It coordinates the process of **cadaver organ donation** that is, organ donation after death and transplantation.
 - It is located in AIIMS, Delhi.
- **Awareness drives:** Many activities are organised across the country to generate awareness, such as the celebration of **Indian Organ Donation Day (IODD)** annually, seminars, workshops, debates, sports events, walkathons, participation in marathons, and NOTTO Scientific Dialogue 2023.
- **Angdaan Mahotsav:** As a part of “Angdaan Mahotsav”, initiated in July 2023, various awareness programmes on deceased donor organ donation are being organised across the country.

Challenges in Organ Transplantation in India

According to the NOTTO, there were 15,561 organ transplants in India in 2022, with the vast majority (12,791) being living donors. Nearly 90% of the transplantation occurs in private hospitals.

- **Demand-supply mismatch:** Because of a demand-supply mismatch, more people are waiting for organs. We need to improve the brain death certification process, as well as harvest and distribute organs.
- **Issues with xenotransplantation:** There is a risk of potential infection of recipients with both recognized and unrecognised infectious agents and the possible subsequent transmission to their close contacts and into the general human population.
- **Lack of incentives:** In the public sector, there is no incentive given to surgeons and **anesthetists** to spend long hours performing a liver transplant and then dealing with the possible complications.
- **Cultural beliefs:** Cultural and religious beliefs play a key role in people’s hesitancy for organ donation.
- **Lack of infrastructure:**
 - Despite increased organ donation efforts, not all hospitals are adequately equipped to handle organ transplantation and retrieval processes.
 - Transplant centres are even sparser in India's rural areas. That's one fully-equipped hospital for every 4.3 million citizens.
- **Transplantation programmes:** It is primarily the responsibility of the state governments to take steps to increase deceased organ donation, develop infrastructure, and monitor deaths.
 - The data regarding the number of deaths due to the non-availability of human organs on time for transplantation is not maintained centrally.

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