

7.Organ Transplantation- Science & Technology

India Registers Landmark Progress in Organ Donation & Transplantation- NOTTO at the Helm of a National Transformation

India's organ donation landscape is undergoing a significant transformation, driven by the Prime Minister's advocacy and the strategic efforts of NOTTO. While the country has achieved a fourfold increase in transplants and global leadership in hand transplants, challenges like low deceased donor rates and regional disparities persist, requiring sustained awareness and infrastructure expansion to ensure equity and transparency.

1. Context

Prime Minister's Address- The Prime Minister of India, through his *Mann Ki Baat* address, has repeatedly highlighted the critical importance of organ donation.

Momentum- This high-level advocacy has given renewed momentum to the organ donation movement across the country.

2. About Organ Transplantation and Donation

Definition- A surgical procedure where an organ, tissue, or group of cells is removed from one person (donor) and surgically transplanted into another person (recipient).

Impact- A single individual can save up to 8 lives by donating vital organs such as the heart, lungs, liver, kidneys, pancreas, and intestines.

Current Status in India-

1. Donation Rate- Remains one of the lowest globally, standing at under 1% relative to the population.
2. Global Ranking- Despite low rates per capita, India ranks third globally in terms of the total volume of organ transplants performed.

3. India's Milestones in Organ Transplantation

India has achieved significant progress under the aegis of the National Organ and Tissue Transplant Organization (NOTTO).

Key Achievements (Comparison- 2013 vs. 2025)

Metric	Status
Total Transplants	Increased fourfold from < 5,000 (2013) to nearly 20,000 (2025).
Deceased Donor Share	Around 18% of transplants are now from deceased donors.
Family Participation	Over 1,200 families donated organs of loved ones in 2025.
Citizen Registration	More than 4.8 lakh citizens have registered for donation via the Aadhaar-based verification system since Sept 2023.
Specialized Expertise	Developed expertise in complex transplants like Heart, Lung, and Pancreas.
Global Leadership	India performs the highest number of hand transplants worldwide.

4. National Organ and Tissue Transplant Organisation (NOTTO)

Establishment- A National-level organization set up under the Directorate General of Health Services, Ministry of Health and Family Welfare (MoH&FW).

Mandate- Develops policy guidelines, conducts training, monitors activities, maintains a national databank, and coordinates inter-regional allocations.

Role and Functions of NOTTO

Allocation- Manages a real-time organ allocation system to enable inter-state cooperation.

Registry- Expands the National Organ & Tissue Transplant Registry to ensure transparency and traceability.

Capacity Building- Strengthens SOTTOs (State) and ROTTOs (Regional) organizations.

Standardization- Aligns transplant protocols with global best practices.

Logistics- Promotes Green Corridors to facilitate rapid organ transport across states.

5. Legal Framework Governing Organ Transplantation

A. Transplantation of Human Organs Act (THOA), 1994

Purpose- To regulate the removal, storage, and transplantation of human organs and prevent commercial dealings.

Key Provisions-

1. Legal recognition of brain death.
2. Allows donation from living donors (specifically "near relatives").
3. Establishment of Authorization Committees to approve cases involving non-near relatives.
4. Strict prohibition of commercial organ trade with penal provisions.

B. Transplantation of Human Organs (Amendment) Act, 2011

Scope Expansion- Renamed to *Transplantation of Human Organs and Tissues Act (THOTA)* to include tissues.

Definition Update- Broadened the definition of 'near relative' to include grandparents and grandchildren.

Mandates-

1. Mandatory registration of hospitals conducting transplants.
2. Provision for swap transplantation (paired exchange).
3. Stronger penalties for illegal trade.

C. Transplantation of Human Organs and Tissues Rules, 2014

Operationalization- These rules operationalize the 2011 Amendment Act.

Key Features-

1. Detailed Brain Death Certification process.
2. Consent procedures for deceased donation.
3. Guidelines for Authorization Committees.
4. Establishment of the national registry and allocation system.

D. Brain Death Certification Process

Requires certification by a Board of Four Medical Experts-

1. Treating Physician.
2. Neurologist/Neurosurgeon.
3. Medical Administrator.
4. Another Registered Medical Practitioner.

6. Technology-Enabled and Ethical Ecosystem

Digitalized- Implementation of Aadhaar-based verification and online registries to prevent fraud.

Transparent- Adoption of standardized allocation protocols to ensure fairness.

Efficient- Enhanced coordination between hospitals and authorities, reducing wastage of harvested organs.

Ethical- Strong emphasis on equity and the prevention of commercial trade, reflecting good governance and accountability.

7. A People-Centric Movement

Social Initiative- The movement has evolved into a mass social campaign involving Panchayati Raj Institutions, youth, and schools.

Infrastructure- District and block-level administrations are now more engaged, with improved hospital readiness for organ retrieval.

Cultural Shift- Families are increasingly viewing organ donation as a final act of compassion, transforming their grief into hope for others.

8. Challenges and The Road Ahead

Challenges

Low Donor Rate- Deceased donor rate remains low compared to developed nations.

Disparities- Significant regional disparities exist in transplant infrastructure.

Awareness- Need for sustained public awareness to dispel myths.

Vigilance- Constant need to guard against the commercialization of organs.

Way Forward

Government Aim- To increase deceased donation rates and expand infrastructure in underserved regions.

Integration- Deepen digital integration and national coordination for seamless allocation.

Core Philosophy- The success of NOTTO reflects India's commitment to placing human dignity, compassion, and equity at the centre of public health policy.

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