

# Organ Donation and Transplantation



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INDIA

# Task Force members on Organ Donation & Transplantation

## Chairman of Task Force

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## Members

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**Dr. Vijay Tadia** Assistant Professor, Department of Hospital Administration, PGIMER, Chandigarh

## Acknowledgments

NOTTO, ROTTO (North)-MOHAN FOUNDATION

## Organ Transplantation saves Lives

Large gap between transplants and end stage organ failure

India 3rd country in world in total Tx in a year after USA and China

Live donor well established (India) vs Deceased donor

Brain stem Death- clarity/poor counselling of patients

Audit lacking - Notified Brain stem deaths

## Organs Donated - National Asset

Body Donation- after death for medical research & education

## Definitions

### Brain Stem Death

Stage when all functions of brain stem are permanently & irreversibly ceased

### Circulation Death (DCD)

Irreversible cessation of circulatory & respiratory functions

### Criteria for Brain Stem Death

- History/ Neurological examination
- Absent pupillary, Corneal, Cough & Gag reflexes
- Absent Oculovestibular reflex & Oculocephalic test

- Failure to  $\uparrow$  HR by  $>5$  beats/ min after 1-2 mg Atropine
- Absent respiratory efforts
- Apnea tests

Exclude shock, Hyponatremia Temp  $< 32^{\circ}\text{C}$

Anesthetic agents, Barbiturates, Encephalitis/ GB syndrome

Severe Hypophosphatemia, HE, Uremia

Interval observation period 6 Hrs

4 Physicians (2 approved by Govt. to declare BSD)

Neurologist/ Neurosurgeons/ Supdt of Hospital

Treating physician

Legal time of death- 2nd BSD certification

## Deceased Donation

Organ donation by deceased- certified- BSD and DCD

## Living donation

Living donor limited renal + hepatic donation

## Organ Transplantation

Implantation of organ from donor to recipient

Organ Retrieval, Preservation & Transportation

## Transplantation of Human Organs and Tissues Act 1994 (THOTA)

Deceased organ Donation

Organ retrieval, storage and transplantation for therapeutic purpose & prevent commercial dealing

## National Organ Transplant Programme (NOTP)

Organization & financial framework for promoting deceased organ & tissue donation

## First Kidney Transplant

World 1954

India 1st Dec 1971 CMC Vellore

Dr Johnny & Mohan Rao

Longest surviving recipient Mr. Krishna Ram Sharma 45yr

Mr. Edith Helm 76 yr

Youngest recipient 17 mo old boy



## First Liver Transplant

1963 Thomas Starzl

1998 Dr Rajshekhar Successful Transplant

Longest surviving Ms Collado 37 years

Youngest Ms Schuttike 5 days old Prof Rela

Survival 70% at 5 yr  $\approx$  30 yrs

Liver has unique capacity to regenerate & grow up to 90% removed

## Heart Transplant

World	3 <sup>rd</sup> Dec 1967	Dr. Christian Barnard
India	17 <sup>th</sup> Feb 1968	Dr. Prafulla Sen
	1994 successful	Prof Venugopal - AIIMS
Longest Survival	21 yrs India	39 years World

## Lung Transplant

World 1963 Dr James Hardy

India 2012 Dr Jnanesh Thacker

Longest survival 30 y World/success rate 70-85 %

Lung most difficult to Tx, susceptible to infection

## Advantages of Living Donation

Transplant faster - elective- family members

Shortens need for dialysis

Better outcomes than deceased

Positive emotional experience

Back to work in 3-4 weeks

Perioperative mortality 0.03% - 0.06 %

morbidity 10%

Anaesthesia & Major surgery

## Organs that can be Transplanted after BSD

Heart & lungs	4-6	hrs
Liver	6-12	hrs
Kidneys	30	hrs
Intestine	6	hrs
Pancreas	6	hrs

One deceased donor can save eight lives

Once retrieved- transplanted urgently

Once donation- all cost borne by hospital

## Tissues that can be donated

Cornea

Bones

Skin

Veins

Muscles

Tendons

Ligaments

Cartilage

Heart Valves

Donate within 6 hrs

## Barriers to Organ Donation

No magic bullet to increase OD

Reluctance in India

lack of training in approaching relatives

Reservations on Brain Stem Death

## Societal issues

Unaware how to register

Fear & mistrust adverse media publicity

Body disfigurement

Inadequate knowledge & reservations of Brain stem death

## Hospital issues

Lack of knowledge on clinical criteria for brain death & legal issues  
has improved amongst hospital staff after education

## Multipronged strategy

Spain vast transplant coordination

Network of Doctors + Nurses

Family counsellors

Education, Healthcare infrastructure and Human Resources

## Fatal road accidents 169000 India (2022)

60% associated head injury      young mostly 2 wheelers

20% state highways                  65% straight roads T-junction

## CVA    Brain Haemorrhage

Common prevalence In India 105-152/Lac person/ year

KamalaKannan et al ITMR 2017:146

## Organ donation rates    per million

Spain	49.61	Thailand	3.66
US	36	Saudi	3.77
UK	24	India	0.52



# Need of Organ Transplant and availability of donors

<b>Organs</b>	<b>Estimated Need (per year)</b>	<b>Transplant performed – 2023 (Tentative) (Living+Deceased+Domino)</b>
<b>Kidney</b>	<b>1.75 - 2lakh</b>	<b>12550 (10920 + 1630 + 0)</b>
<b>Liver</b>	<b>40,000-50000</b>	<b>4171 ( 3336 + 828 +7)</b>
<b>Heart</b>	<b>50,000</b>	<b>221</b>
<b>Lung</b>	<b>-</b>	<b>191</b>
<b>Pancreas</b>		<b>21</b>
<b>Small Bowel</b>		<b>14(1+13)</b>
<b>Total</b>		<b>17168 (14257+2904+7)</b>

## National Networks

**National Organ and Tissue Transplant Organization (NOTTO)** Delhi

**Regional (ROTTTO)** Mumbai, Kolkata, Chandigarh, Chennai,

Guwahati (5-7 states)

**State (SOTTO)** 14

Nodal agency- allocation- Hospitals- website- waiting lists

Integrate efforts of states, Institutes, Healthcare Professionals,

NGOs & community

Kidney/ Lungs- one to hospital & common pool

Govt to Govt Hospital      Pvt to Pvt Hospital

Trans state allocation- ROTTO/ NOTTO informed

3 lac patients wait for organ donations

Greater awareness- one deceased donor saves several lives

20 patients die each day waiting for an organ

600 Medical Colleges & 20 AIIMS- one donation/ year- enough??

US- 10% only get in time

Ministry- done away with domicile rule

easing rules of withdrawal of life support

facilitate organ transplant across country

Paediatric cadaveric donation is extremely rare

Family coming to term with loss with split liver Hindu-2023

Statistics indicates 70-75% donors are females, wives, mothers & sisters

Organ donation pledge need to translate to actual donations

Increase awareness

Brain dead 14 yr old Delhi 1.5 yr old Bhubaneswar

Many families lack suitable living donor

Hence rely on deceased donors

## Organ Donation

Living- near relative- Spouse, Son, Daughter, Brother, Sister, Parents,  
Grandparents, Grandchildren

Distant relatives- need permission of State Authorisation committee

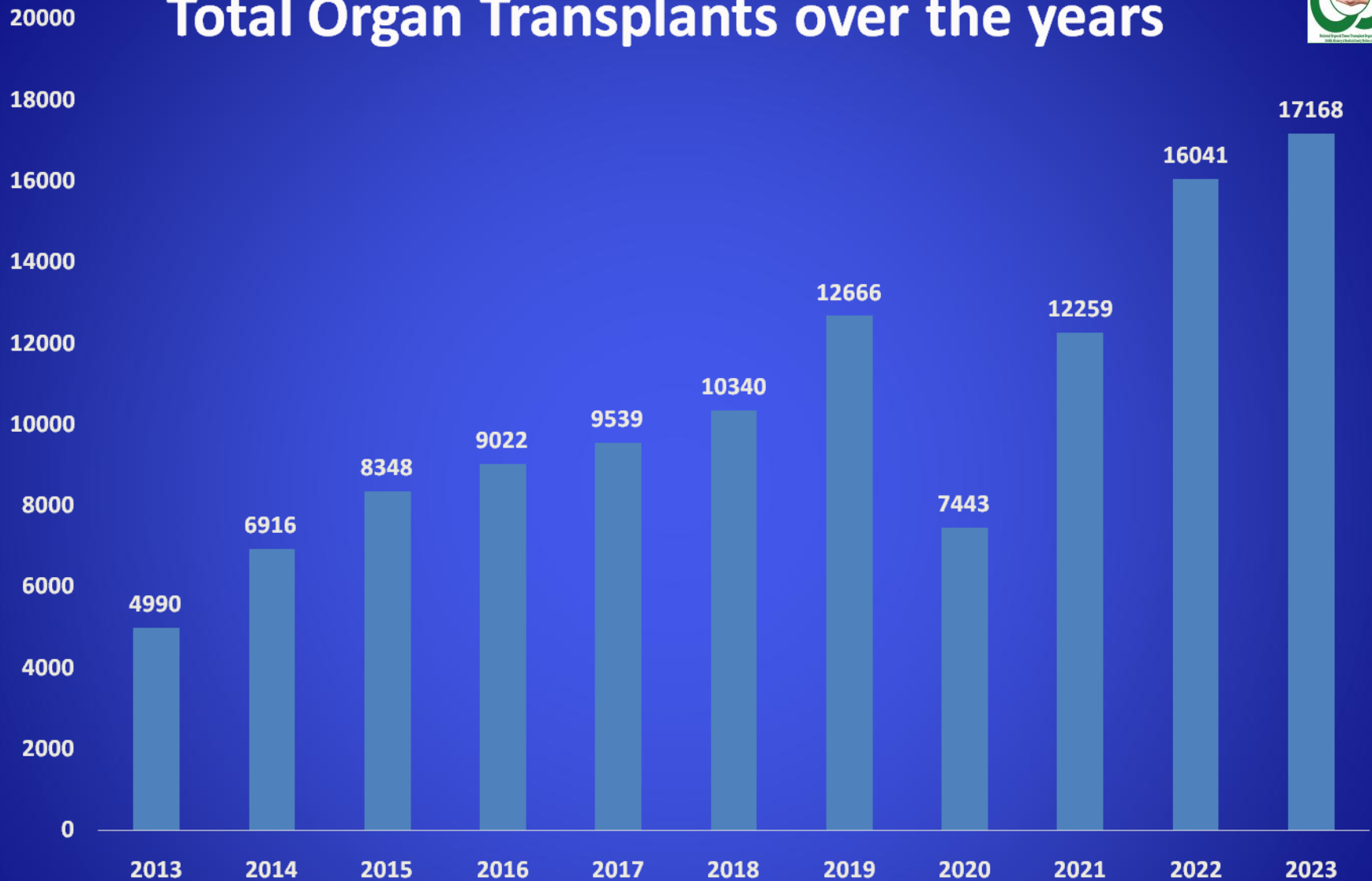
Work towards an environment where everyone donates organs  
after death, so no living person need to donate

Donation requires coordination between Operating teams

NOC from Police & intimate Forensic expert



# Total Organ Transplants over the years



# Total Living Donor Transplants



# Total Deceased Donor Transplants



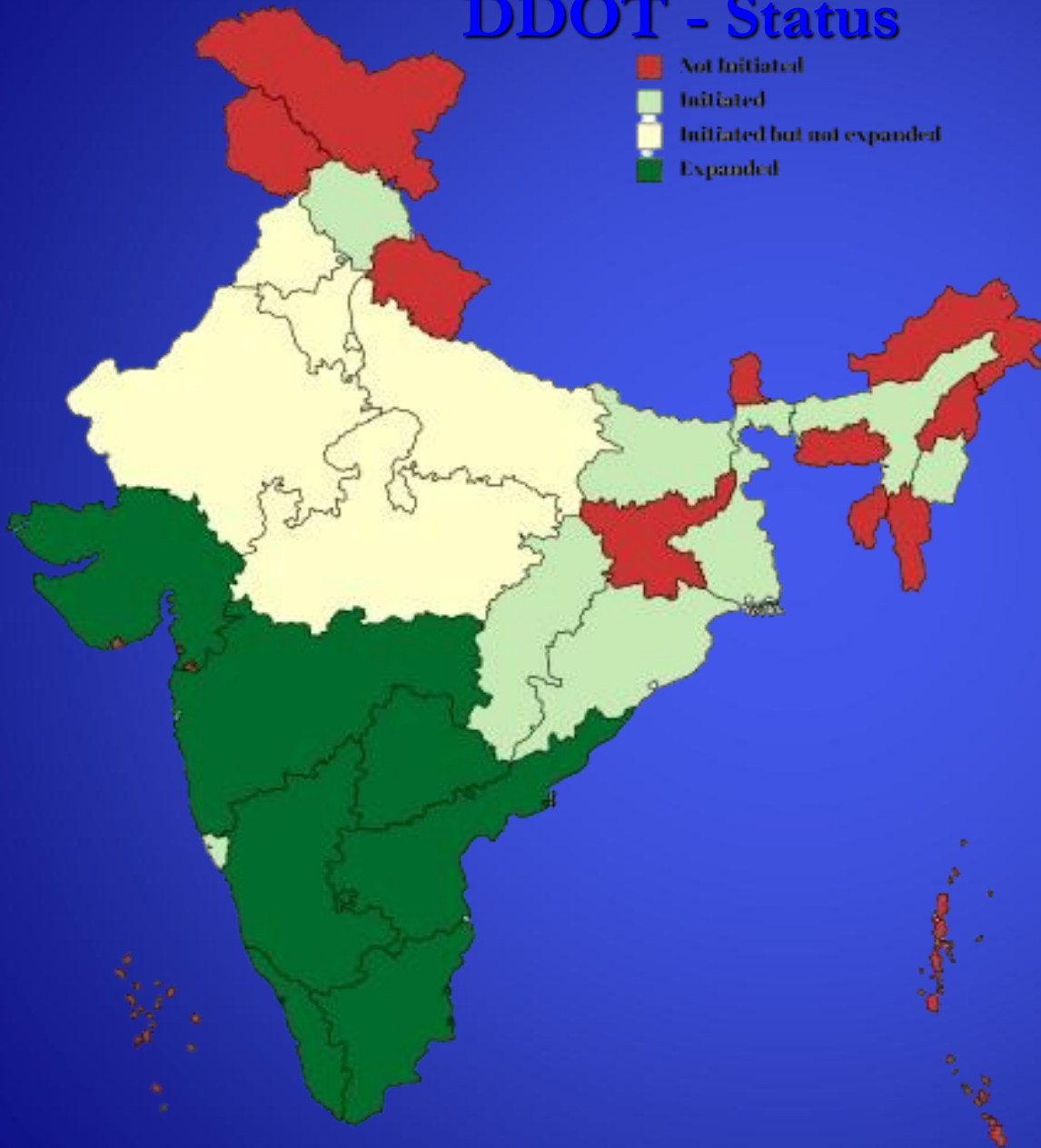
# Number of Deceased Donors over the Years





# DDOT - Status

- Not Initiated
- Initiated
- Initiated but not expanded
- Expanded



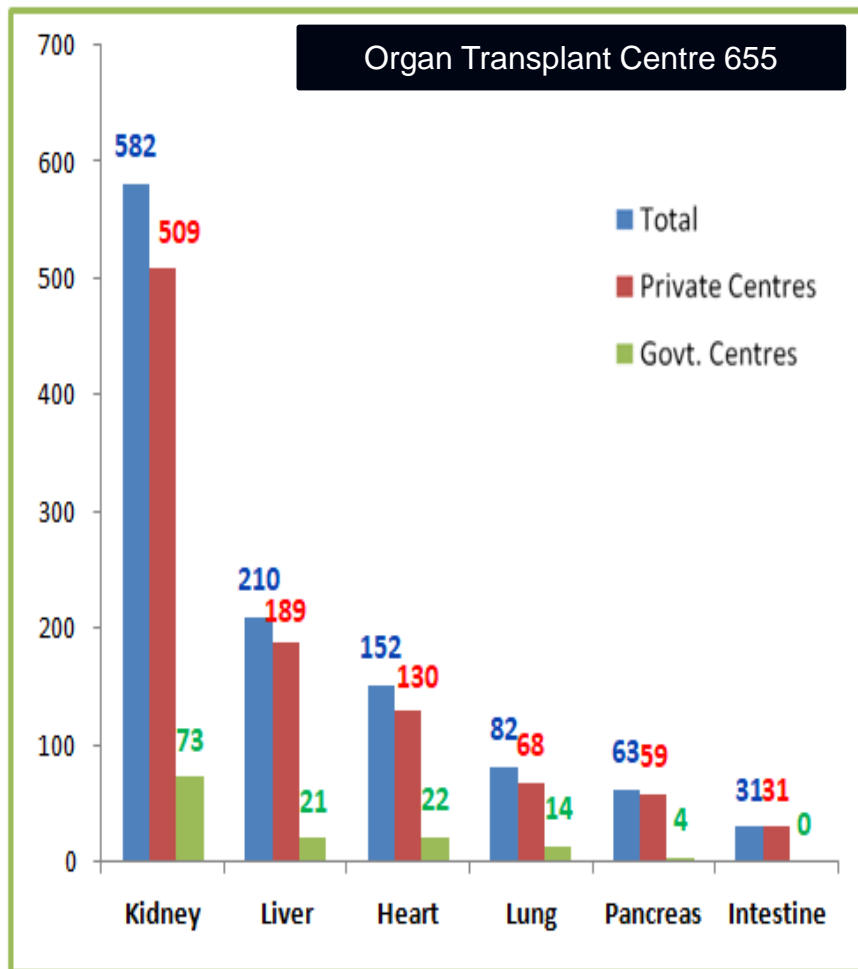
## NO DDOT ACTIVITY

- North East States except Manipur, Assam
- J&K
- Ladakh
- Uttarakhand
- Jharkhand
- Dadra and Nagar Haveli and Daman and Diu
- Andaman and Nicobar Islands
- Lakshadweep

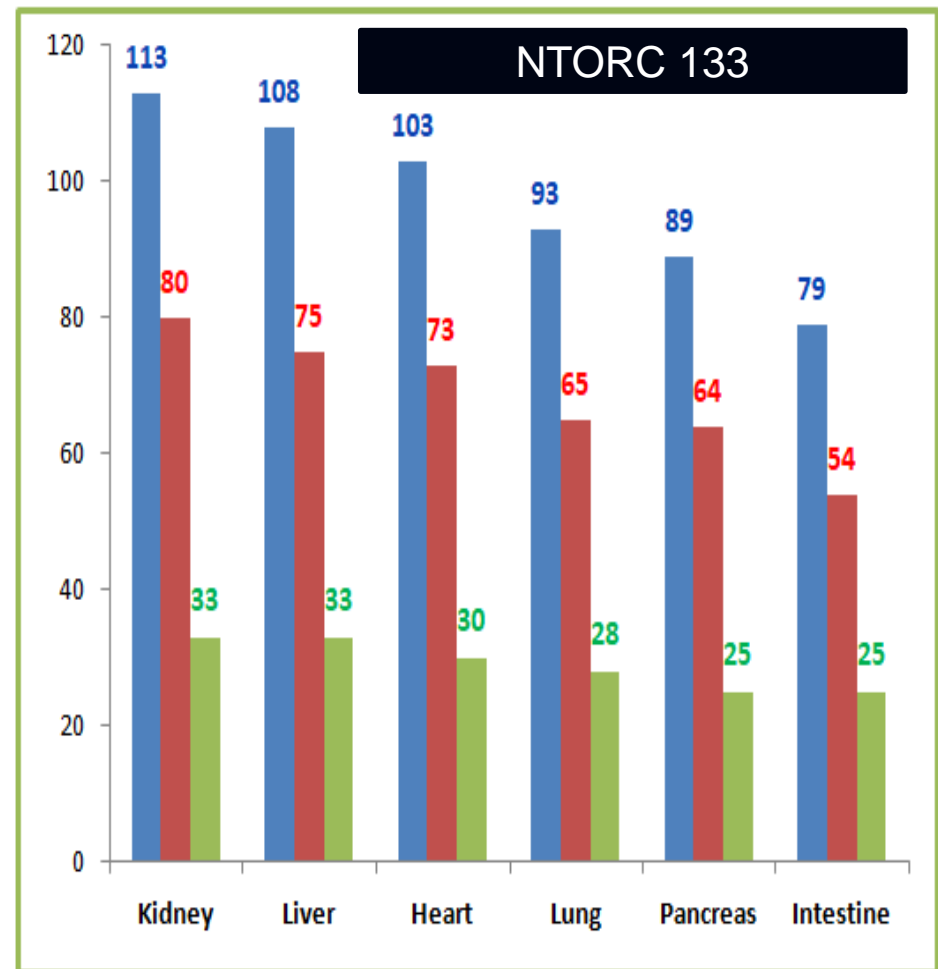
STATE with highest organ donation rate  
Telangana 5.41  
(2023)

# Organ wise centres registered with NOTTO

Total registered (Organ/Tissue) centres – 859



**Transplant Centres**



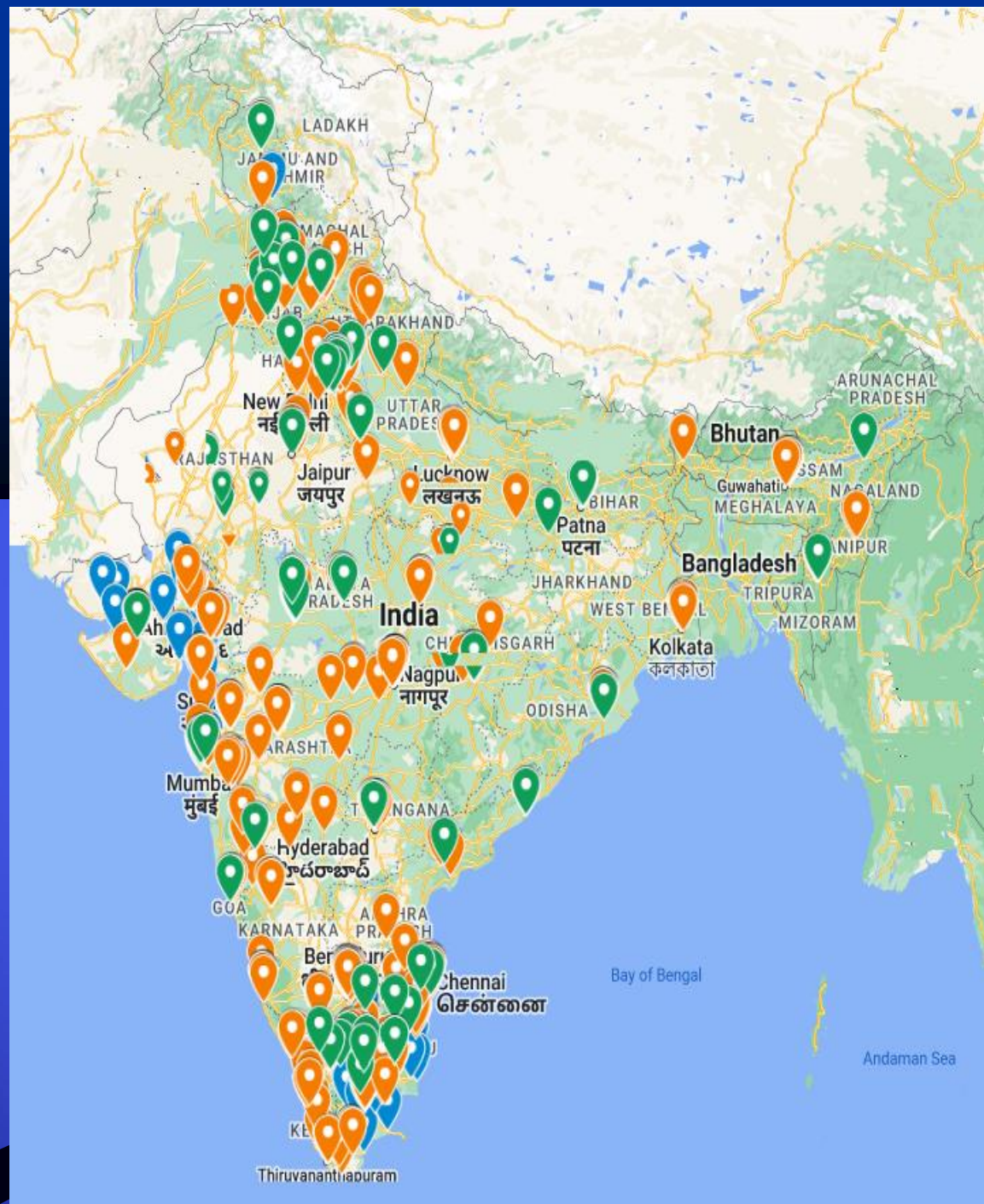
**NTORCs**

# Geographical distribution of 859 Registered Centres on NOTTO Website

655  
Organ Transplant Centres

133  
NTORCs

71  
Biomaterial Centres



# Financial Grants by Government of India

	Amount
ROTTO: Recurring Grant per annum	<b>Rs. 1.05 crore</b>
SOTTO: 1. Non-Recurring grant for setting up of SOTTOs 2. Recurring grant for manpower.	<b>Rs. 36 lakh</b> <b>Rs. 48 lakh</b>
RETRIEVAL CENTRE: for setting up	<b>Rs. 75 lakh</b>
TRANSPLANT CENTRE: For setting up	<b>Rs. 1.50 Cr.</b>
UPGRADATION of existing retrieval/transplant unit	<b>Rs. 75 lakh</b>
TRANSPLANT COORDINATORS:: Govt. institutions-2 TCs, PVT. Centres- 1 TC Identified Govt. Trauma Centres- 1 TC	<b>Rs. 35,000/PM per transplant coordinator</b>
Bio-material Centre (only for ROTTO)-	<b>Rs. 1.0 Cr.</b>
IMMUNO-SUPPRESSANT THERAPY to BPL transplant recipients in Govt. hospitals	<b>Rs. 10,000/month</b>
DIGNIFIED FUNERAL OF DECEASED DONOR	<b>Rs. 10,000/per deceased person</b>
MAINTENANCE OF BODIES OF DECEASED DONOR	<b>Rs. 1,00,000/- per donation</b>

## How to address Deficiencies

Lack of BSD identification certification and maintenance for organs

Lack of infrastructure/suboptimal utilisation of infrastructure

Shortage of manpower in Govt Hospitals

Retrieval centres not optimally utilised

Guidelines related to circulating death lacking

Non utilisation of grants from National Program

Regional imbalance problem of equity & allocation

Specific manpower allocated to SOTTO/ ROTTO



Declaration of BSD made mandatory for all hospitals

Guidelines for BSD widely circulated

Regular training program for BSD in all Medical Colleges and  
Hospitals with ventilators

Procedure for organ donation in MLCs streamlined and SOPs  
Nationally and State wise

Monthly audit of BSD by SOTTO

Training ICU staff, family counselling- end of life care

## Regulatory Bodies

Incentivise transplant & retrieval centres

Hub & Spoke pattern for retrieval & transplantation

All Trauma centres should be registered

All Medical Colleges & Hospitals- identified as Non Tx Retrieval centres

NOTTO should have more financial powers

Monthly activities of NOTTO, ROTTO, SOTTO notified on website-

future workshops

Performance organisations assessed by independent bodies

## Hospital & ICU

Monthly audit of death - BSD- to find out missed opportunities and possible solutions

SOPs for donation procedure mandatory for certification

Recertification- trained ICU staff/ family counsellors

Grief counsellors/ Transplant coordinators

At least 4- identified and trained

Different for Donors and Recipients



## Role of Police

Designate Nodal officer to coordinate organ donation related activities

Sensitise Police- importance of Organ Donation & MLC issues

SHO/ IO under which hospital falls- directed to give assistance

Interactions with Police Chiefs

## Education & Training

Organ Transplant units in all Medical colleges with faculty having expertise in Organ Transplantation

Identify one Medical College every State for Centre of Excellence- as a Motto Multi Organ Transplantation Hospital

Recruit people with passion for Organ Transplantation and strengthen hospital with Depts related to Transplants

Train all PGs in BLS, ALTS- ↑ awareness

Transplant societies to help training ICU professionals &  
Surgeons for BSD

Donor action program in all Medical Colleges

Fellowships & short term attachments at Tx centres

Trauma centres- better equipped to handle Brain Death Ventilators

Curriculum in Medical Colleges- Organ Donation Chapter

Ayushman Bharat should cover all transplants and amount increased      Crowd funding and CSR funding for poor patients

Dedicated Transplant Departments for Multiorgan Transplant

Dedicated ICUs, Beds for Organ Donation

Extended Criteria- for maximising utilisation of Deceased Organ donation- Machine Perfusion

Honouring family members on Organ Donation Day

Memory Tree plantation in honour of Organ Donors

Prime Minister MANN KI BAAT- radio program, Walkathons,  
Festival celebrations

Religious/ Faith leaders NGOs ( Mohan Foundation) support to  
overcome religious and socio cultural barriers

Media- disseminate information on Organ Donation

Organ Pledge- Driving Licence

To give push to organ donation **Aadhaar** (Nat. ID) verified digital pledge registry launched ([notto.abdm.gov.in](http://notto.abdm.gov.in))



Ministry of Health & Family Welfare  
Government of India

### ORGAN DONATION PLEDGE CERTIFICATE

**Aman Tiwari**

मैं, एक अधिकांश रूप से स्वस्थ व्यक्ति (डॉक्टर/वैद्यकीय) के द्वारा उपस्थितता के बाद मेरी/हमारे शरीर के निम्न अंगों/अंगों को (अंग/अंग) (अंग/अंग) को दान करने का प्रस्ताव देता हूँ।

I hereby unequivocally authorize the removal of the mentioned Organ(s) and/or Tissue(s) from my body for therapeutic purpose after being declared (Brain Stem/Carotid) dead by the board of medical experts.

पिता/पति का नाम Father's/Husband's Name:	<b>INDERJEET</b>	जारी करने की तारीख Date of Issuance:	<b>25 Aug 2023</b>
जन्म तिथि ABHA Number:	<b>91 20374 4700438</b>	रक्त समूह Blood Group:	<b>A+</b>
NOTTO ID:	<b>02 30000000 117</b>	आपातकालीन संपर्क नंबर Emergency Contact Number:	<b>96 50 640512</b>

अंग:  
Organs:  
अंग/अंग  
Tissues:

**Liver, Kidney, Heart, Intestine, Pancreas, Lungs**  
**Bone, Heart Valve, Skin, Cornea, Cartilage, Blood Vessel**

**जीवन के बाद जीने का अवसर**  
An opportunity to live after life

Toll Free Helpline (24 x 7): 1800134770 | [www.notto.gov.in](http://www.notto.gov.in) | Email: [donor@notto.in](mailto:donor@notto.in)

Total pledges registered from 17-9-2023 to till date – around 1,53,200

## Way Forward

Incentivise hospitals

Annual conferences by NOTTO/ ROTTO/ SOTTO

All National conferences- session on Organ Donation

Organ transplantation- Green Corridors, Airlines

Role of Digitisation- Drones

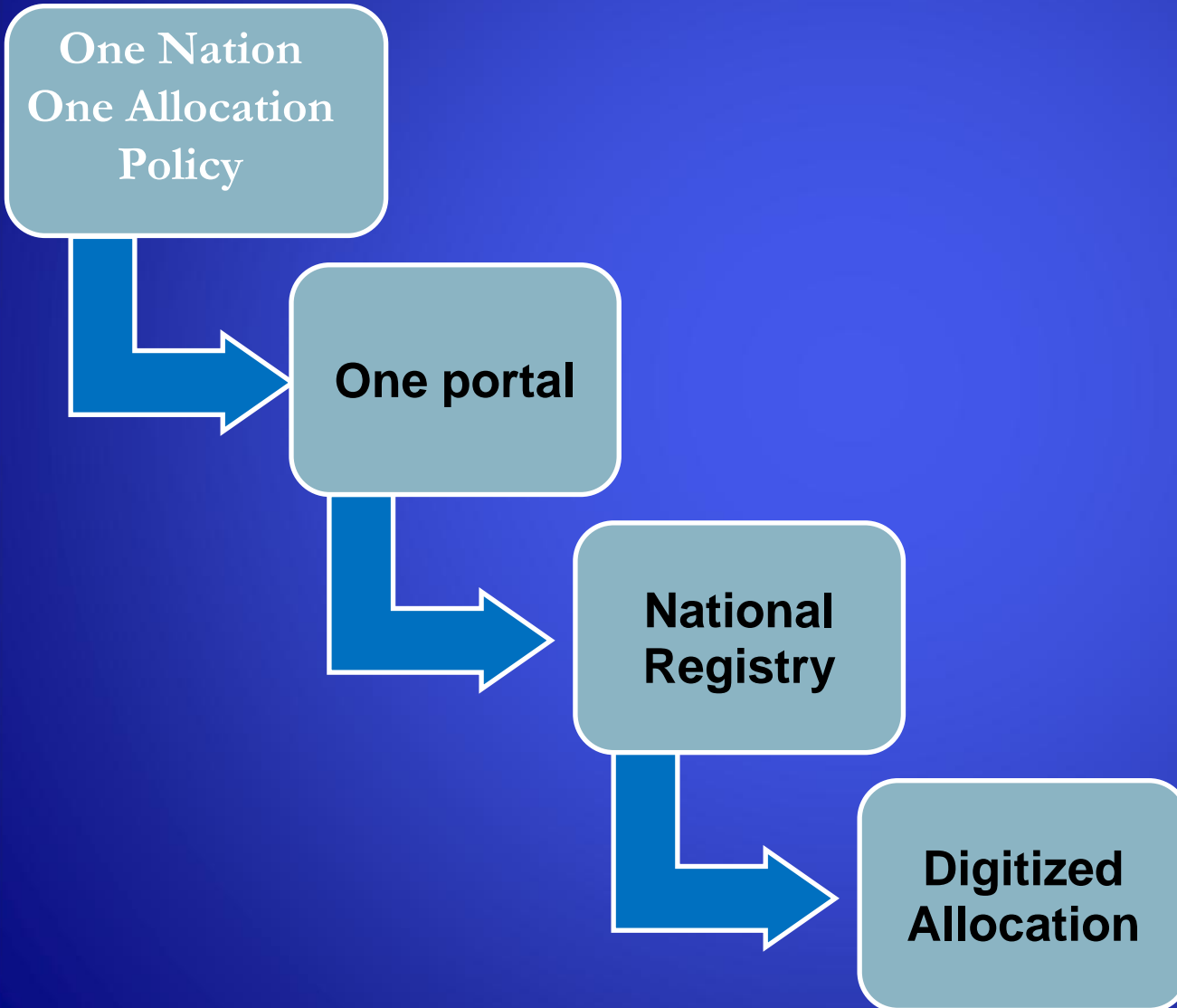
24 hr Call centres- NOTTO

Awareness in School and Colleges

Orientation and Sensitisation- Judges, Legal experts,

Police & Traffic personnel

# WAY FORWARD





**Organs donated are a National asset and  
Organ Transplantation should be a National priority**