



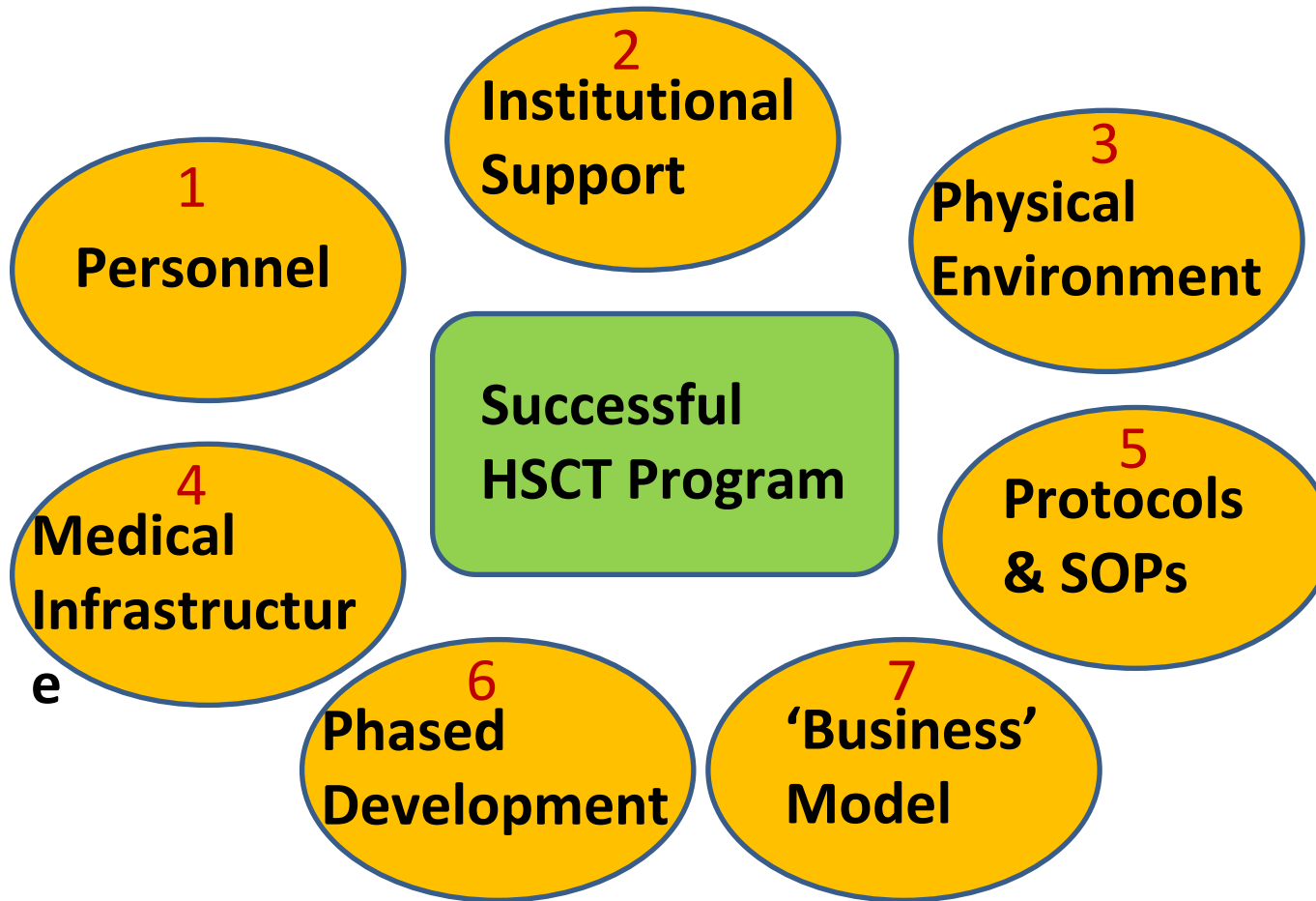
Workshop of the WBMT  
in cooperation with the  
World Health Organization (WHO)

Hanoi, Vietnam, November 10 – 11, 2011

## Starting a HCT program – A perspective from India



*Alok Srivastava*  
*Department of Haematology*  
*Christian Medical College*



**Establishing a successful HSCT program**

# Establishing a successful HSCT program

## 1. Developing appropriate personnel

**1. Physicians** – Comprehensive training (2-3 years) in hematology and transplantation **(Most critical)**

**2. Resident physicians**

**3. Nurses** – Very critical component, need a team, 1 to 1 nursing, if possible

**4. Consultative support** – Histopathology, Radiologists, Clinical consults: Gastroenterology, Nephrology, Neurology, Cardiology, others

**5. Apheresis / cryopreservation staff**

**6. Transplant coordinators / counselors**

**7. Housekeeping staff / Engineers**

# Establishing a successful HSCT program

## 2. Physical Environment

1. Transplant rooms – HEPA filtered
2. Water – “clean”
3. Food supply – ?Sterile
4. Support departments – Central sterile supply
5. Protocols for entry / exit
6. Protocols for housekeeping
7. Microbiological monitoring of air and water



CHRISTIAN MEDICAL COLLEGE, VELLORE, INDIA (ESTD: 1900)



Streets  
around  
CMC,  
Vellore





# Establishing a successful HSCT program

## *3. Institutional support*

**1. Critical for developing the**

- team of personnel**
- physical environment for HSCT**
- medical infrastructure**

**2. Provide necessary space and financial support for establishing infrastructure for what may appear esoteric at first**

# Establishing a successful HSCT program

## 4. Medical infrastructure

1. HLA typing – Institutional / outsourced
2. Insertion of Hickman / Broviac catheters
3. Blood bank with components – platelets / plasma
4. Apheresis instruments – for PBSC / platelets
5. Blood irradiation facilities
6. Round the clock laboratory services:
  - Hematology (Flowcytometry / Molecular genetics  
→ graft assessment /  
chimerism)
  - Biochemistry
  - Microbiology – bacterial / fungal / viral infections  
(quantitation, if possible)
7. Pharmacy services: Drugs / TPN / other requirements

# Establishing a successful HSCT program

## 5. Establishing protocols and SOPs

Important to have clearly defined policies and protocols for everything –

1. Pre-transplant evaluation (recipient & donor)

2. Conditioning regime

3. Harvest of stem cells – BM / PBSC

4. Cultures and antibiotics – prophylaxis, if any

5. GVHD prophylaxis and (?treatment)

6. Post-transplant follow-up and care –

    Taper of GVHD prophylaxis

    Monitoring of engraftment / chimerism

    Immunization protocol

7. Long term follow-up protocols

8. Systematic data recording for analysis and quality management

# Establishing a successful HSCT program

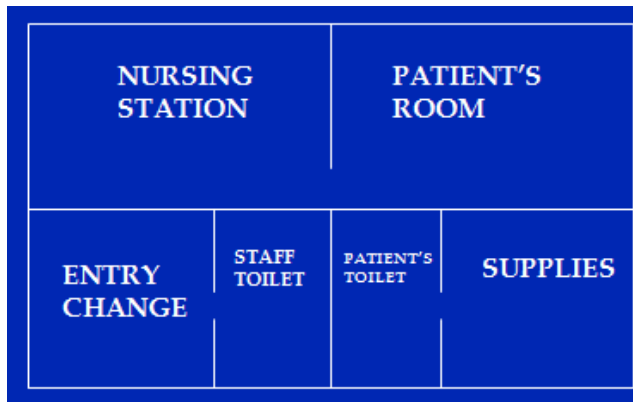
## 6. Phased development

- 1. Build team through practice of intensive hematology – managing chemotherapy and cytopenias with transfusions / antibiotics / other supportive measures**
- 2. Careful selection of initial patients**
- 3. Start with autologous, if possible, for multiple myeloma and then lymphomas when cryopreservation becomes possible.**
- 4. Move to matched related allogeneic transplants in good risk patients before doing high risk / alternative donor transplants**
- 5. Collegial atmosphere for discussion / questions in the team**
- 6. Keep up with relevant literature and technology, as much as possible – Introduce research into clinical practice**
- 7. Develop a team that communicates well patients and**

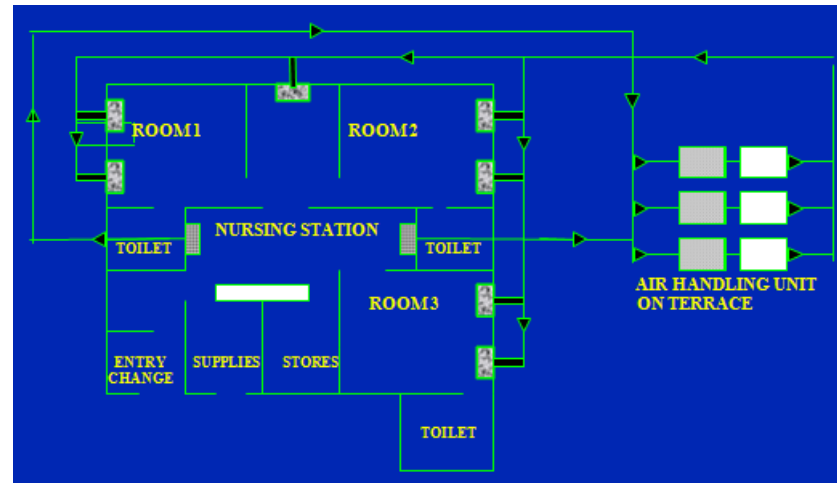
# Establishing a successful HSCT program

## *7.The 'business' model (if relevant)*

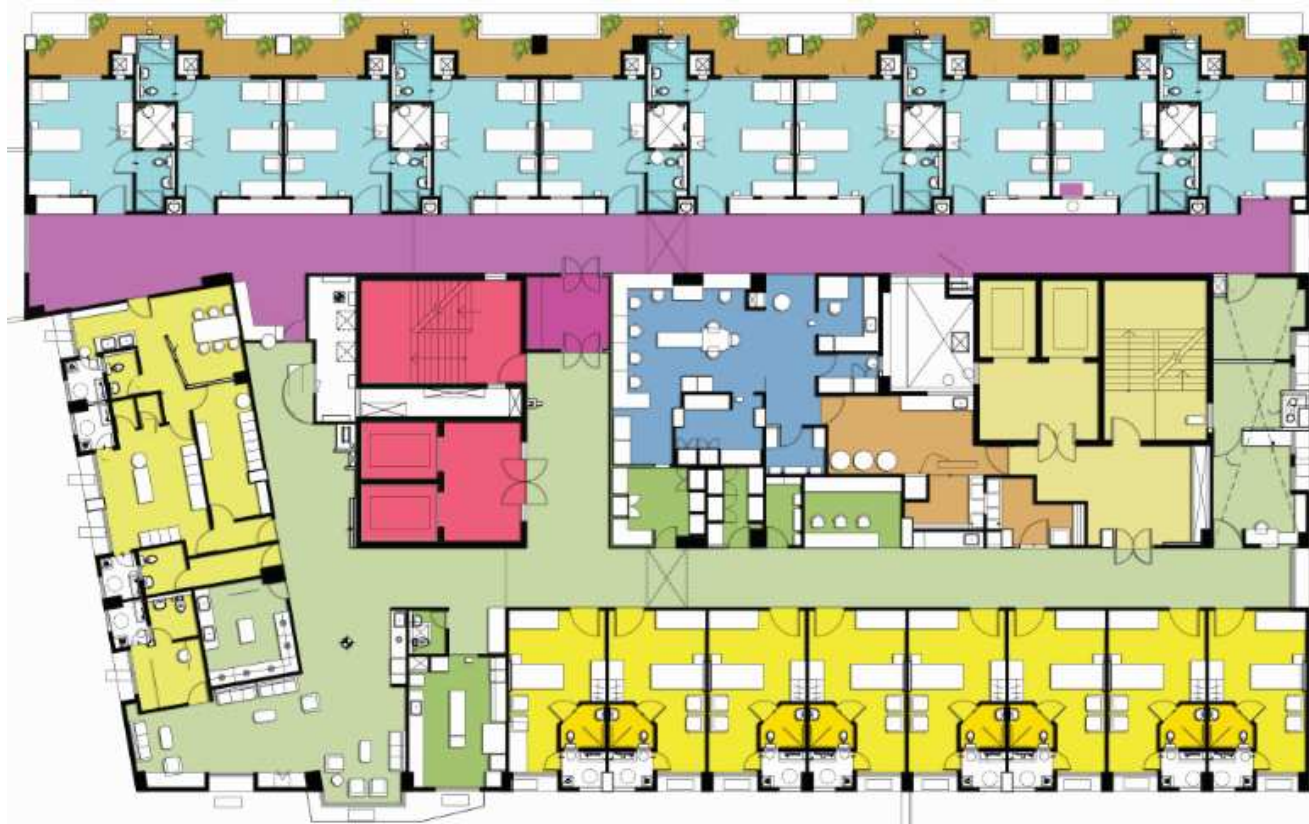
- 1.Even if fully supported by government funds, need to evolve a program that is financially sustainable within that health care system**
- 2.If in the private sector (insurance / self pay), need to develop a cost structure that allows even those with limited resources to access the program**



1986 (1 bed)



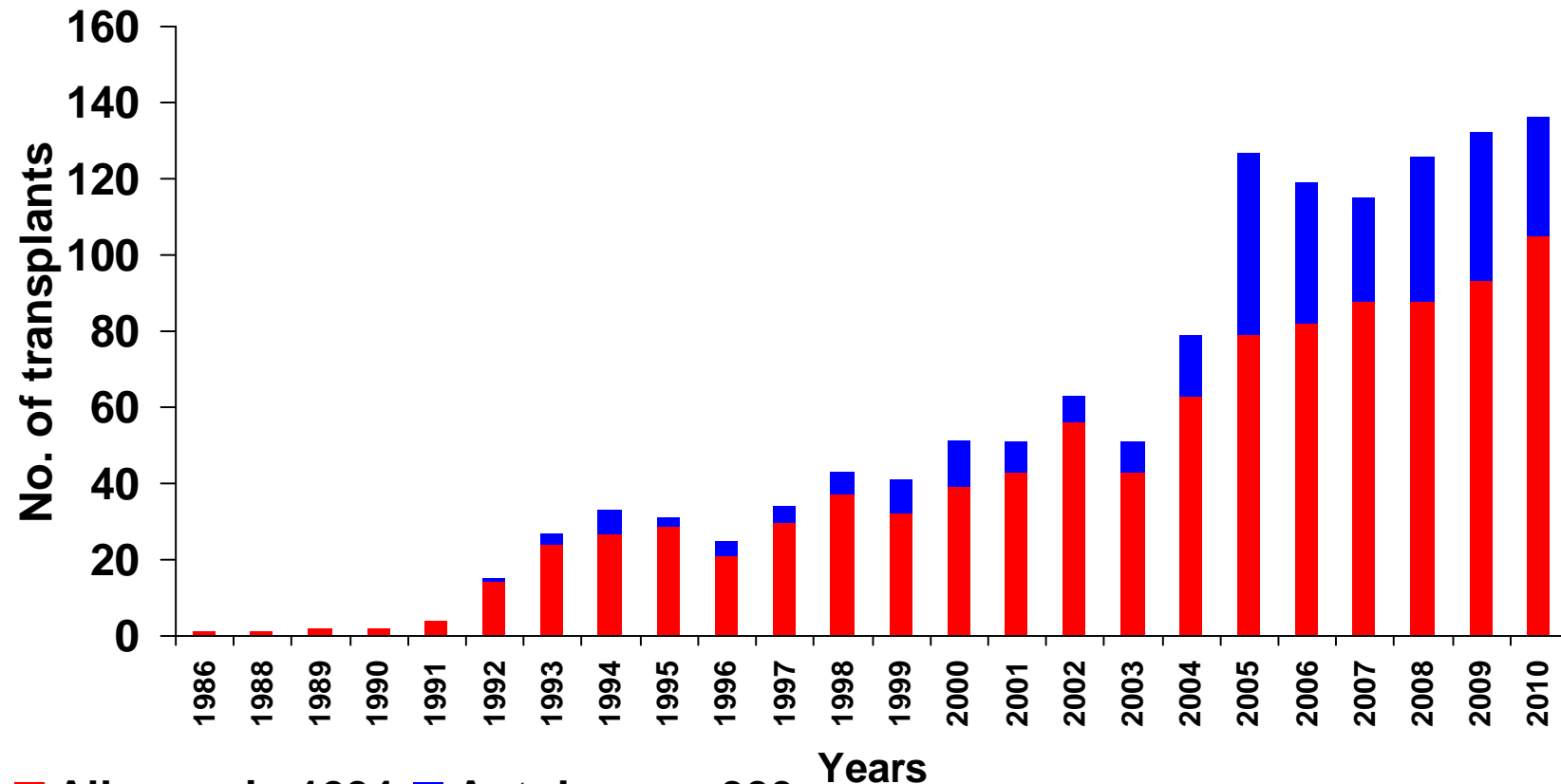
1990  
(3 beds)



2008  
10+8  
beds

**Phased development of the Stem Cell Transplant Unit at CMC, Vellore,**

# *BONE MARROW TRANSPLANTATION CMC (Oct 1986 - Dec 2010)*



■ Allogeneic-1004 ■ Autologous-306

-Matched related : Avg cost - US \$ 20,000

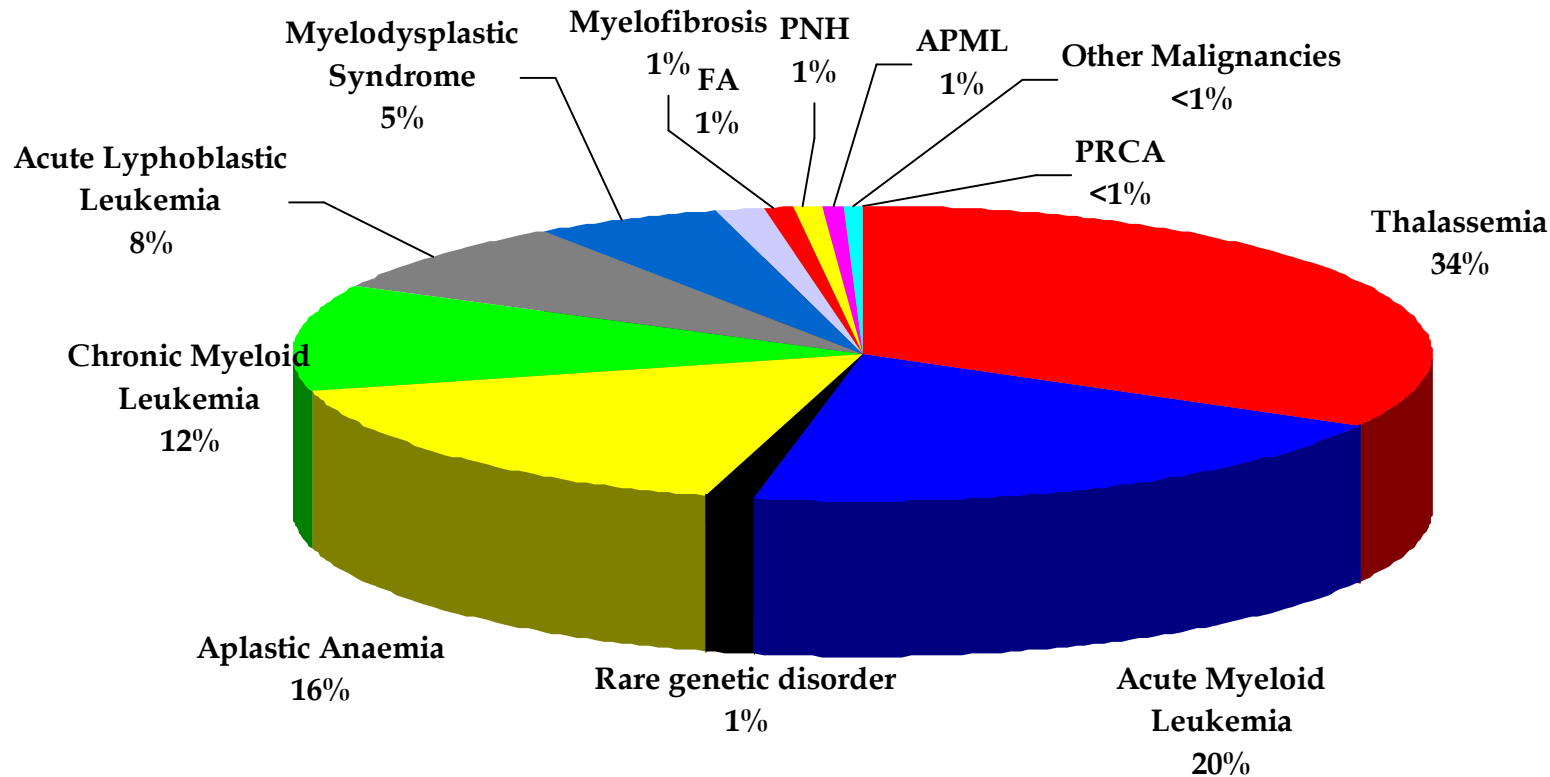
-Matched unrelated (since 2008) : Avg cost – US \$ 50-100,000

-Haplo identical (since 2006) : Avg cost – US \$ 20-50,000

# *INDICATIONS FOR BMT*

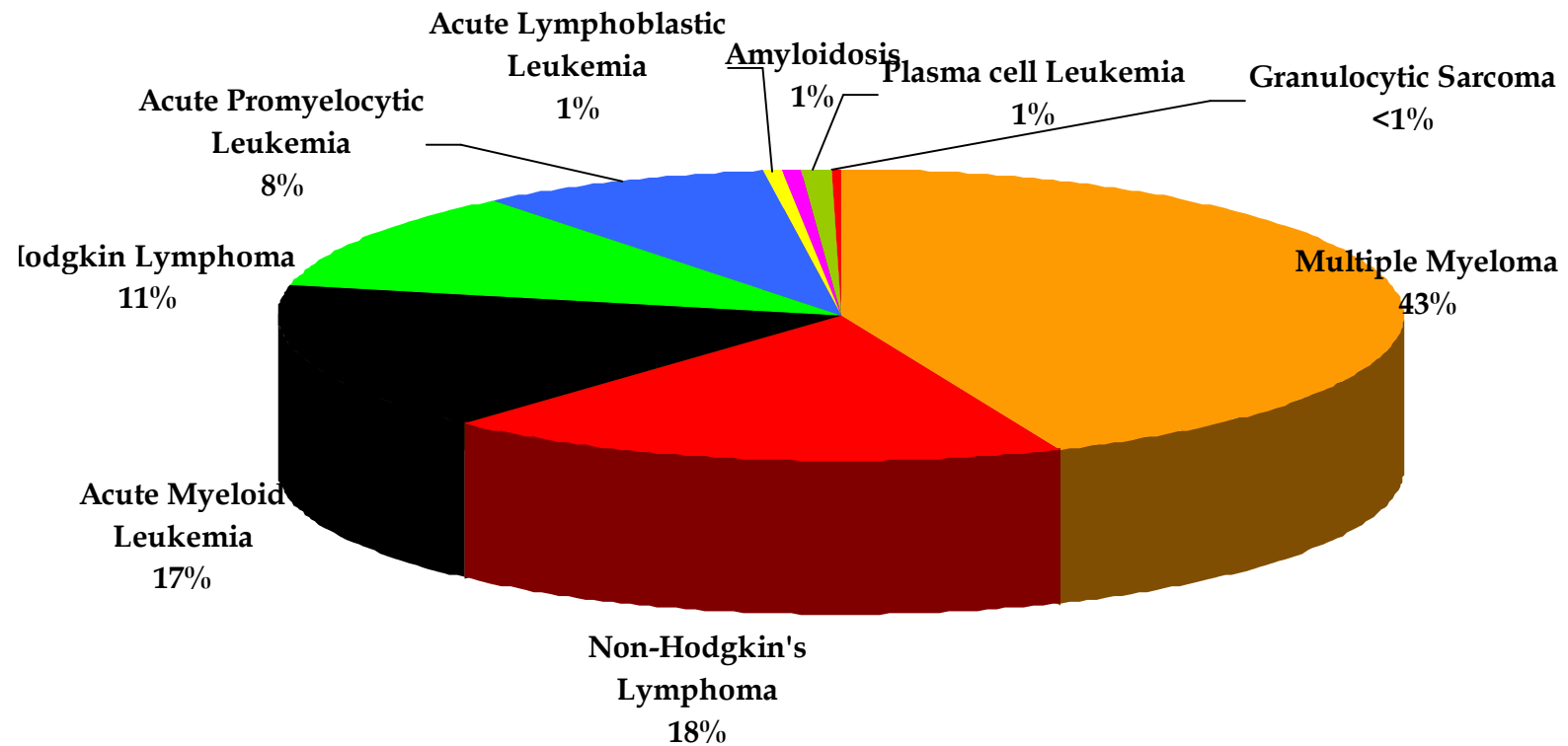
## *CMC, Vellore (Oct 1986 - Dec 2010)*

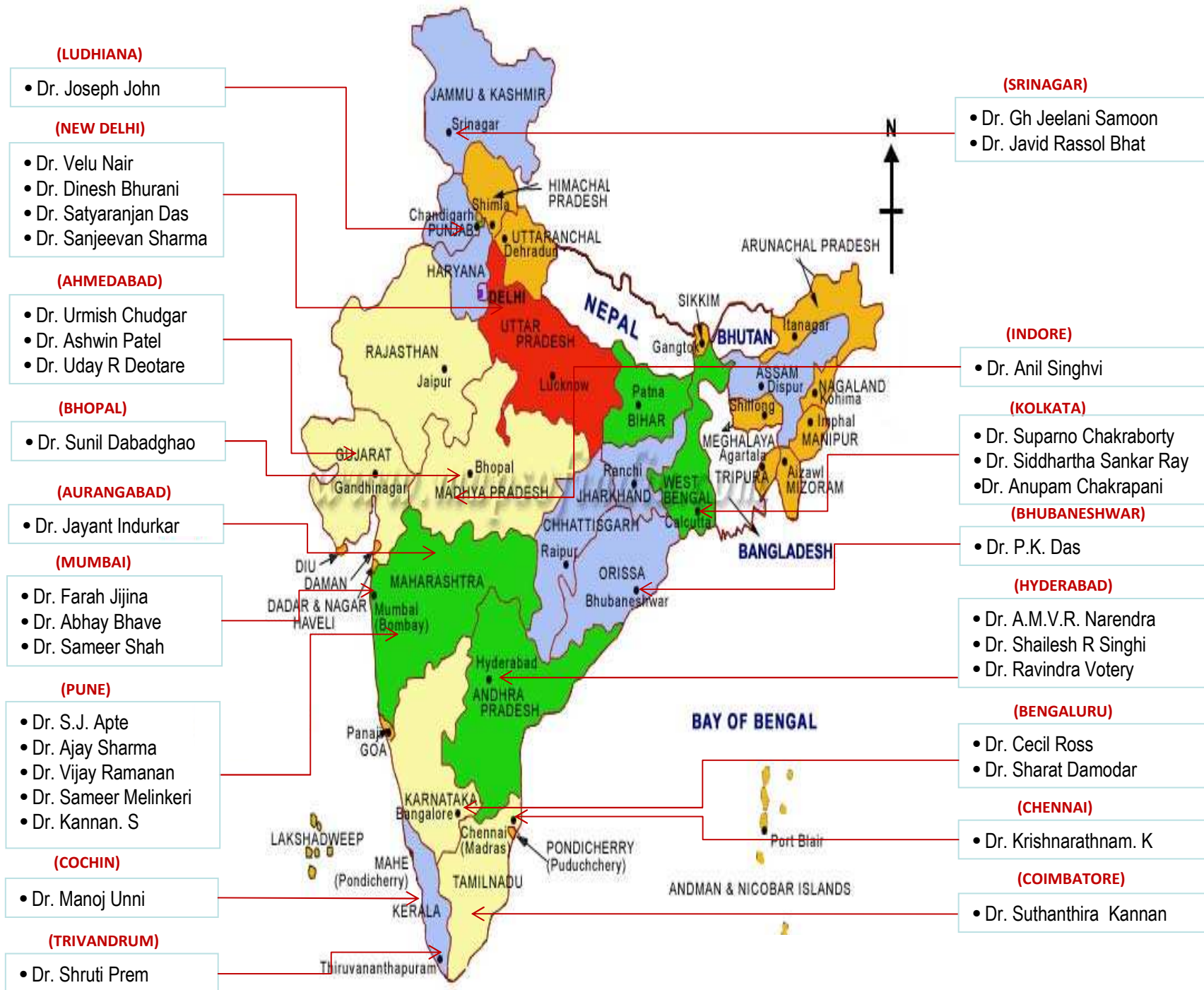
### *Allogenic transplant (n=1004)*



(Diamond Blackfan-3  
 Severe Combined Immuno Deficiency-3  
 Wiscott Aldrich Syndrome-4  
 Dyskeratosis congenita-1  
 Osteopetrosis-1  
 Adrenoleukodystrophy-1  
 Kostmann Syndrome-1  
 Congenital Sideroblastic anaemia-1)

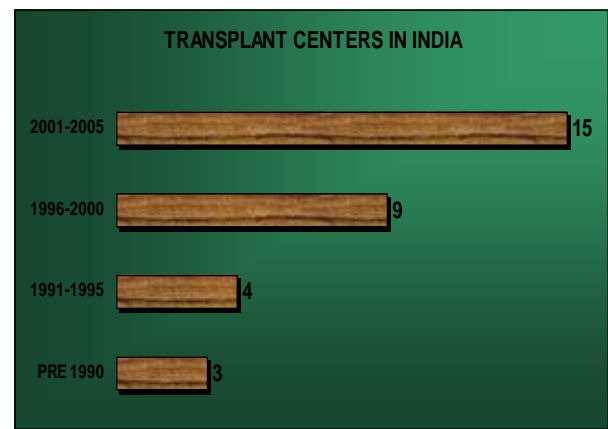
***INDICATIONS FOR BMT***  
***CMC, Vellore (Oct 1986 - Dec 2010)***  
***Autologous Transplant (n=306)***





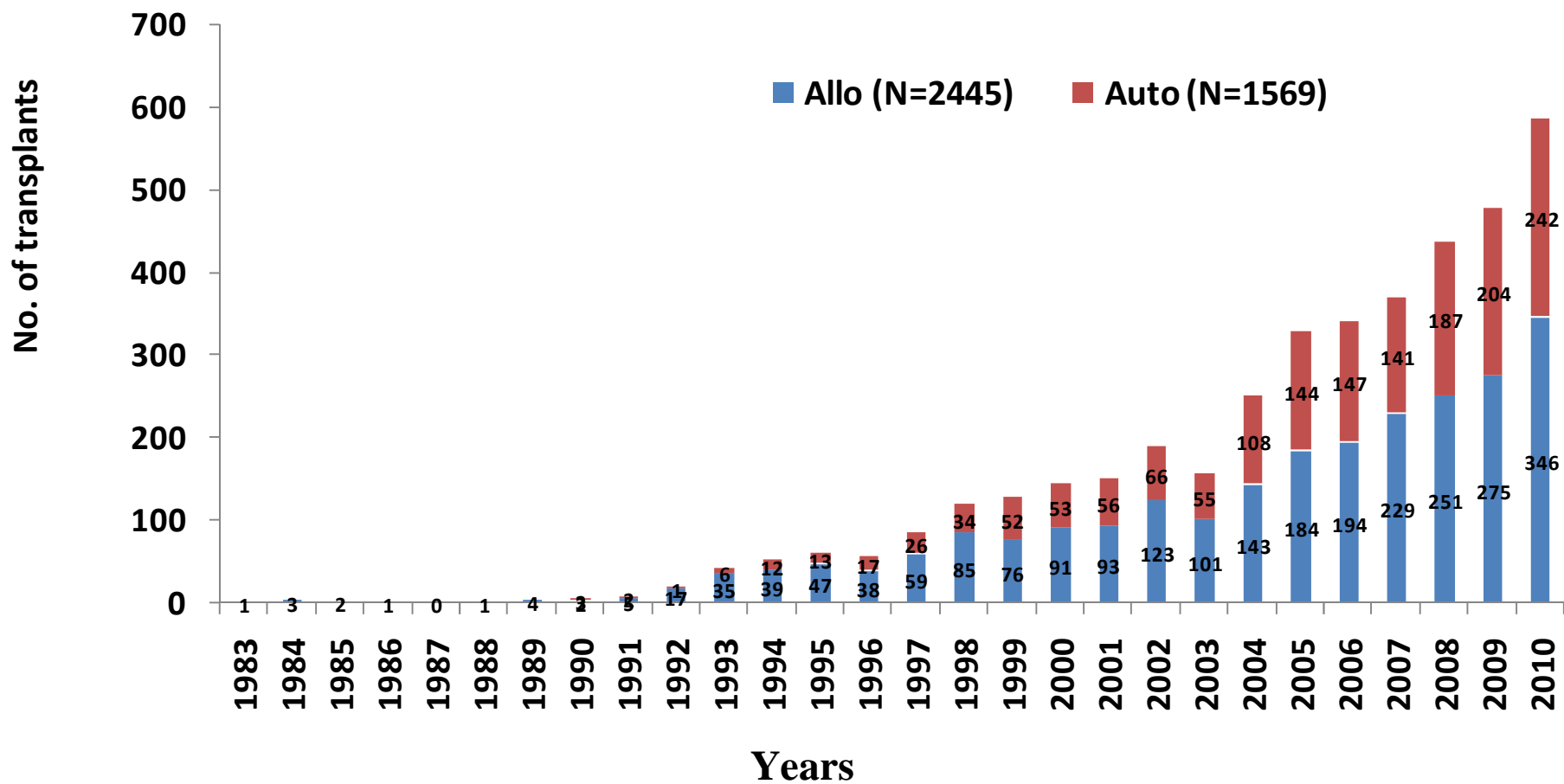
INDIA

# Stem Cell Transplant Centers in India - 2011



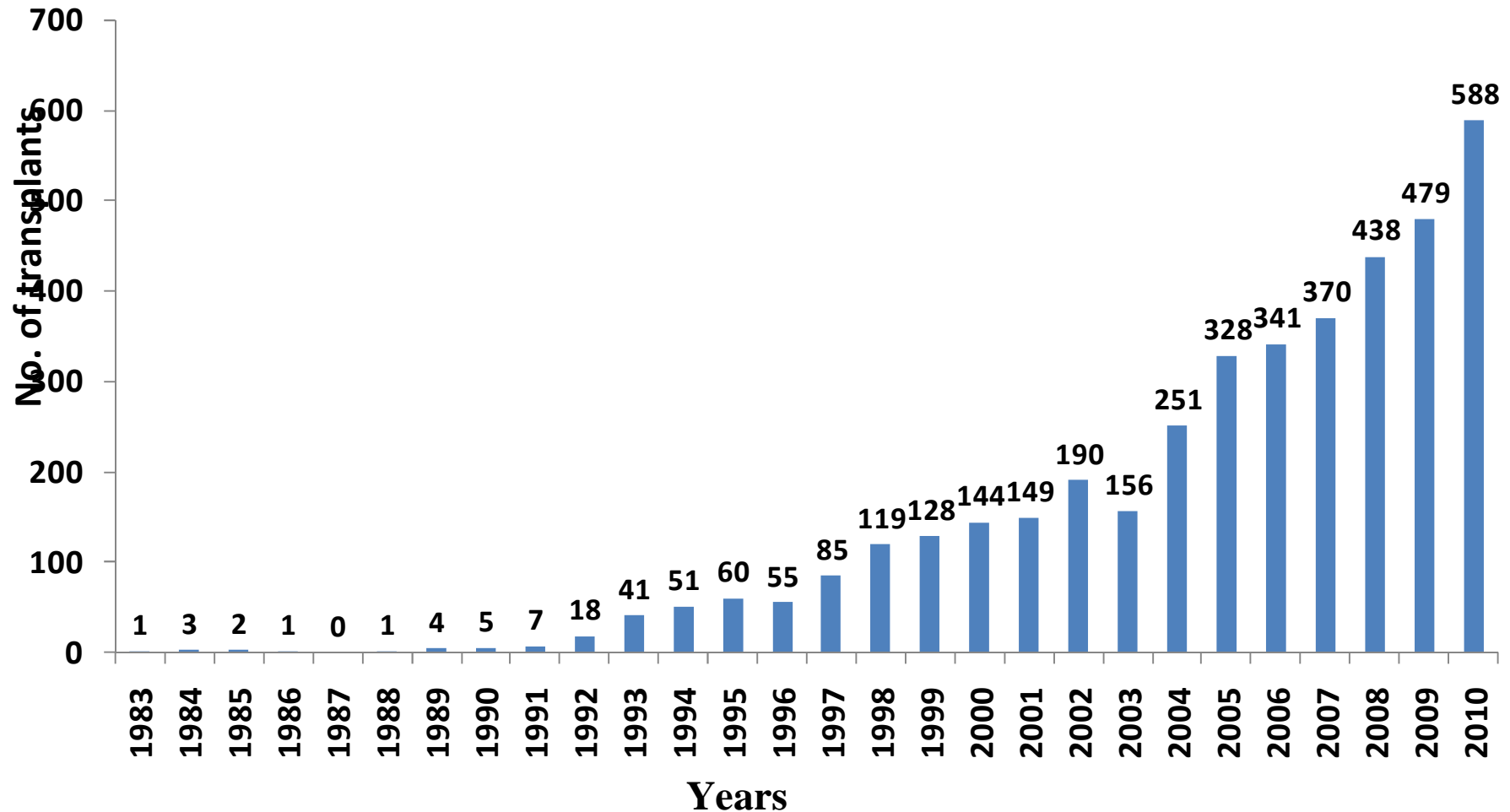
# INDIAN STEM CELL TRANSPLANT REGISTRY

## Number of Transplants – India (N=4015)

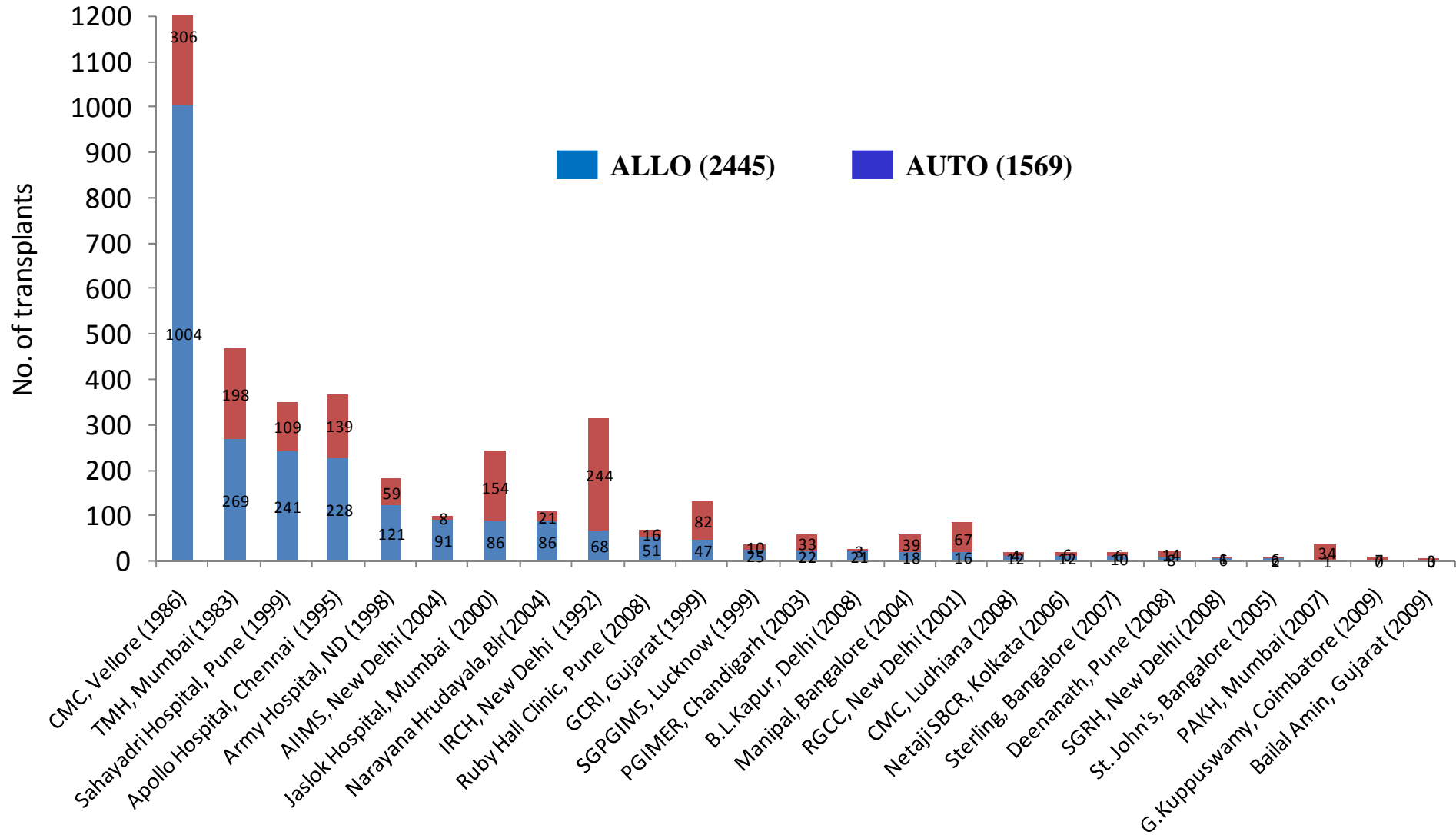


# INDIAN STEM CELL TRANSPLANT REGISTRY

## Number of Transplants – India (N=4015)



# INDIAN STEM CELL TRANSPLANT REGISTRY



# Starting a HCT program – A perspective from India

Possible to establish a state of the art facility for SCT if there are the

*-Right people*

*-Strong commitment*

*-Supportive institutional environment*

*-Disseminate expertise to the rest of the country*

## **Our team**

**Physicians: 6**

**Scientists: 4**

**Registrars: 15**

**Research Fellows: 20**

**Nurses: 22**

**Transplant / Research coordinators**