# *Allogeneic stem cell transplantation*
## *Romanian experience*

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# *ALLOGENEIC STEM CELL TRANSPLANTATION*

## Which purpose ?

Eradicate the disease

Control the host immune system's ability to reject the transplant

# STEM CELL TRANSPLANTATION (adults):

Standard of care !

| | ALLO-SCT | AUTO-SCT |
|---|---|---|
| AML – CR1 ir/hr | + | +/- |
| AML – CR2, CR3 | + | - |
| ALL – CR1 hr/CR2 | + | - |
| MDS | + | - |
| HD/NHL | +/- | + |
| MM | +/- | + |
| CML>1CP, AP | + | - |
| SAA | + | - |
| PNH | + | - |
| Autoimmune | - | +/- |
| Renal carcinoma | +/- | - |

# *Romania: 20 million inhabitants – 3 transplant centers*

- Timisoara – children and adults (40 allo: 2005-2011) > 34 related, 5 unrelated and 1 CBU
- Tg. Mures – adults (24 allo: 2005-2011) > all related
- Bucharest – adults and children (55 allo: 2001-2011) > all related

119 allo
2005-2011

8 allo/10 mil/year

# *The Transplant Compartment*

Adult patients

Pediatric patients

**The clinical side**

**7 isolation beds**
**8 pre-transplant beds**
**2 pediatritians+ 2 hematologists**
**23 health care workers**

**Hematology**
**Hematopatology**
**Imunophenotyping**
**Cell cultures**
**HLA & virology**
**Hemobiology**
**Imunohistology**
**Hemostasis**
**Biochemistry**
**Microbiology & epidemiology**

# *Technical aspects - 1*

- The grafts:
  - Peripheral stem cells
  - Apheresis and cryopreservation
  - CD34 + cell count
  - Viability of the cells
  - Cellular cultures (GM-CFU)

- The procedures:
  - Autologous stem cell transplants
  - Allogeneic stem cell transplant from sibling donors (myeloablative and nonmyeloablative conditioning regimens)

# *Technical aspects - 2*

**Pre-transplant evaluation:**

- Organ functions
- Screening of the infections
- Blood group typing
- Immun status
- Testing the chemosensitivity of the disease
- Solving the dental problems
- Sperm / oocyte cryopreservation (optional)
- Pregnancy test
- Informed consent

# *STANDARD PROTOCOLS*

- Establishing the transplant indication
- Evaluation of the patient and the donor before the transplant
- Informed consent
- Mobilisation, apheresis and cryopreservation of the stem cells
- Installation and care of central venous lines
- Conditioning regimens
- Anti-infectious protocols
- Protocols regarding prophylaxis and treatment of GVHD
- Infusion of the stem cells
- Prevention and treatment of mucosytis
- Prevention and treatment of veno-occlusive disease
- Protocol regarding diagnosis and treatment of febrile neutropenia
- Blood transfusion strategy
- Screening and treatment of CMV
- Sceening and treatment of fungal infections
- Chimeric profile
- Long-term follow-up of the transplanted patients

# *Mobilisation protocols for auto and allo*

| *Disease* | *Protocol* |
|---|---|
| | |
| **Lymphomas** | **DHAP +G-CSF**<br>**IGEV + G-CSF** |
| **Multiple myeloma** | **Cy 3g/m2 + G-CSF** |
| **Neuroblastoma** | **COJEC/G-CSF** |

| *Donor* | *Protocol* |
|---|---|
| | **G-CSF 10mg/kg x 4 days** |

# *Conditioning regimen for auto and allo*

| *Disease* | *Conditioning* |
|---|---|
| **Acute leukemias, SAA – full conditioning** | **TBI/CY**<br>**Bu/CY**<br>**ATG/CY** |
| **Reduced intensity conditioning**<br>**(acute leukemias, MMM, relapsed lymphomas)** | **Flu/Bu**<br>**Flu/Mel**<br>**Flu/Threo** |
| **Lymphoma** | **BEAM**<br>**BEAC** |
| **Multiple myeloma** | **Mel200** |
| **Neuroblastoma** | **CEM** |

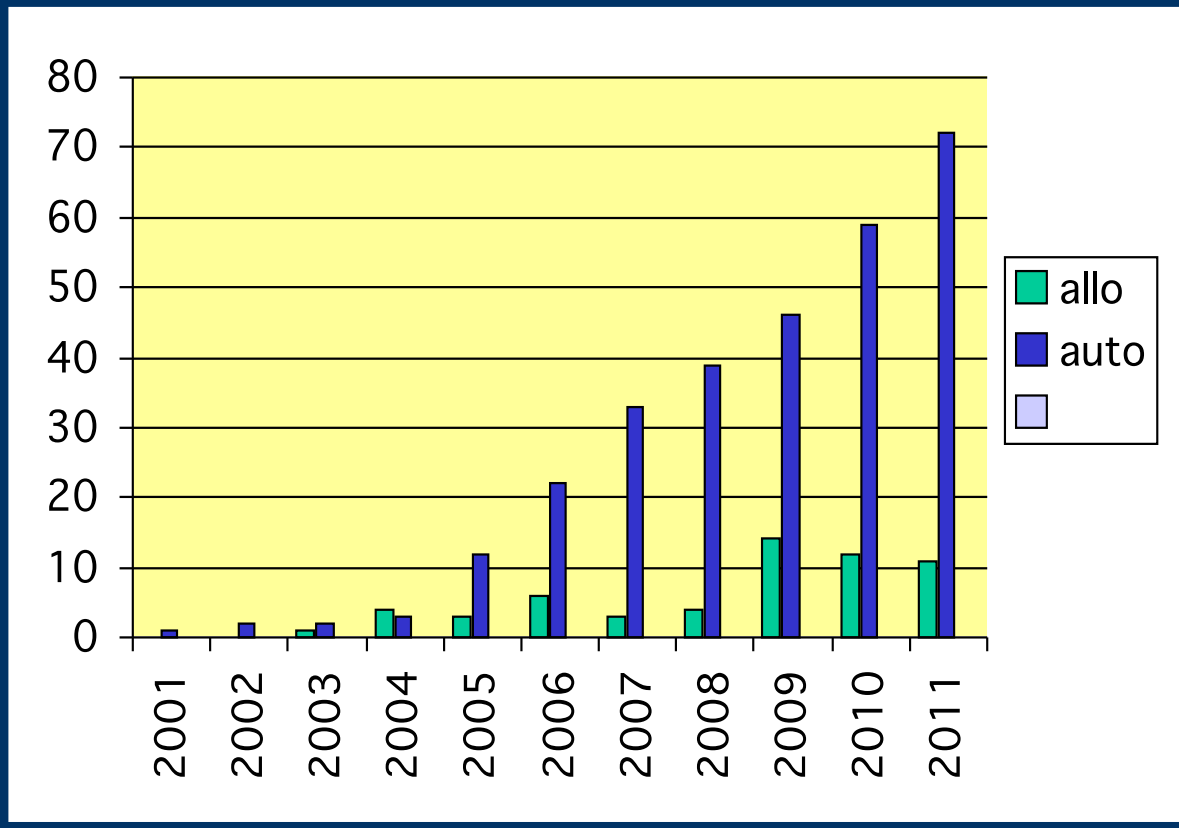
# *Achievements (2001-2011)*

346 procedures:

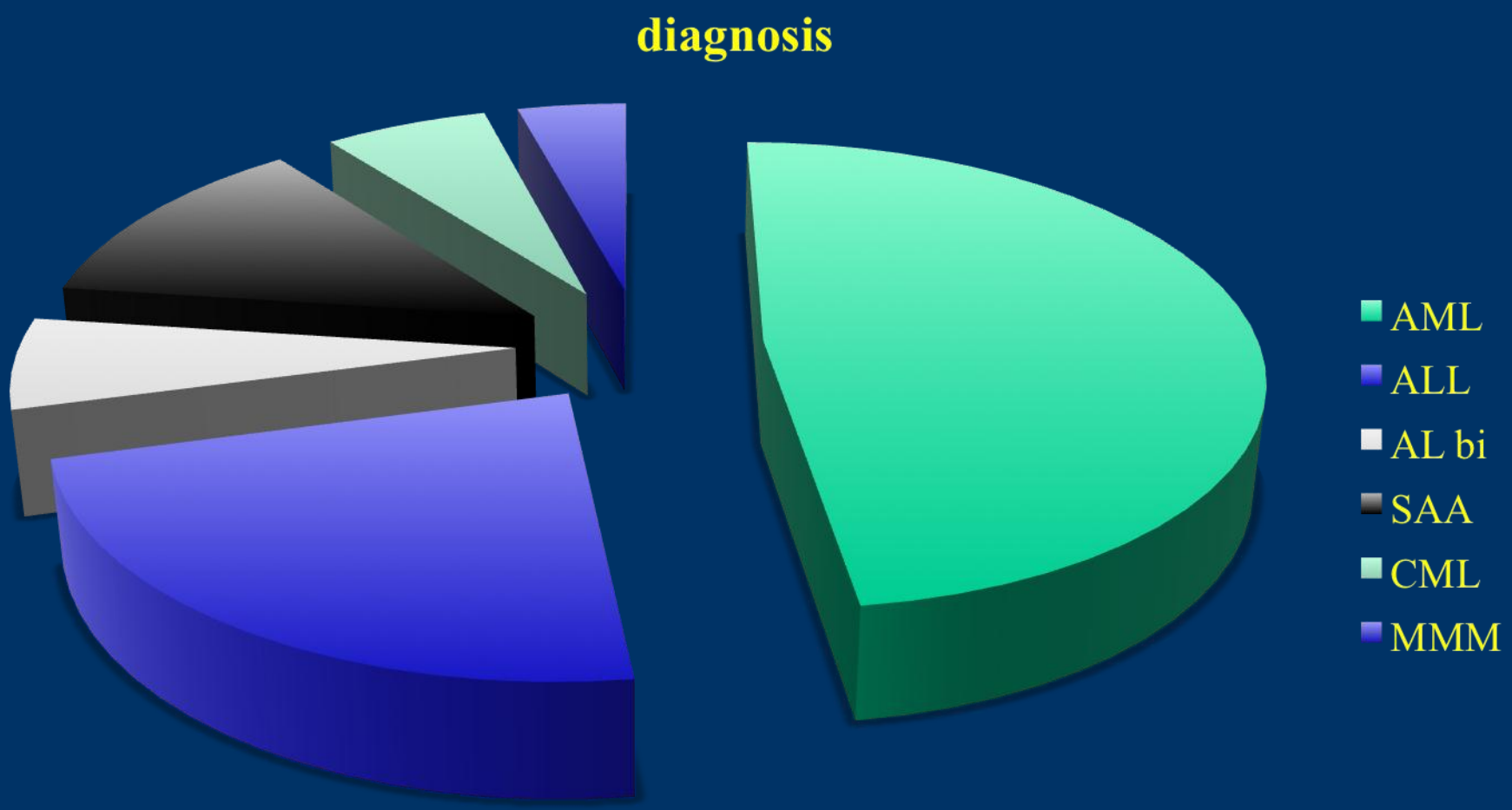
291 auto and 55 allotransplants

16/55: RIC transplants.

42/346 children.



# *Allogeneic transplants - diagnosis*



# *Conditioning regimens for allogeneic*

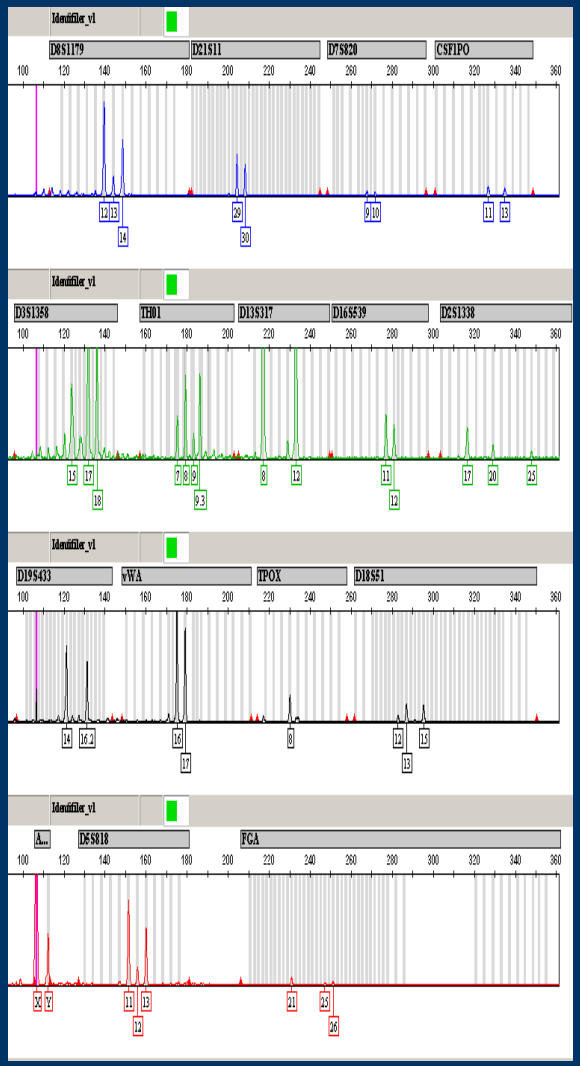
- 55 allogeneic transplants

  **- myeloablative conditioning : 39 (14 with TBI, 19 with Bu/Cy and 6 with CFA/ATG)**

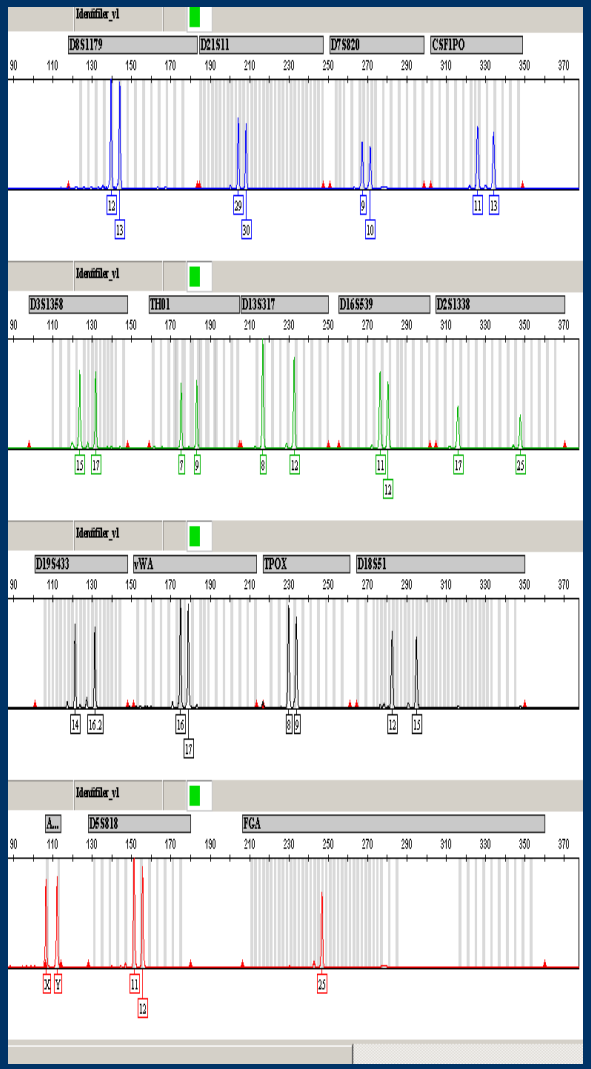
  **- reduced intensity conditioning : 16 cases**

# Chimerism with STR-PCR

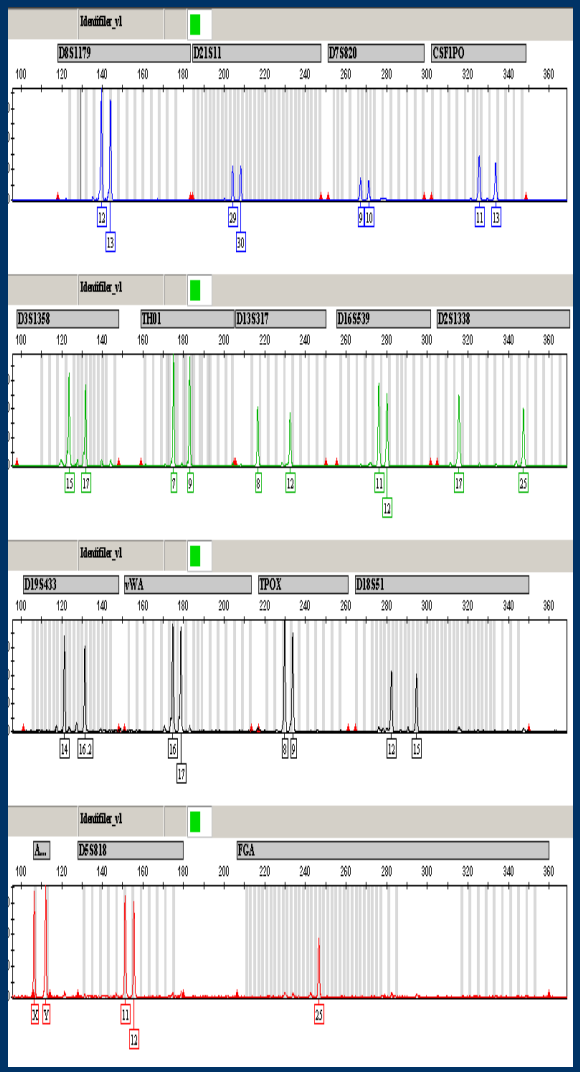
## National Forensic Institute Bucharest




patient




donor




patient day 104

# *Results of allo*

- 55 procedures: 39 MAC and 16 RIC
- 44 adults and 11 children
- Median age: 33,1 years (11 months – 59 years)
- Diagnosis: 23/55 AML; 11/55 ALL; 3/55 AL bifeno; 6/55 SAA; 4/55 lymphoma; 2/55 MMM; 1 case of LMMC; 3 case of CML, 1 MDS, 1 CLL and 1 case of diskeratosis.
- Median number of CD34 cells/kgbw = 3,54 (2,3-6,08) $x10^6$
- Engraftment in day +16,7(+11, +24)
- One case of engraftment failure
- Two cases of rejection
- Global TRM = 22,7%

# *ALLOGENEIC STEM CELL TRANSPLANTATION*

## What is necessary ?

1. Adequate amount of allogeneic stem cell procedures.
2. Growth of Romanian Stem Cell Donor Registry.
3. European accreditation (JACIE) of stem cell transplant teams.
4. Adequate structure for medical care.

# *Acknowledgements*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