MATCHED UNRELATED DONOR (MUD) STEM CELL TRANSPLANTATION IN SOUTH AFRICA

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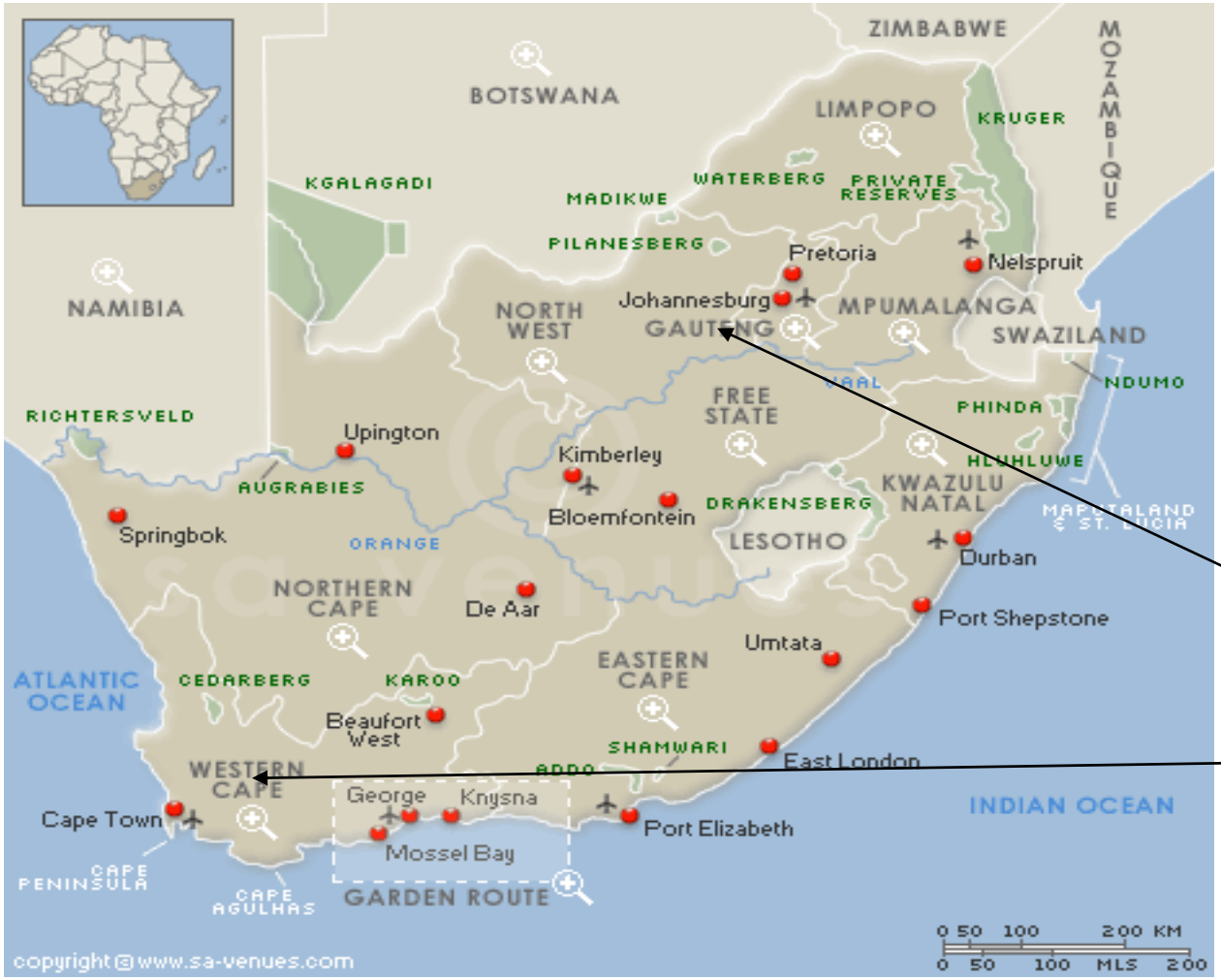
INTRODUCTION

- Between 1997 and 2008, a total of 150 South African *patients* received haematopoietic stem cell (HSC) transplants from MUDs.
- Bone marrow transplantation is offered in two regions in South Africa:

  Western Cape (2 Transplant Centres) and

  Gauteng (4 Transplant Centres) thus, requiring patients from other areas to relocate.



Gauteng

Western Cape

Introduction cont.

Using overall survival as endpoint, variables analysed were:

- the degree of HLA match,
- ABO compatibility,
- gender,
- CMV status and
- the interval between diagnosis and transplantation.

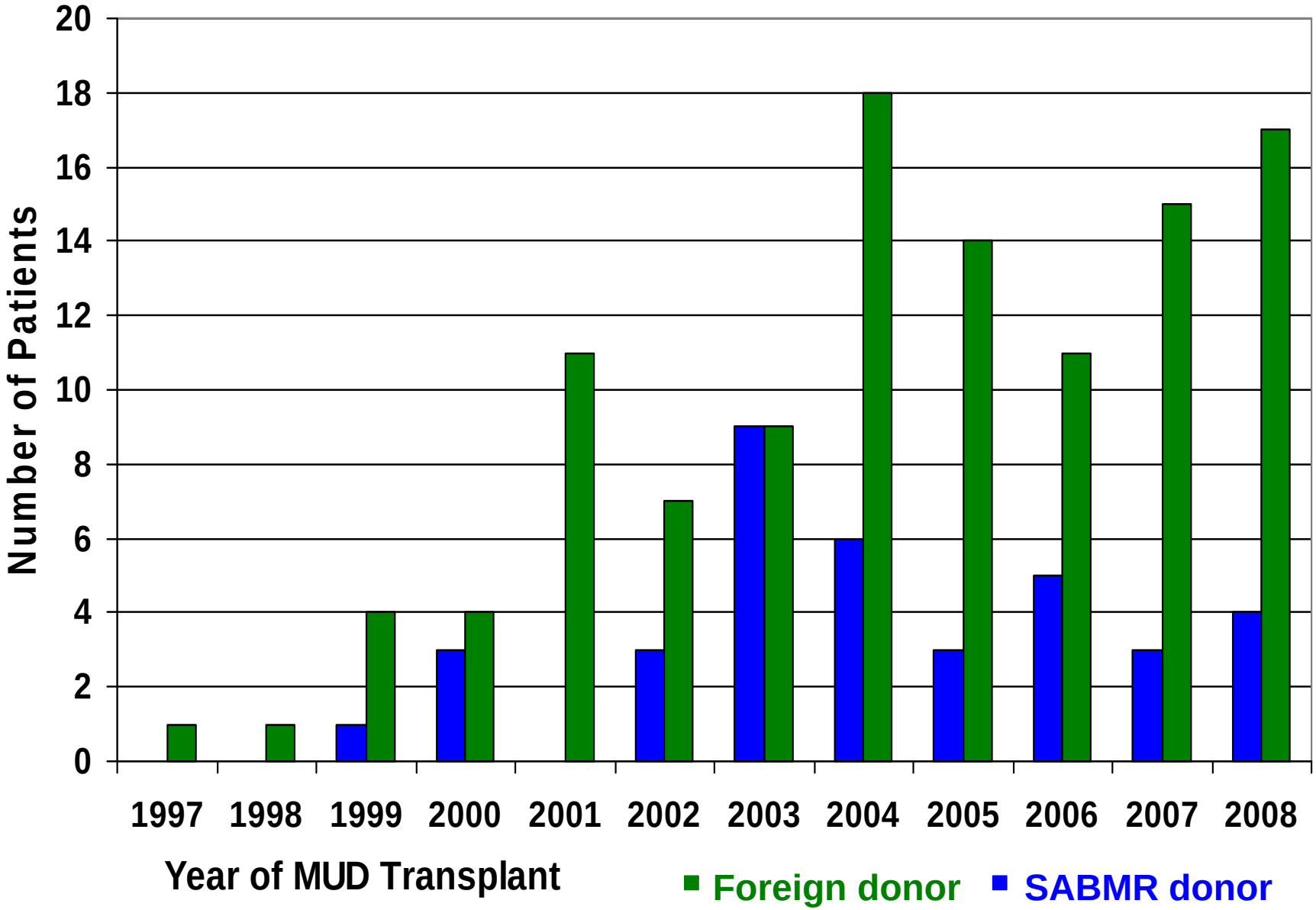
SUBJECTS

As shown in Figure 1, there were 150 patients the first of whom underwent this procedure in 1997.

- Excluded from this analysis were patients who received cord blood units (10);
- Patients who were transplanted in the United Kingdom (2) and
- Eight patients who received a second MUD transplant from either the ***same*** (4) or a ***different*** (4) donor.
- Thus, the outcome of all **130 transplants** was analysed.

Figure 1: NUMBER OF SOUTH AFRICAN PATIENTS RECEIVING MUD BMT

(first transplant only) n = 130



Subjects cont.

The patients were transplanted for a variety of haematopoietic disorders including:

ALL, AML, acute promyelocytic leukemia (APL), biphenotypic promyelocytic leukemia (BPL), lymphomas, Bernard-Soullier syndrome, CML, Fanconi anaemia, myelodysplasia, megaloblastic anaemia, mucopolysaccharidosis, multiple myeloma, PNH, polycythaemia vera, severe aplastic anaemia and T-cell lymphoblastic leukaemia.

Most received peripheral blood stem cells from a foreign registry, only 38 from SABMR donors.

RESULTS, DISCUSSION

The outcome of 130 transplants was analysed:

- 65 (50%) patients are still alive with the longest survivor being >10 years.
- The interval between diagnosis and transplantation ranged from 4 months to 279 months.
- The longer intervals included patients with diseases such as Fanconi anaemia and PNH.

Results, discussion cont.

HLA

Patients and donors were typed for HLA-A, B, Cw, DRB1 and DQB1 loci, with typing at high resolution since August 2002.

- 90 patients received HLA matched donors.
- 40 received grafts from donors that were mis-matched at a variety of HLA loci, either for one antigen or for two alleles.
- 54 out of 65(83%) of the surviving patients received HLA matched grafts (Table 1).

Table 1: HLA

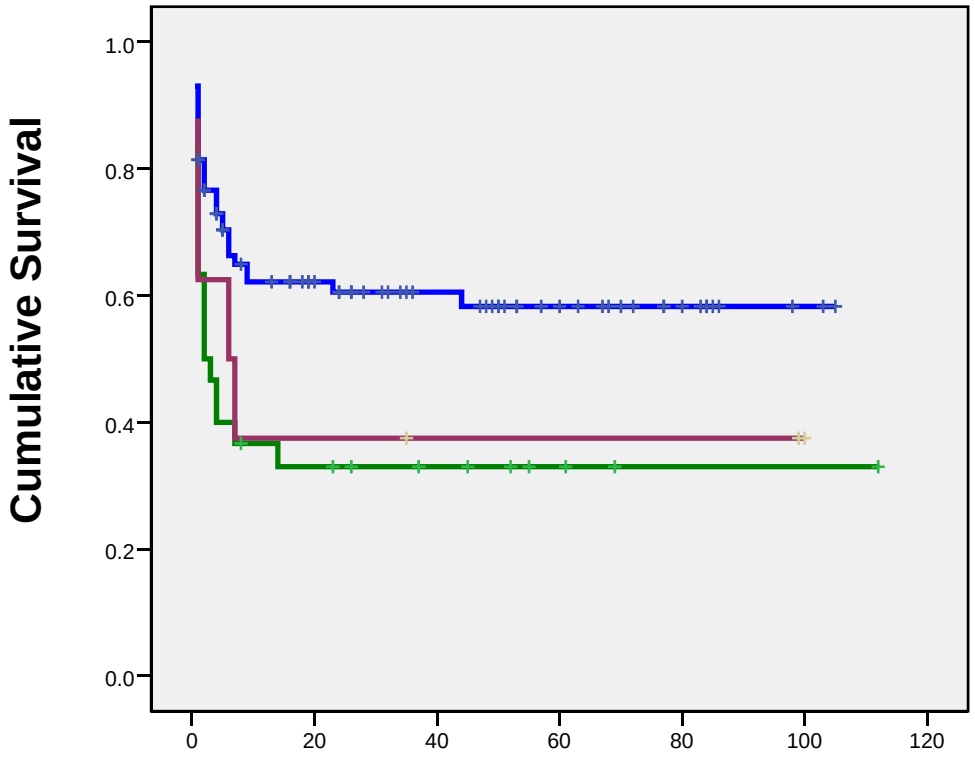
	ALIVE (50%) n = 65	DEAD (50%) n = 65	TOTAL n = 130
HLA MATCHED	54	36	90
HLA MISMATCHED	11	29	40

EFFECT ON OUTCOME:

1. HLA MATCHING

Patients with zero HLA mismatches survived significantly better than those with one or two HLA mismatches (Fig 2).

Figure 2: EFFECT OF HLA MATCHING



0 HLA MM
1 HLA MM
2 HLA MM

MM = Mismatches

EFFECT ON OUTCOME:

2. ABO COMPATIBILITY

Conventional blood transfusion rules were used to determine ABO compatibility.

The *majority* of patients (84) were transplanted with *ABO compatible donors.*

ABO also influenced transplant outcome with 46 out of 65 (71%) of the *surviving* patients receiving ABO compatible grafts (Table 2).

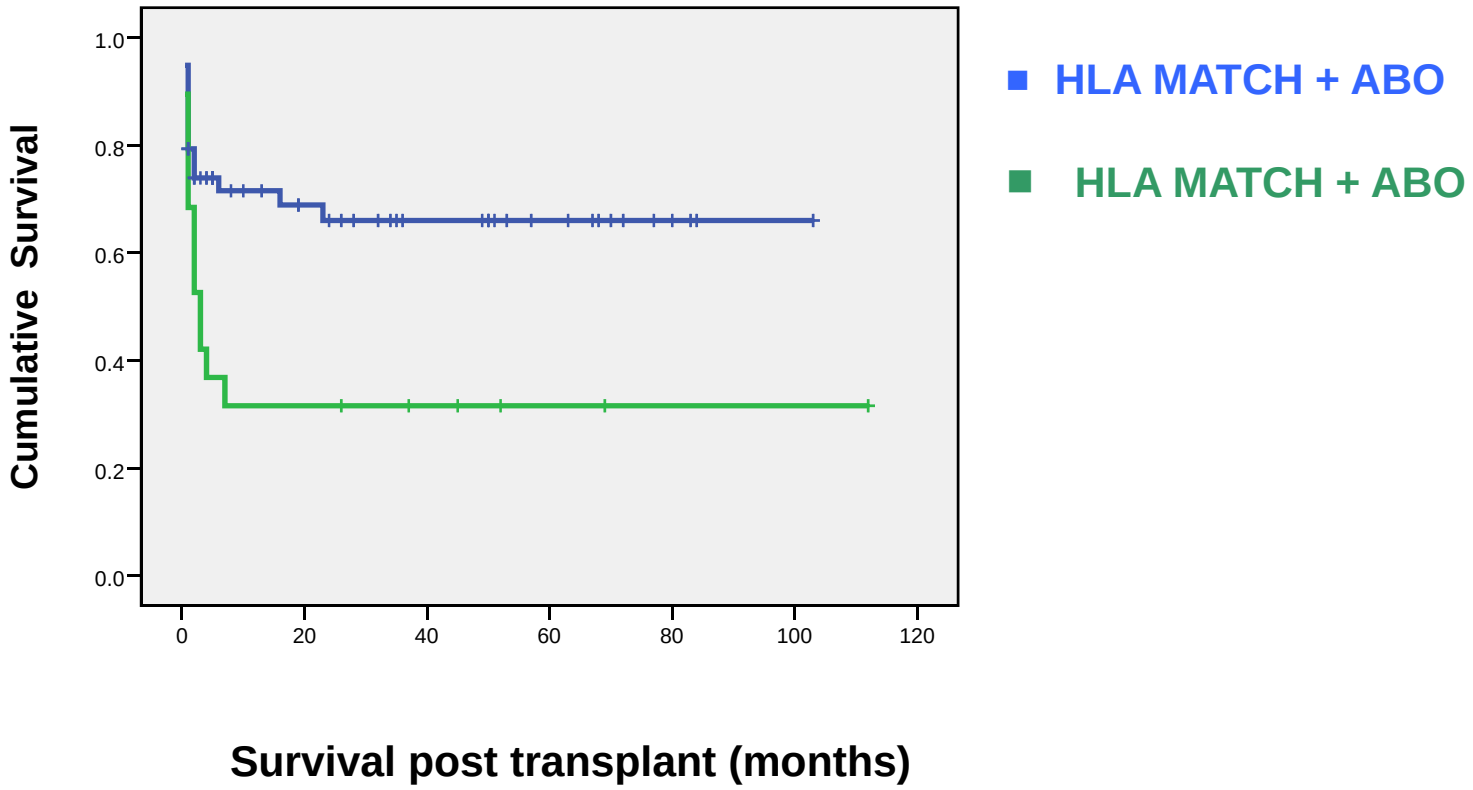
Table 2: ABO

	ALIVE n = 65	DEAD n = 65	TOTAL n = 130
ABO Compatible	46	38	84
ABO Incompatible	19	27	46

COMBINED EFFECT ON OUTCOME:

3. HLA and ABO COMPATIBILITY

Figure 3: COMBINED EFFECT OF HLA MATCH & ABO COMPATIBILITY

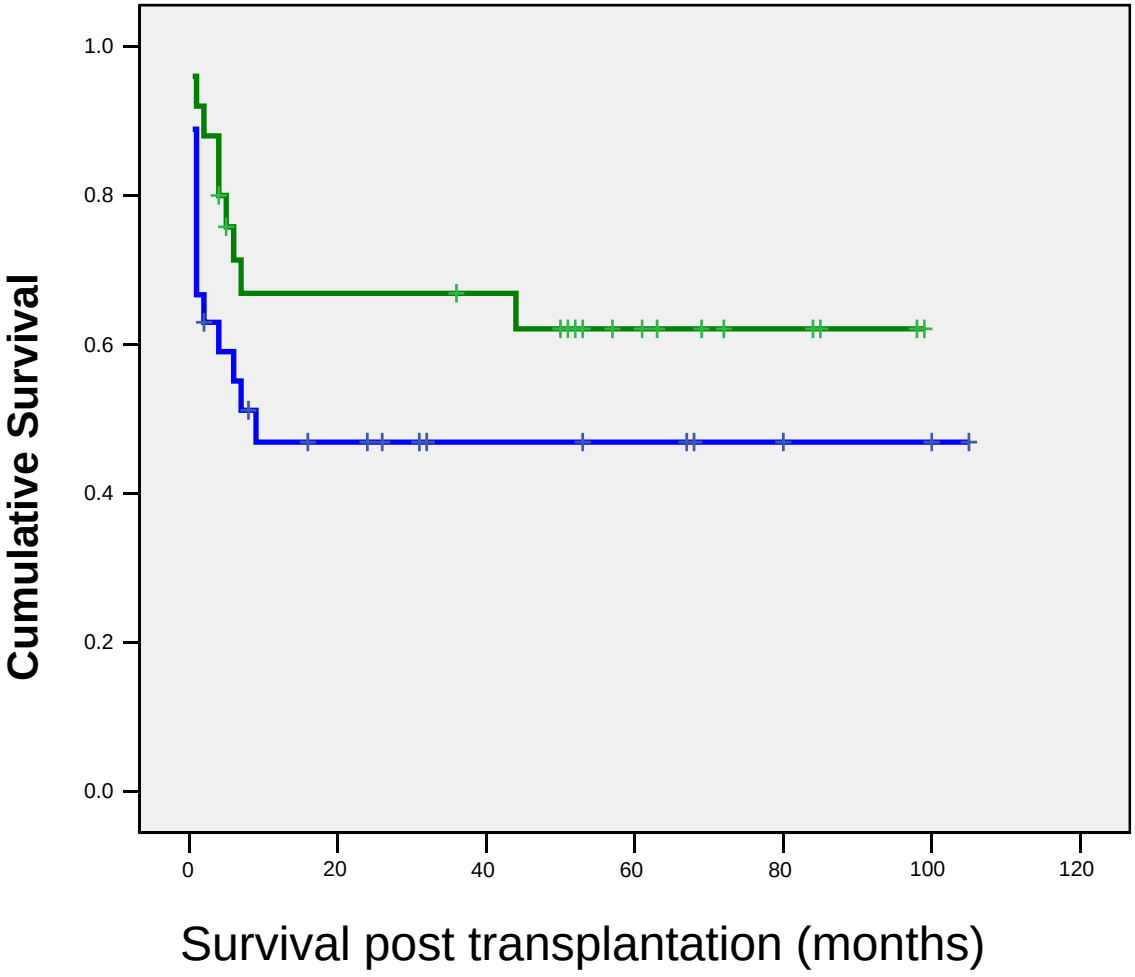


EFFECT on OUTCOME:

4. GENDER

- There were 77 male and 53 female patients.
- 60 received HSC from a donor of the opposite gender.
- The expected negative effect of female donor to male recipient was not demonstrated in this study. (Figure 4)

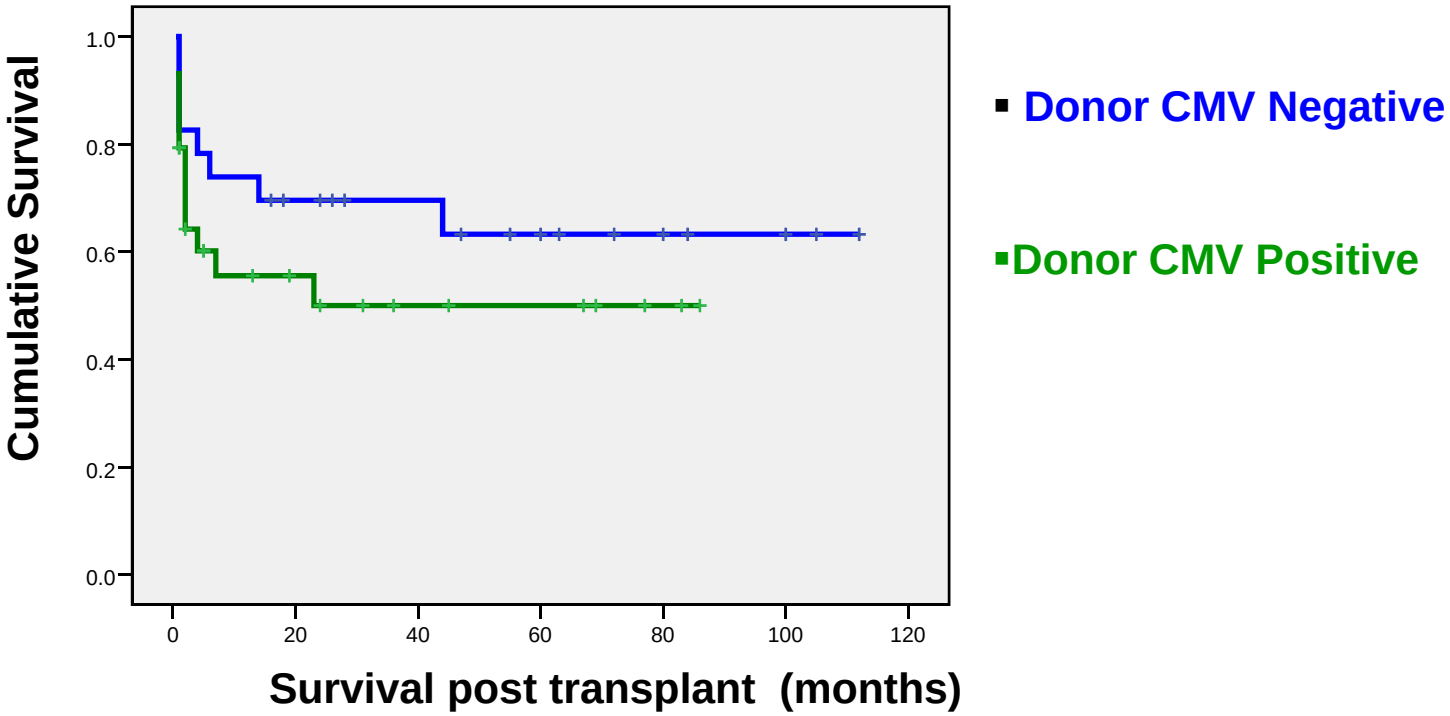
Figure 4: EFFECT OF DONOR GENDER (all these donors were FEMALE)



***Patient* - Male**
Donor = Female

***Patient* – Female**
Donor = Female

Figure 5: EFFECT OF CMV STATUS – CMV NEGATIVE PATIENTS



PATIENTS RECEIVING CORD BLOOD UNITS n = 10

Gender	:	8 males, 2 females
Ages	:	2 adult (dual cords) 8 paediatric (7m – 12yrs)
Outcome	:	3/10 Alive (3m to 2y5m post BMT)

PATIENTS RECEIVING SECOND MUD BMT n = 8

Gender	:	4 males , 4 females	
Indications	:	Failure to engraft	5
		Relapse	3
Donor	:	Same donor	4*
		Different donor	4
Outcome	:	3/8 Alive & Well	

* (one donor provided PBSC followed by BM)

CONCLUSION

- There is, at present, no South African register of bone marrow transplants whether autologous or allogeneic (related and unrelated).

- This is the first analysis of HSC transplantation in South Africa using matched unrelated PBSC and BM donors as a stem cell source.

- Although the numbers are small, as expected HLA matching increased the chance of survival.

CONCLUSION contd.

- Wherever possible, an ABO compatible donor was selected and this also appeared to improve transplant outcome.

- The expected negative effect of female donor to male recipient was not demonstrated in this small study.

- MUD transplantation has now become a well-accepted option for patient care in South Africa, with six transplant centres operating in the major metropoles. Unfortunately it is not available to patients in the public sector for funding reasons.

ACKNOWLEDGEMENTS

We would like to thank the following transplant centres for their participation:

Constantiaberg Medi Clinic, Cape Town
Donald Gordon Medical Centre, Johannesburg
Faerie Glen Hospital, Pretoria
Flora Clinic, Johannesburg
Groote Schuur Hospital / UCT Private Academic Hospital, Cape Town
Mary Potter Oncology Centre, Pretoria

Professor Tim Dunne, Department of Statistical Sciences, University of Cape Town is thanked for kind assistance with the statistical analysis.