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# Outcomes of Older Patients Undergoing 2-Step Approach to Haploidentical and Matched Related Peripheral Blood Hematopoietic Stem Cell Transplantation (HSCT): A Single Institutional Experience

Sameh Gaballa, MD

*Thomas Jefferson University Hospital, samehgaballa@gmail.com*

Seyfettin Onder Alpdogan, MD

*Thomas Jefferson University Hospital, onder.alpdogan@jefferson.edu*

Matthew Carabasi, MD

*Thomas Jefferson University Hospital, Matthew.Carabasi@jefferson.edu*

Joanne Filicko-O'Hara, MD

*Thomas Jefferson University, Joanne.Filicko-O'Hara@jefferson.edu*

Margaret Kasner, MD

*Thomas Jefferson University, Margaret.Kasner@jefferson.edu*

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**Authors**

Sameh Gaballa, MD; Seyfettin Onder Alpdogan, MD; Matthew Carabasi, MD; Joanne Filicko-O'Hara, MD; Margaret Kasner, MD; Benjamin E Leiby, PhD; Ubaldo E. Martinez-Outshoorn, MD; Edward C Pequignot, MD; Sarah Rosado; Shannon Rudolph, MS; John L Wagner, MD; Mark Weiss, MD; Neal Flomenberg, MD; and Dolores Grosso, DNP

# Outcomes of Older Patients Undergoing 2-Step Approach To Haploidentical and Matched Related Peripheral Blood Hematopoietic Stem Cell Transplantation (HSCT): A Single Institutional Experience

Sameh Gaballa, MD<sup>1</sup>, Onder Alpdogan, MD<sup>1</sup>, Matthew Carabasi, MD<sup>1</sup>, Joanne Filicko, MD<sup>1</sup>, Margaret Kasner, MD<sup>1</sup>, Benjamin Leiby, PhD<sup>2</sup>, Ubaldo Martinez, MD<sup>1</sup>, Edward Pequignot, MS<sup>2</sup>, Sarah Rosado<sup>1</sup>, Shannon Rudolph, MS<sup>1</sup>, John Wagner, MD<sup>1</sup>, Mark Weiss, MD<sup>1</sup>, Neal Flomenberg, MD<sup>1</sup>, Dolores Grosso, DNP<sup>1</sup>

<sup>1</sup>Department of Medical Oncology, Kimmel Cancer Center, Thomas Jefferson University Hospital, Philadelphia, United States

<sup>2</sup>Department of Biostatistics, Thomas Jefferson University, Philadelphia, United States

## Introduction

- HSCT is a curative option for many patients (pts) with hematological malignancies.
- Significant advances in supportive care and conditioning regimens over the past decade have allowed the extension of this therapy to older individuals.
- Information regarding the outcomes of this older subset of pts undergoing HSCT is limited, especially those undergoing haploidentical (HI) HSCT.

## Objectives

- To describe the outcomes of patients 60 years of age or older undergoing haploidentical and matched related (MR) HSCT using the 2-step approach.

## Methods

- We did a retrospective chart review of outcomes in pts 60 years of age or older enrolled on our 2 step haploidentical<sup>1,2,3</sup> or matched related HSCT trials.
- Details of the 2-step approach are shown in figure 1.

## Results

- Multivariate statistics using cox regression analysis identified the following factors affecting:

### I. Overall survival:

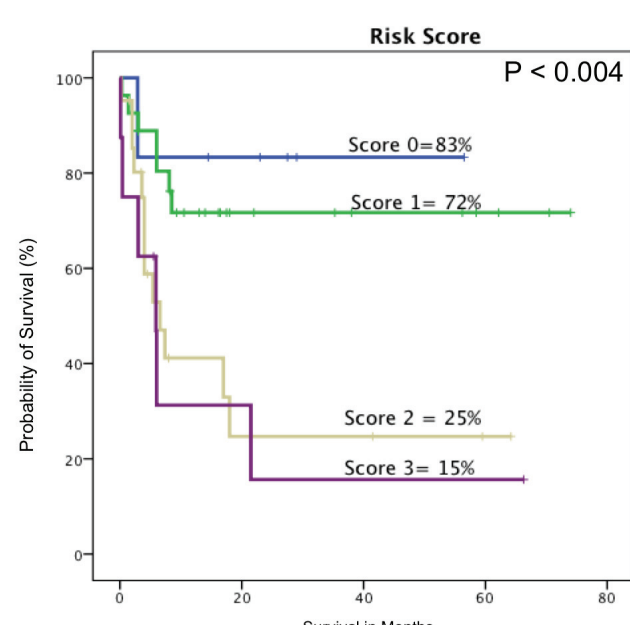
Variable	Hazard Ratio	95% CI		p-Value
		Lower	Upper	
KPS 60-80 vs 90/100	6.2	2.74	14.02	<0.001
Age 60 – 78 years	1.12	1.01	1.23	0.033

- HCT-CI (0 vs >0) and presence of active disease at the time of transplant had a strong trend with decreased OS on univariate statistics (p= 0.07 and p= 0.08 respectively)

### II. Non-Relapse Mortality:

Variable	Hazard Ratio	95% CI		p-Value
		Lower	Upper	
KPS 60-80 Vs 90/100	7.37	2.48	21.94	<0.001
Age 60 – 78 years	1.37	1.11	1.68	0.003
Conditioning MA vs RIC	6.6	1.15	37.87	0.034
CD34 Dose (x 10 <sup>8</sup> /kg)	0.67	0.46	0.96	0.029
Recipient gender M vs F	4.82	1.3	17.87	0.019

- After a median follow-up of 8 months (range 1-74), 57% of pts were alive.
- Relapse related mortality was 18% while non-relapse related mortality was 26%.
- No rejections or engraftment failures were observed.
- GVHD was controlled in all cases with steroids and/or photopheresis.



Each of the following risk factors receive 1 point:  
 • Age > 66 yo  
 • KPS < 90  
 • HCT-CI > 0

## The 2 Step Approach

Figure 1

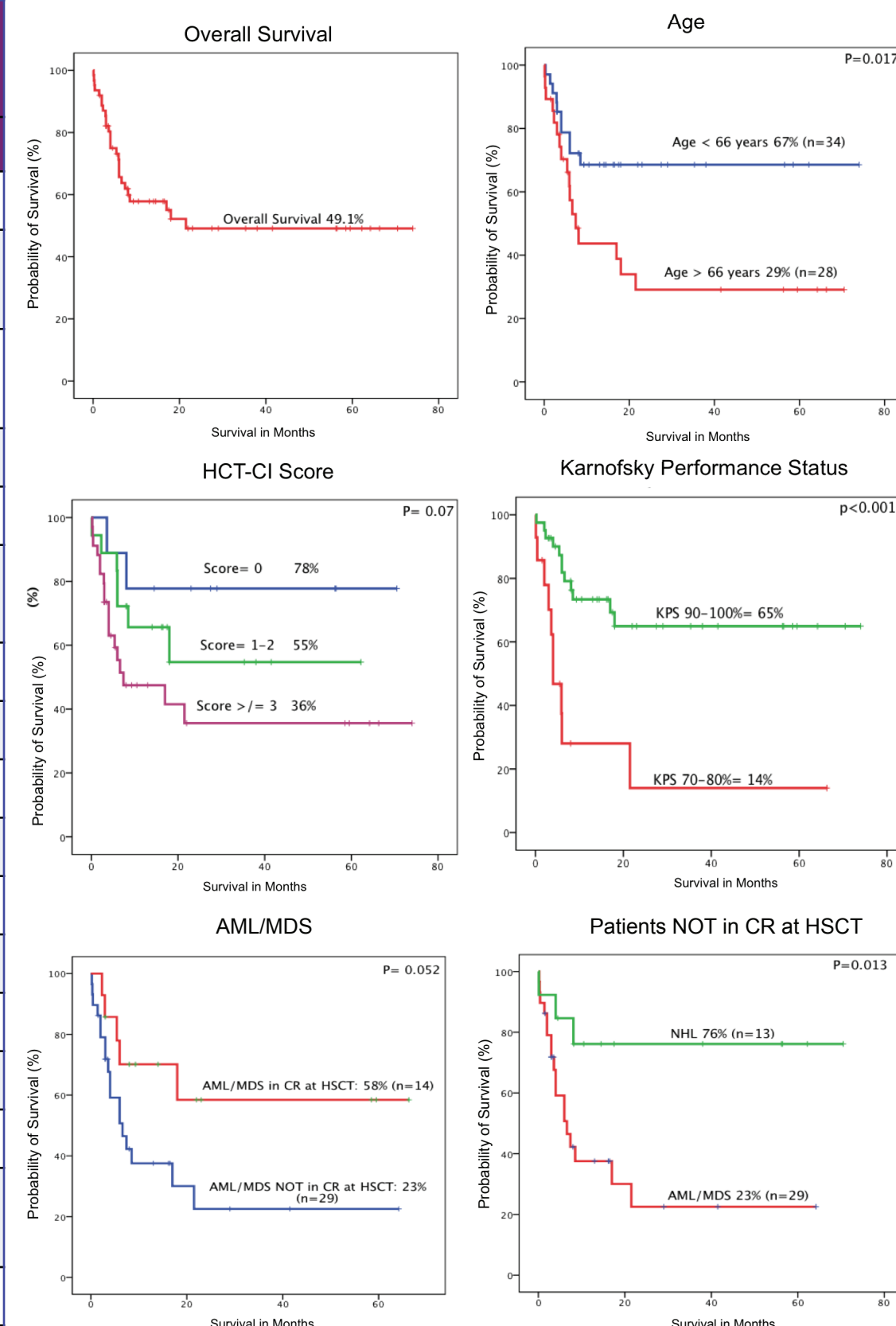


\* Myeloablative (MA) = 12 Gy TBI over 4 days

\* Reduced Intensity (RIC) = 4 days of Fludarabine 30mg/m<sup>2</sup> + Cytarabine 2gm/m<sup>2</sup> or Thiotepa 5mg/kg

## Results

	Myeloablative	Reduced Intensity
<b>Patient Characteristics:</b>		
Number	28	34
Median Recipient Age (range)	63 (60-68)	68 (60-78)
Median Donor age (range)	36 (19-70)	44 (24-68)
Age>65 (%)	8 (28)	26 (77)
Sex (M/F)	19/9	21/13
Median CD34 cells (x 10 <sup>6</sup> /kg)	4.41 (2.1-10)	4.44 (1.4-10.6)
CD 3 cell dose (x 10 <sup>8</sup> /kg)	2	2
<b>Donor Source</b>		
Haploidentical (%)	23 (82)	33 (97)
Matched Related (%)	5 (18)	1 (3)
<b>Disease</b>		
AML/MDS	23 (82)	20 (59)
ALL	1 (4)	1 (3)
NHL	4 (14)	11 (32)
Other	0	2 (6)
Active disease at time of HSCT (%)	19 (68)	25 (74)
AML/MDS	15 (54)	14 (41)
NHL	4 (14)	9 (26)
Others	0	2 (6)
<b>KPS</b>		
60 %	1(4)	0
70-80%	5 (18)	12 (35)
90-100%	22 (79)	22 (65)
<b>HCT-CI</b>		
0	3 (11)	6 (18)
1-2	10 (36)	8 (24)
≥3	15 (54)	19 (56)
<b>Outcomes:</b>		
Median ANC recovery (days)	11	11
Median Platelet recovery (days)	16	20
aGVHD II-IV (%)	9 (32)	12 (35)
aGVHD III-IV (%)	0	3 (9)
cGVHD (%)	3 (10)	0
<b>Cause of Death</b>		
Relapse	4 (14)	7 (21)
Non-Relapse Mortality (%)	7 (25)	9 (27)
Infection	2 (7)	3 (9)
Toxicity	4 (14)	4 (12)
GVHD	1 (4)	2 (6)



## Conclusions

- Factors associated with decreased overall survival in patients above the age of 60 undergoing HSCT using the 2 step approach included older age (>66) and lower KPS (70/80%) in a multivariate analysis.
- Factors associated with higher non-relapse mortality were older age (>66), lower KPS (70/80%), use of myeloablative conditioning, male gender and a lower CD34 dose.
- Haploidentical or matched related HSCT utilizing the 2 step approach are associated with acceptable outcomes in older pts.
- Age and lack of a MR donor should not be barriers to HSCT if patients are fit.
- Patients with lymphoma and controlled myeloid malignancies fared better in this older population.

## References

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