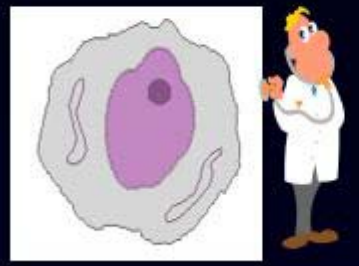
A I H



Allogreffe de Cellules Souches Hématopoïétiques du Sang Placentaire

Marseille, 30 septembre - 1 octobre

Association des Internes et Jeunes Hématologues

EUROCORD

EBMT

V Rocha MD, PhD
Unité de Greffe de Moelle Osseuse
Hôpital Saint Louis,
France

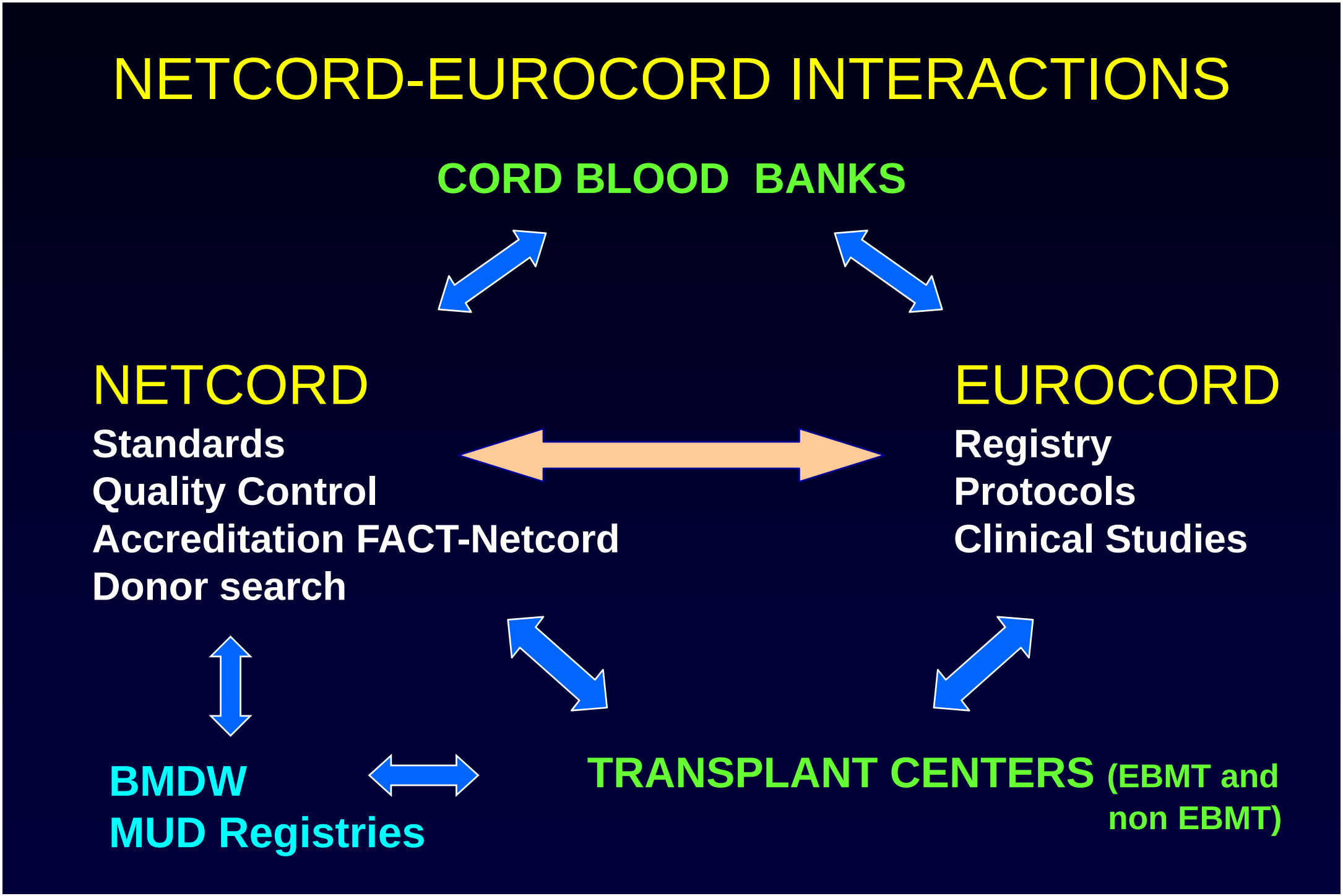
NETCORD

First cord blood transplant

Past and Present of Cord Blood Transplants

- 1989 → First Cord blood transplant
- 1989-92 → Clinical observation that GVHD was reduced in HLA incompatible CBT
- 1992-93 → Establishment of Cord blood banks (NY, Paris, Milan and Dusseldorf)
- 1993-95 → Feasibility of HLA incompatible unrelated cord blood transplants
- 1995 → Establishment of Eurocord group
- 1997 → Nucleated cell dose more important factor for engraftment and survival , influence of HLA on engraftment
- 1998 → Large series of UCBT = confirmation of cell dose and HLA
- >2000 → Retrospective comparisons between UBMT and UCBT
- 2002 → Use of cord blood cells in adults with promising results
- 2003 → Criteria of cord blood choice and indications
- 2003-04 → Use of double cord and RIC regimen in adults
- 2004 → Isolation of USSC from umbilical cord blood
- 2004-05 → Comparable results between unrelated CBT and UBMT in adults

NETCORD-EUROCORD INTERACTIONS



EUROCORD Registry

2842 cord blood transplantation performed from 1988 to Sep 2006

in 39 countries and 318 transplant centers:

- 138 EBMT → 1700 cases

- 180 Non-EBMT → 742 cases

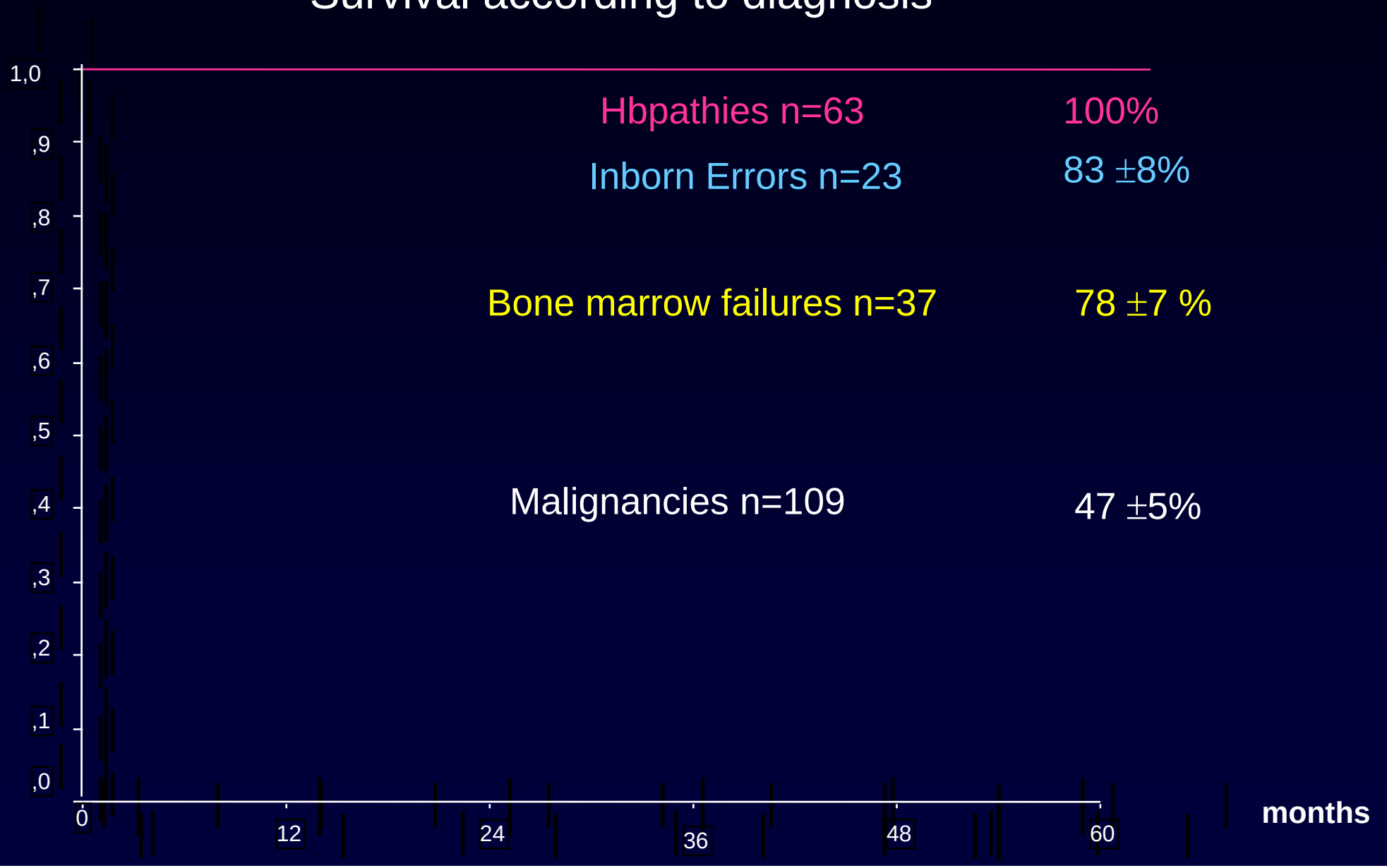
- **Single CB transplant n=2680** **Related n= 267**
  Unrelated n = 2313
- **Expanded Unit n= 52**
- **Unit for multi cord n= 150**
- **UCB + BM (haplo) n= 14**
- **CB + BM (genoidentical) n= 18**
- **Autologous or gene therapy n=4**

CLINICAL RESULTS

Related Cord Blood Transplantation

Related Cord Blood Transplantation (n=231)

Survival according to diagnosis



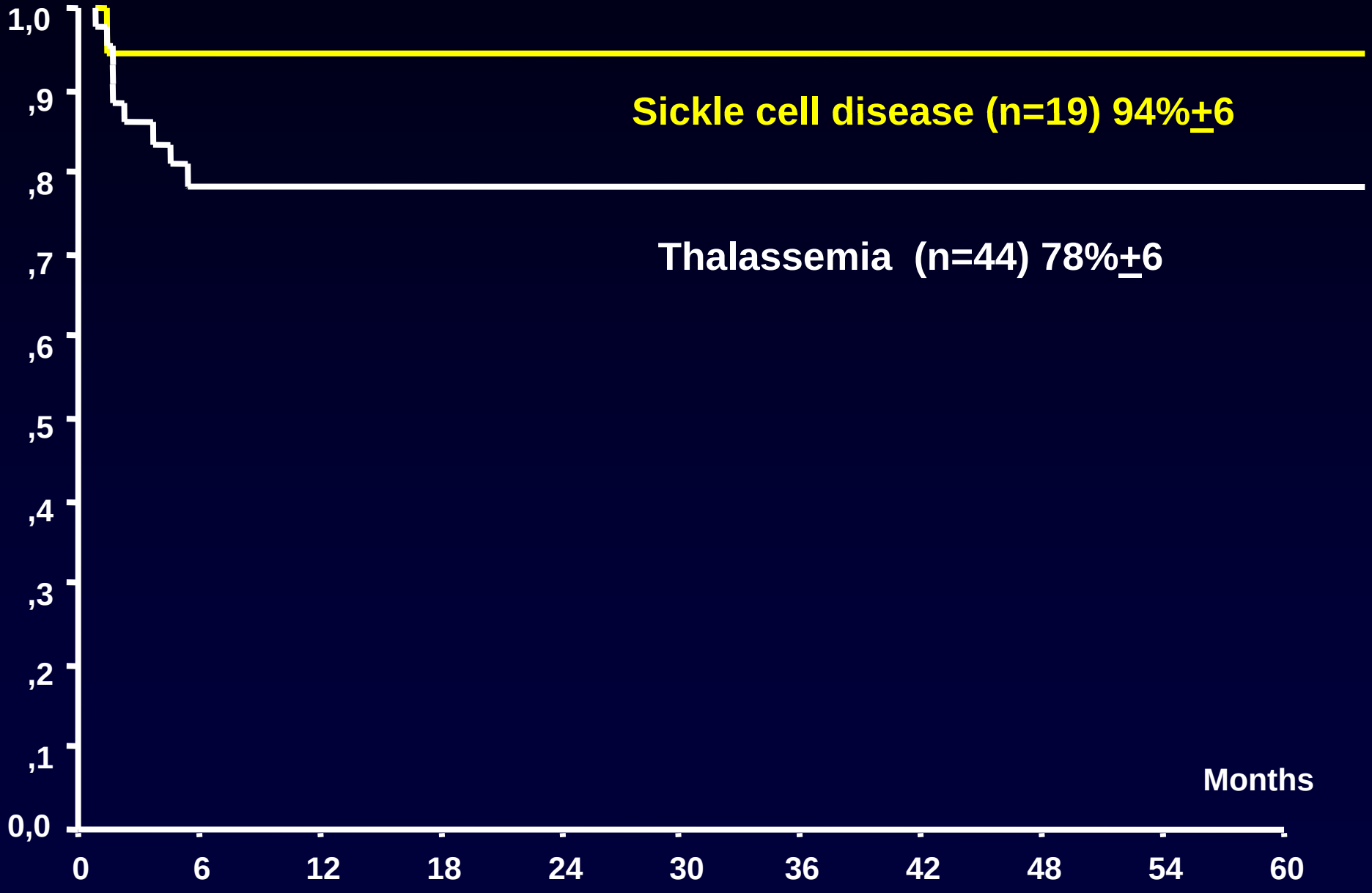
Hbpathies n=63 100%

Inborn Errors n=23 83 ±8%

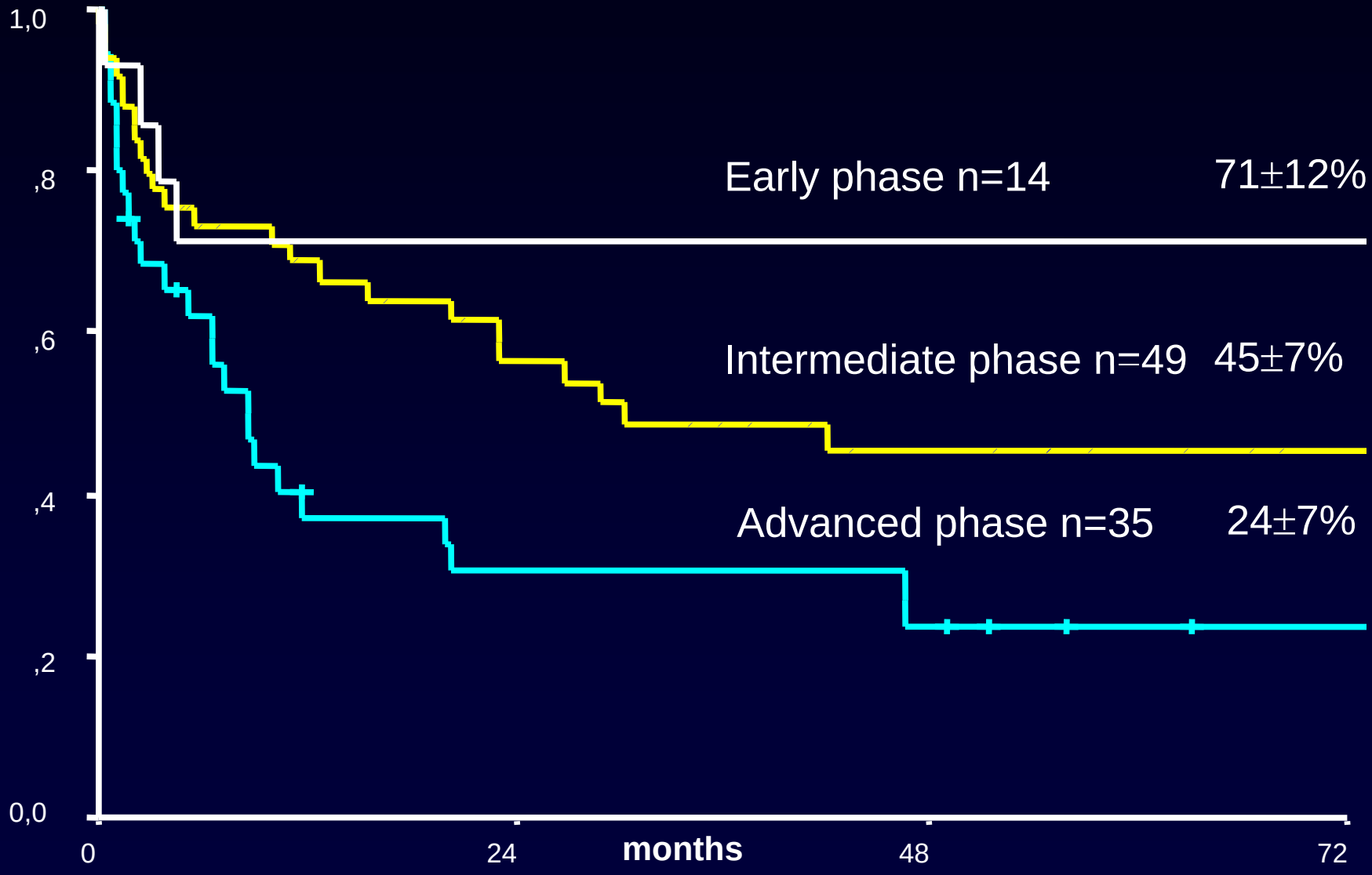
Bone marrow failures n=37 78 ±7 %

Malignancies n=109 47 ±5%

5 years EFS according to diagnosis



Related cord blood transplantation for maligancies (n=109)
Survival according to status of the disease at CBT



COMPARISON OF GVHD AFTER HLA-IDENTICAL SIBLING CORD BLOOD vs BONE MARROW TRANSPLANTS IN CHILDREN

International Bone Marrow Transplant Registry

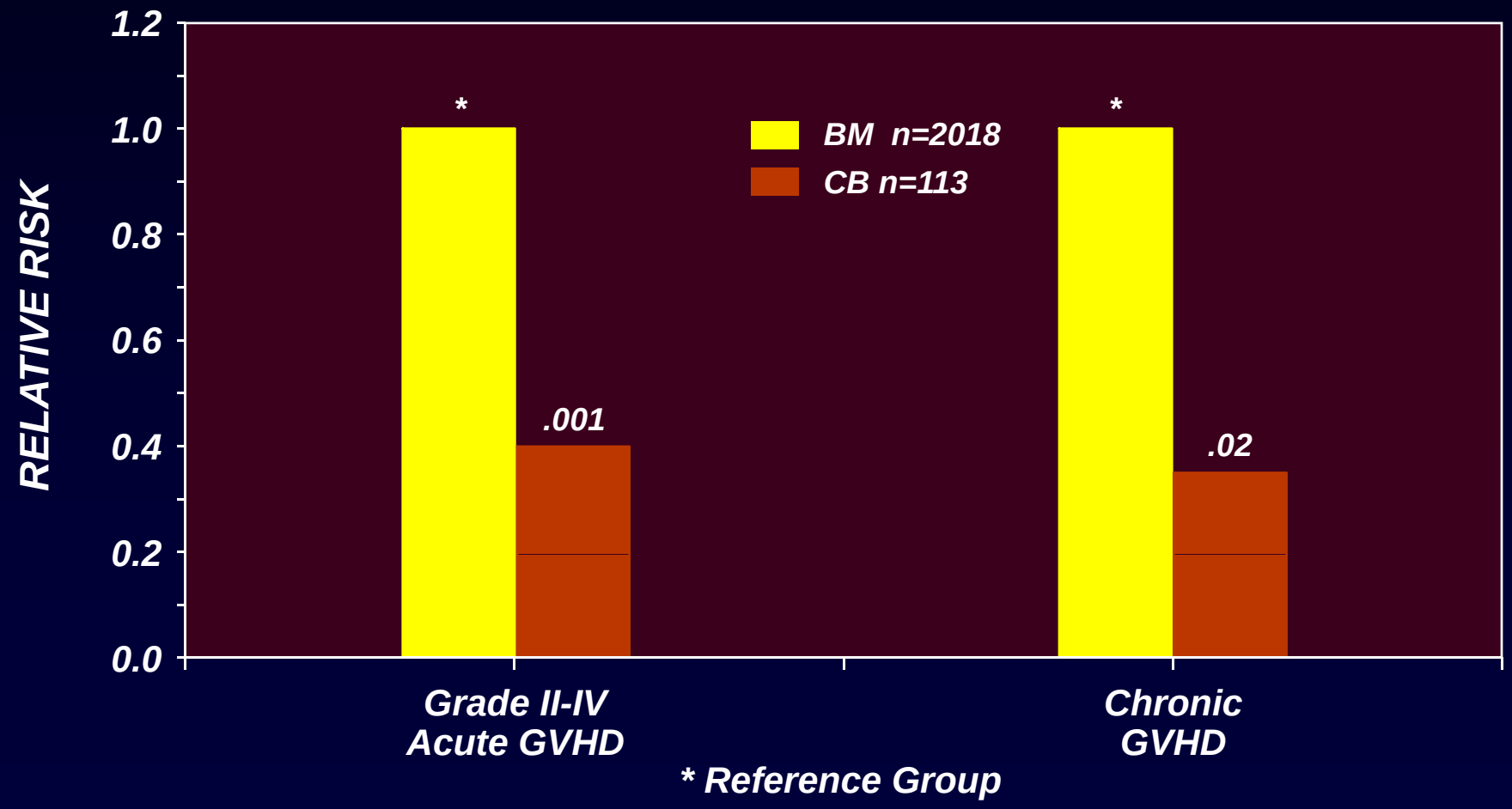
and

Eurocord

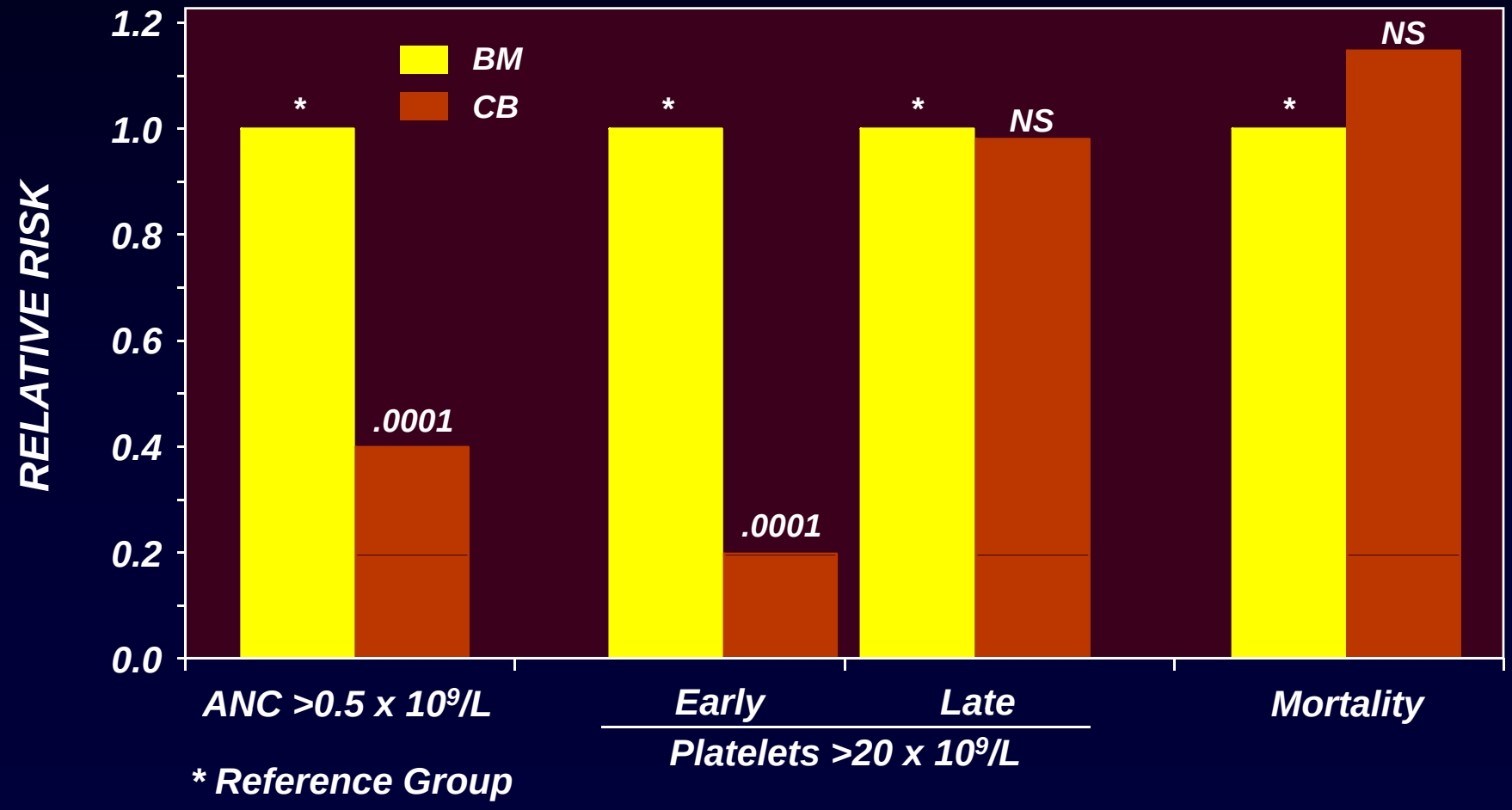
V Rocha et al

NEJM 342: 1846-1854, 2000

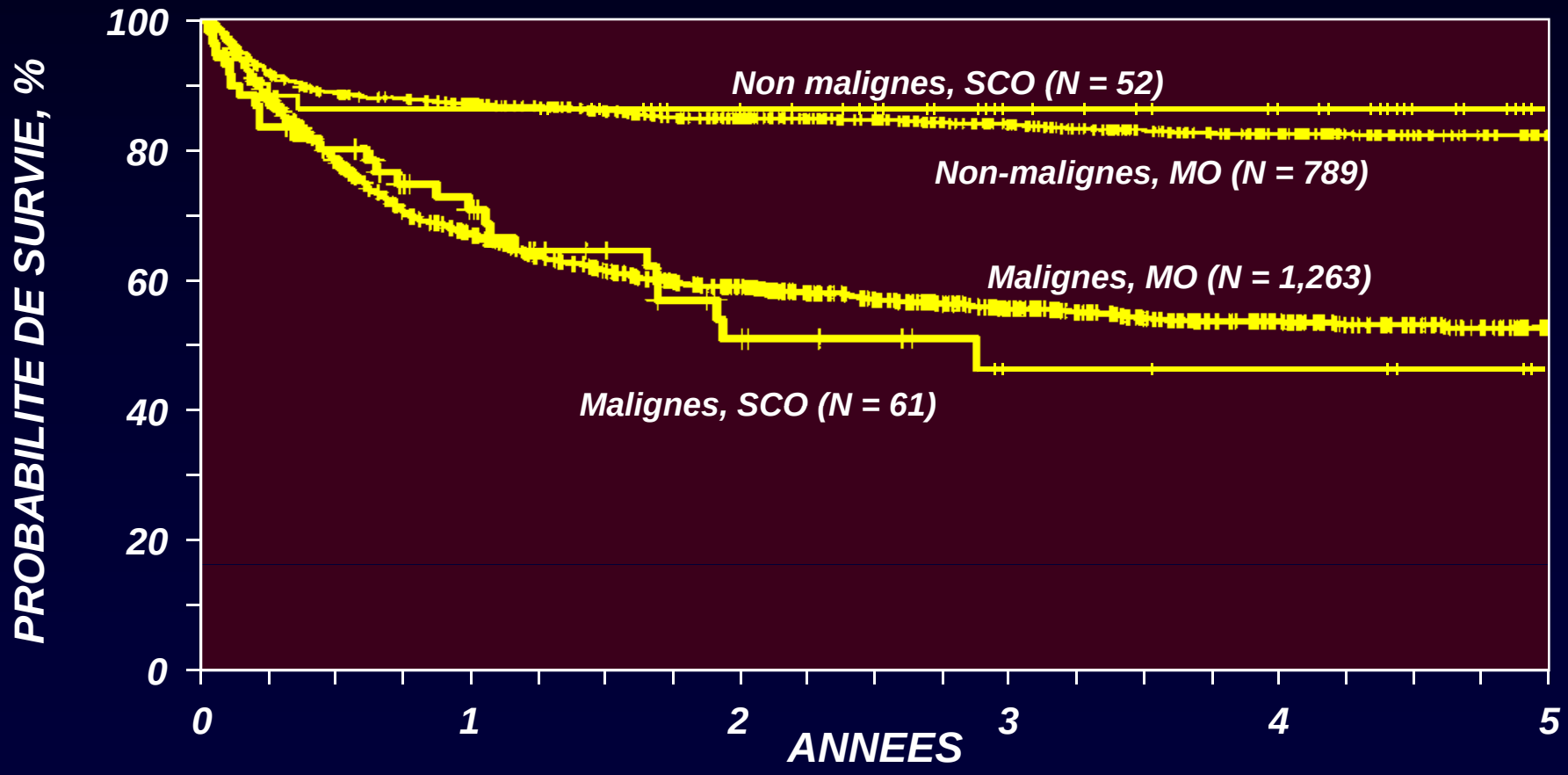
MULTIVARIATE ANALYSIS
- GVHD -



MULTIVARIATE ANALYSIS
- Hematopoietic Recovery & Survival -



Survie Globale après greffes HLA identiques de SCO comparées aux greffes de MO chez les enfants selon les diagnostiques



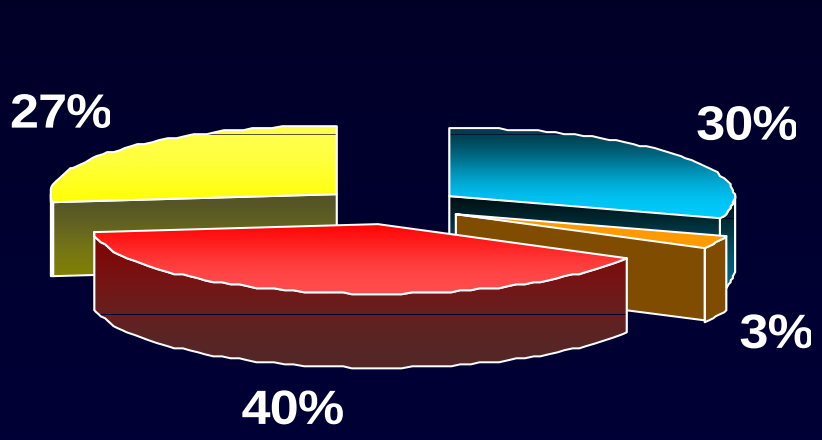
V Rocha, J Wagner, K Sobosinski et al, NEJM 342: 1846-1854, 2000

Indications of cord blood banking for family use

- **Sibling with a disease which can be cured by hematopoietic stem cell transplantation: Poor risk leukemia, aplastic anemia, hereditary disorders.**
- **HLA mismatched transplants with 1, 2 or full haplotype (?)**
- **Familial predisposition to malignancies**
- **Genetic disease (autologous use for gene therapy)**

Unrelated Cord Blood Transplantation

Estimate number of patients with an indication of an allogeneic hematopoietic stem cell transplants



- HLA identical sibling donor
- Related 1 HLA incompatible
- Unrelated BM or PB donor (9 or 10 out of 10)
- no donor

Advantages and disadvantages

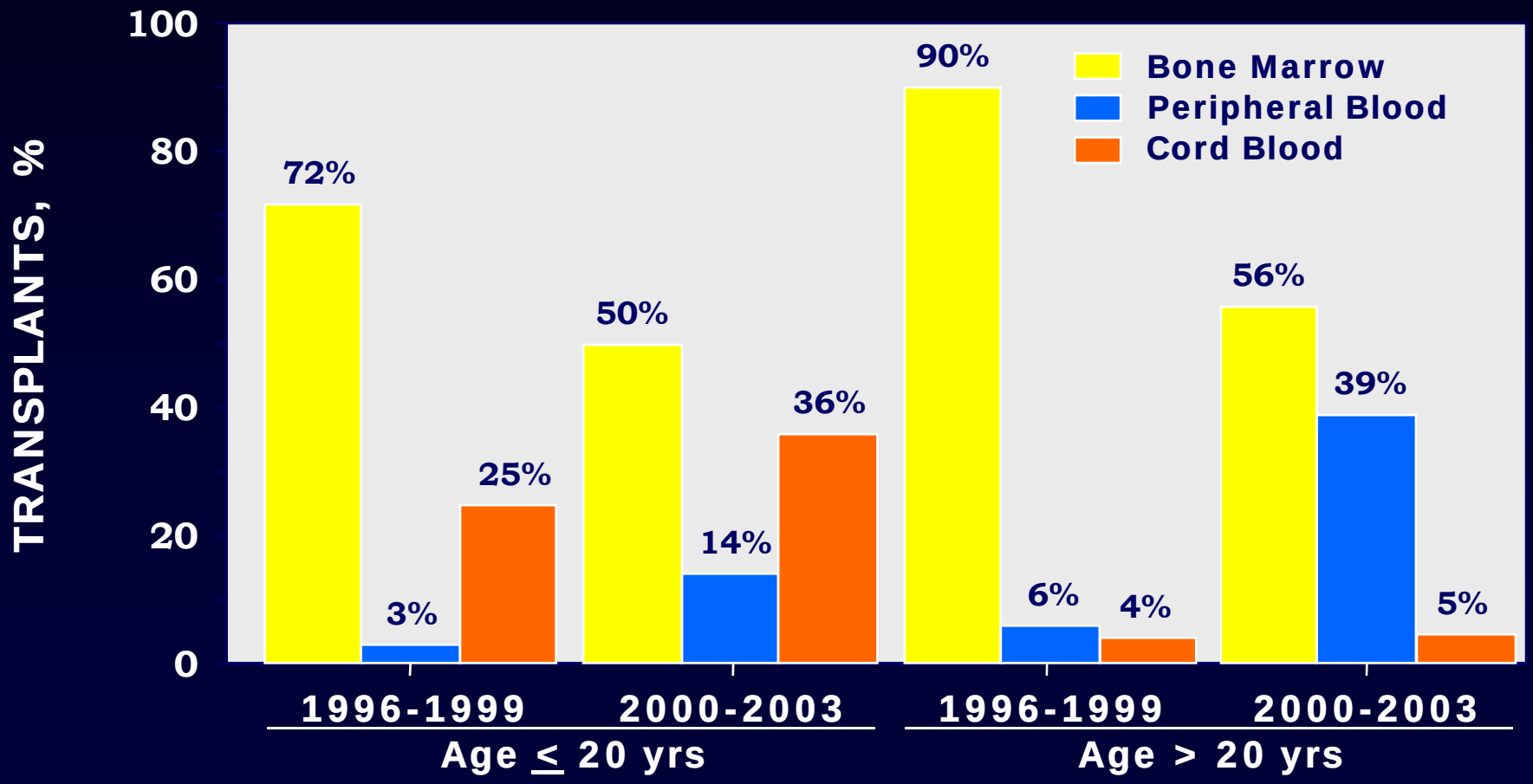
Searching and identifying an unrelated stem cell donor

	BM	CB
Information of A+B (serology) +DRB1(DNA) typed	16-56%	40-80%
Median search time	3-6 mon	<1mon
Donors identified but not available	30%	~1(?)%
Rare Haplotypes represented	2-10%	20%
Major limiting factors to graft acquisition	HLA match	Cell Dose
Ease of rearranging date of cell infusion	Difficult	Easy
Potential for second HSC graft or DLI from the same donor	Yes	No
Potential for viral transmission to recipient	Yes	No
congenital diseases	No	Yes
Risk to donor	Yes	No

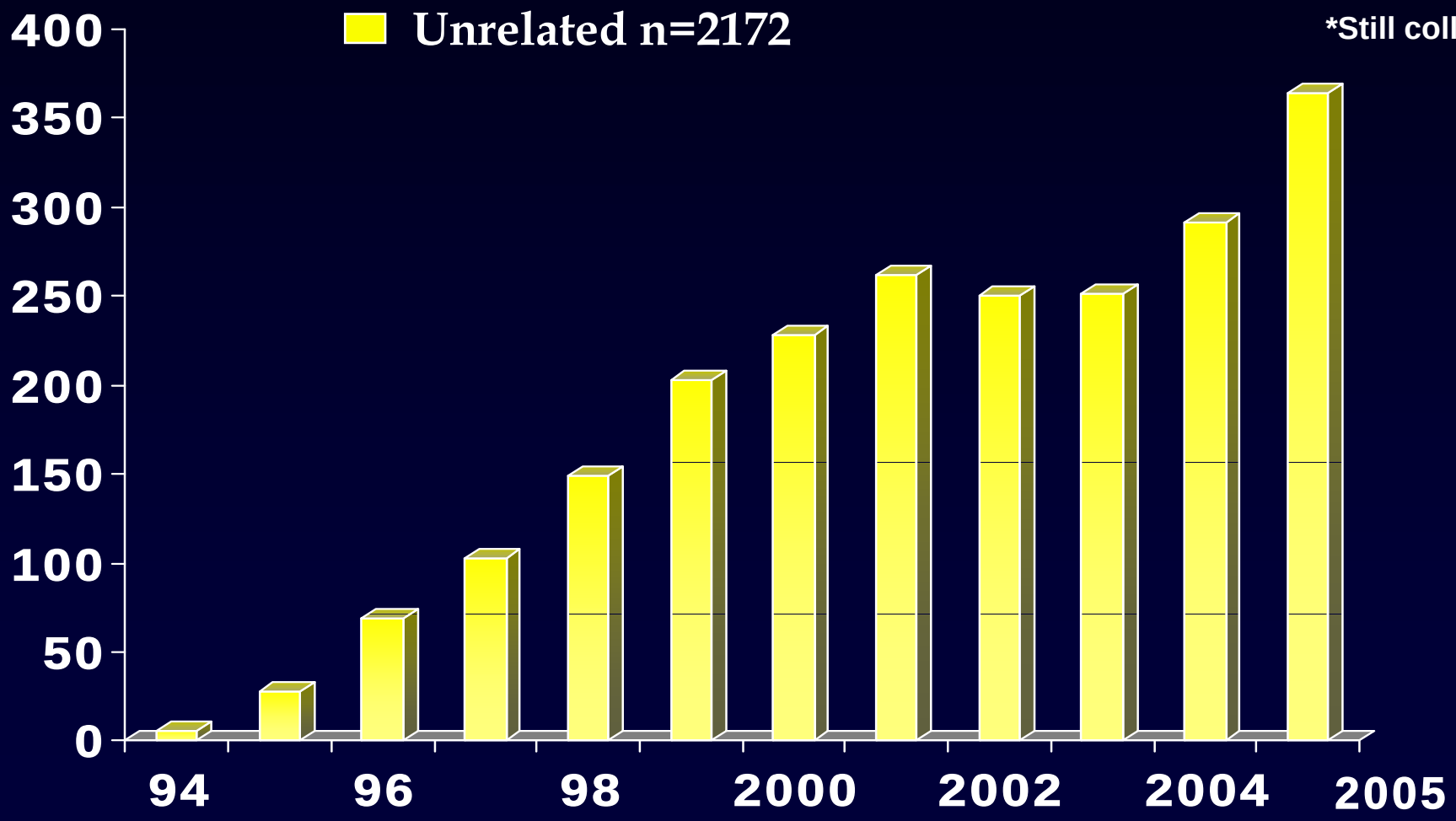
Grewal S et al, modified Blood 2003

UNRELATED TRANSPLANTS BY RECIPIENT AGE

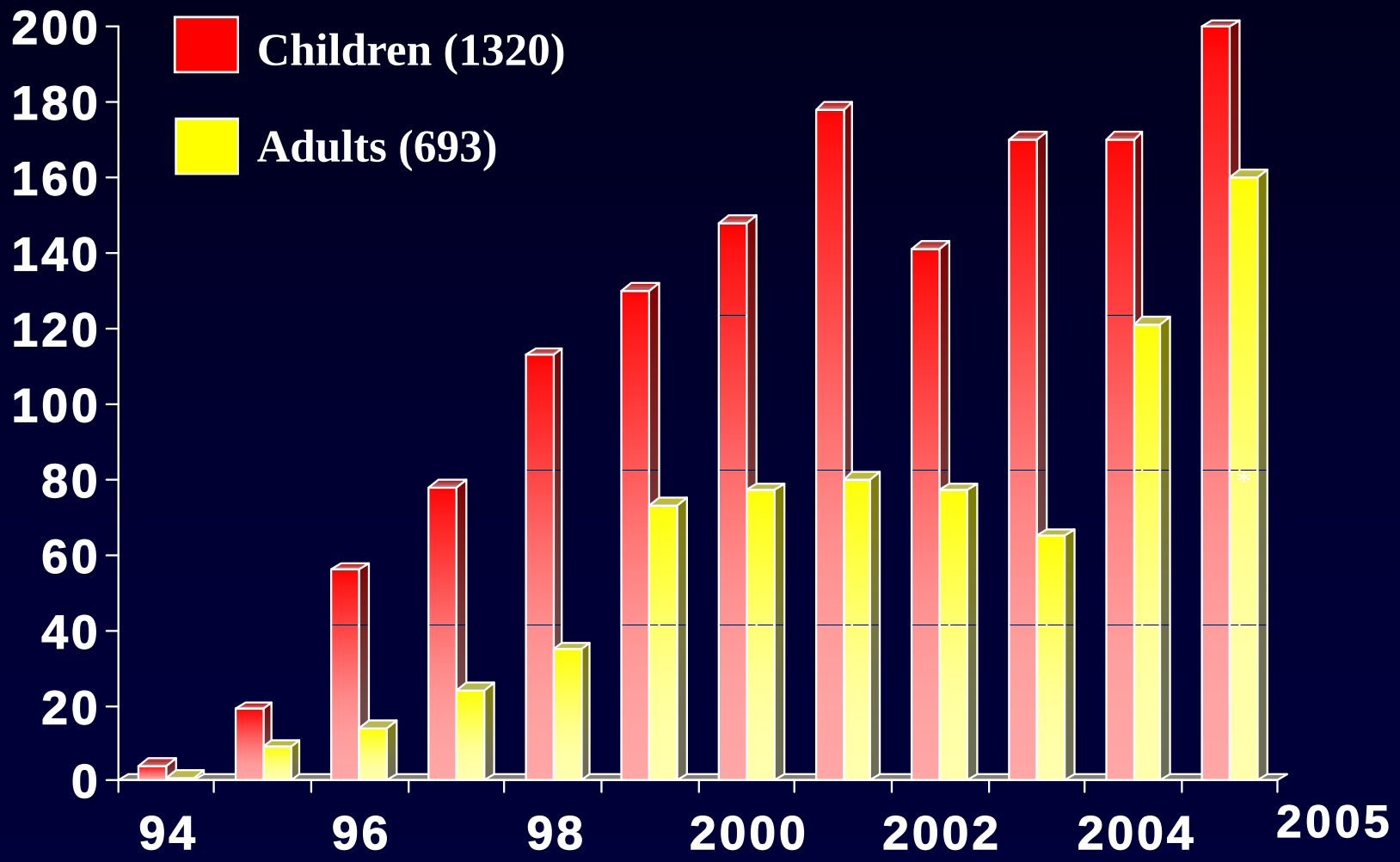
- Registered with CIBMTR, 1996 to 2003 -



Number of Unrelated CBT / year reported to Eurocord



Number of Unrelated Donor CBT according to the recipient age/year reported to Eurocord



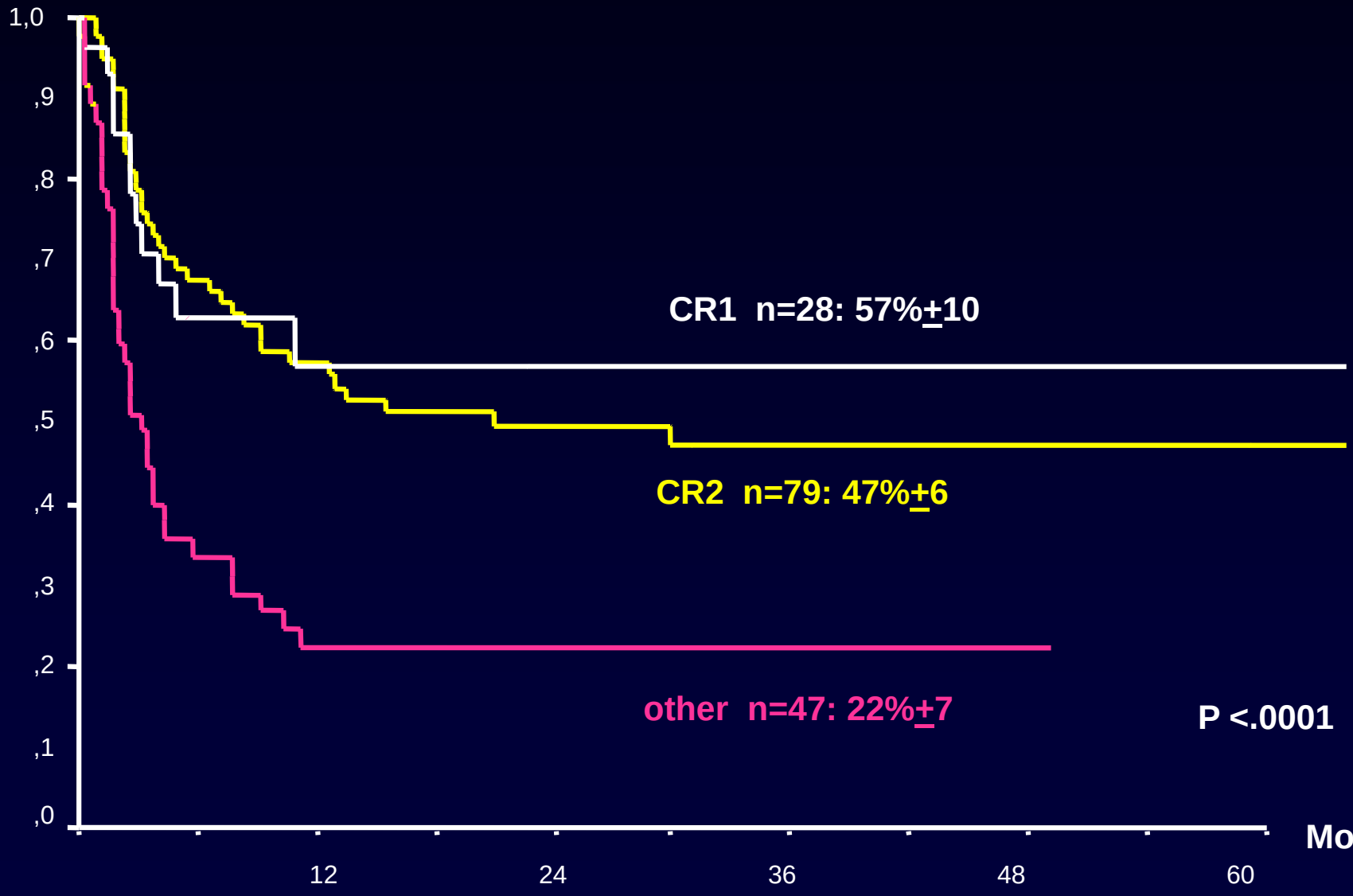
UNRELATED CORD BLOOD TRANSPLANT

IN CHILDREN

Eurocord Registry

UCBT in children with AML (n=154)

Leukemia free survival according to the status of the disease at transplant



G Michel updated , Blood 2003

Outcome after Unrelated Umbilical Cord Blood Transplants for Children with Acute Lymphoblastic Leukemia

V Rocha, M Labopin, G Michel, N Kabbara, W Arcese, J Ortega, A P Iori, L Madero K-W Chan, F Locatelli, F Garnier, I Ionescu, P Wernet, E Gluckman

Eurocord and Acute Leukemia Working Party of EBMT

Hôpital Saint-Louis, Paris

Patient and disease characteristics (n=361)

	CR1	CR2	Advanced
N	87	152	122
Median age at UCBT	4.7 (0.4-16)	6.7 (0.7-16)	8.0 (0.5-16)
< 1 year	18%	<1%	<1%
+CMV Recipient	43%	44%	58%
Previous autograft	0	2%	10%
Duration of first CR	-	21 mo	23 mo

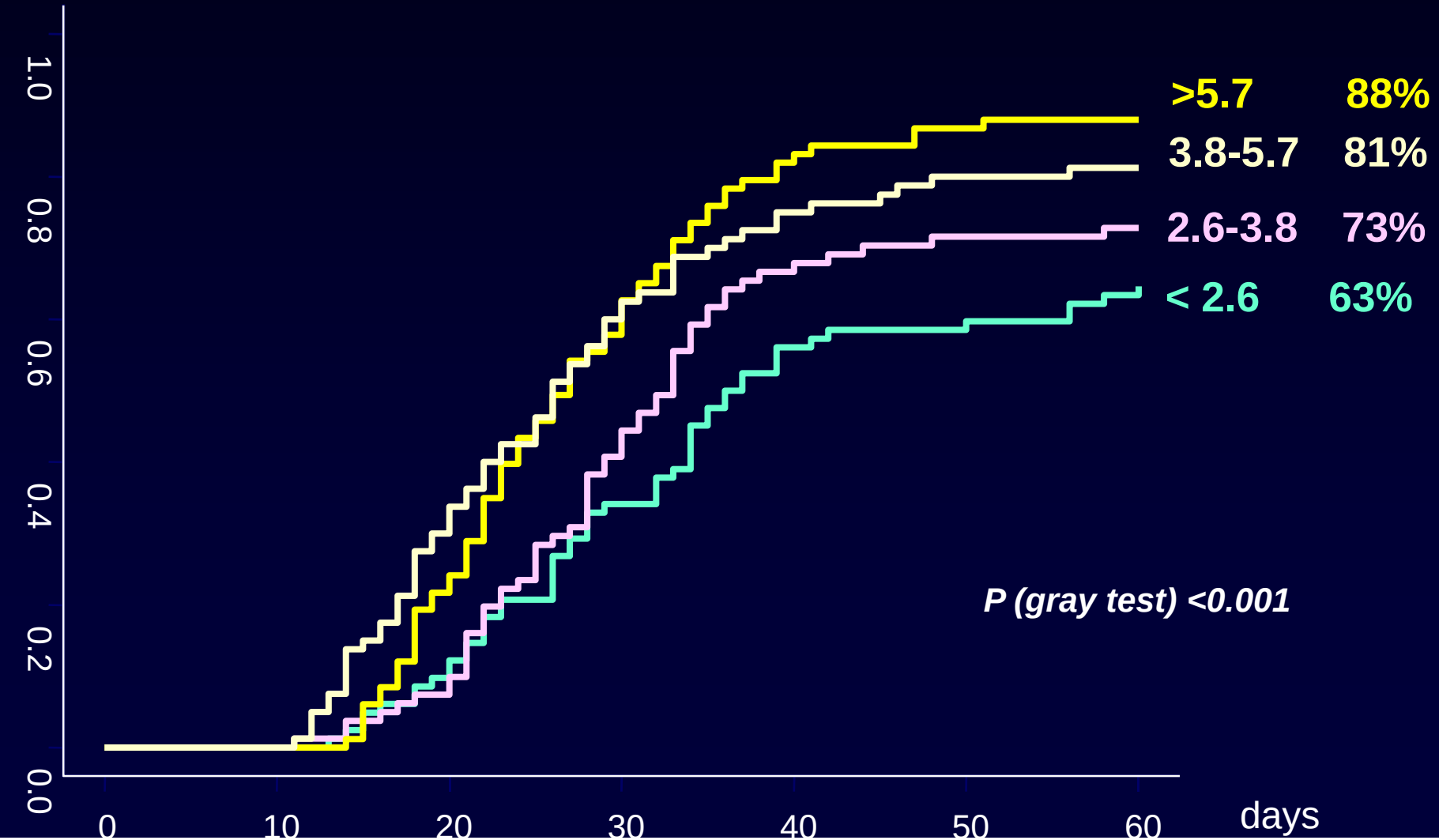
Disease Characteristics

	CR1 (n= 87)	CR2 (n=152)	Advanced (n=122)
Pre-B	47%	56%	66%
B	21%	19%	12%
T	17%	16%	14%
Null	7%	3%	6%
Biphenotypic	8%	6%	2%
Poor risk Cytogenetics t (9;22), t (4;11)	89%	38%	39%

Outcomes after UCBT for children with ALL (n=361)

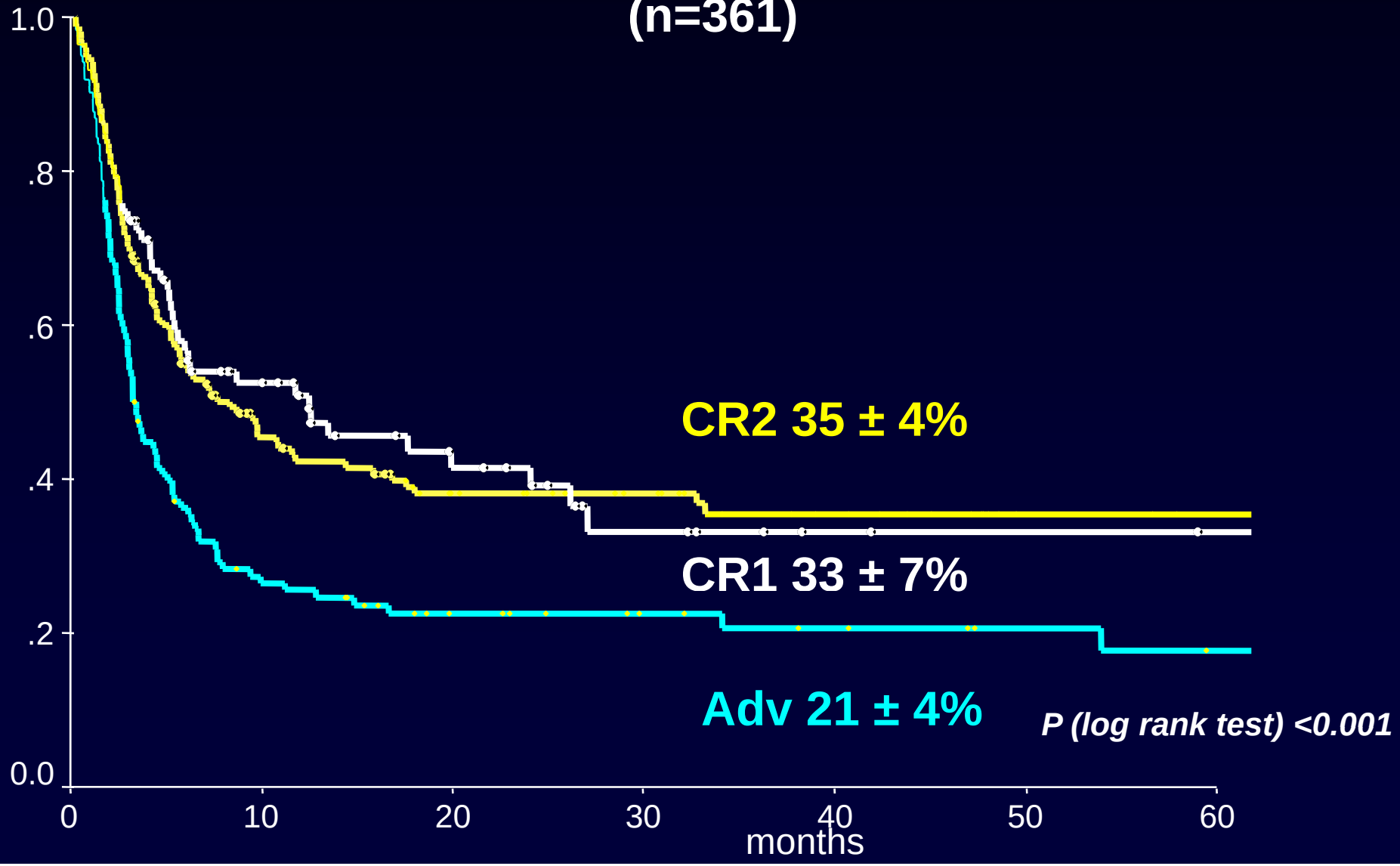
UCBT for Children with ALL

Cumulative incidence of neutrophil recovery according to number of cells infused (10^7/kg) (per quartiles) (n=361)



UCBT for Children with ALL

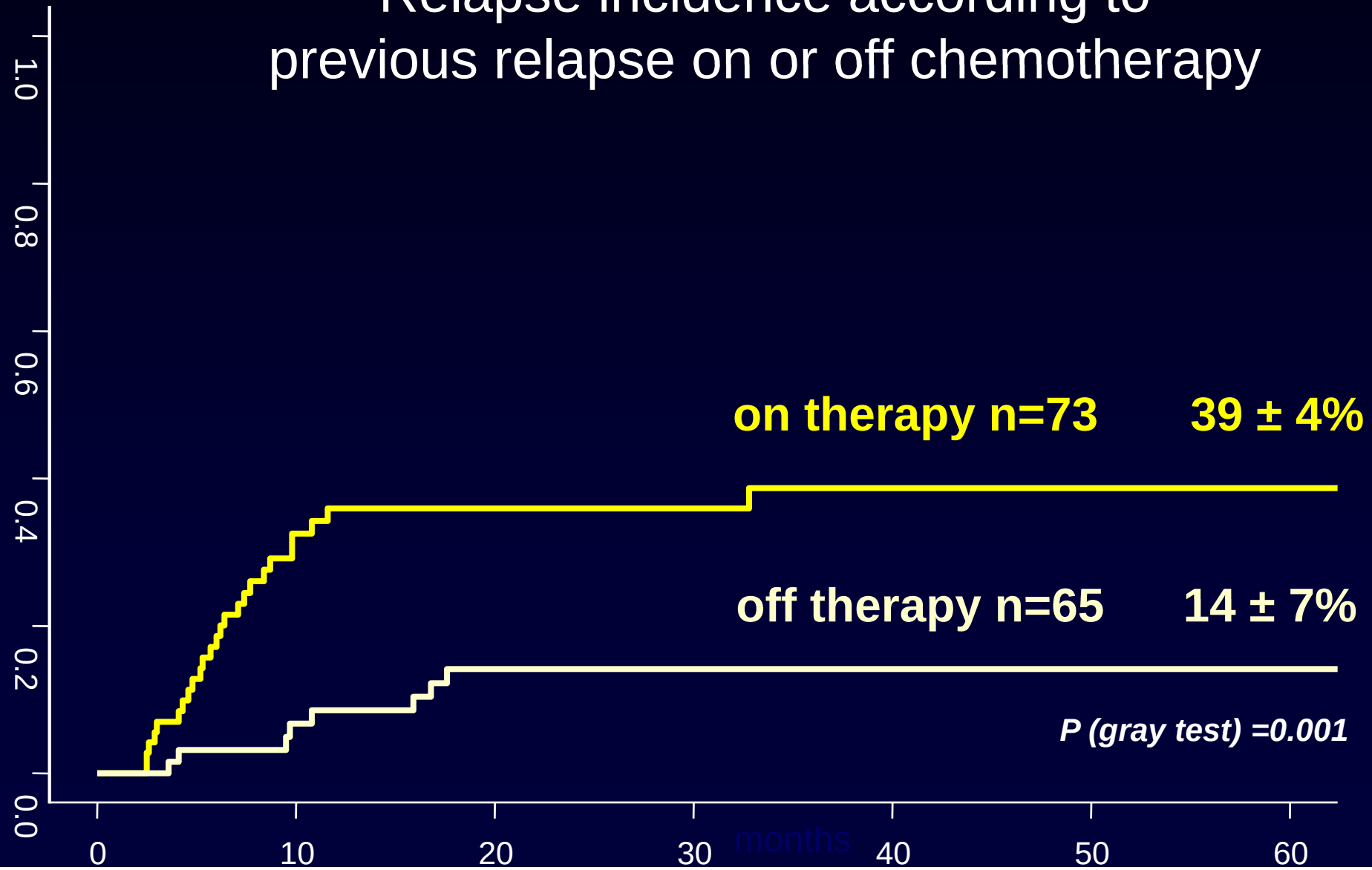
Leukemia Free Survival according to disease status (n=361)

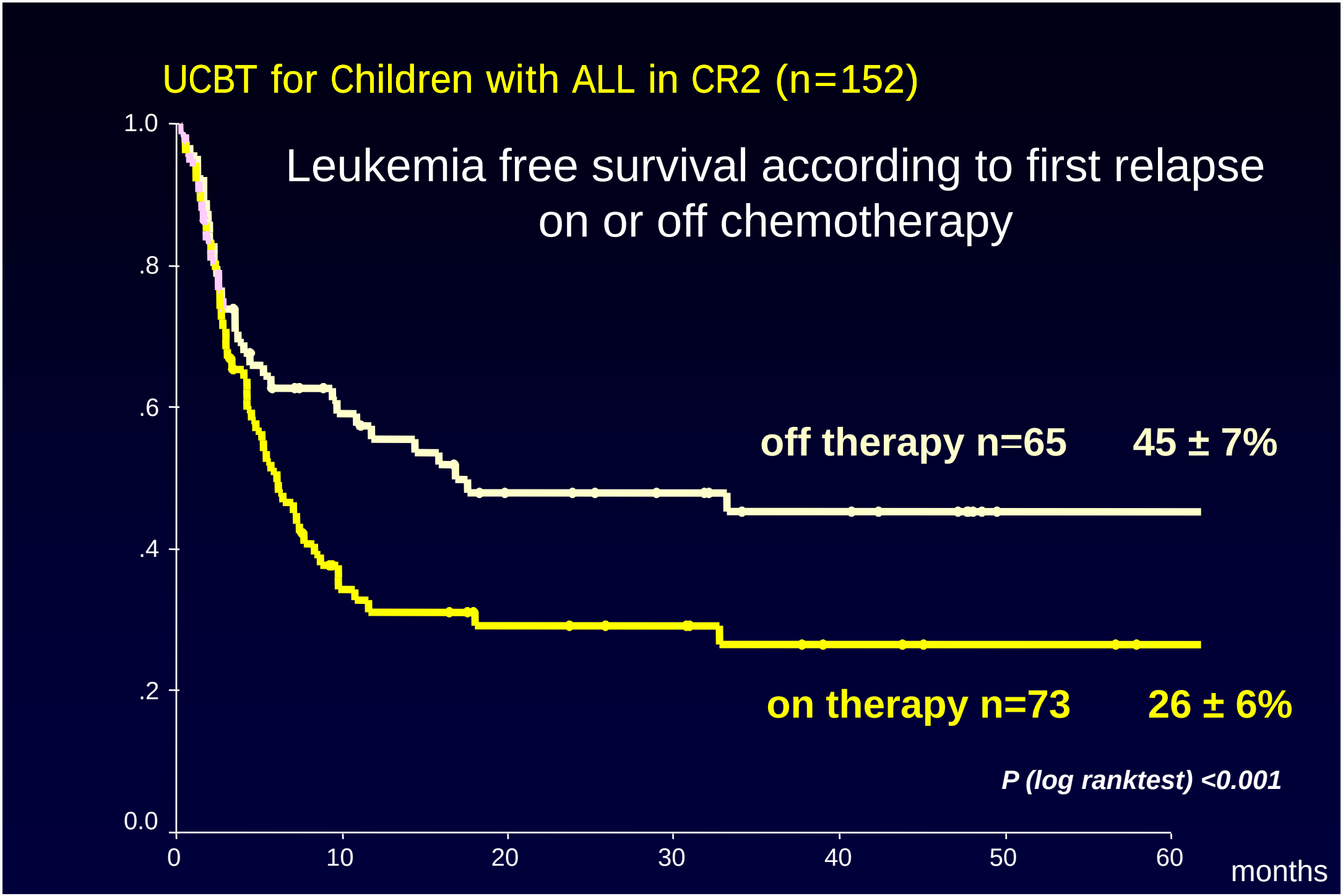


Risk factors of outcomes after UCBT for children with ALL in 2nd CR (n=152)

UCBT for Children with ALL in CR2 (n=152)

Relapse incidence according to
previous relapse on or off chemotherapy

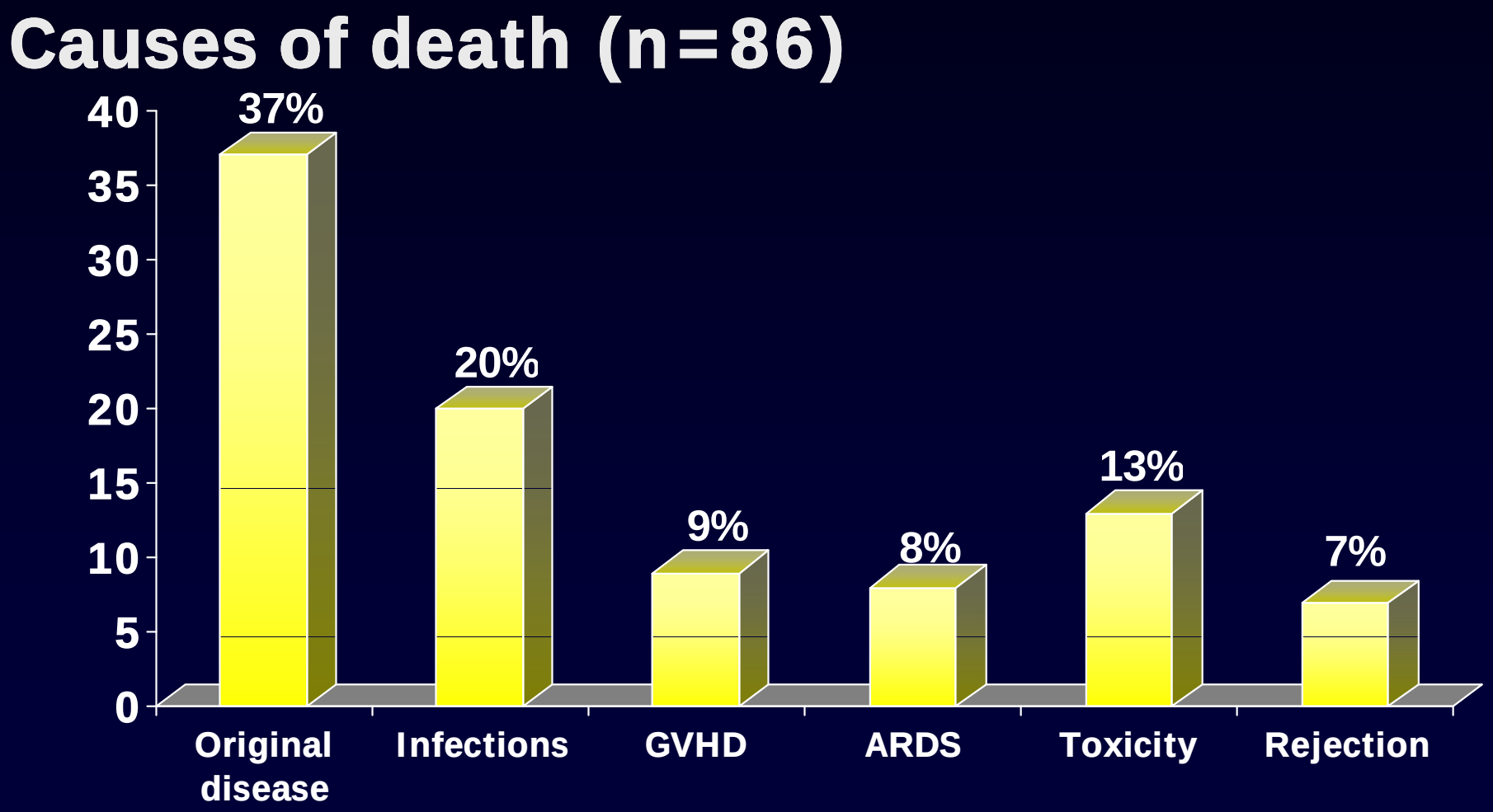



UCBT for Children with ALL in CR2 (n=152)
Leukemia free survival according to first relapse on or off chemotherapy
1.0
.8
.6
.4
.2
0.0
0
10
20
30
40
50
60
months
off therapy n=65
45 ± 7%
on therapy n=73
26 ± 6%
P (log ranktest) <0.001

Results of multivariate analysis in CR2 patients

	p value	RR	95%CI
Acute GVHD (II-IV)			
Use of Serotherapy	**0,03**	**0,42**	**0.19-0.93**
TRM	**no factor**		
Relapse			
Off therapy	**0,03**	**0,33**	**0.12-0.92**
LFS			
Off therapy	**0,02**	**0,57**	**0.36-0.92**

UCBT for Children with ALL in CR2 (n=152)



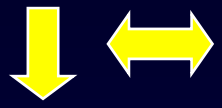
Comparative studies between UCBT and UBMT in children

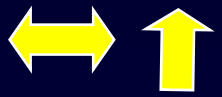
(V Rocha Blood 2001, J Barker Blood 2001, H Dalle BMT 2004, Jacobson BMT 2004, P Rubinstein ASH 2005)

Cord blood vs Bone Marrow

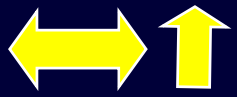
ENGRAFTMENT 

ACUTE GVHD 

CHRONIC GVHD 

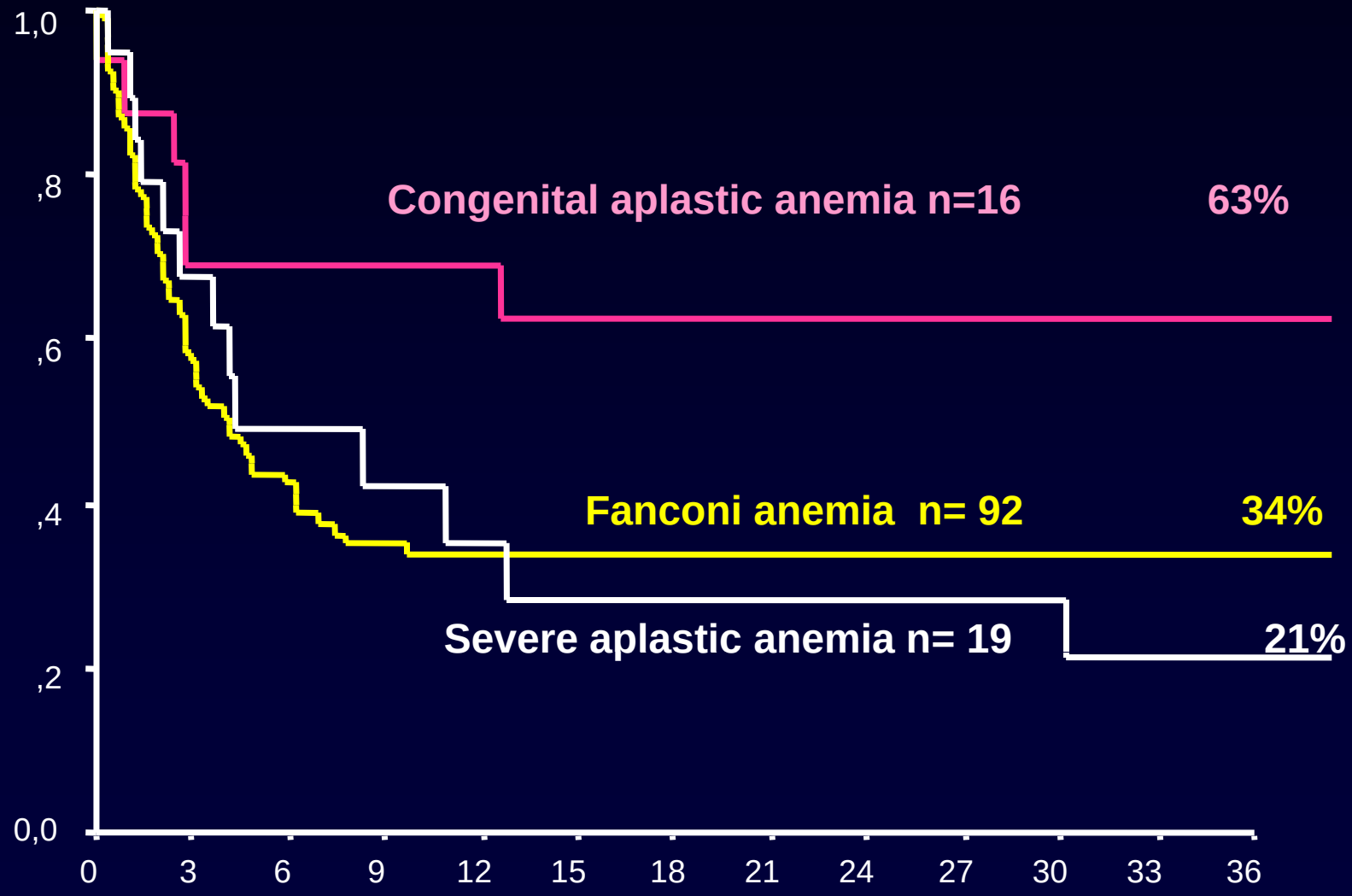
EARLY TRM 

RELAPSE 

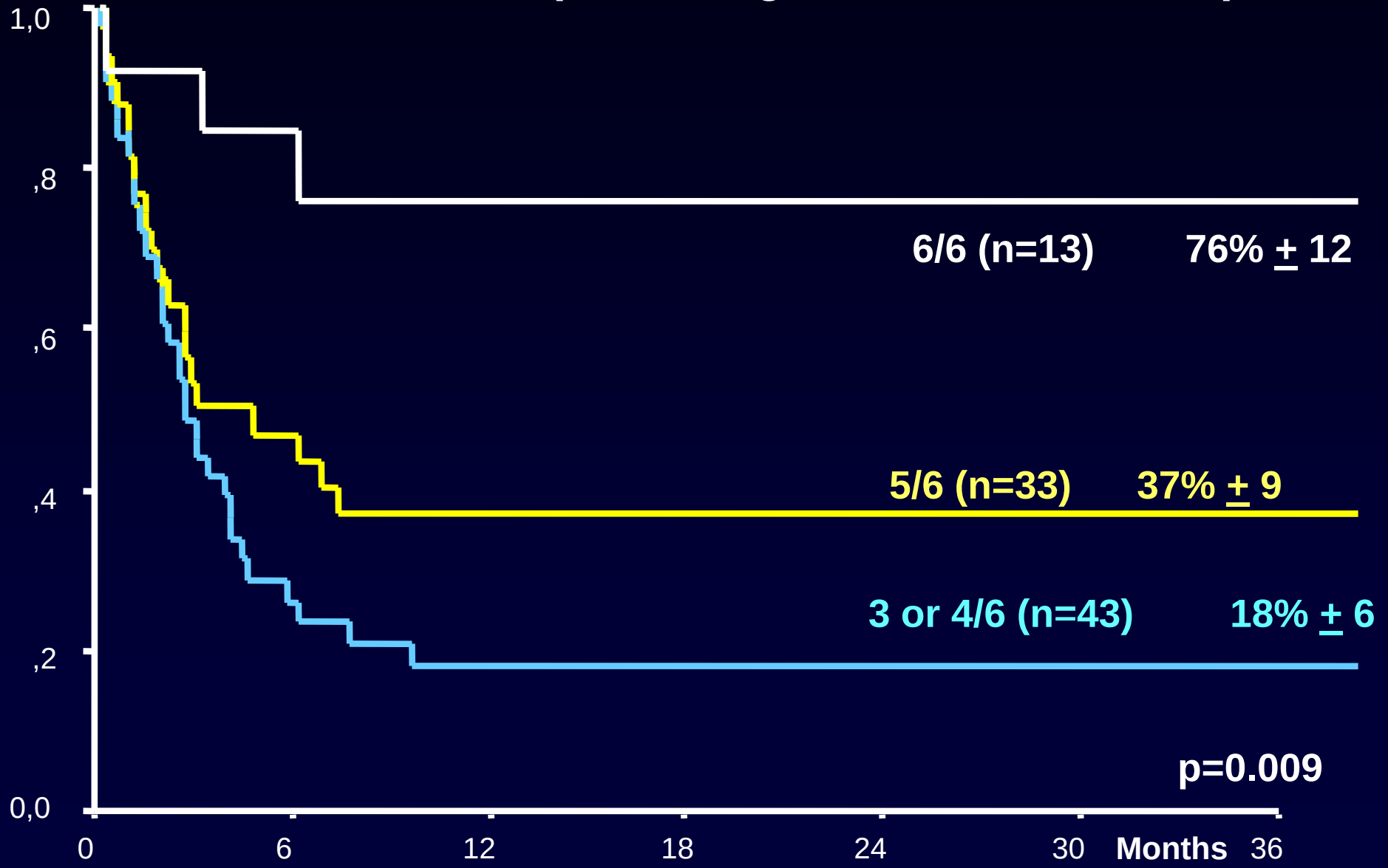
SURVIVAL 

Non malignant diseases in children

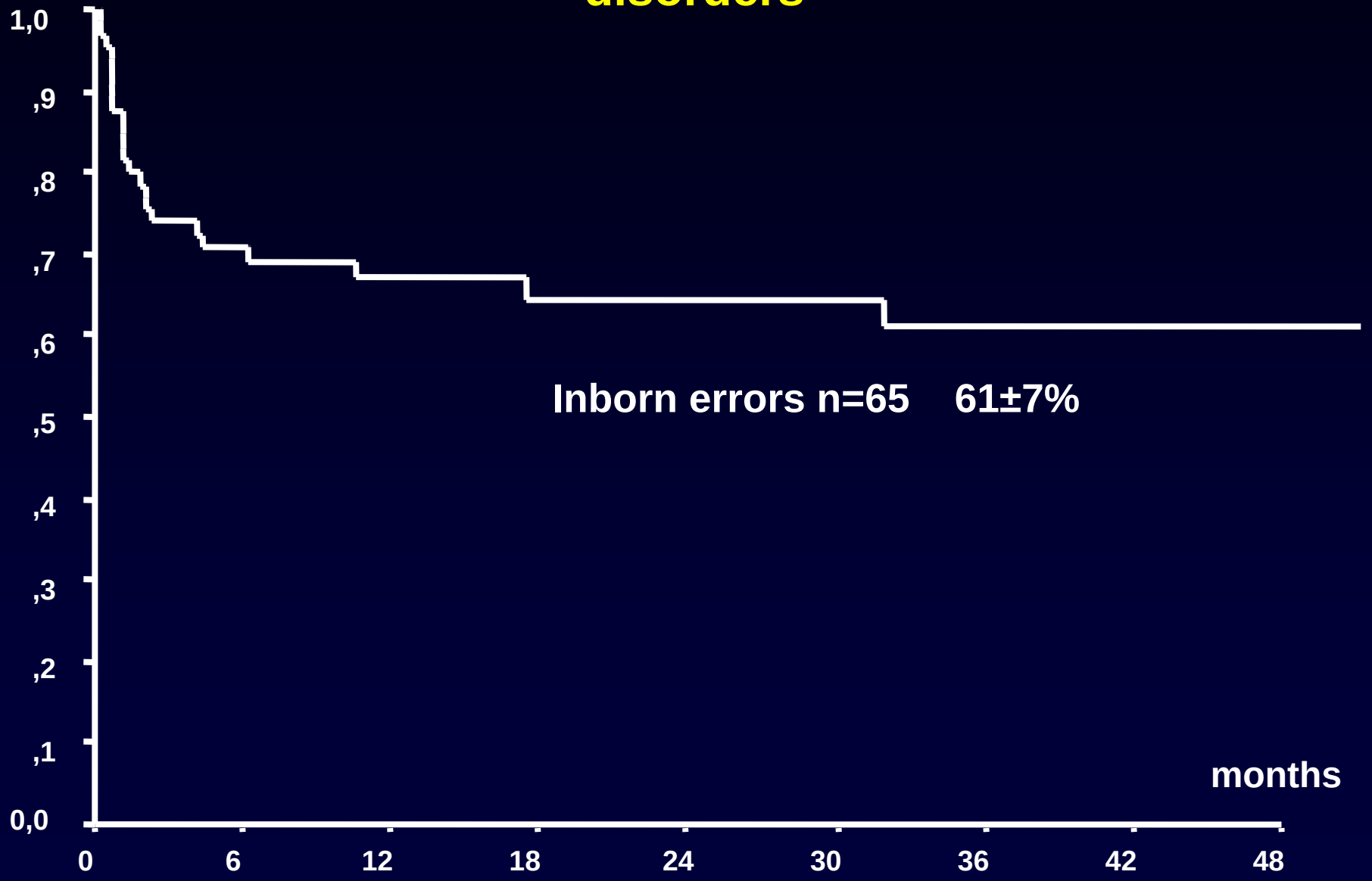
Overall survival after UCBT in patients with bone marrow failure syndromes



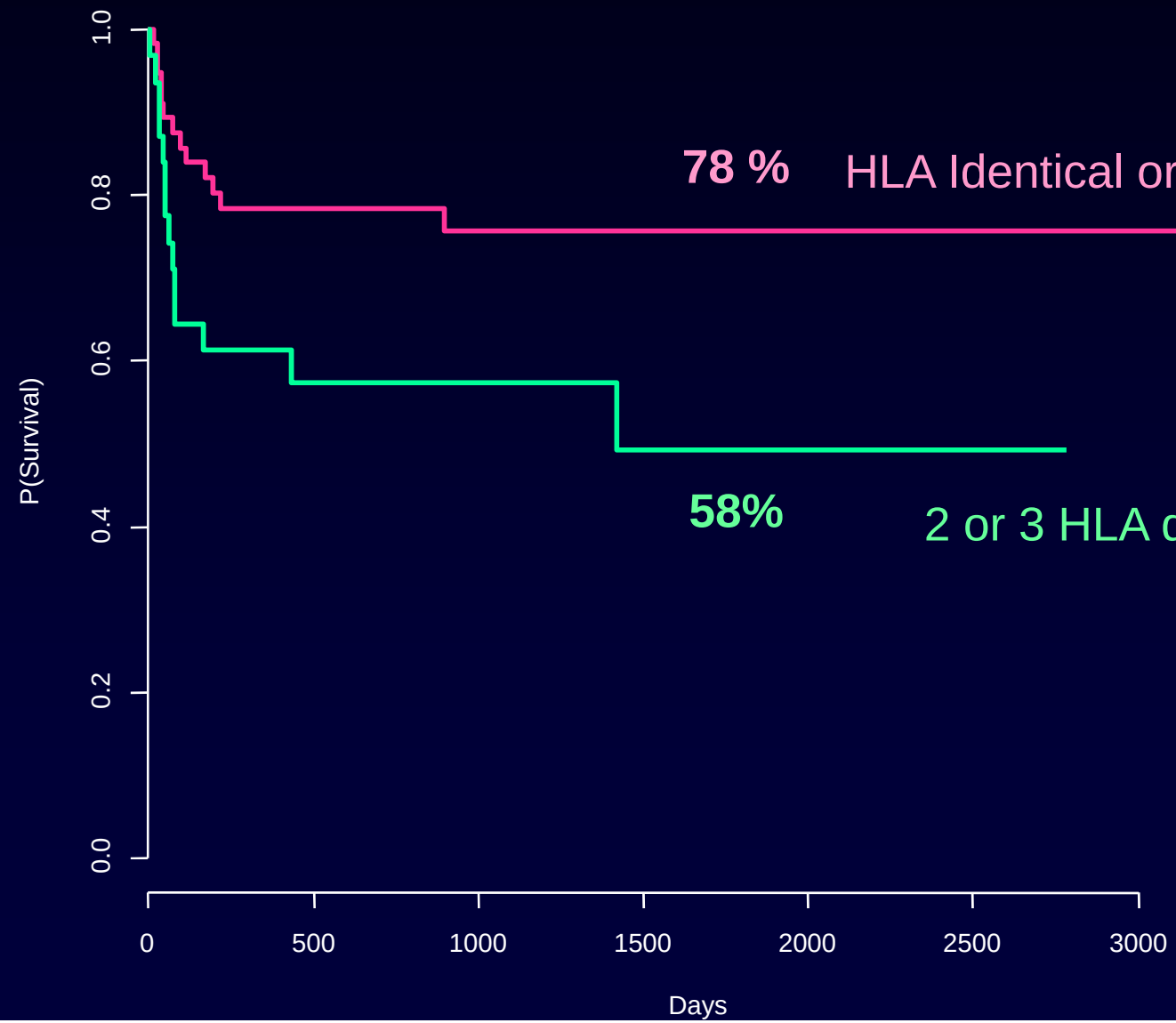
Survival after UCBT for Fanconi anemia (n=92) according to number of HLA differences (A, B antigen and DRB1 allelic)



Overall survival after UCBT in children with metabolic disorders



Overall survival of children with Primary Immunodeficiencies according to Number of HLA differences (n=93)



78 % HLA Identical or one difference out of 6

58% 2 or 3 HLA differences out of 6

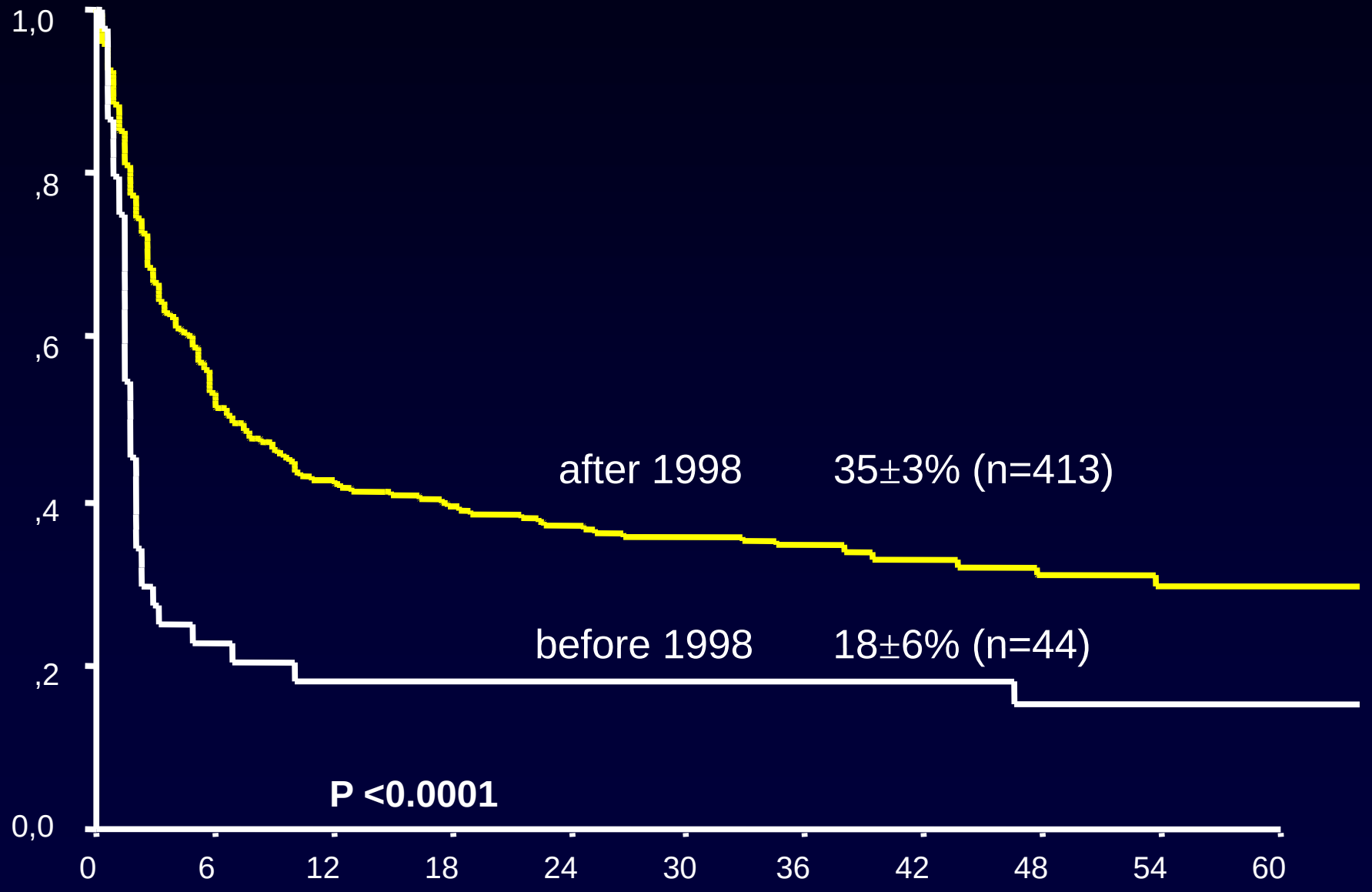
UNRELATED CORD BLOOD TRANSPLANT

IN ADULTS

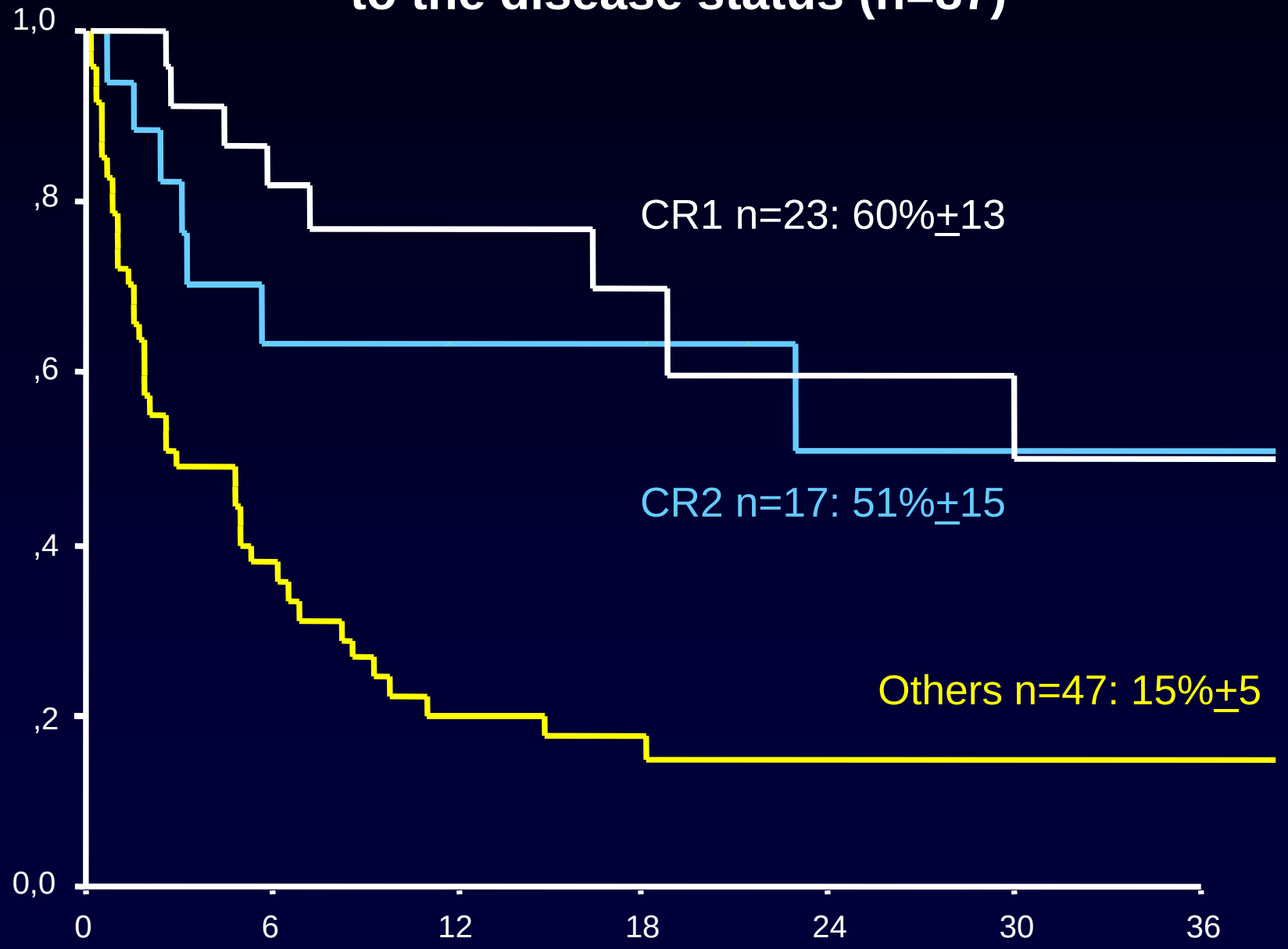
Results

Eurocord Registry

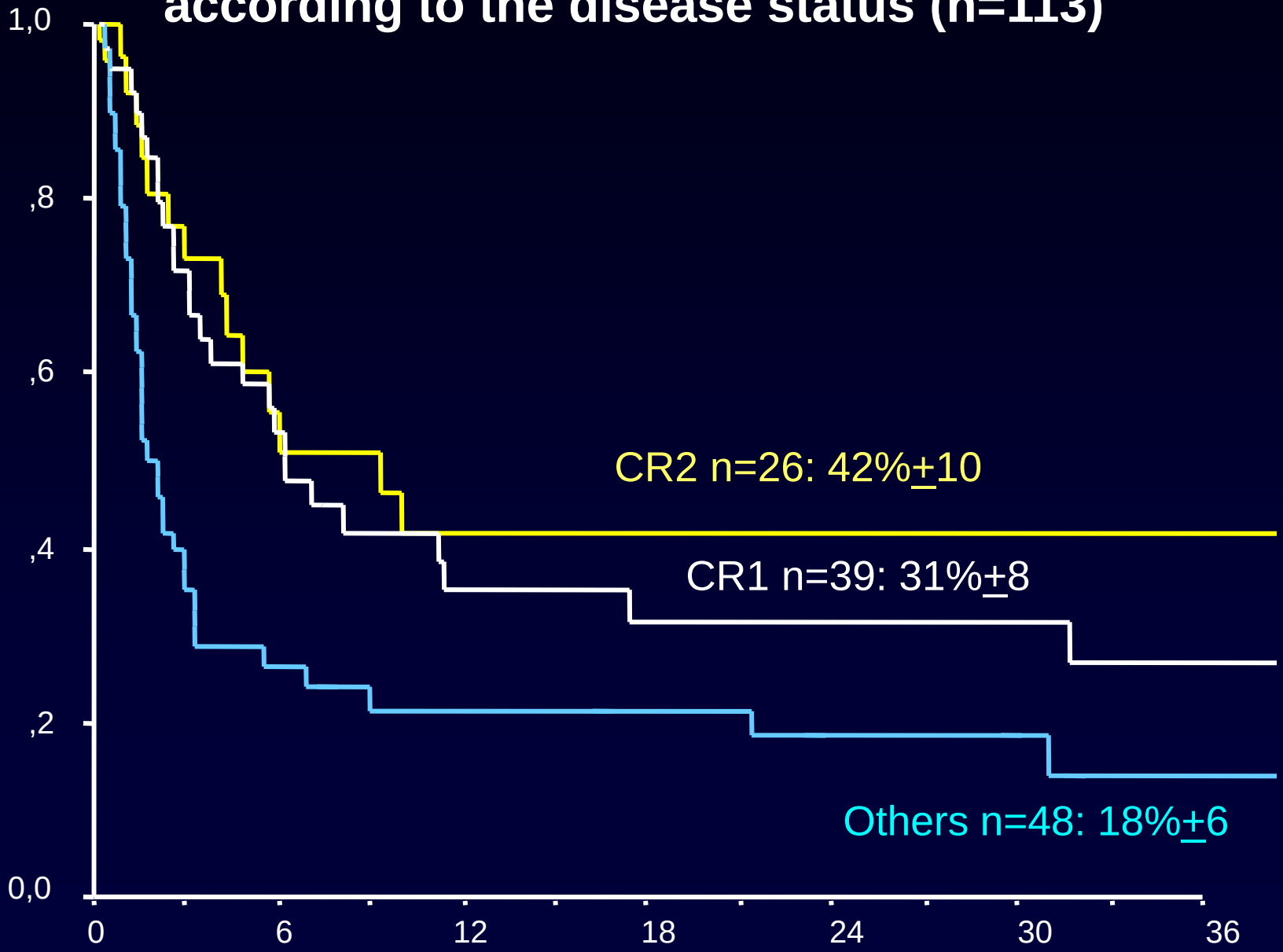
# Overall Survival after UCBT for adults with hematologic malignancies
n= 457



Leukemia Free Survival after UCBT fr adults with AML according to the disease status (n=87)



Leukemia Free Survival after UCBT for adults with ALL according to the disease status (n=113)

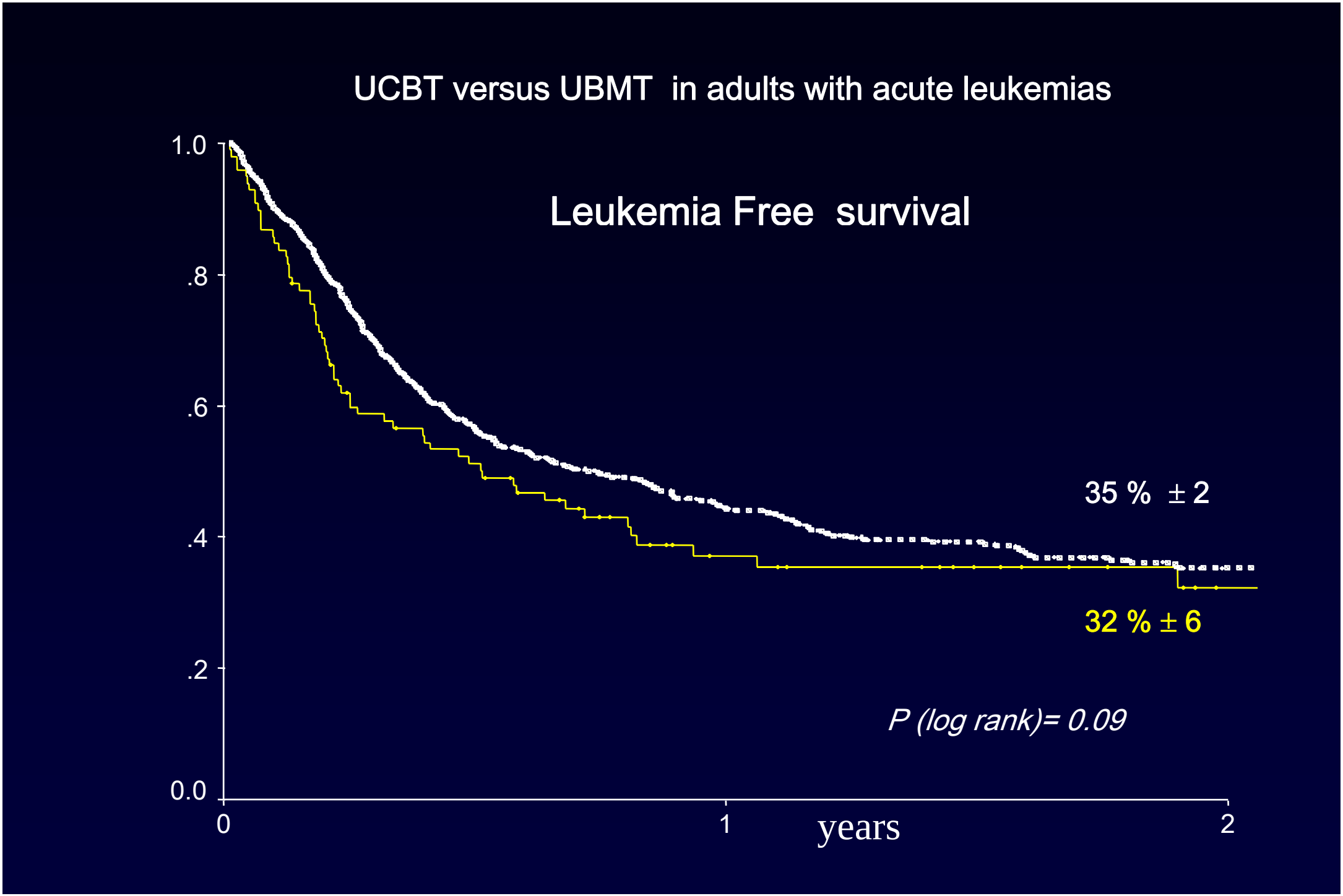


Outcomes of Unrelated Cord Blood Transplants compared to Unrelated Bone Marrow Transplants in Adults with Acute Leukemia

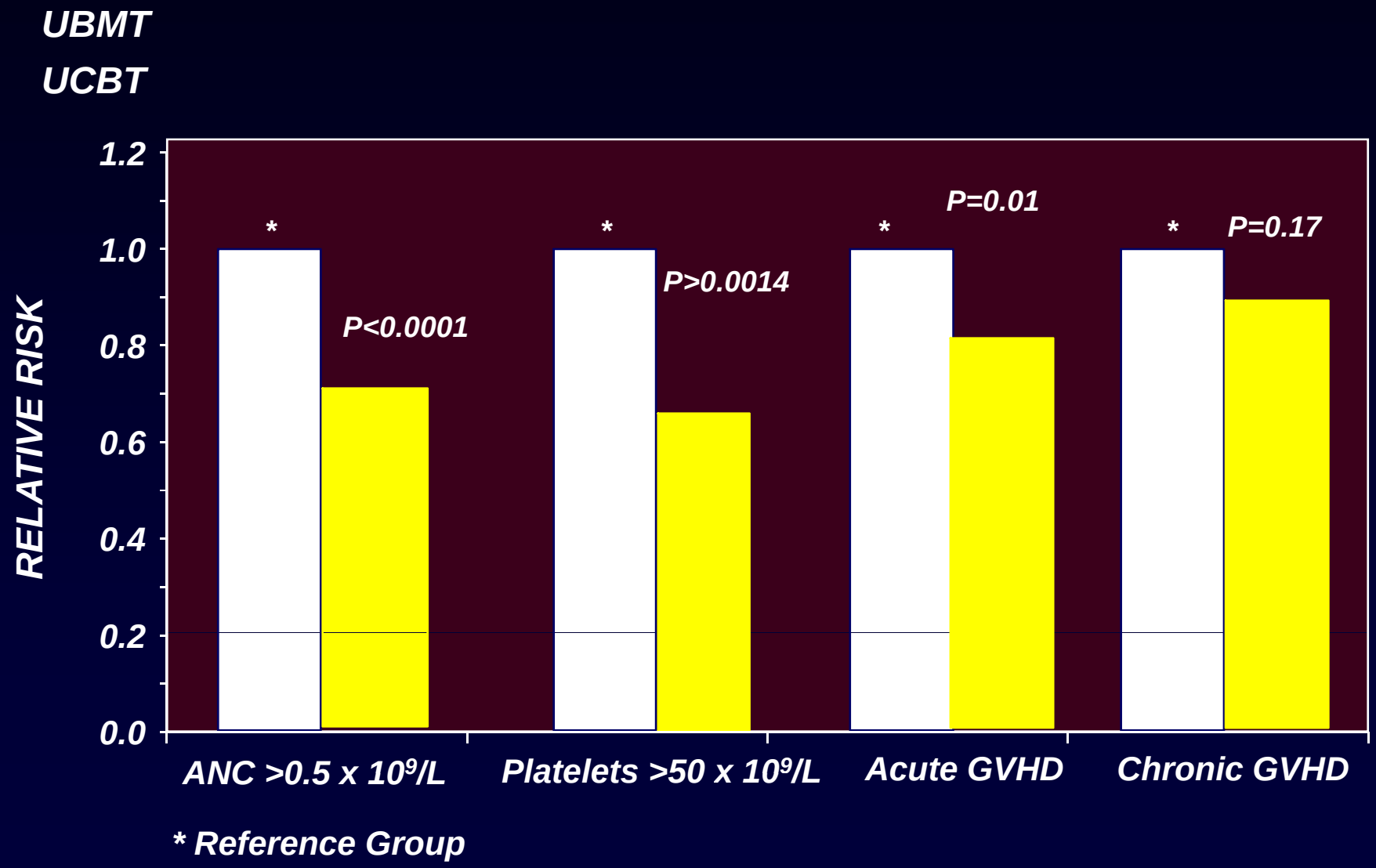
A retrospective based registry study

V Rocha on behalf of Eurocord and Acute Leukemia Working Party-EBMT

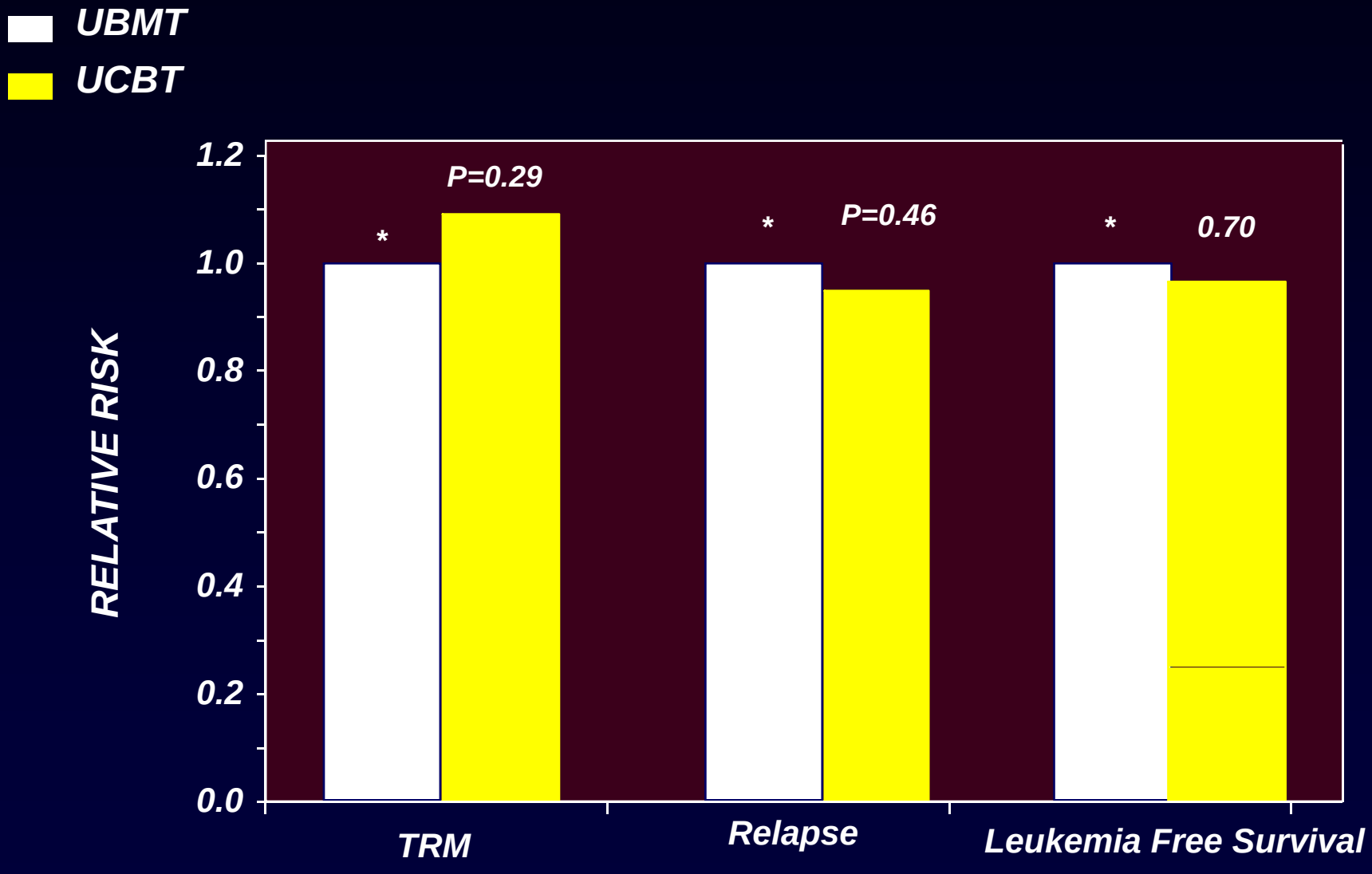
New England Journal of Medecine , Nov 2004


UCBT versus UBMT in adults with acute leukemias
Leukemia Free survival
1.0
.8
.6
.4
.2
0.0
0
1
2
years
35 % ± 2
32 % ± 6
P (log rank)= 0.09

MULTIVARIATE ANALYSIS
- Hematopoietic Recovery & GVHD -



MULTIVARIATE ANALYSIS
- TRM , RELAPSE AND LFS -



* Reference Group

Indication for allogeneic HSCT

NO HLA identical sibling

NO HLA matched unrelated donor

Unrelated Cord Blood

Haplo Identical T-cell depleted PBSC

Comparison of outcomes after Unrelated Cord Blood or Haploidentical T-cell depleted Peripheral Blood Stem Cells in Adults with High Risk Acute Leukemia

V Rocha, F Aversa, M Labopin, G Sanz, F Ciceri, W Arcese, D Bunjes, J Rowe, P Di Bartolomeo, F Frassoni, M Martelli and E Gluckman on behalf of the Eurocord-Netcord and Acute Leukemia Working Party EBMT

Patients

From 1998-2002

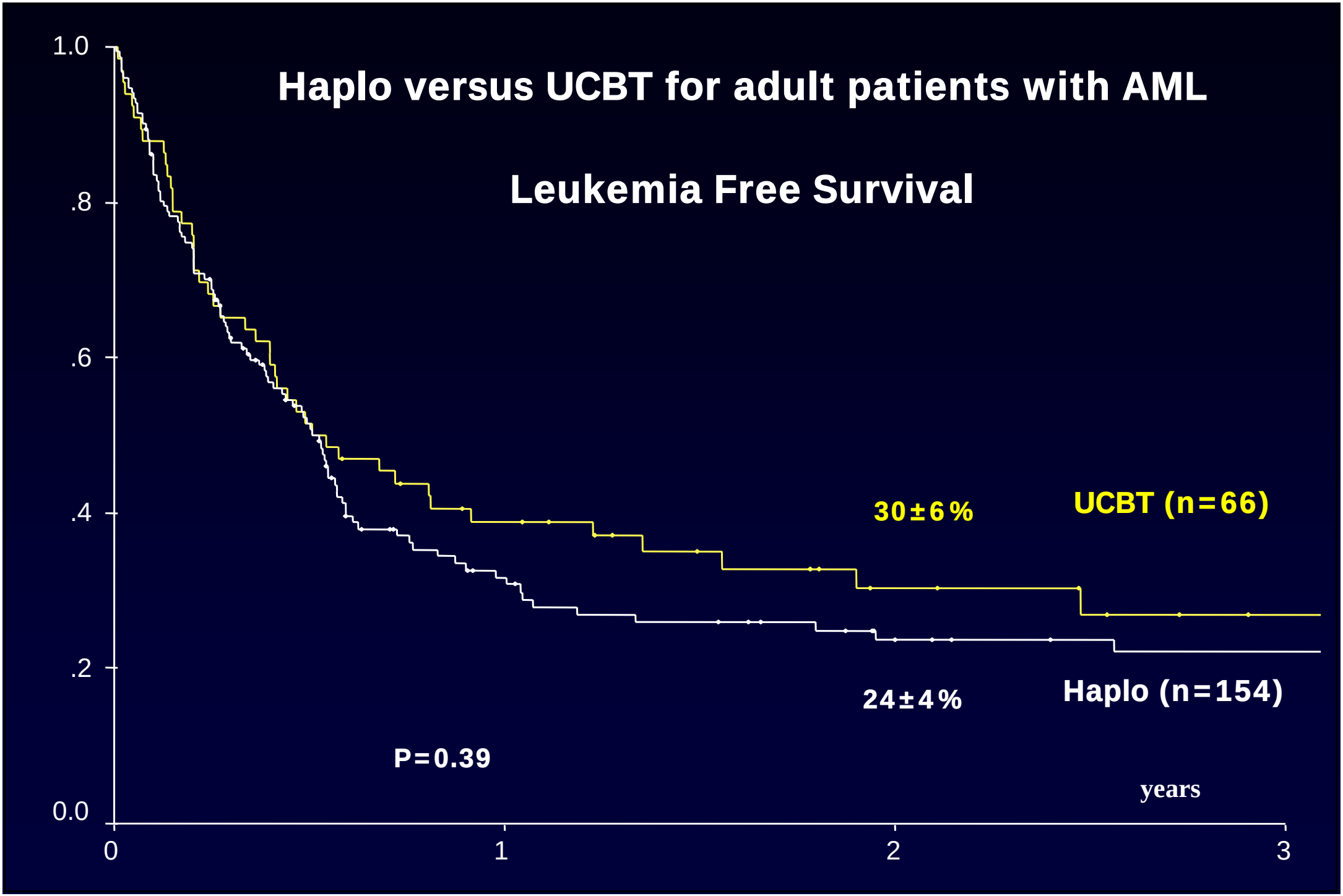
229 haplo and 139 UCBT were performed for adults with high risk acute leukemia (AML and ALL)

Two different analysis were performed

AML patients	**Haplo=**	**154**
	UCBT=	**66**
ALL patients	**Haplo=**	**75**
	UCBT=	**73**

AML Patients and Disease characteristics

	Haplo	UCBT	P
N	154	66	
Status at transplant			0.9
CR1	33 (21%)	15 (23%)	
CR2	32 (21%)	12 (18%)	
More advanced	89 (58%)	39 (59%)	
Previous autologous transplant	21%	25%	0.61
Interval from diag-transplant	333 d	384 d	0.16
Median year of transplantation	2000	2000	0.21


Haplo versus UCBT for adult patients with AML
Leukemia Free Survival
1.0
.8
.6
.4
.2
0.0
0
1
2
3
years
30±6%
UCBT (n=66)
24±4%
Haplo (n=154)
P=0.39

Haplo versus UCBT for adult patients with AML

2 year-LFS according to status of the disease

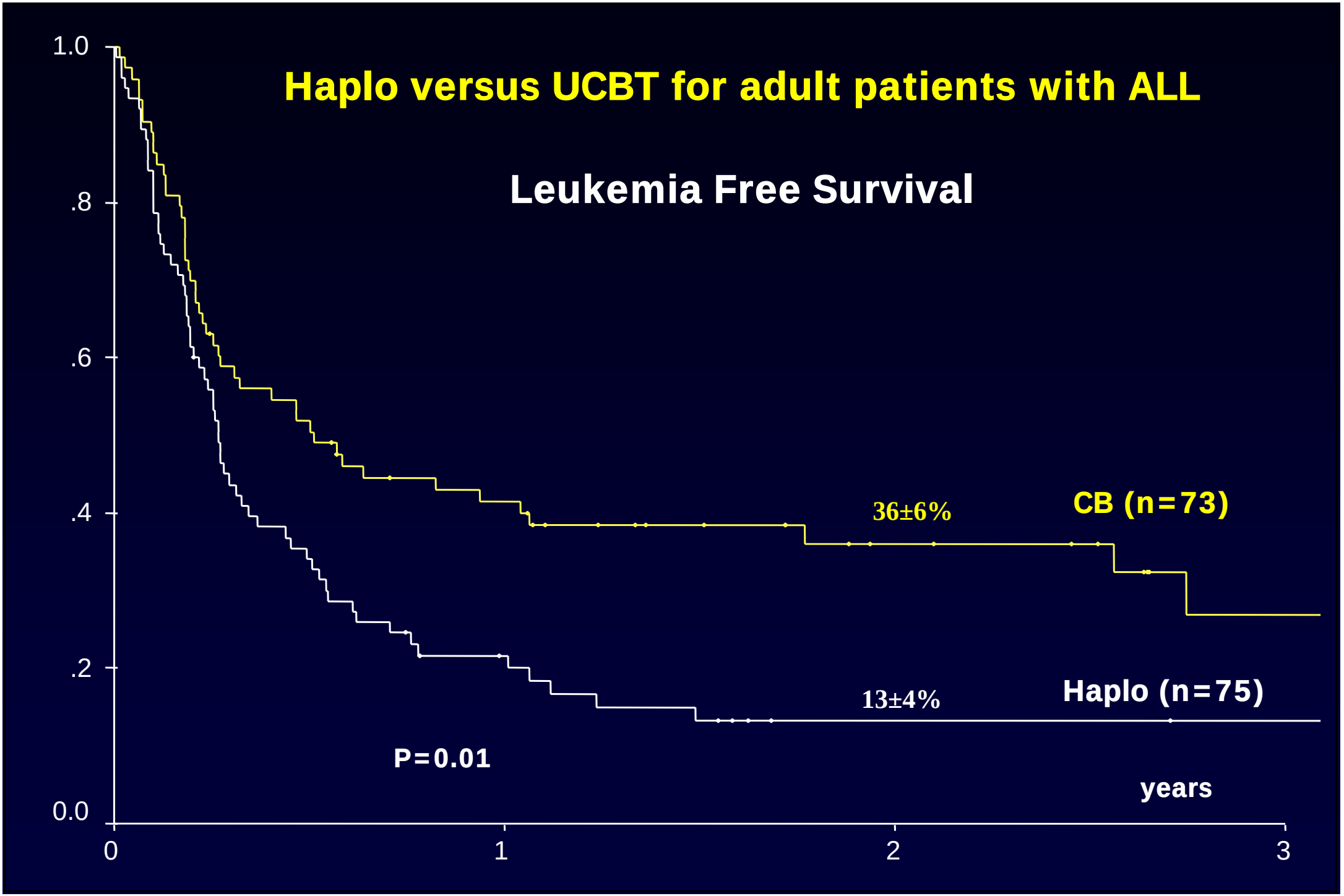
	Haplo	UCBT	P
CR1	48±9%	48±14%	0.94
CR2	42±10%	44±16%	0.70
Advanced	8±3%	20±6%	0.29

ALL Patients and Disease characteristics

	Haplo	UCBT	P
N	75	73	
Age (y) Median	27	20	0.007
Range	15-56	15-55	
CMV+	65%	62%	0.76
Cytogenetics abnormality			
t (9;22)	41%	34%	0.57

ALL Patients and Disease characteristics

	Haplo	UCBT	P
N	75	73	
Status at transplant			0.79
CR1	23 (31%)	15 (29%)	
CR2	18 (24%)	12 (20%)	
More advanced	34 (45%)	39 (51%)	
Previous autologous transplant	13%	14%	0.90
Interval from diag-transplant	419 d	415 d	0.10
Median year of transplantation	2000	2000	0.23


Haplo versus UCBT for adult patients with ALL
Leukemia Free Survival
1.0
.8
.6
.4
.2
0.0
0
1
2
3
years
36±6%
CB (n=73)
13±4%
Haplo (n=75)
P=0.01

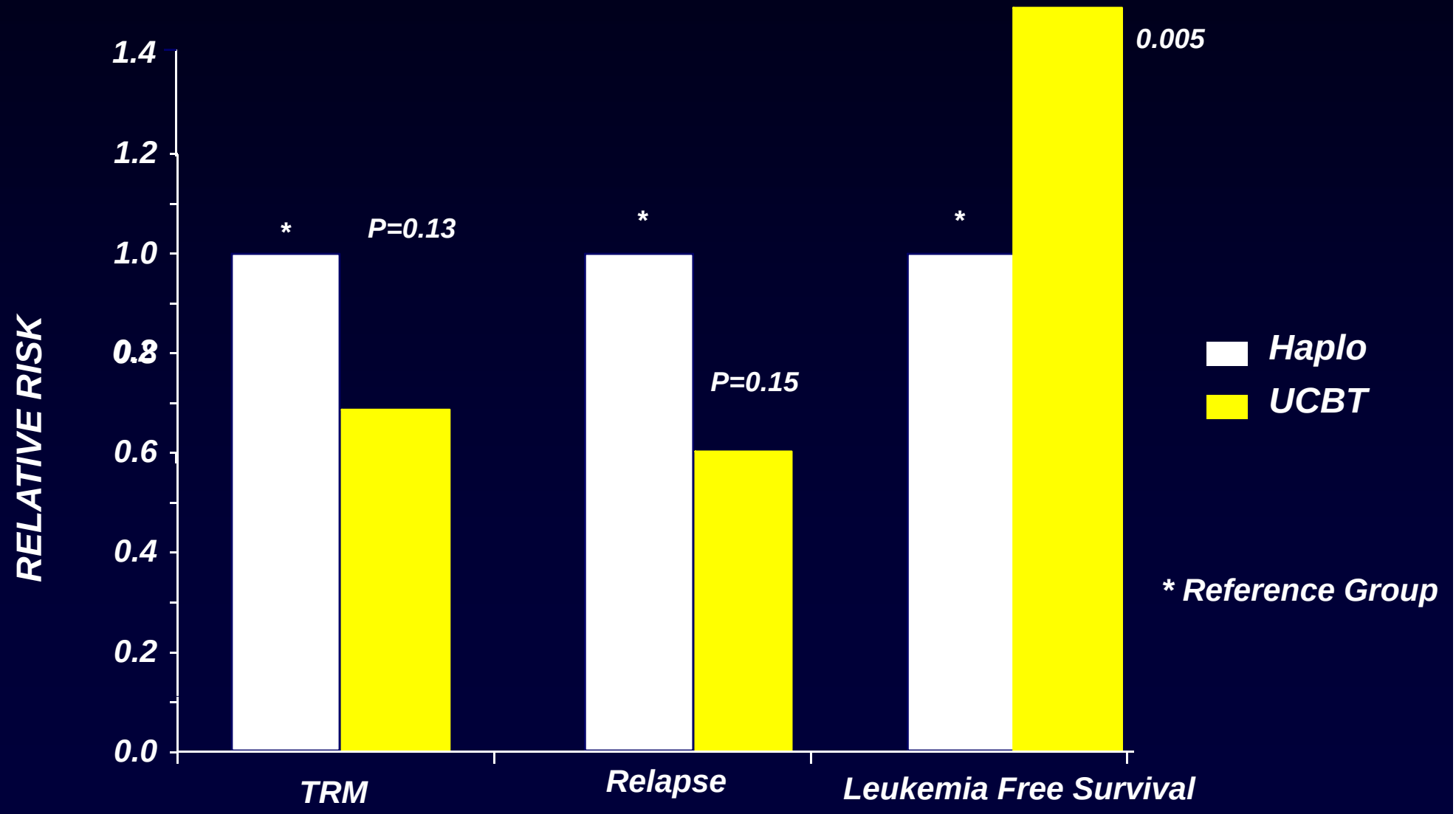
Haplo versus UCBT for adult patients with ALL

Unadjusted 2 year-LFS according to status of the disease

	Haplo	UCBT	P
CR1	32±10%	38±11%	0.92
CR2	15±9%	40±13%	0.16
Advanced	0%	33±8%	0.0004

Haplo versus UCBT for adult patients with ALL

Multivariate analysis –TRM, Relapse and LFS



Conclusions

- In this retrospective registry-based analysis in adults patients with high risk acute leukemia, outcomes of HLA mismatched UCBT compared to T-cell depleted Haploidentical PBSC have shown
  - Delayed neutrophil recovery
  - Increased incidence of acute GVHD
  - Same incidence of chronic GVHD in ALL and increased incidence in AML

- In patients **with AML**, TRM, relapse rate and LFS were similar between UCBT and Haplo transplants.

- In patients **with ALL,** LFS is increased in UCBT recipients compared to Haplo transplants

How to improve engraftment?

Donor choice

How to choose the best unit?

Strategies of Cord Blood Banks

Collection of units containing high number of cells

Under investigation

Use of hematopoietic growth factors at day 0

Ex vivo expansion of cord blood cells

Intrabone injection of cord blood cells

Co-infusion of mesenchymal cells

Reduced intensity conditioning regimen using cord blood cells

Use of double transplants

How to improve engraftment?

Donor choice

How to choose the best unit?

Strategies of Cord Blood Banks

Collection of units containing high number of cells

Under investigation

Use of hematopoietic growth factors at day 0

Ex vivo expansion of cord blood cells

Intrabone injection of cord blood cells

Co-infusion of mesenchymal cells

Reduced intensity conditioning regimen using cord blood cells

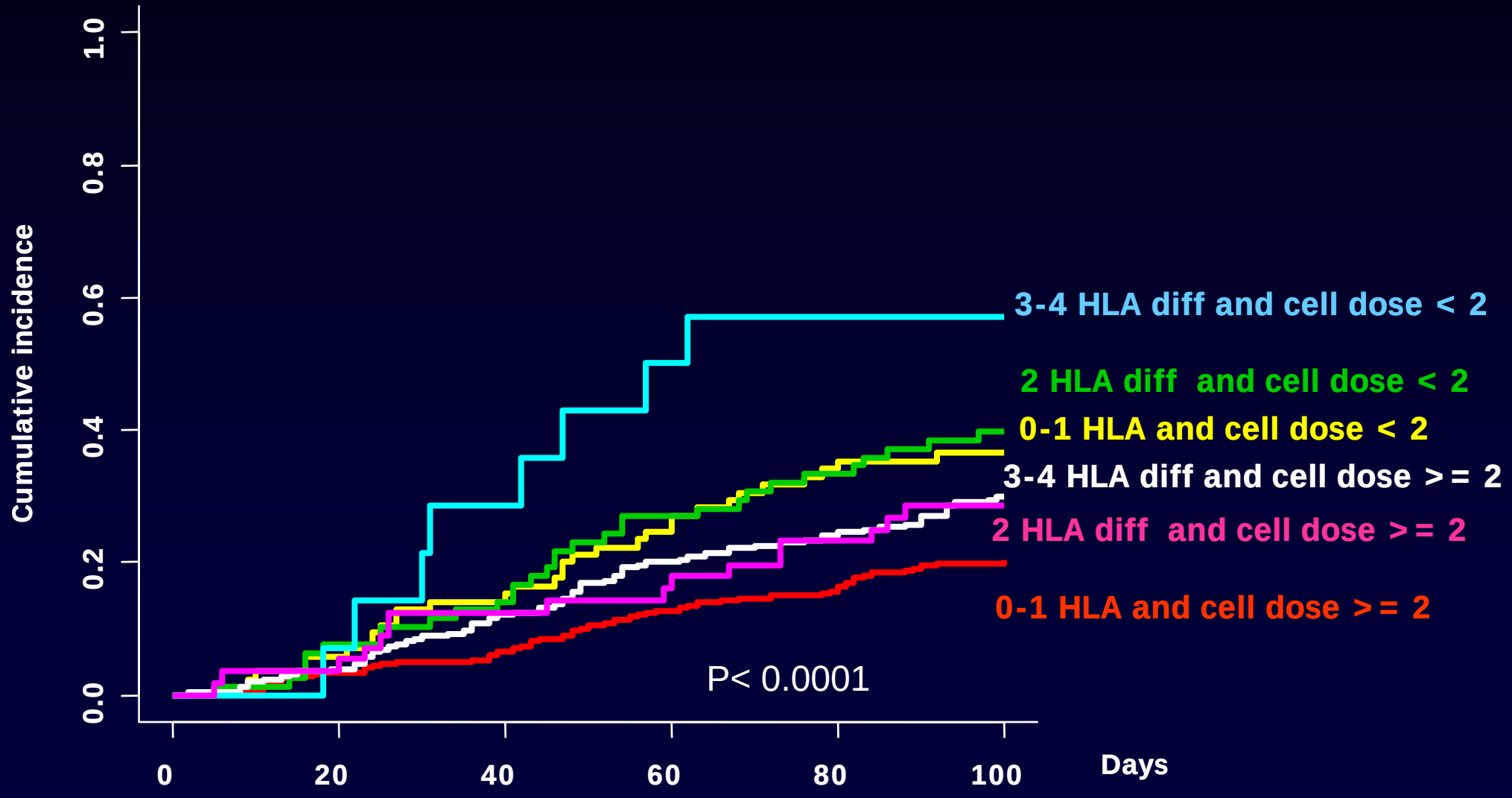
Use of double transplants

Impact of number and type of HLA incompatibilities and cell dose on outcomes of unrelated cord blood transplants for patients with malignant and non-malignant disorders

An Eurocord registry analysis

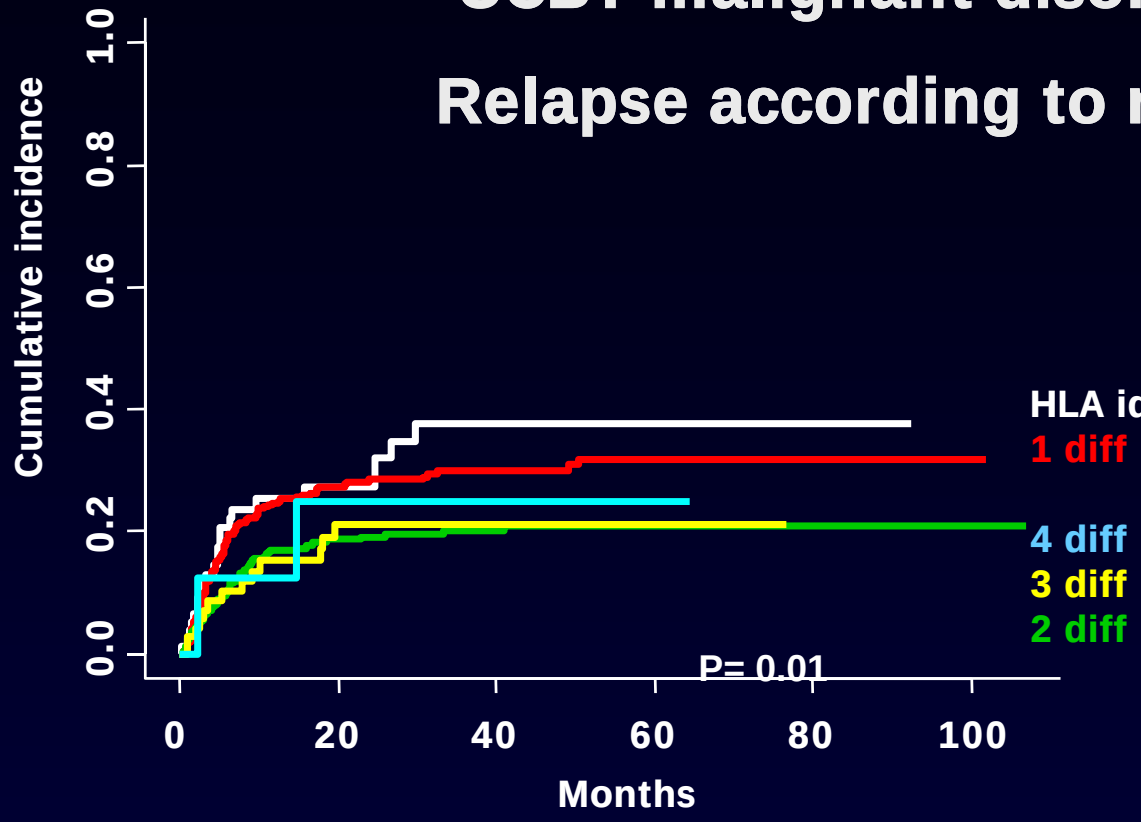
UCBT malignant disorders (n=929)

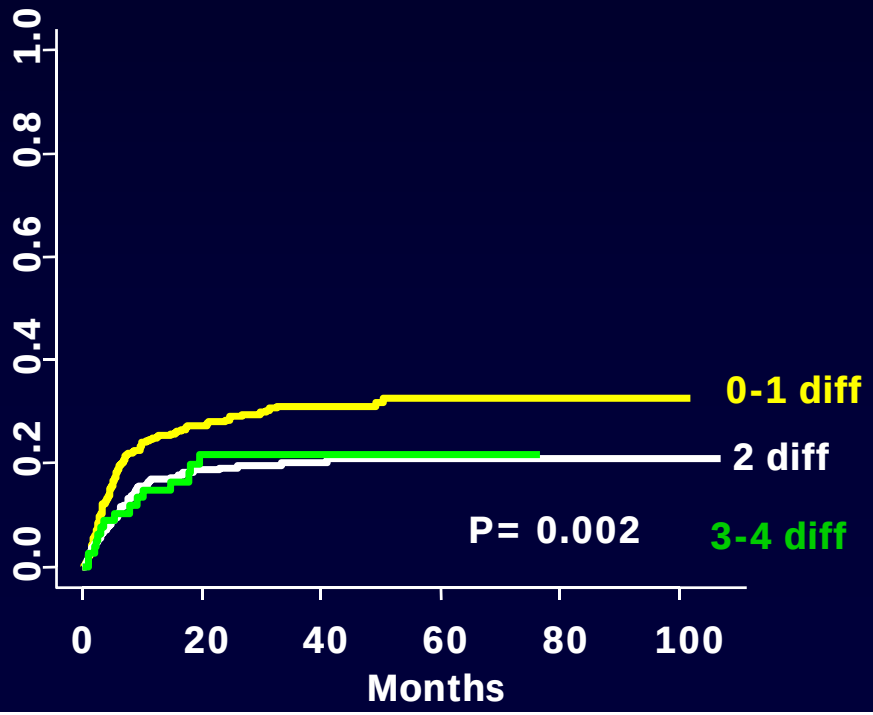
TRM according to number of HLA and cell dose



UCBT malignant disorders (n=929)

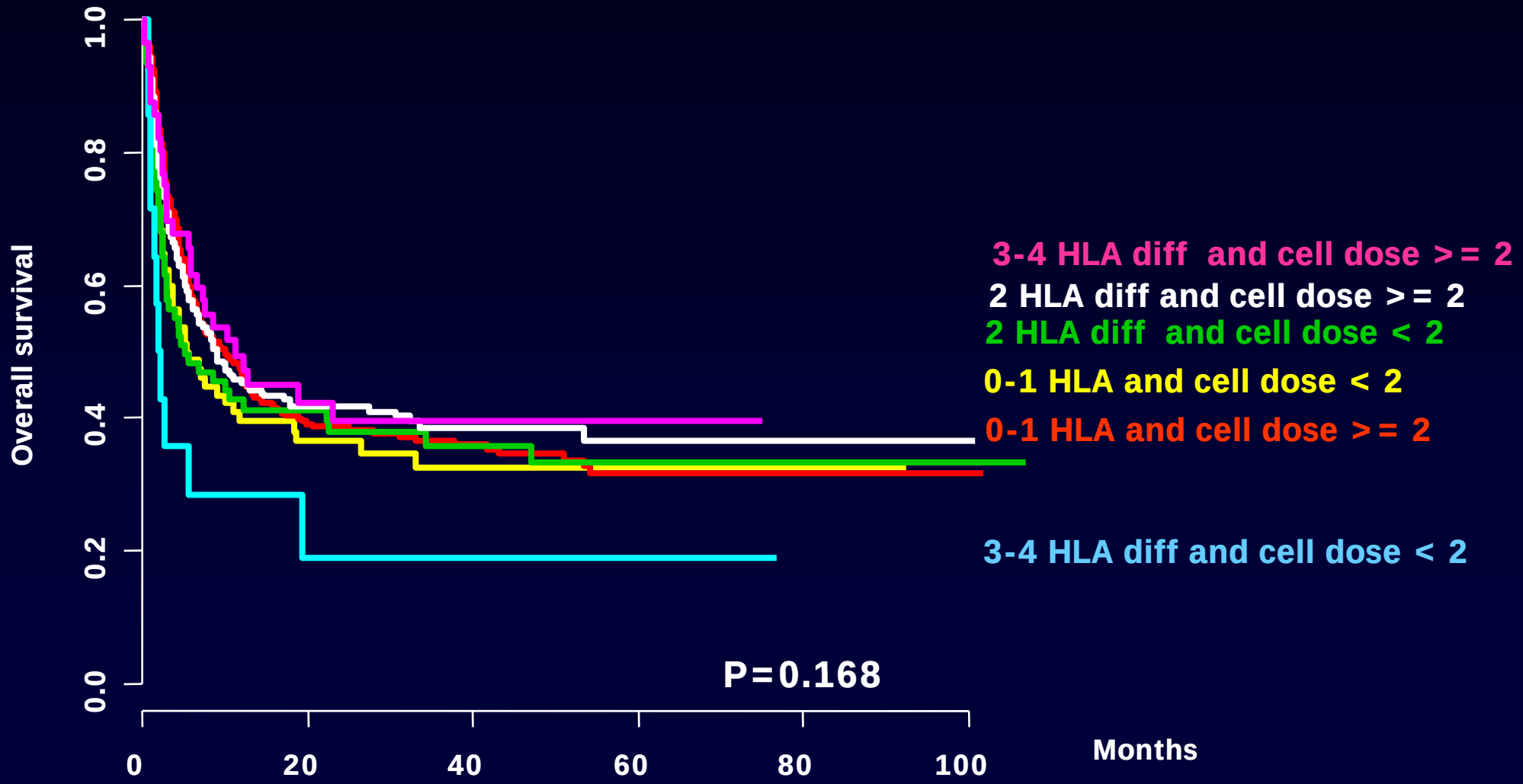
Relapse according to number of HLA





UCBT malignant disorders (n=929)

Overall survival according to number of HLA and cell dose

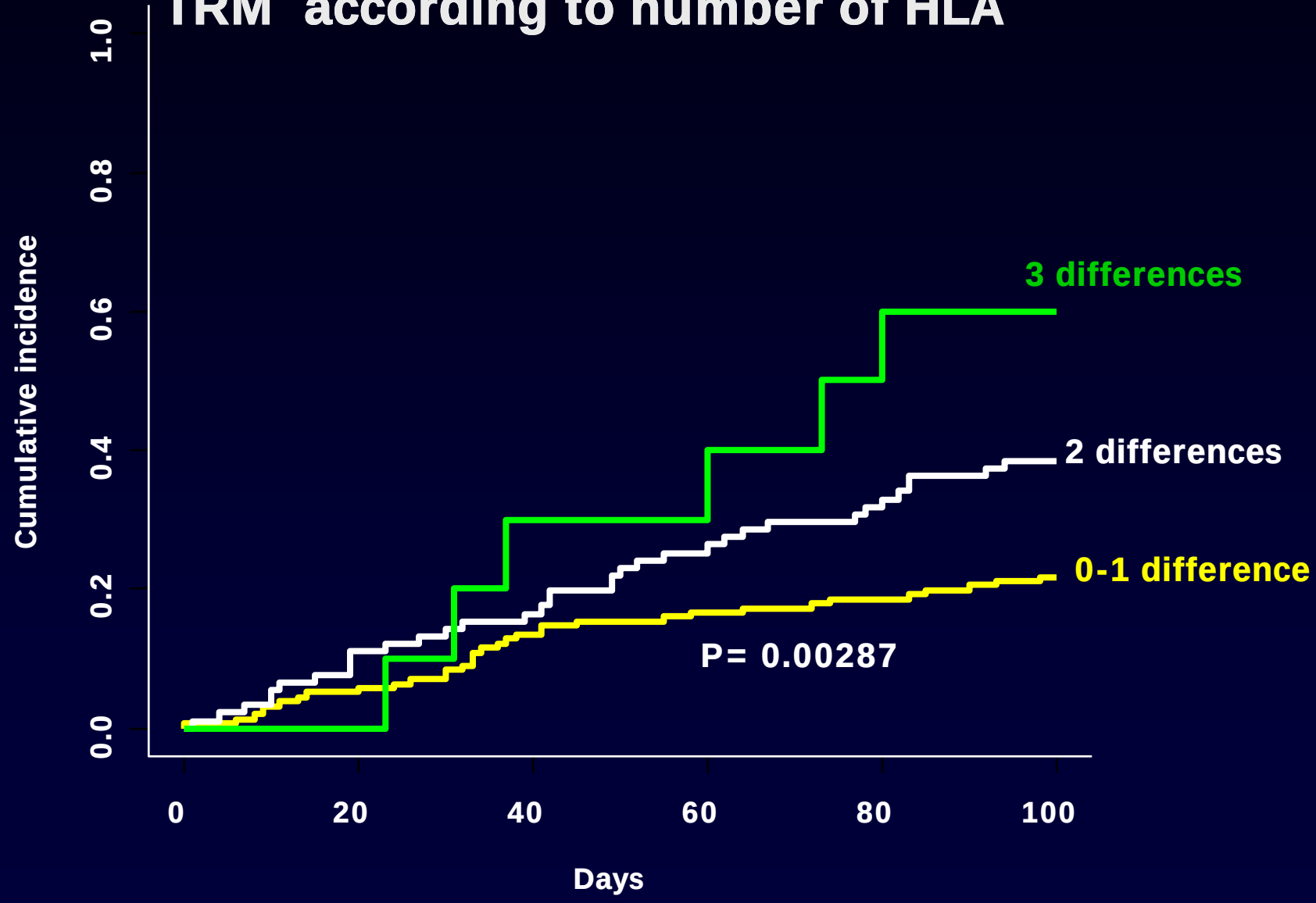


Interaction between HLA mismatches, number of cells and outcomes after unrelated CBT for malignant diseases

	Number of HLA MM 0-1 vs 2 vs 3-4	Type of HLA MM Class I vs class II	Interaction with number of cells
PMN engraftment	Less	Same	Worse 3-4 MM and $<3x10^7$NC/kg
Platelet engraftment	Less	Same	Worse 3-4 MM and $<3x10^7$NC/kg
TRM	More	More 2 DR MM	Worse 3-4 MM and $<3x10^7$NC/kg
AGVH	More	More 2 DR MM	Same
CGVH	More	Same	Decreased < MM and > cells
Relapse	Less	Less 2 DR MM	Increased < MM and > cells
OS , EFS	Same	Same	Decreased >MM and <cells

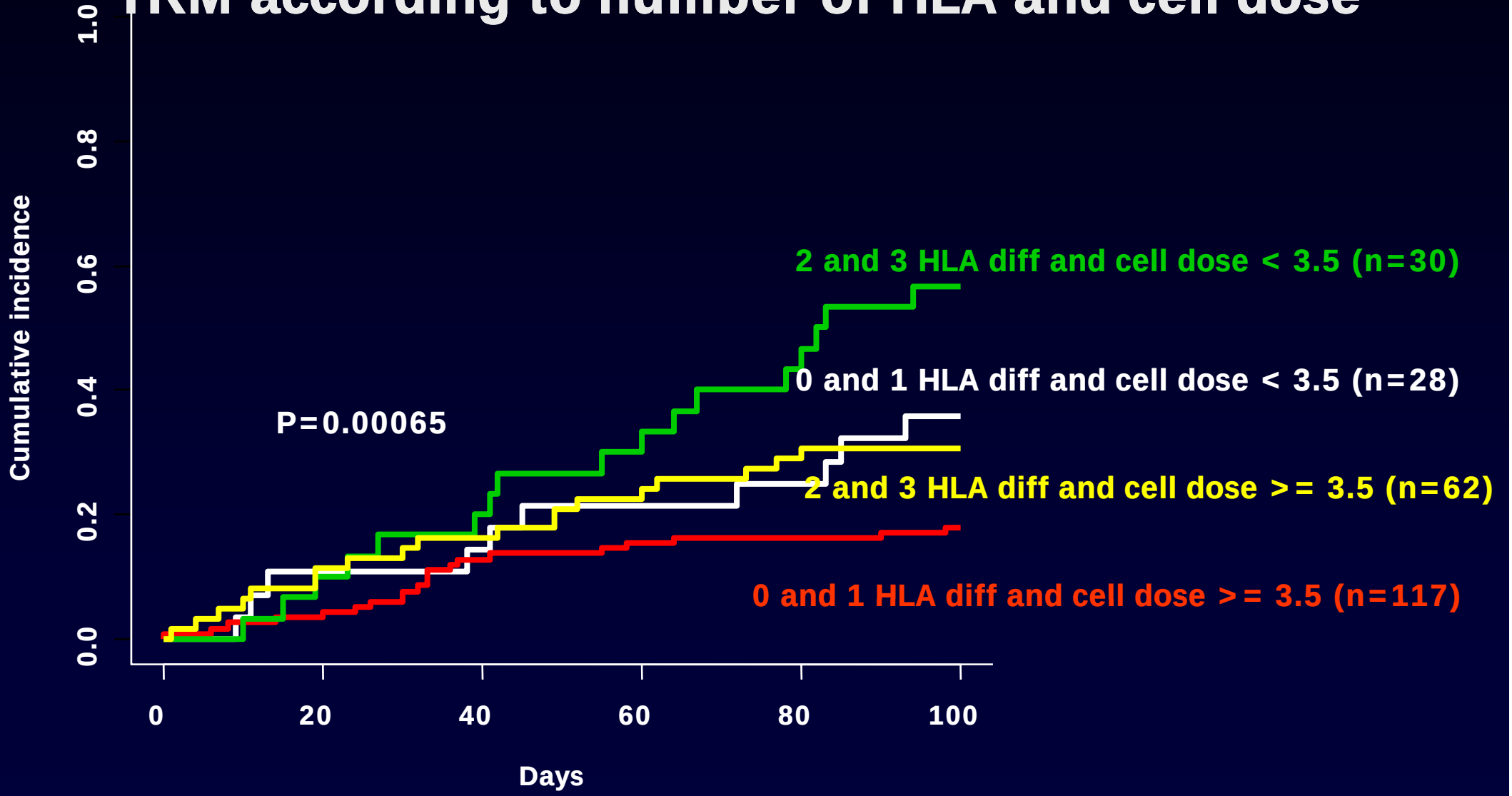
UCBT in non-malignant disorders (n=268)

TRM according to number of HLA



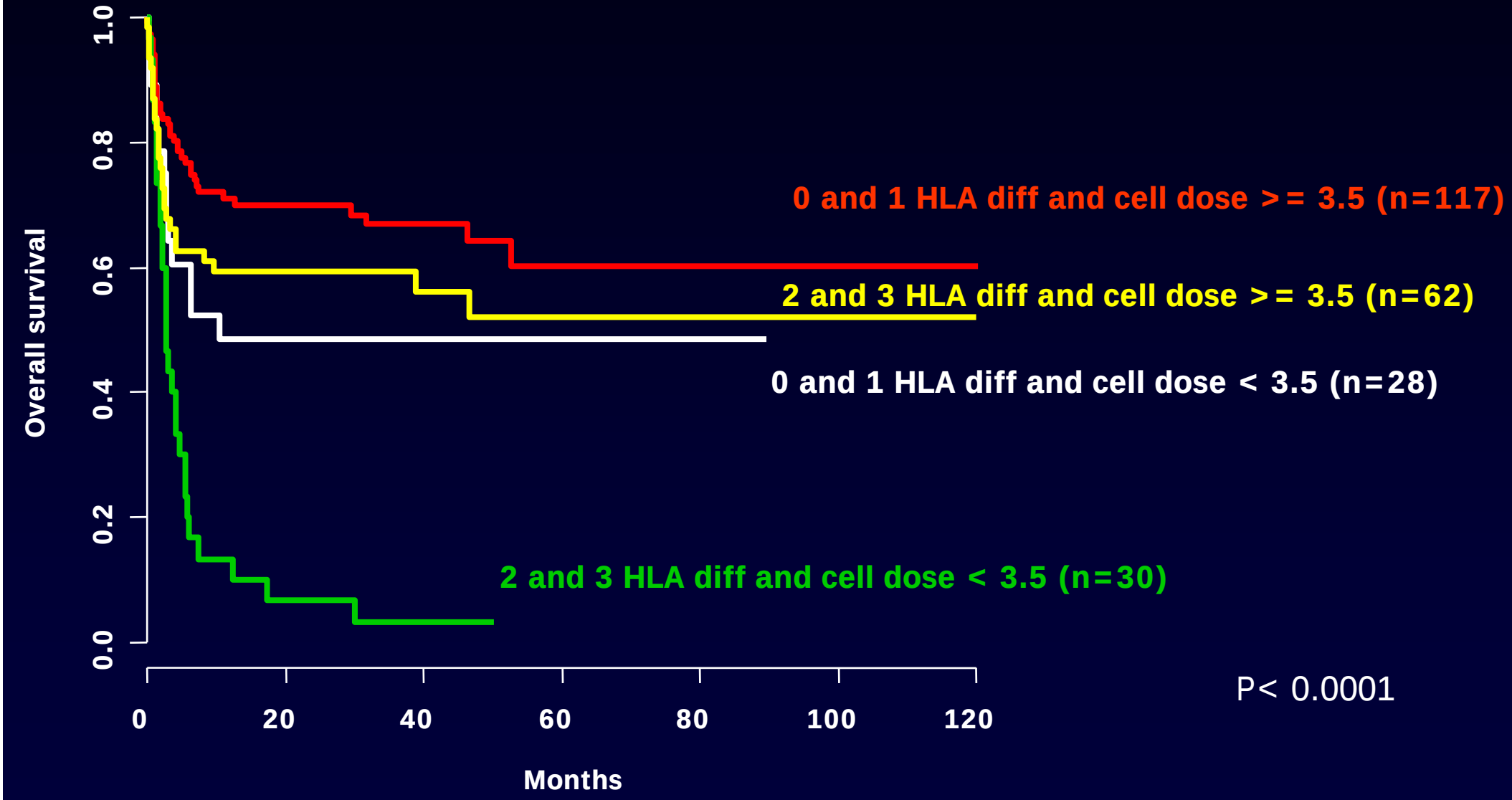
UCBT in non-malignant disorders (n=268)

TRM according to number of HLA and cell dose



UCBT in non-malignant disorders (n=268)

Overall survival according to HLA and cell dose



P< 0.0001

Interaction between HLA mismatches, number of cells and outcomes after unrelated CBT for non malignant diseases

	Number of HLA MM 0-1 vs 2 vs 3-4	Type of HLA MM Class I vs class II	Interaction with number of cells
PMN engraftment	Less	More 1 HLA-B # Less 2 DRB1=	Less <cells and more MM
Platelet engraftment	Less	More 1 HLA-B # Less 2 DRB1=	Less <cells and more MM
TRM	More	More 2 DRB1=	Less <cells and more MM
AGVH	More	Same	More >cells and>MM
CGVH	More	Same	More >cells and>MM
OS , EFS	Less	Less with DRB1	Worse if HLA MM≥2 and NC≤ 3.5NC/kg

How to improve engraftment?

Donor choice

How to choose the best unit?

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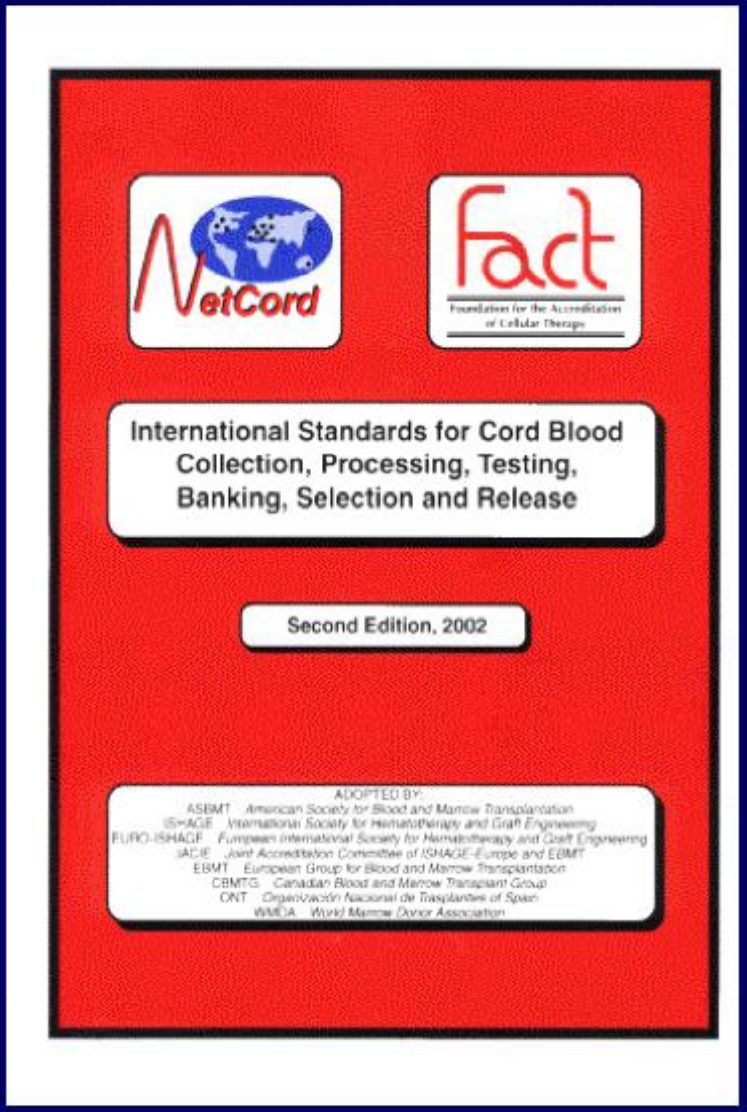
NETCORD/FACT Standards

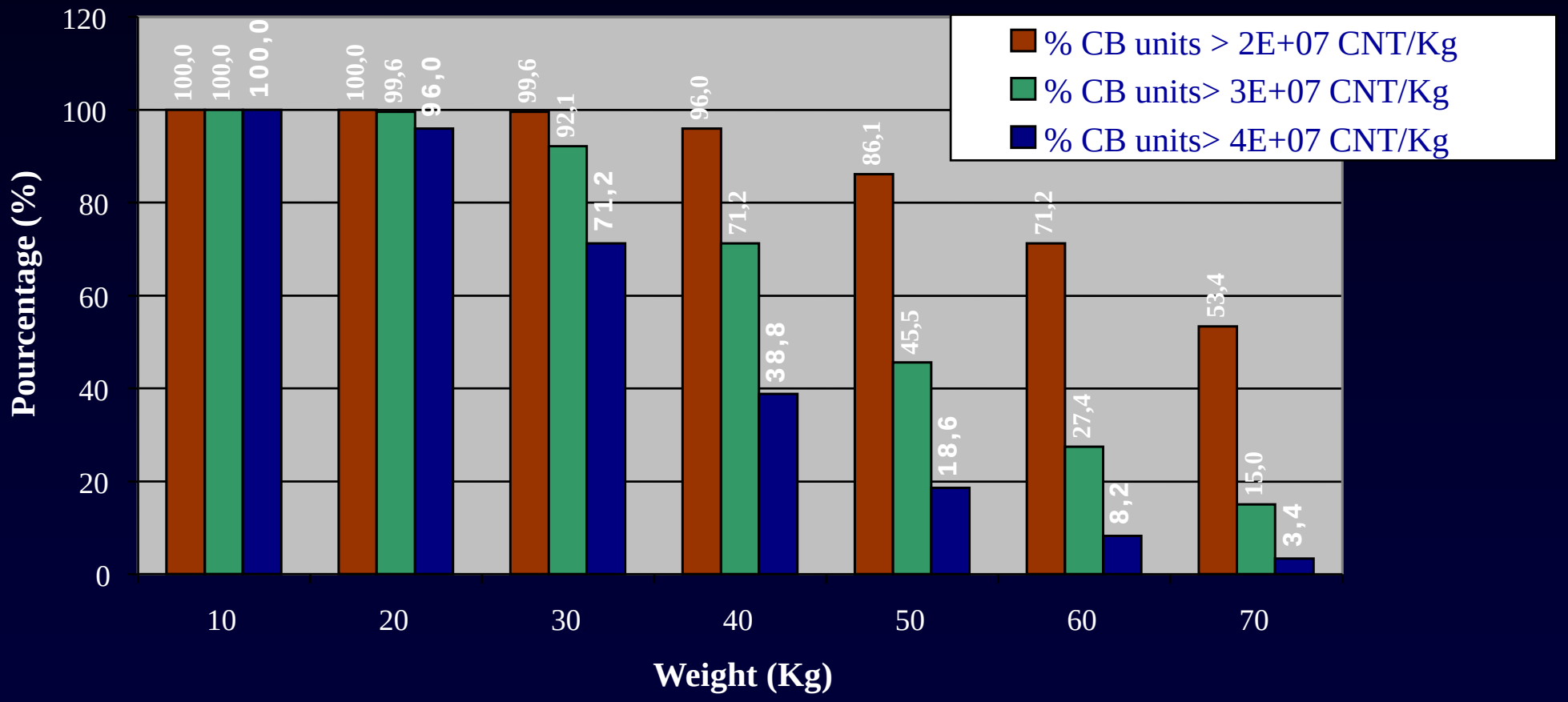


NETCORD/FACT standards developed in consensus by representatives of NETCORD and FACT

Accreditation

(FACT = Foundation for the Accreditation of Cellular Therapy)

% of French CB units accoring to the number of NC/Kg



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New Approaches to Adult UCBT

Problem: Low Cell Dose

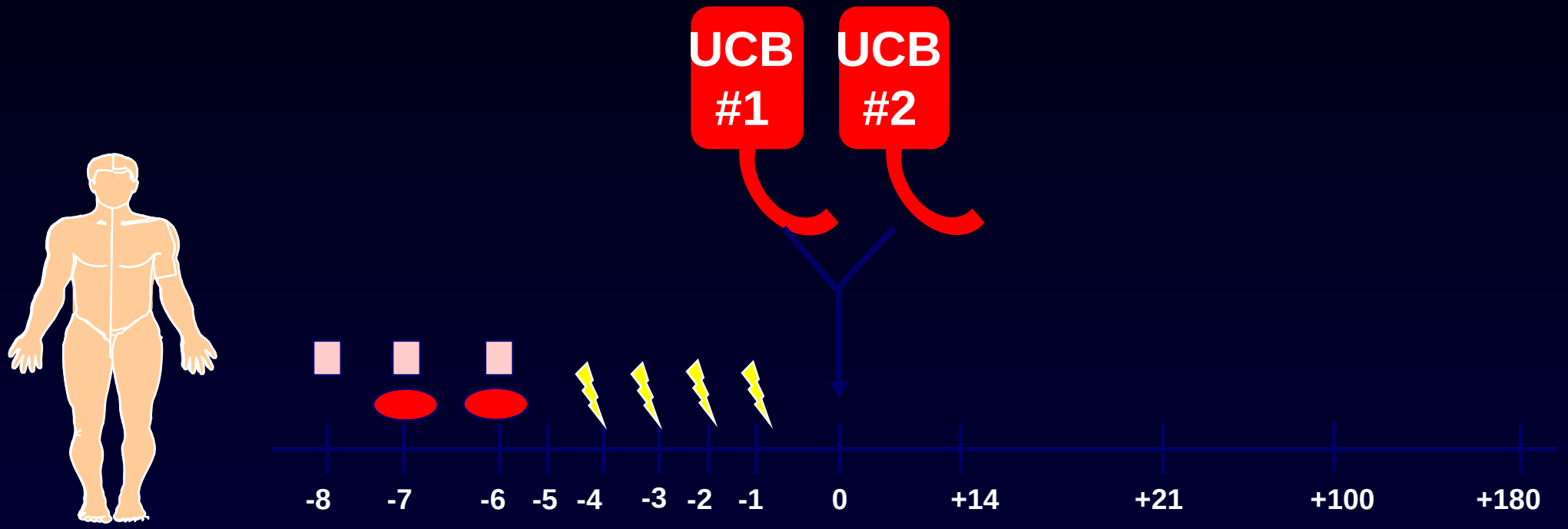
Solution: Use 2

Double Unit UCBT: Hypothesis

Increased graft cell dose will improve engraftment & survival

(Each unit will not reject the other)

Myeloablative Treatment Schema



Eligibility:

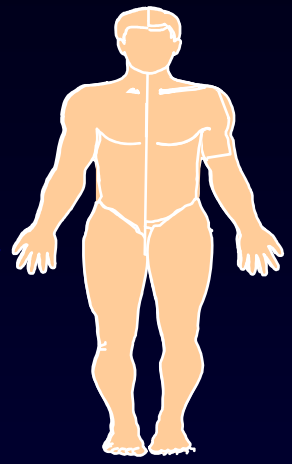
- **High-risk hematologic malignancy**
- **No single 4-6/6 UCB ≥ 2.5 x 10^7 NC/kg (later increased to 3.5)**

CSA - 3 to ≥ +100

Mycophenolate - 3 to + 30

G-CSF

Double Unit Selection



0-2 mismatch

0-2 mismatch

Minimum allowed cell dose **1.0** x 10^7 NC/kg

UCB #1

0-2 mismatch

UCB #2

Minimum allowed cell dose **0.5** x 10^7 NC/kg

Goal : maximize graft cell dose

1º Endpoint: Donor Engraftment

Patient Characteristics

Total N	23
Tx date	2000-2003
Age	24 yrs (13-53)
Wt	73 kg (48-120)
Diagnosis	
AML	13 (56%)
CML	2 (9%)
ALL	8 (35%)
Conditioning	
Cy120/ TBI 1320/ ATG	2 (9%)
Cy120/ TBI 1320/ Flu75	21 (91%)
Median Follow-Up	10 months (4 - 30)

Cell Doses using Double UCB Tx

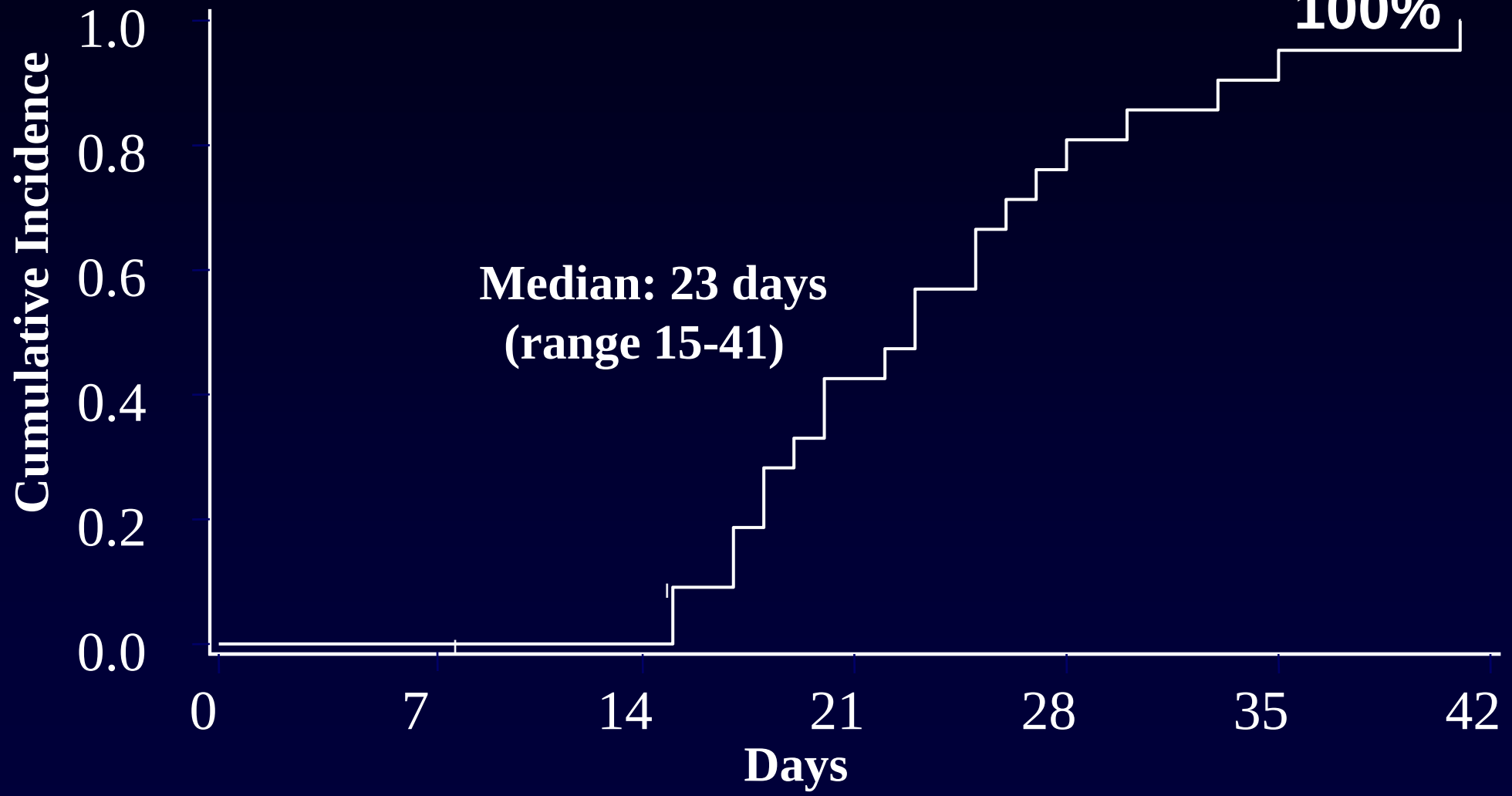
Infused TNC	**3.5×10^7 /kg (1.1-6.3)**
Larger Unit	1.9 (0.6-3.6)
Smaller Unit	1.5 (0.5-2.7)
Infused CD34+	**4.3×10^5 /kg (0.9-14.3)**
Larger Unit	2.7 (0.5-10.4)
Smaller Unit	1.2 (0.4-4.7)

HLA match in Double UCB Tx

Best Match to Recipient	N = 23
6/6	2 (9%) one 6/6 unit (2nd unit: 6/6 n = 1, 5/6 n = 1)
5/6	11 (48%) one 5/6 unit (2nd unit: 5/6 n = 4, 4/6 n = 7)
4/6	10 (43%) both units 4/6

Match to Each Other	N = 23
6/6	2
5/6	5
4/6	16

Neutrophil Engraftment (n = 21)



Do Both Units Contribute to Hematopoiesis?

Do Both Units Contribute to Hematopoiesis?

NO

Only 1 unit is sustained

Chimerism

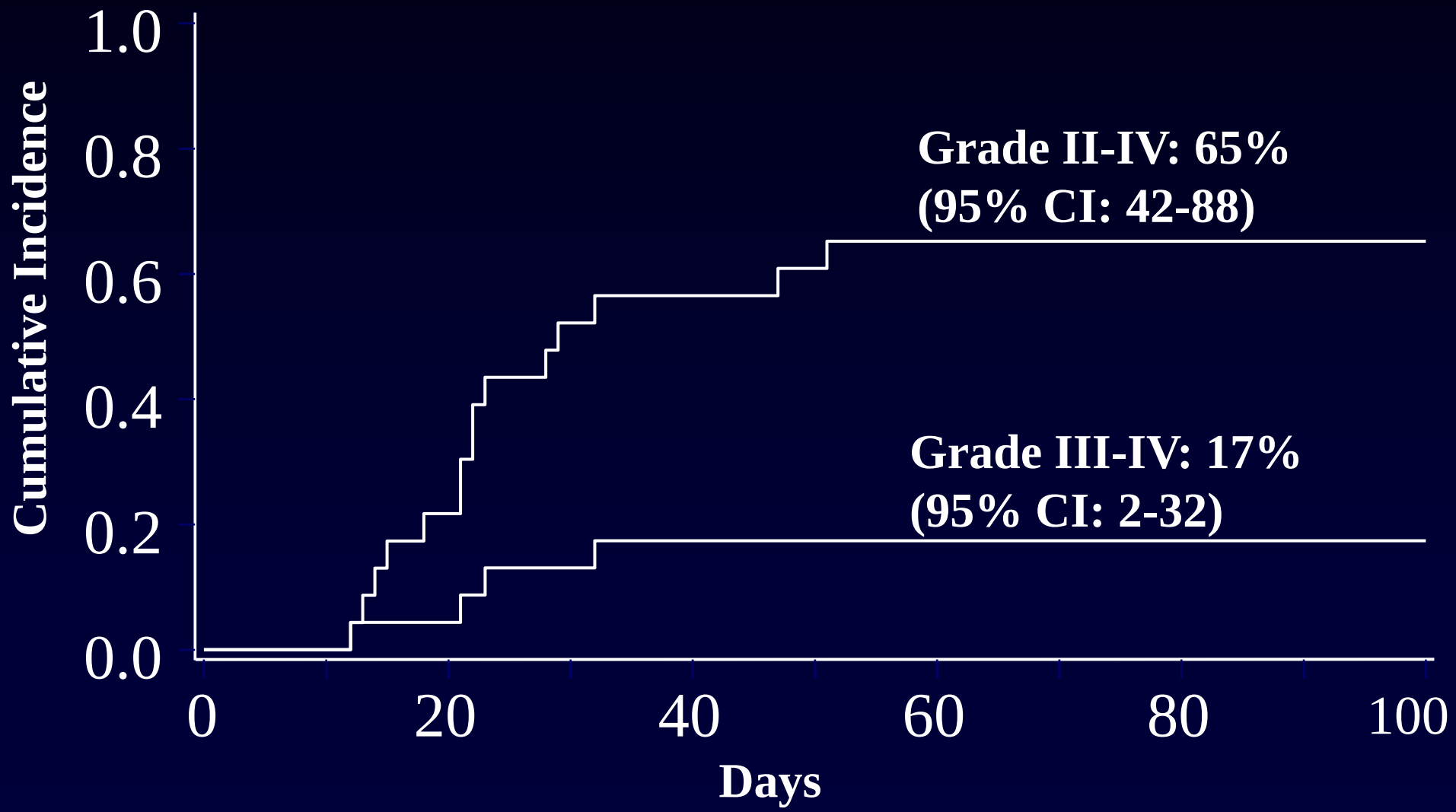
	Double (n = 23)	
Day +21	91% (64-100)	
		24%: 2 units present 74% (42-85) vs. 20% (15-40)
		76%: 1 unit
+100	100%	

Complete donor chimerism was rapid and sustained.
Sustained hematopoiesis accounted for by only 1 unit.

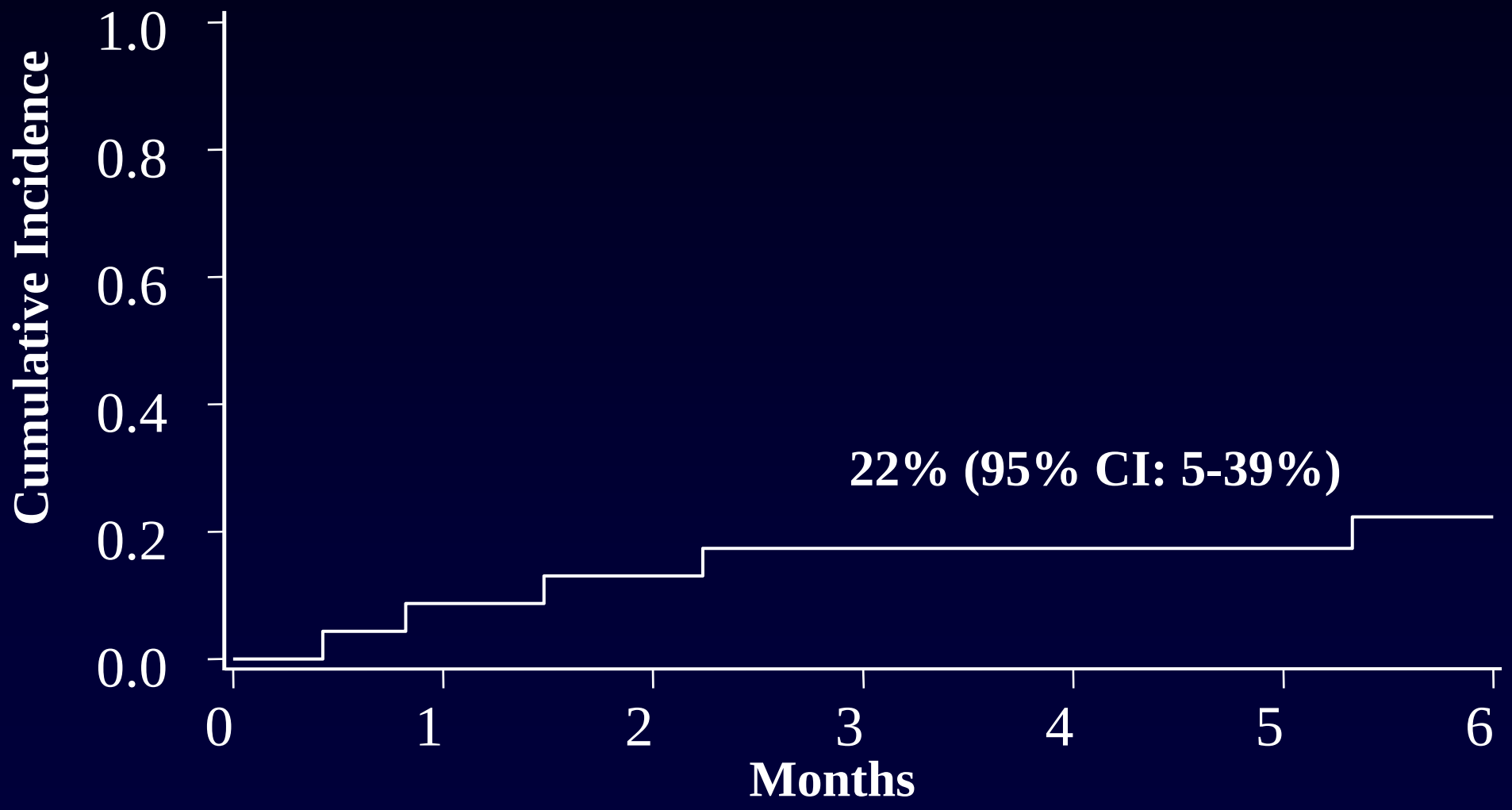
Cell Doses using Double UCB Tx

Infused TNC	**3.5×10^7 /kg (1.1-6.3)**
Larger Unit	1.9 (0.6-3.6)
Smaller Unit	1.5 (0.5-2.7)
Infused CD34+	**4.3×10^5 /kg (0.9-14.3)**
Larger Unit	2.7 (0.5-10.4)
Smaller Unit	1.2 (0.4-4.7)
Infused CD3+	**1.0×10^7 /kg (0.5-2.2)**
Larger Unit	0.6 (0.3-1.3)
Smaller Unit	0.4 (0.1-0.9)

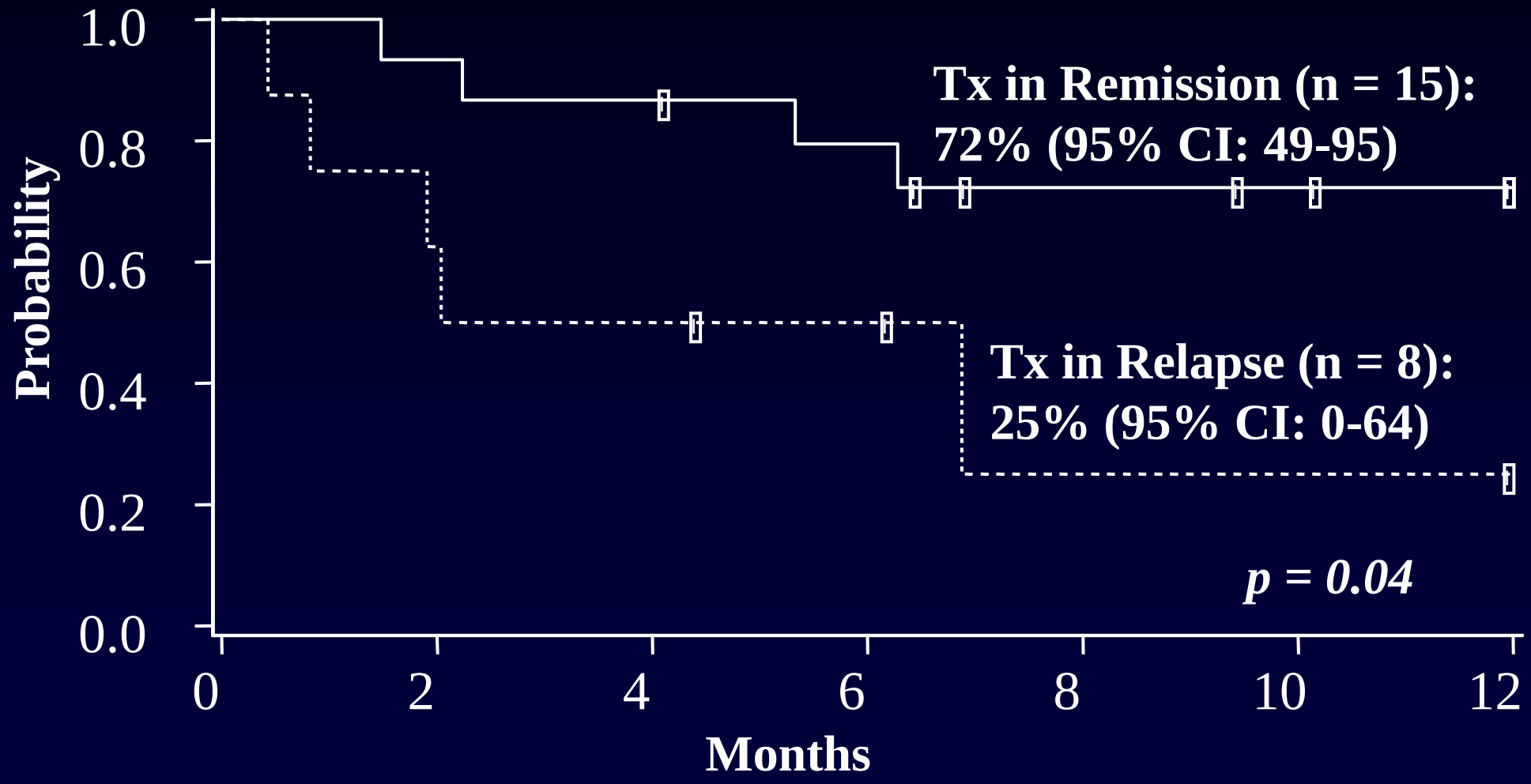
Acute GVHD


Cumulative Incidence
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
Days
Grade II-IV: 65%
(95% CI: 42-88)
Grade III-IV: 17%
(95% CI: 2-32)

Transplant Related Mortality



Disease-Free Survival



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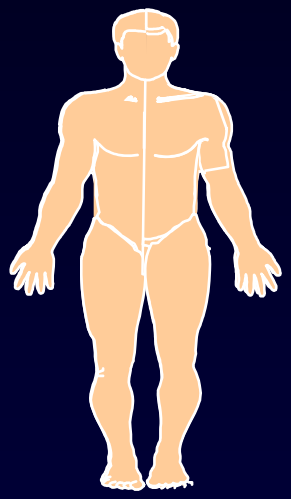
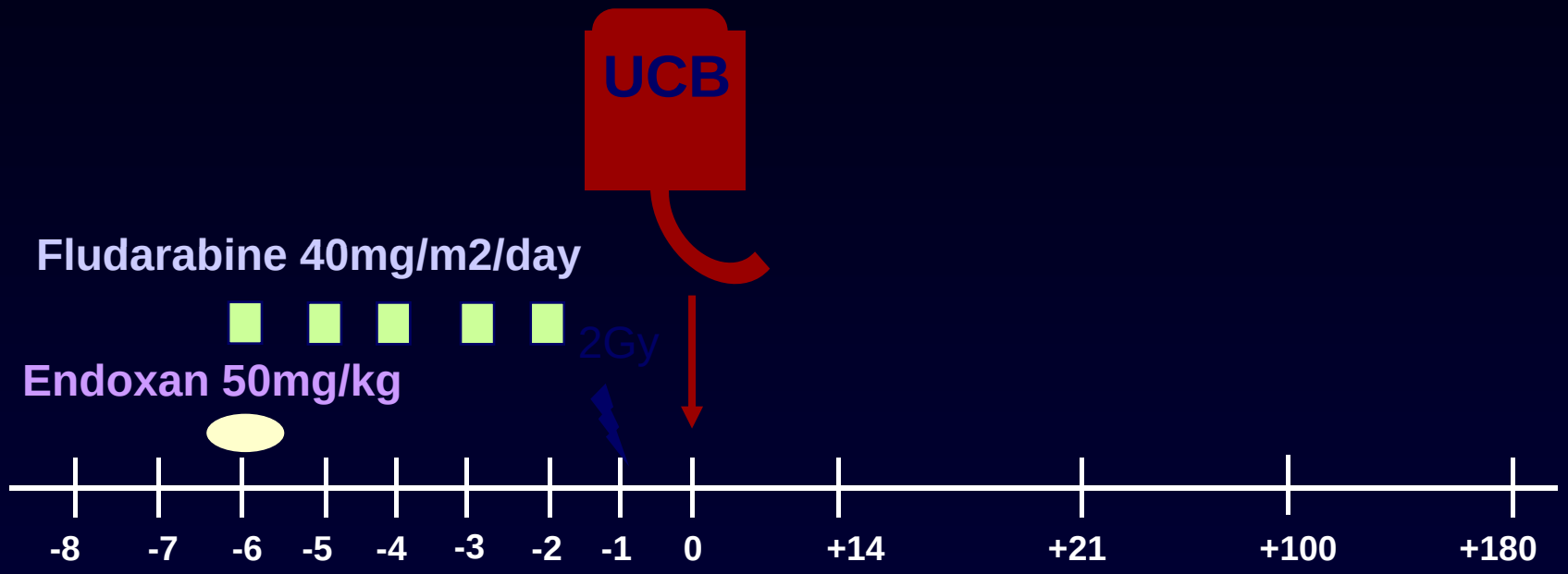
Non-myeloablative regimen for UCBT in adults (n=18)





CSA (level>200µg/L) - 3 to ≥ +100

MMF (30mg/kg/day)- 3 to + 30

G-CSF

Eligibility:

- High-risk hematological malignancy
- 4-6/6 UCB

  ≥ 2.5 x 10^7 NC/kg (at collection)

(J Barker and J Wagner)

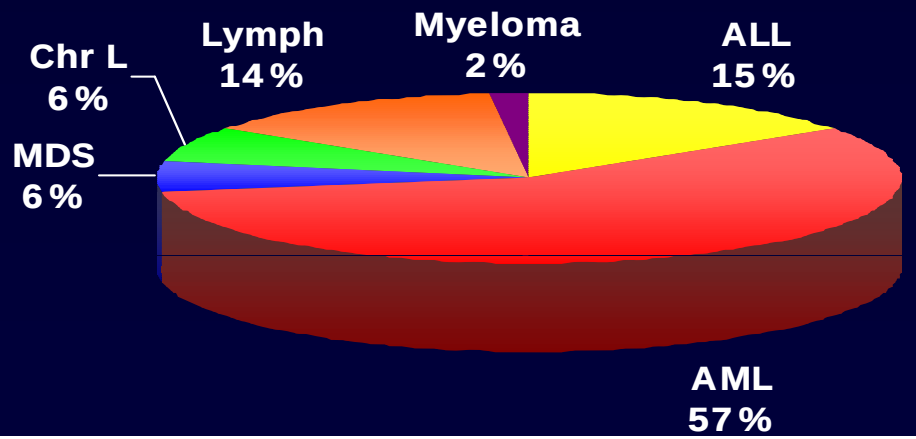
Reduced Intensity conditioning regimen in Unrelated cord blood transplants for patients with hematological malignancies (n=65)

Patients and disease characteristics

Transplants performed from 1999-2005 (75% in the last 3 years) with single units

Follow-up:	8 months (3-26)
Median age:	47 years (16-76)
Median weight:	60 kg (40-110kg)
CMV+:	63%

Diagnosis



Previous autologous transplant:
39% (n=26)

Reduced Intensity conditioning regimen in Unrelated cord blood transplants for patients with hematological malignancies (n=65)

Conditioning

Fludarabine+TBI (2Gy)	3
Fludarabine+Endoxan (or mephalan)	11
Fludarabine+Endoxan+TBI (2y)	33
Fludarabine+Bussulfan(<8mg/kg)± other	9
Fludarabine+Bussulfan(<8mg/kg)+TBI (<5y)	4
Other	5
Anti T antibodies (ATG/ALG or MonoAb)	26%
Hematopoietic growth factors (<Day 8)	87%

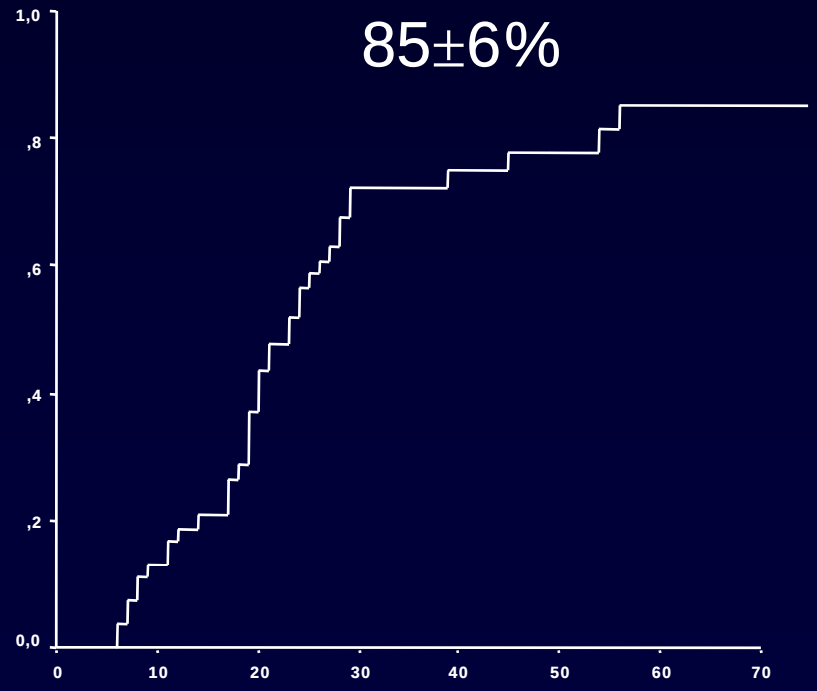
RESULTS

Neutrophils recovery
Median days: 20 days (0-56)

Chimerism at 3 months (available in 71% of the patients)

Full donor	67%
Mixte chimerism	9%
Autologous reconstitution	24%

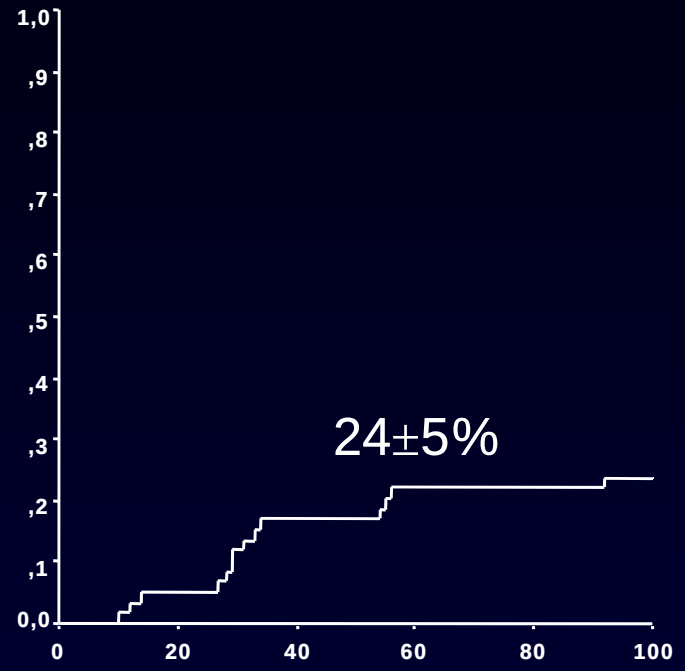
Platelets recovery 35 days (9-63)



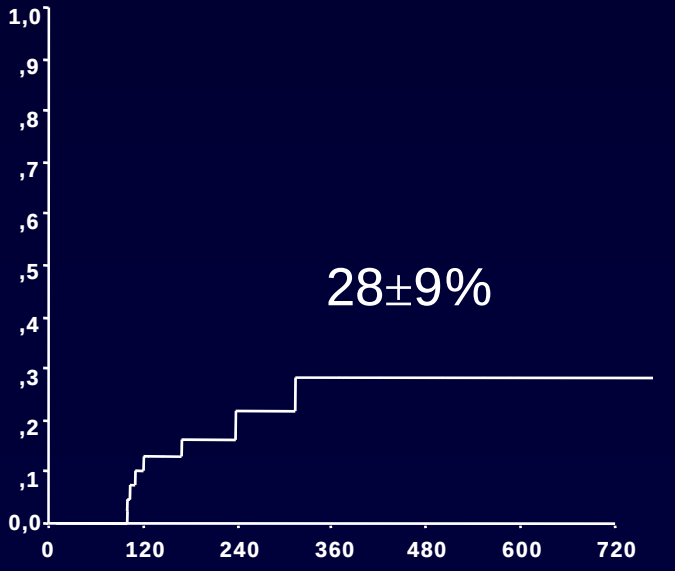
RESULTS

Acute GVHD

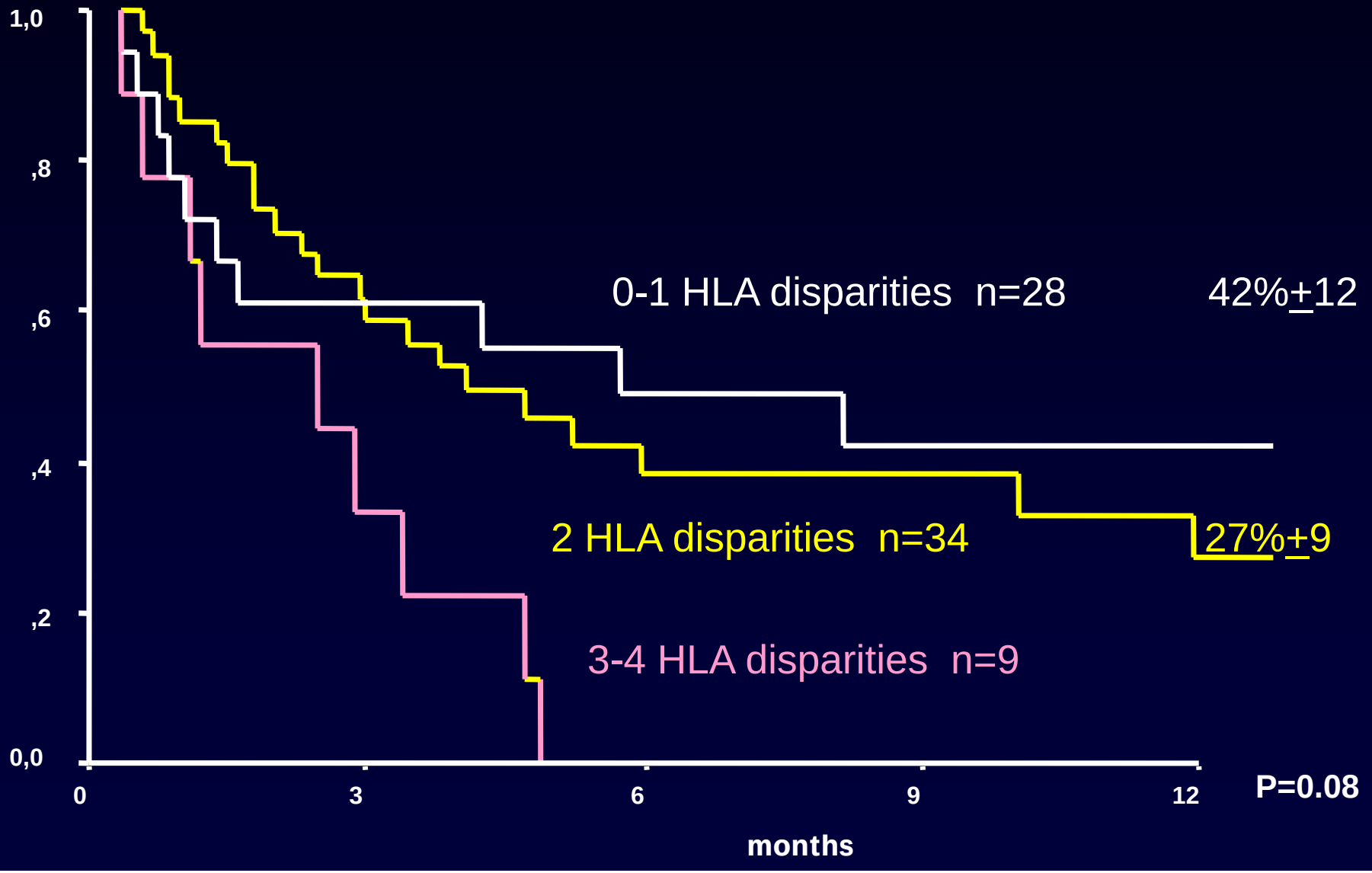
Grade 2	8 (13%)
Grade 3	4 (7%)
Grade 4	4 (7%)



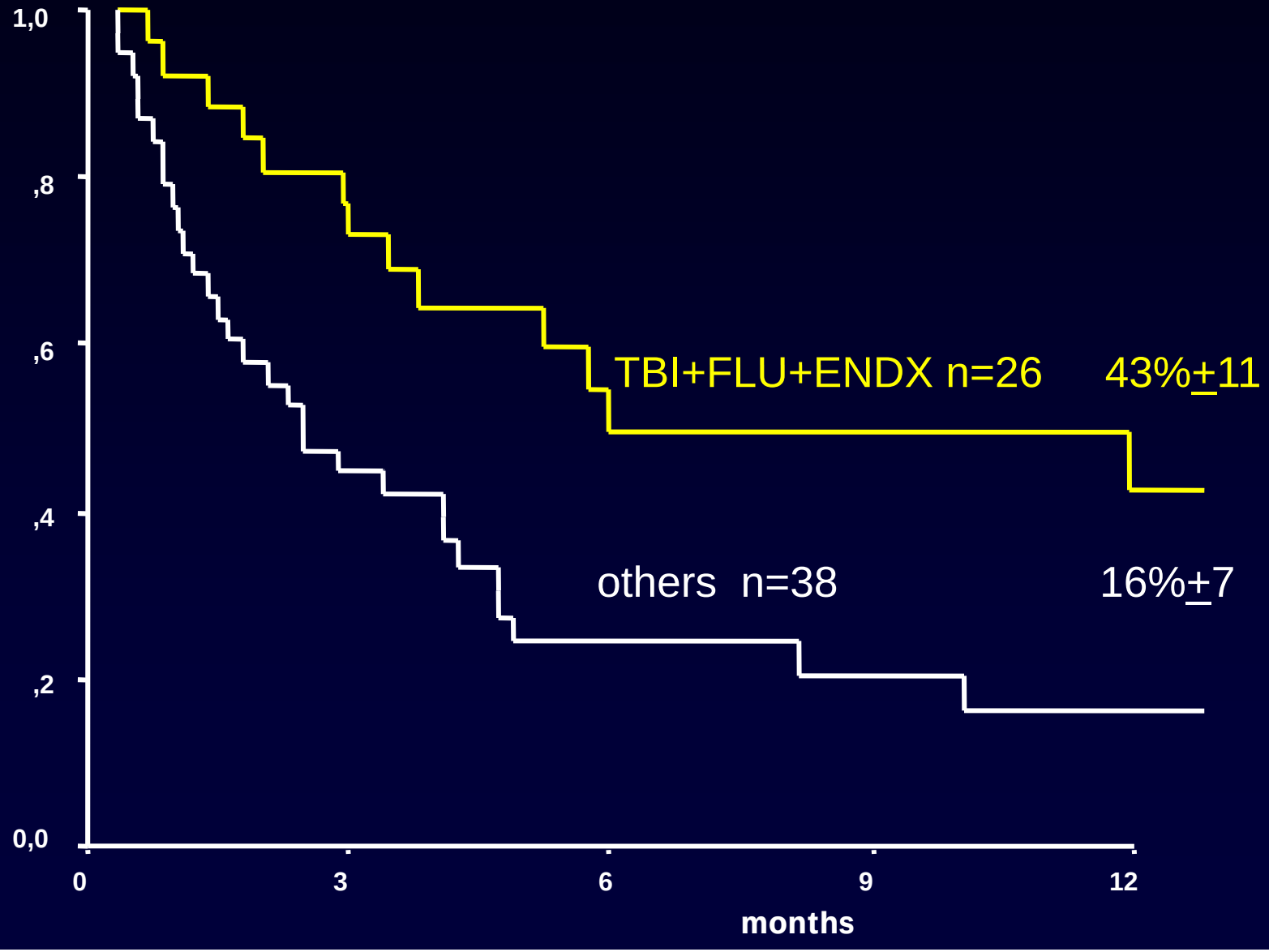
Chronic GVHD



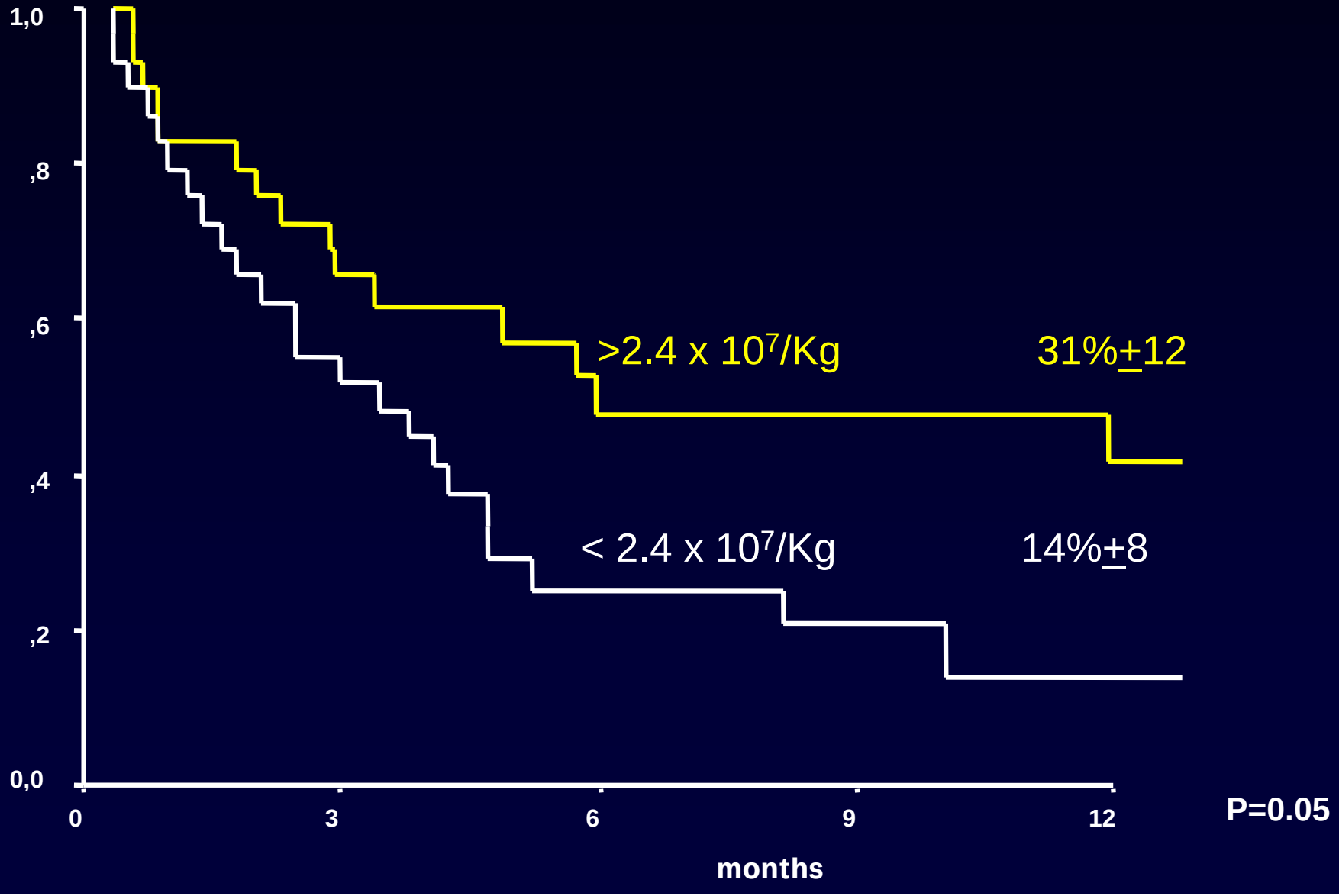
DFS after RIC UCBT according to number of HLA disparities



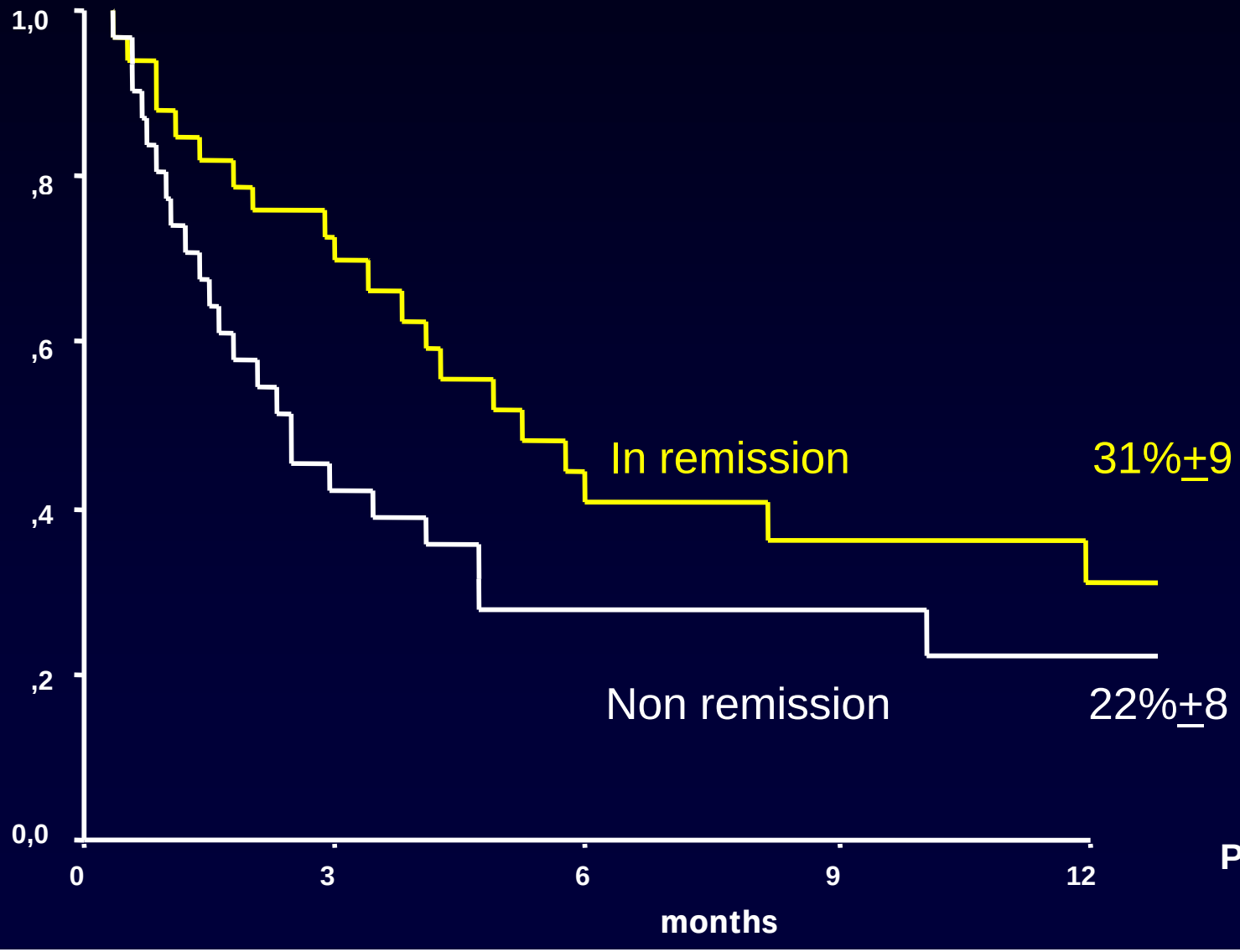
DFS after RIC UCBT according to conditioning



DFS after RIC UCBT according to number of cells infused



DFS after RIC UCBT according to status of disease



HOW TO CHOOSE AN ALTERNATIVE STEM CELL TRANSPLANT DONOR ??

Strategy of alternative stem cell donor for patients with malignant disorders

High resolution HLA typing of the patient (adults and children)

To be considered Haplo T-depleted in AML?

Simultaneous search

Cord Blood Banks

Bone Marrow donor registries

Cell dose to be increased with nb of mismatches (single or double)
>3.5x10^7/kg
HLA < 3/6

< 8/10 or delay (> 3 months for AL)

HLA 10/10 or 9/10

UCBT

UBMT

Strategy of alternative stem cell donor for non malignant disorders

High resolution HLA typing of the patient (mostly children)

To be considered Haplo T-depleted?
Yes for PID

Simultaneous search (metabolic disorders , PID, BMFS)

Cord Blood Banks

Bone Marrow donor registries

Cell dose to be increased with nb of mismatches (double systematically?)
>4.5x10^7/kg (?)
HLA < 2/6

< 8/10 or urgency

HLA 10/10 or 9/10

UCBT

UBMT

Conclusions

•Cord Blood is an established source of hematopoietic stem cell for allogeneic transplantation in children and adults with malignant and non malignant disorders

•Nowadays, an alternative HSC donor can be found for almost all patients

•The indication of using UCB cells will depend on the urgency of transplantion, number of cells in a unit and number of HLA disparities

•Main questions to be answered :
the immune reconstitution (mainly for adults) and long term follow up

•New technologies using cord blood cells such as RIC and double transplants are still in an investigational phase

EUROCORD CENTERS

ABECASIS M
ABELLA E
ADKINS D
AMADORI S
ARCESE W
BADELL SERRA I
BAKER D
BEGUIN Y
BEKASSY A
BEKSAC M
BENGT S
BENOIT Y
BERNAUDIN F
BERTRAND Y
BLAISE D
BLAYLOCK J
BOGDANIC V
BORDIGONI P
BOSI A
BRICHARD B
CAHN JY
CAIRO M
CHAMPAGNE M
CHAN KW
CHAPUIS B
CHI KONG LI
COWAN M
DALLORSO S
DEMEOQ F
DELLIERS LG
DI BARTOLOMEO P
DICKINSON A
DIEZ B
DINI G
DOKAL I
EAMES G
EBELL W
FAGIOLI F
FAVRE C
FERNANDEZ MN
FERREIRA E
FIBBEN W
FILIPOVICH A
FISCHER A
FISCHER S
GIBSON B
GOLDBERG S
GRAFAKOS S
GRAHAM M
GRANENA A
GRATECOS N
HARHALAKIS N
JACOBS H
JACOBSEN N
JEDRZEJCZACK W
JOUET JP
KATO S
KAWANO Y
KEESLER C
KINOSHITA A
KOBYLKA P
KOZINER B
KREMENS B
KUSMINSKY G
LAMBERTENGHI G
LAPORTE JP
LEUNG L
LI X
LIMA M and GIRALT S
LOCATELLI F
LOCATELLI F
LUTZ P
MADERO LM
MARTINEZ-RUBIO A
MASSZI T
MESSINA C
MICHEL G
MILLER J
MILONE J
MILOVIC V
MILPIED N
MOORE T
MUÑOZ VILLA A
NAGLER A
NIGEL P
NURNBERGER W
O'MARCAIGH A
ORTEGA J
PASQUINI R
PEREZ-OYTEZA J
PESSION A
PETERS C
PETRYGA D
PIHKALA U
PIMENTEL P
PLOUVIER E
PRITCHARD D
QUINONES R
RABUSIN M
RAJA T
REIFFERS J
RIO B
ROBERTS I
ROITTMAN S
ROSSBACH F
ROSSBACH T
ROWE J
RUBIN A
SANZ G
SADOUN A
SASLAVSKY J
SCHULTZ A
SCIME R
SHAW P
SHPALL EJ
SIEVERS E
SMITH F
SOCIE G
SPRUCE W
STARY J
STIFF P
TAKAHASHI T
TIEDEMANN K
TOREN A
UDERZO C
URBAN C
VERDEGUER A
VERDONCK L
VEYS P
VILMER E
VORA A
VOWELS M
WALL D
WAWER A
WILL A
WOOD J
YANIV I
YEAGER A
ZANDER A
ZANESCO L
ZINTL F


18
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2005
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HÔPITAL SAINT-LOUIS
ACCUEIL
17h30