

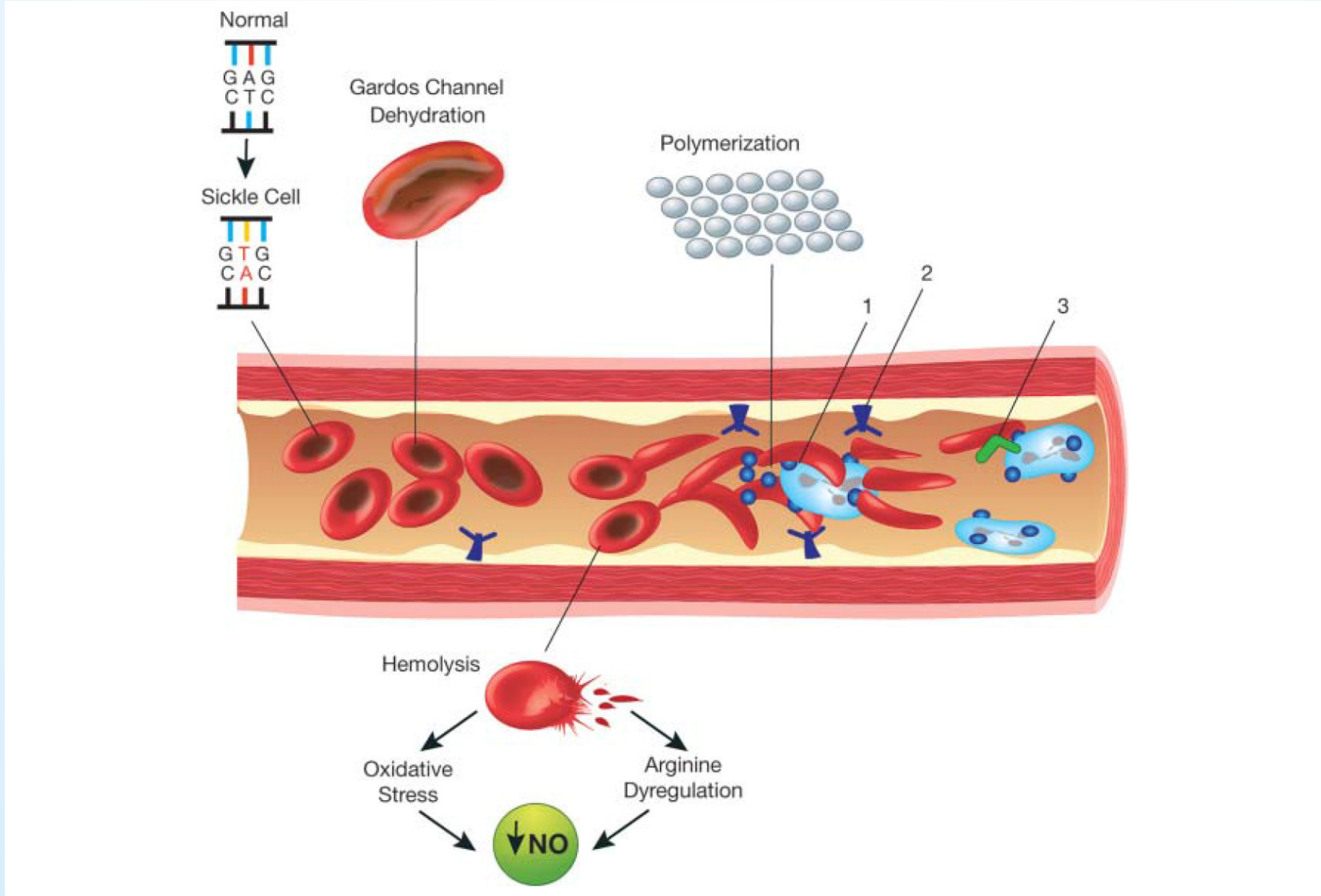


DÉPISTAGE NÉONATAL DE LA DRÉPANOCYTOSE ET REGISTRE NATIONAL

DR PHU QUOC LÊ – ME S. WAMBACQ – DR LAURENCE DEDEKEN

26 MAI 2023

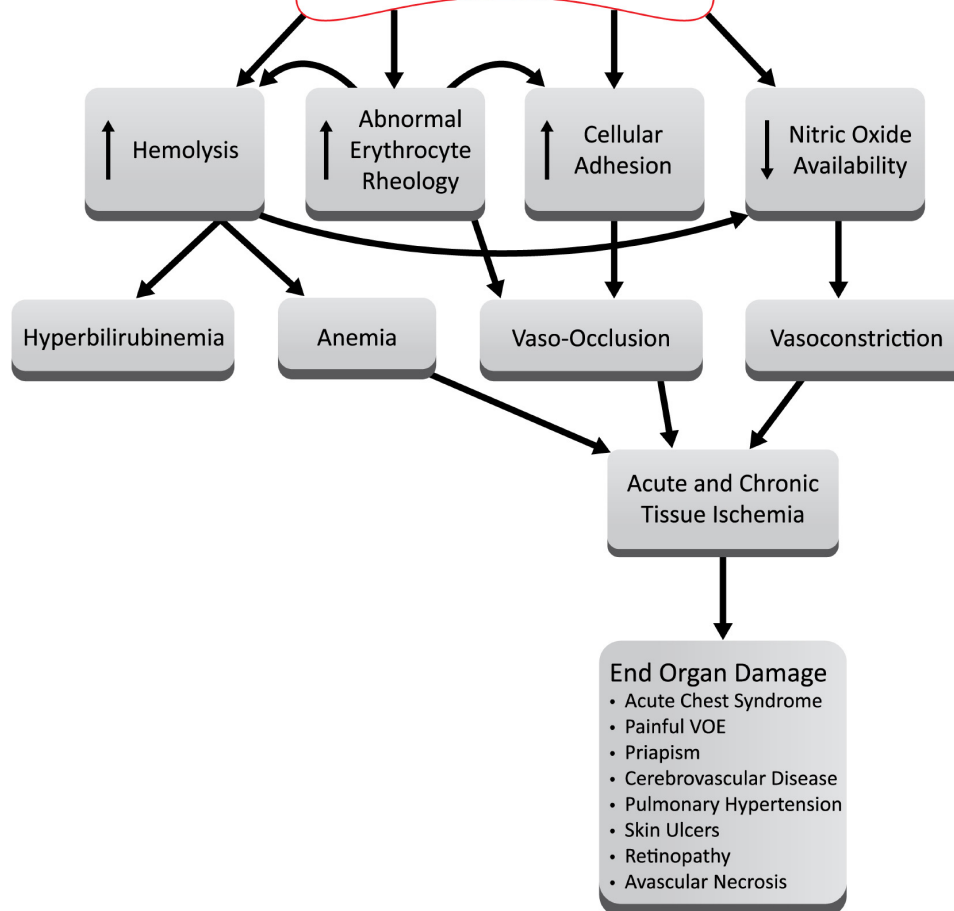
INTRODUCTION



Glu -> Val on the 6th codon of the Beta Globin Gene

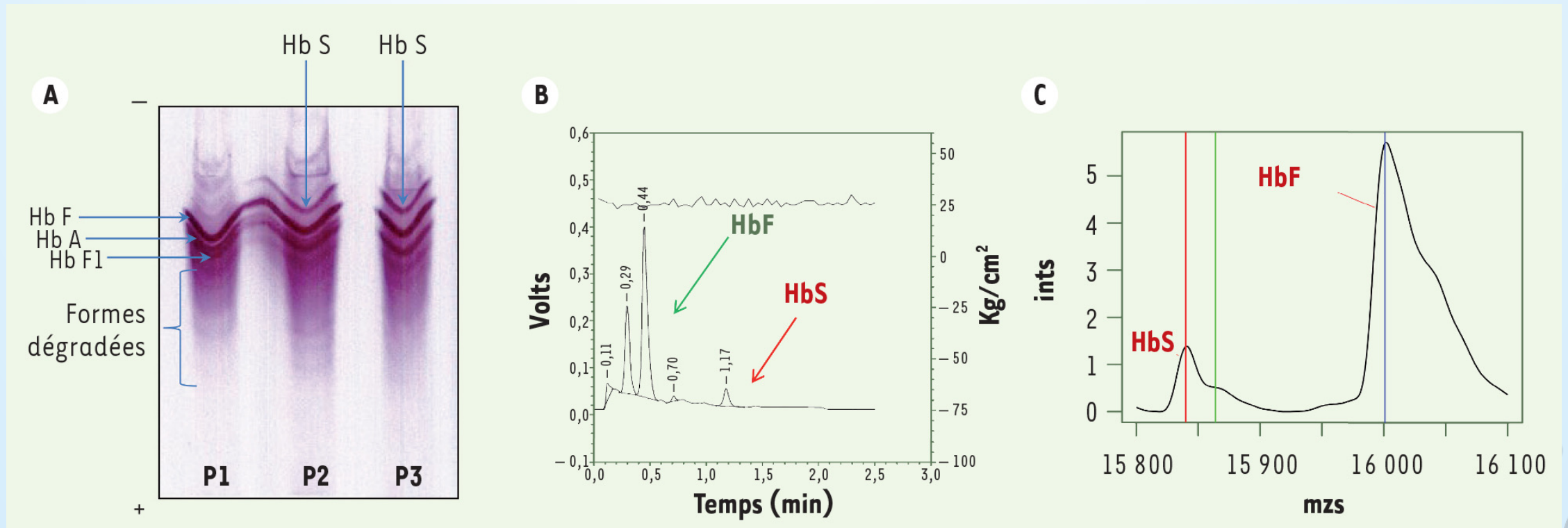
- Circulatory Desaturation
- Acidosis
- Dehydration
- Pyrexia

Hemoglobin S Polymerization



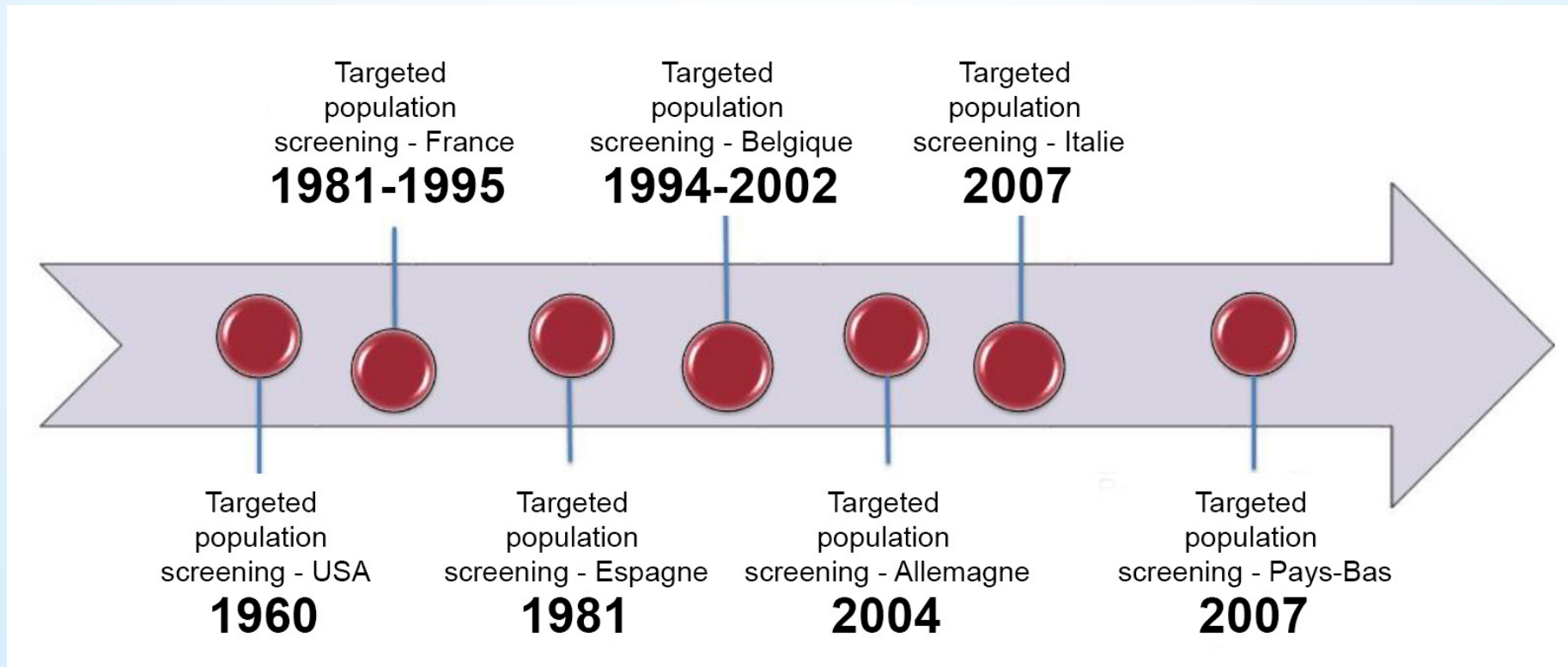
- End Organ Damage**
- Acute Chest Syndrome
 - Painful VOE
 - Priapism
 - Cerebrovascular Disease
 - Pulmonary Hypertension
 - Skin Ulcers
 - Retinopathy
 - Avascular Necrosis

TECHNIQUES DE DEPISTAGE



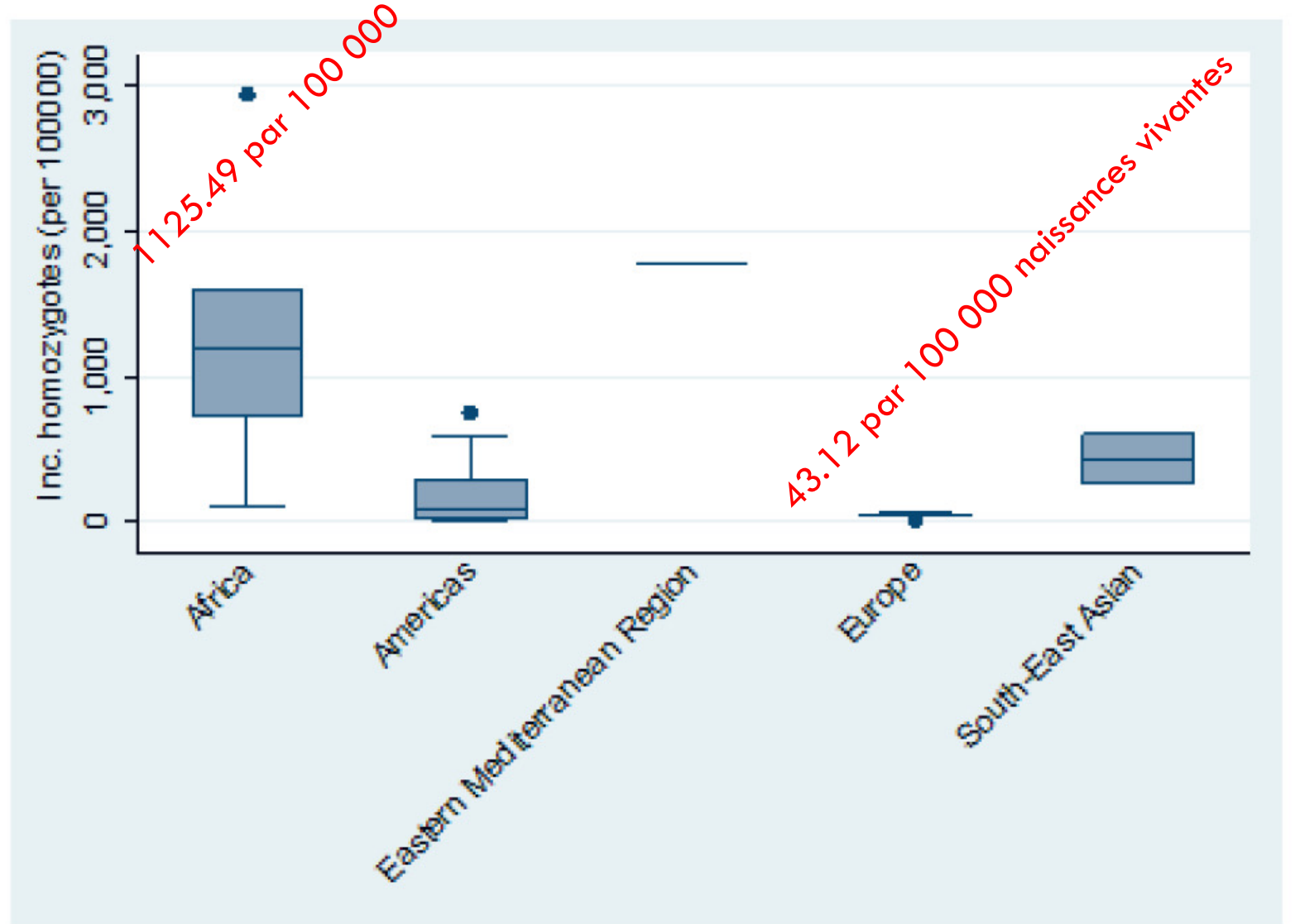
DÉPISTAGE NÉONATAL

Dépistage ciblé ou universel de la population à risque



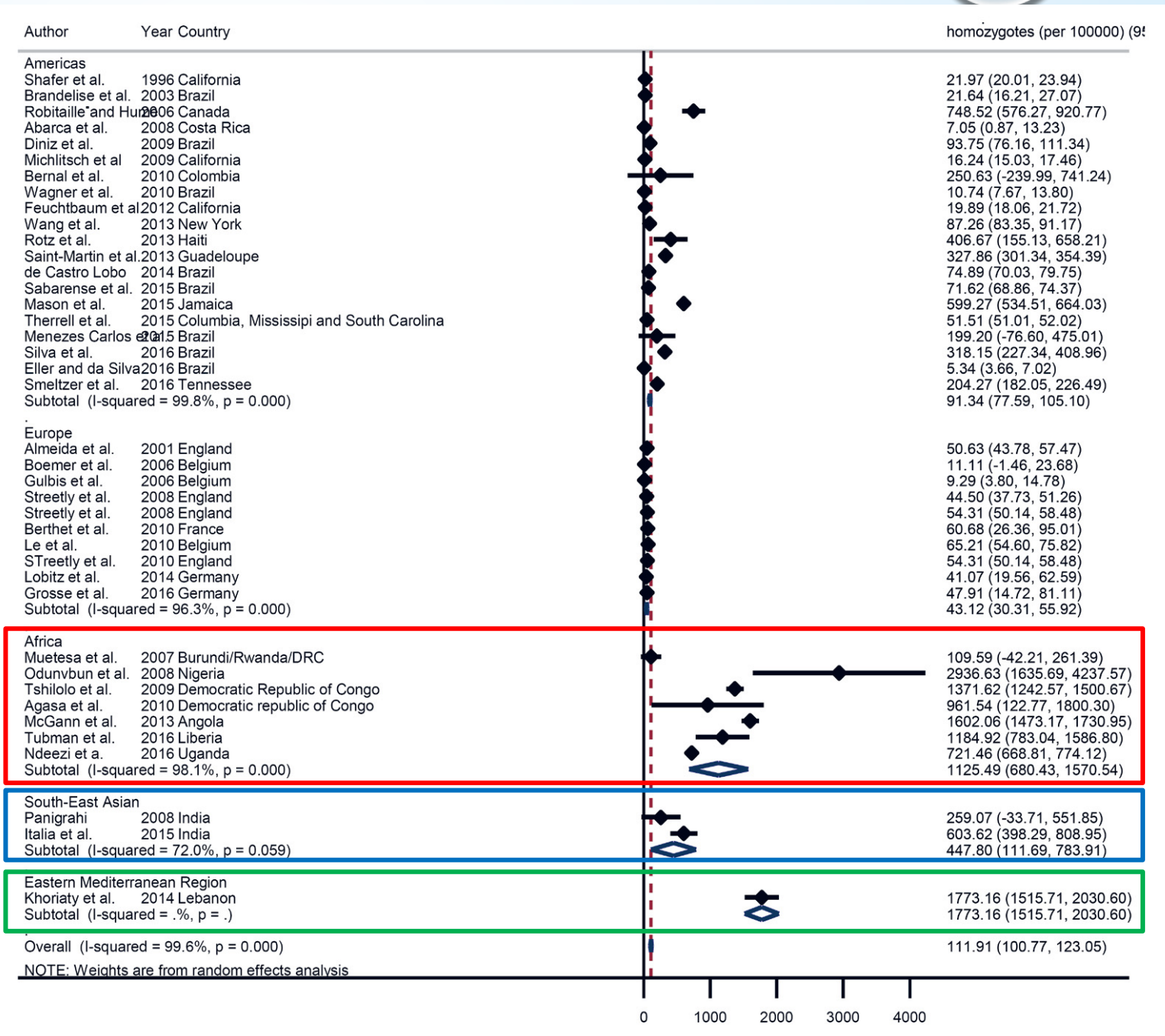
PRÉVALENCE

Homozygote/100 000 naissances vivantes



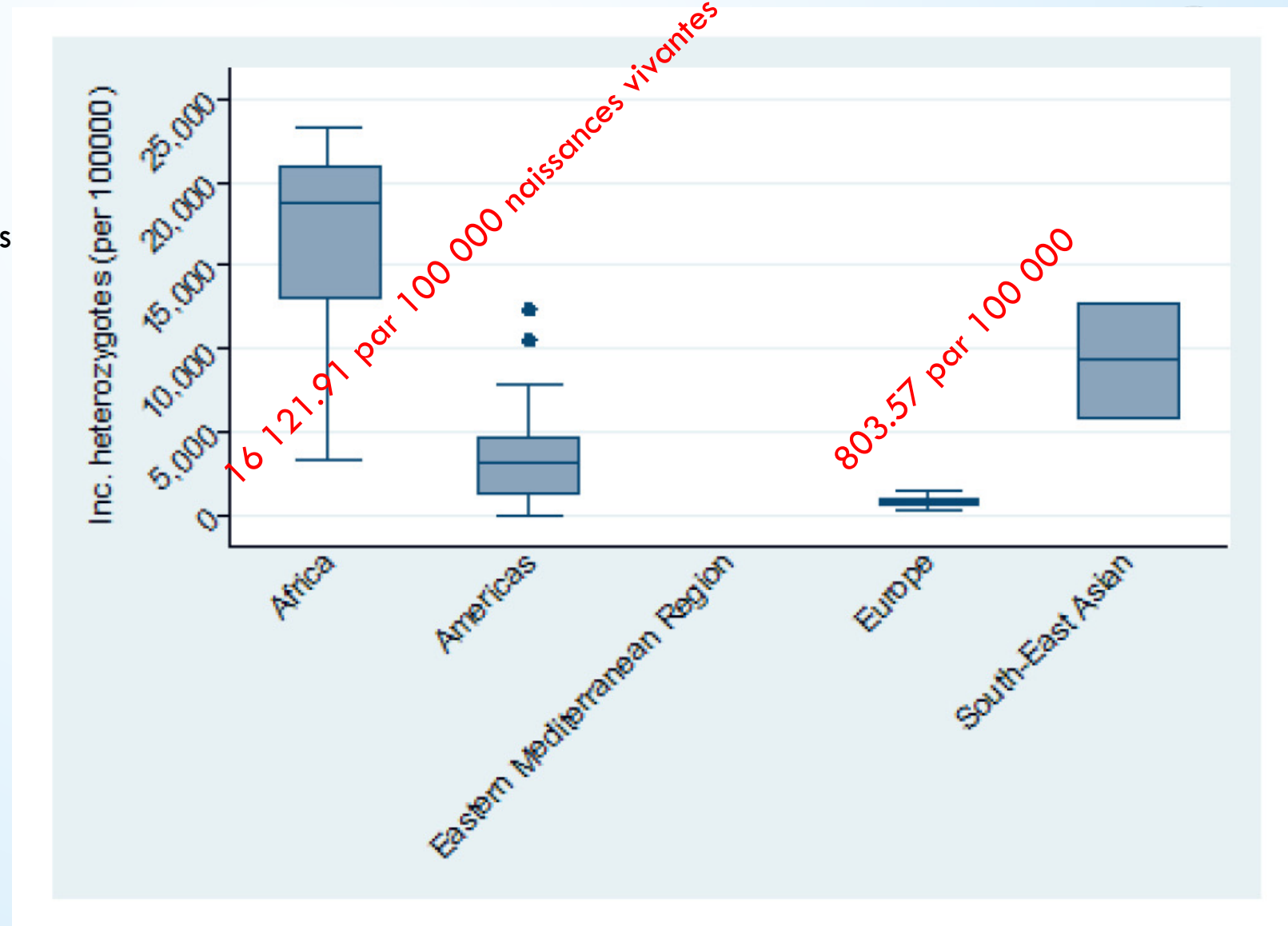
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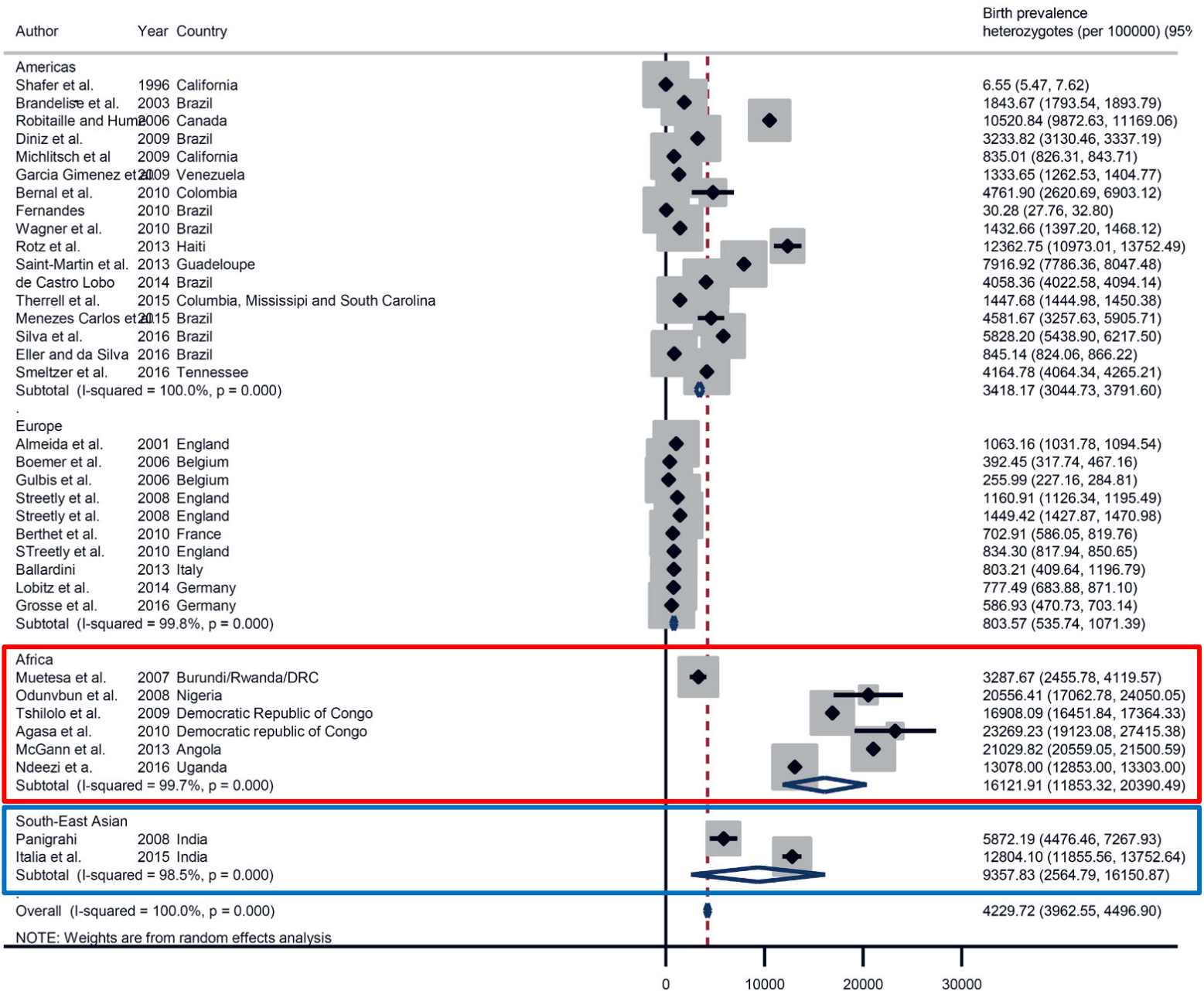
PRÉVALENCE

Hétérozygote/100 000 naissances vivantes

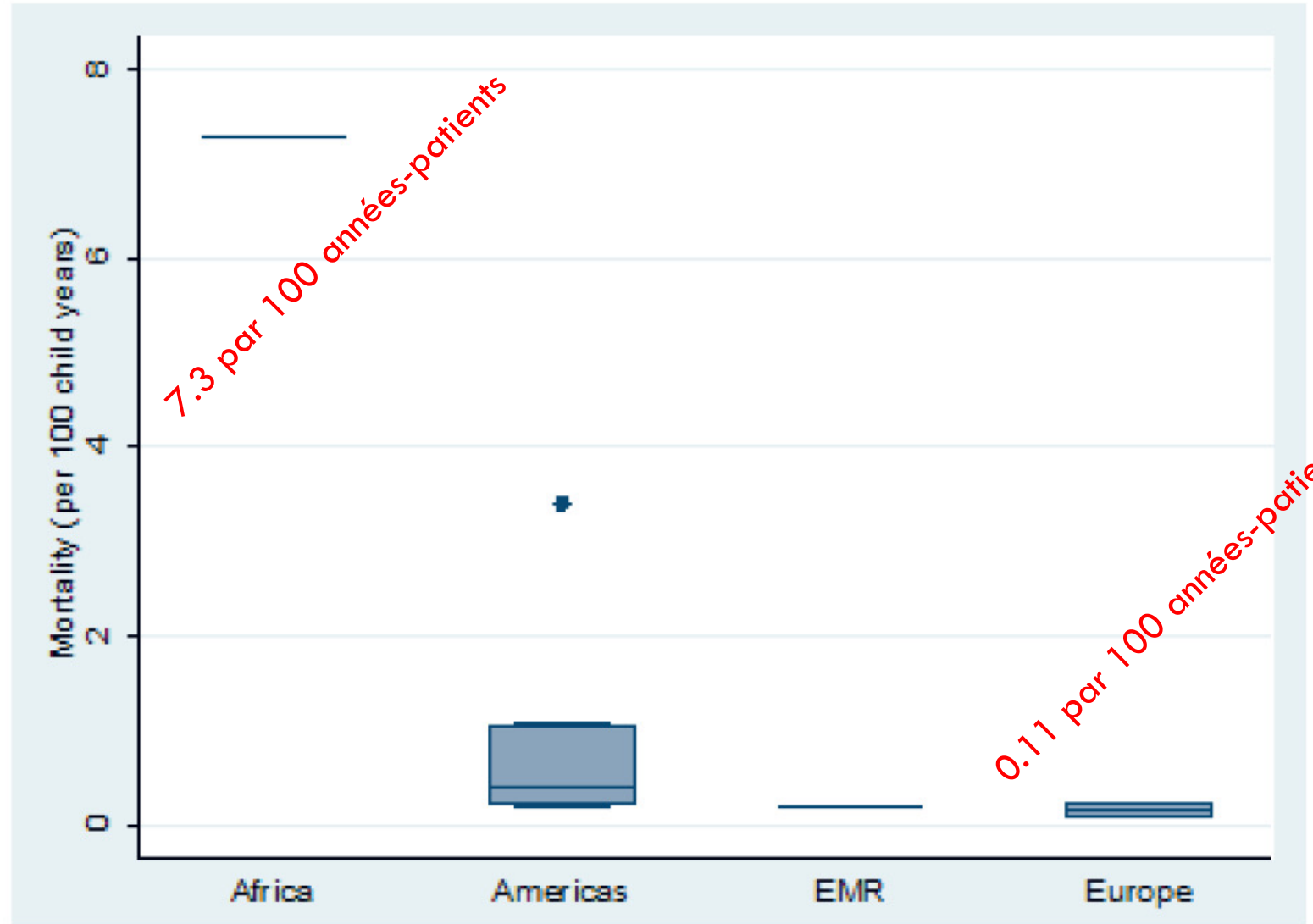


PRÉVALENCE

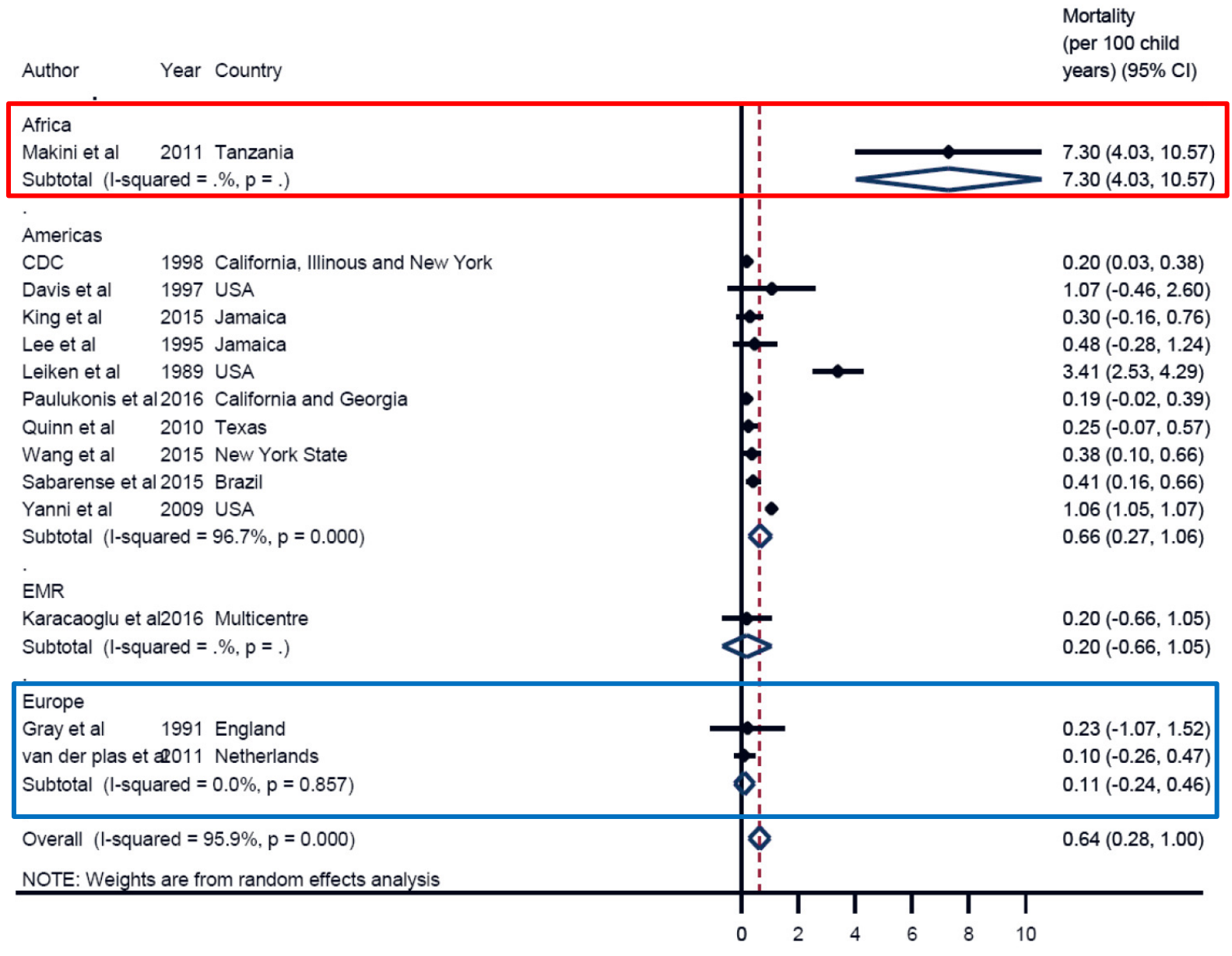
Hétérozygote/100 000 naissances vivantes



MORTALITÉ



MORTALITÉ



REGISTRE DES PATIENTS BELGES

INTRODUCTION

- CRÉÉ EN 2008
- BASE VOLONTAIRE
- QUESTIONNAIRE STANDARDISÉ
 - DONNÉES DÉMOGRAPHIQUES, BIOLOGIQUES, THÉRAPEUTIQUES ET LES HOSPITALISATIONS
- SYSTÈME INFORMATISÉ
- CONSENTEMENT ÉCLAIRÉ
- BELGIAN HEMATOLOGY SOCIETY

PARTICIPATING CENTERS : 16



GENERAL ACTIVITY

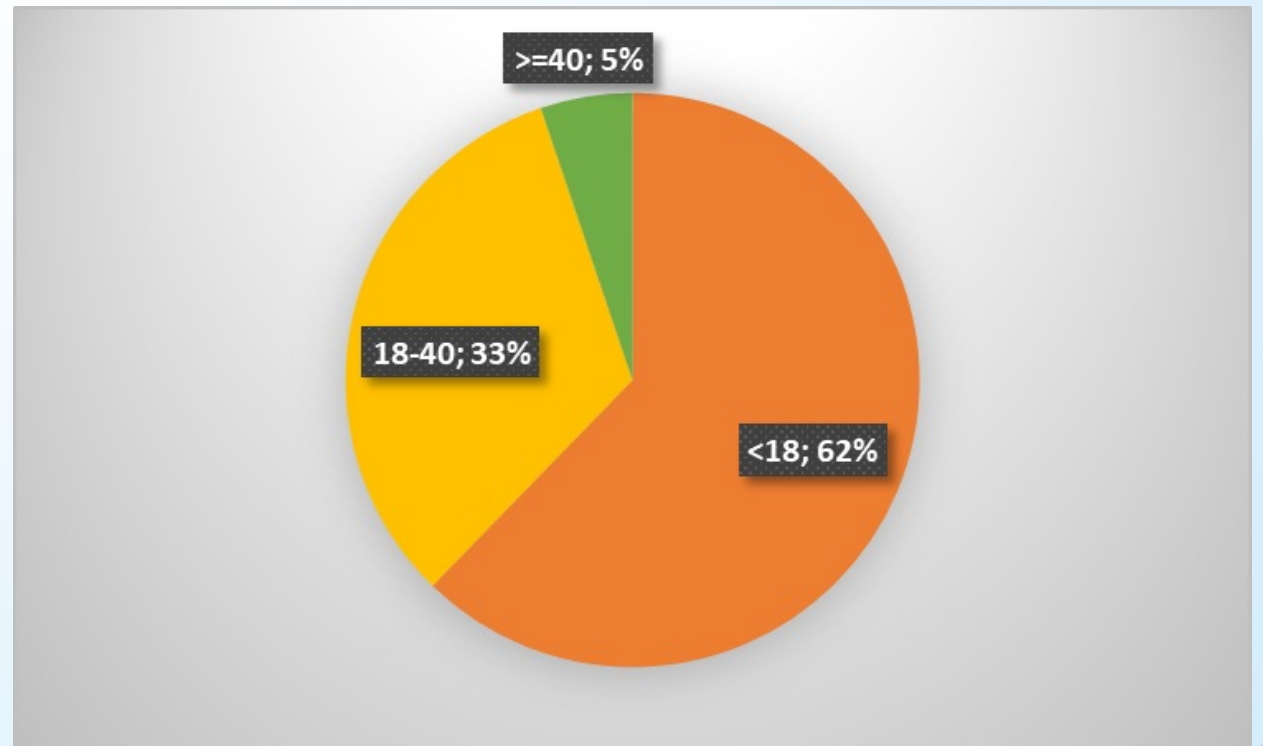
Sex	Patients	Ratio	FU Years
F	611	52%	7359
M	562	48%	6380
Total	1173		13739
Median FU			10
Mean FU years			12

30 new patients included without FU

** General Activity Based upon extraction of 10/05/2023*

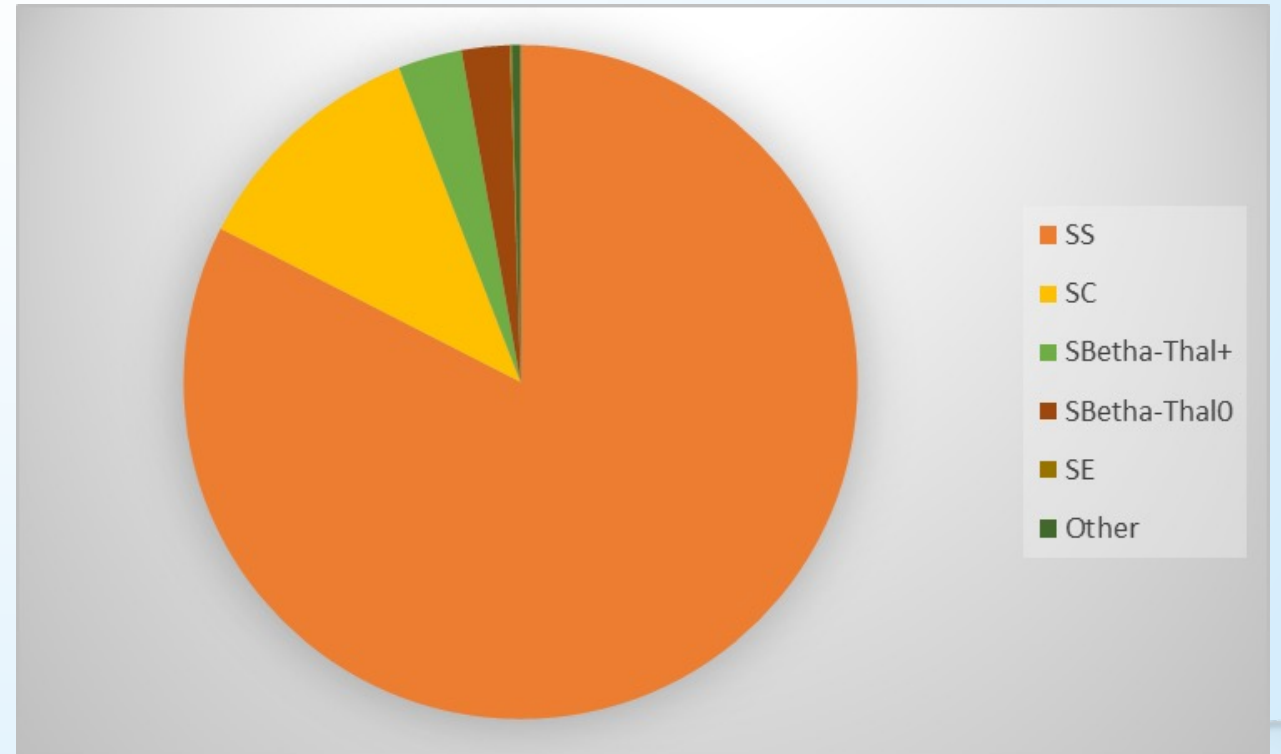
DISTRIBUTION BY AGE GROUP

Group age	Patients	Ratio
<18	601	62%
18-40	314	33%
>=40	50	5%
Total	965	100%
	Minus death & LFU	
	Real	At last FU
Median age	16	14
Mean age	19	17
	Minus death	Minus death & LFU



DISTRIBUTION BY GENOTYPE

Genotype	Patients	Ratio
SS	968	83%
SC	136	12%
SBetha-Thal+	36	3%
SBetha-Thal0	27	2%
SE	1	0%
Other	5	0%
Total	1173	100%
Median age at diagnosis	0,6	
Median age at diagnosis SS	0,7	
Median age at diagnosis oth	0,7	

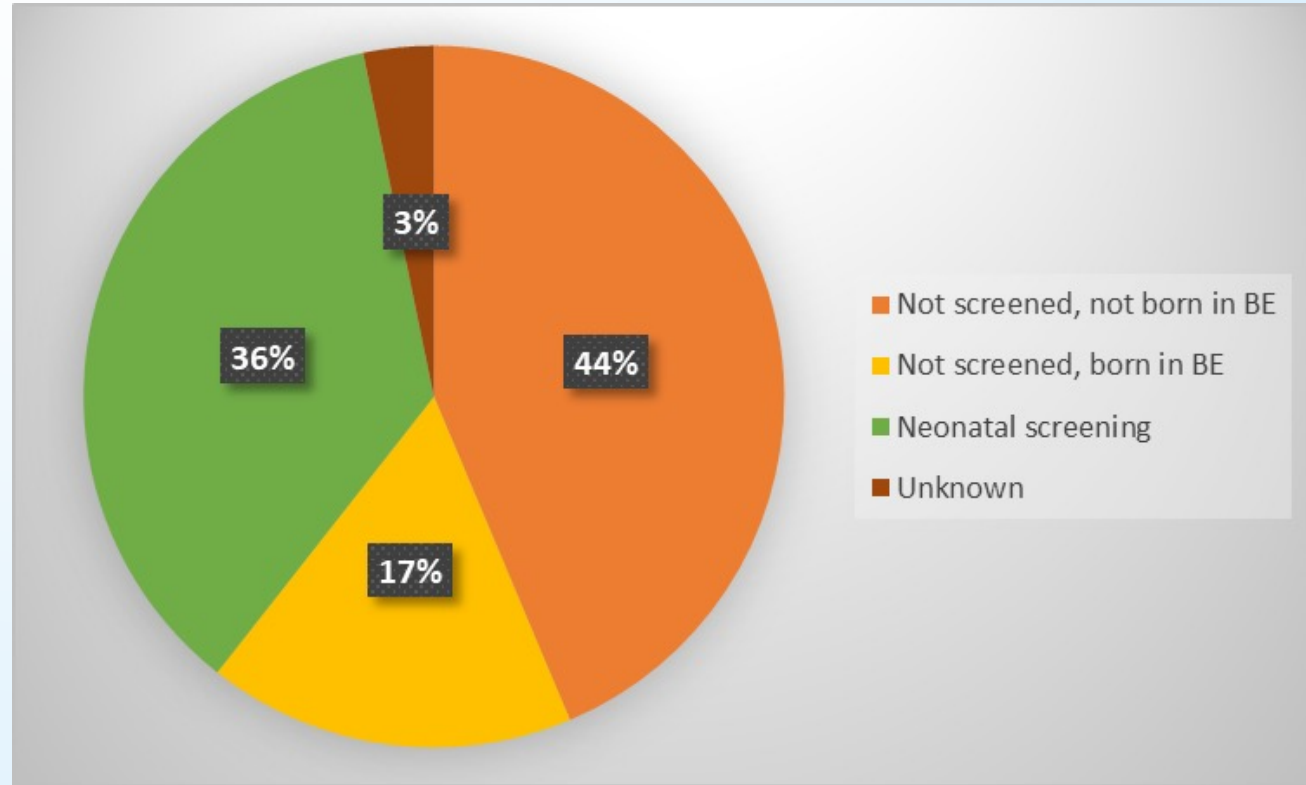


Severe Genotype SS & S β ⁰ = 85% of patient cohort

DISTRIBUTION BY SCREENING

Screening	Patients	Ratio
Not screened, not born in BE	512	44%
Not screened, born in BE	199	17%
Neonatal screening	424	36%
Unknown	38	3%
Grand Total	1173	100%

Born in BE = 53%
Not born in BE = 44%



DISTRIBUTION BY MOTHER COUNTRY

Congo	483	41%
Guinea	128	11%
Angola	76	6%
Cameroon	48	4%
Togo	40	3%
Ghana	30	3%
Nigeria	25	2%
Niger	24	2%
Ivory Coast	21	2%
Senegal	15	1%
Benin	12	1%

.....

Total ratio patients from Central African region = 52%

DISEASE MODIFYING TREATMENT

Last treatment	Patients	Ratio
Hydroxyurea	715	61%
HSCT	134	11%
Chronic tranfusion	89	8%
Crizanlizumab	8	1%
Study or other DMT *	13	1%
No treatment (yet)	263	22%
Unknown	30	3%

- * 3 patients are involved in gene therapy protocol
 - 2 of them were successfully treated with modified stem cells with auto HSCT
- 64 patients are simultaneous treated with Chronic transfusion + HU

MORTALITY RATE

	Patients	FU	Mortality	Mortality/100 PY	* 2012
Total	1173	12996	32	0,25	0,25
<18y	711	9981	19	0,19	0,35
18-40y	400	2692	9	0,33	0,16
>40y	62	323	4	↑ 1,24	

* Database lock
2012, publications
PQ. Le

Median age 15 14
Mean age 19 ↑15

4 extra deaths reported since last year

- 2021 – 10y stroke, 26y Hyperhemolysis syndrome after spontaneous abortion
- 2022 – 15y hearth failure, 18y hepatic failure

Trend to increased mortality with age. But remain much lower than mortality rate in US.

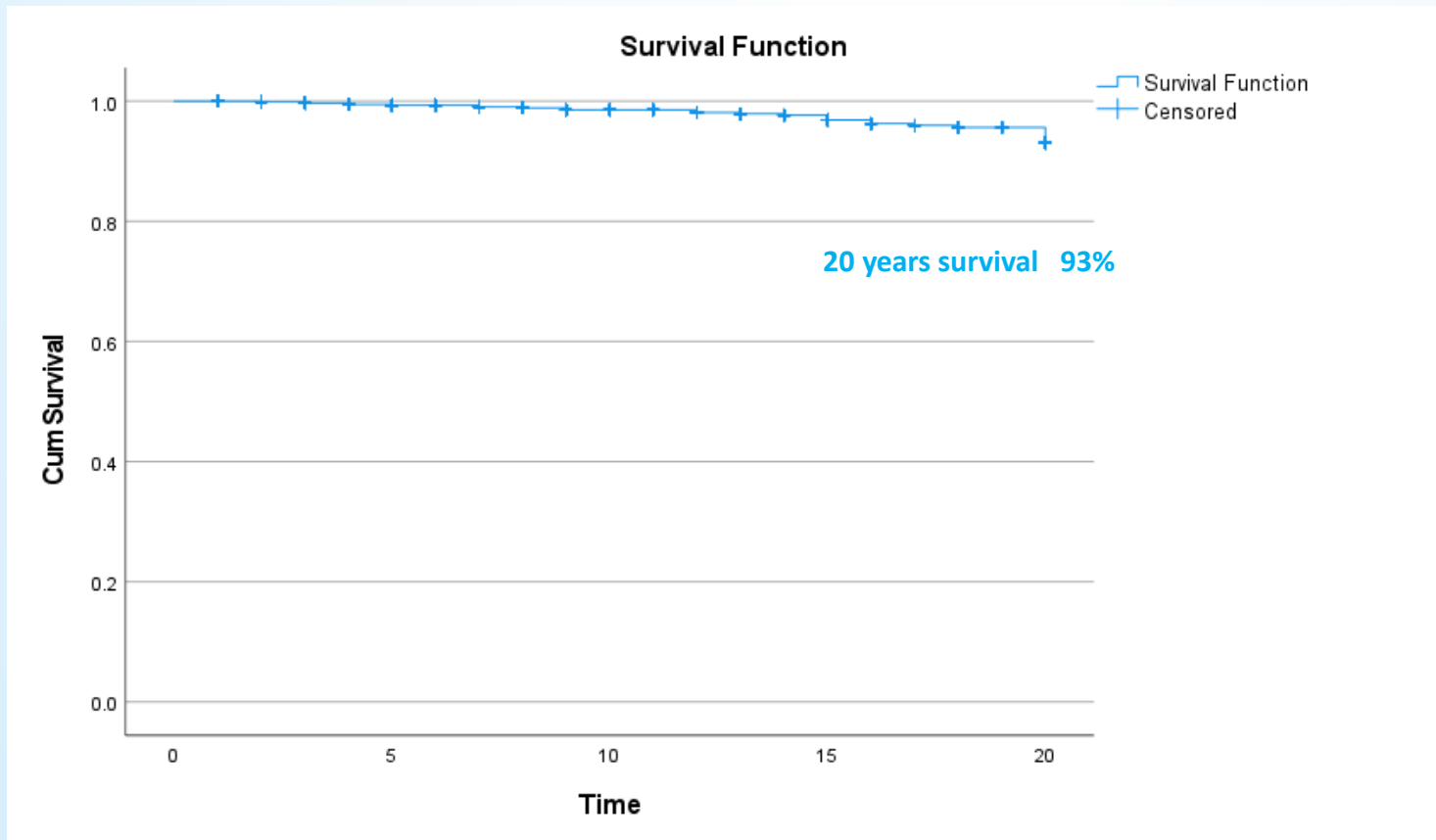
32 Deaths

- 3
Invasival Pneumococcal infection
- 7
Acute neurological problem
- 3
Heart Failure
- 2
Death after return in Africa
- 6
Post HSCT*
- 1
DHTR
- 1
Acute Anemia
- 2
MOF
- 7
Miscellaneous

Secondary AML
Hemorrhagic Diathesis
MOF
Respiratory Insufficiency
Cerebral hemorrhage
Pneumo sepsis

*2 more death post HSCT since last database lock (2012)
Adult patient/severe disease/RBC allo immunization/Haplo Tx)
Pneumo sepsis
Mortality rate post HSCT is decreasing

20 YEARS SURVIVAL



Kaplan Meier survival SPSS

Number at risk (number censored)

1083(0) 773(6) 517(11) 353(18) 113(28)

SCIENTIFIC ACTIVITIES 2021-2023

- 6 master theses 2020/2021
- 2 master theses 2021/2022
- 4 master theses 2022/2023
- 1 PhD 2022/2023 – Dr. H. Reyaert : *Comparison of outcome of children with Sickle cell disease after newborn screening versus after clinical diagnosis* – FU Work Prof. Dr. Le

- EHA 2021 – accepted => poster presentation
'BELGIAN Sickle Cell Disease Registry : Diversity in Practice but low Mortality'

- ASH 2021 – submitted => published in supplement 'BLOOD'
'Factors Influencing Change in MCV and Age at Transplantation in the Belgian Sickle Cell Disease Registry'

REDCAP THROUGH BSR



Rare Anaemia Disorders European Epidemiological Platform

BSR



Data transfer with mapping
Interoperability
Extension to RA

BR-ScRa (March 2022)

Belgian Registry of Sickle Cell Disease
and Rare Anemia patients

Start data collection in 2022 for:

- ✓ PKdeep (Pyruvate kinase deficiency)
- ✓ Thalassaemia

AUTRES REGISTRES : COMPARAISON

SELON LE GÉNOTYPE

Pays	N	Période	SS/Sβ ⁰ (%)	SC/Sβ ⁺ (%)
France (Brousse et al, J. Clin. Med 2019)	1620	2006-2010	71,8	20,3
Angleterre (Streetly et al, Arch Dis Child 2018)	1701	2010-2016	65,4	32,5
Allemagne (Kunz et al, Pediatr Blood Cancer 2019)	425	2015-2019	81,5	18,1
Espagne (Cela et al, Pediatr Blood Cancer 2016)	615	2014-2015	85	15
Belgique	1173	2008-2023	85	15

SELON LA CLINIQUE

	France	Allemagne	Espagne	Belgique
Crise vaso-occlusive	42,9% (à 3 ans)	69%	21%	66%
Syndrome thoracique aigu	33,9%	29,2%	15,9%	35,5%
Séquestration splénique aiguë	16,9%	14%	4,3%	8%
Infections sévères	1,6%	3,2%	2,1%	23,6%*
AVC	0,74%	4,2%	2,6%	4,6%

* Bactériémie, méningite, ostéomyélite

SELON L'INTENSIFICATION DU TRAITEMENT

Traitement	France*	Allemagne	Espagne	Belgique
HU	13,7%	80%	25%	61%
Greffe de moelle geno-identique	0,6%	5,4%	3,7%	11%
Transfusion chronique	13,2%	4,6%	6,1%	8%

* Données pour les 5 premières années de vie

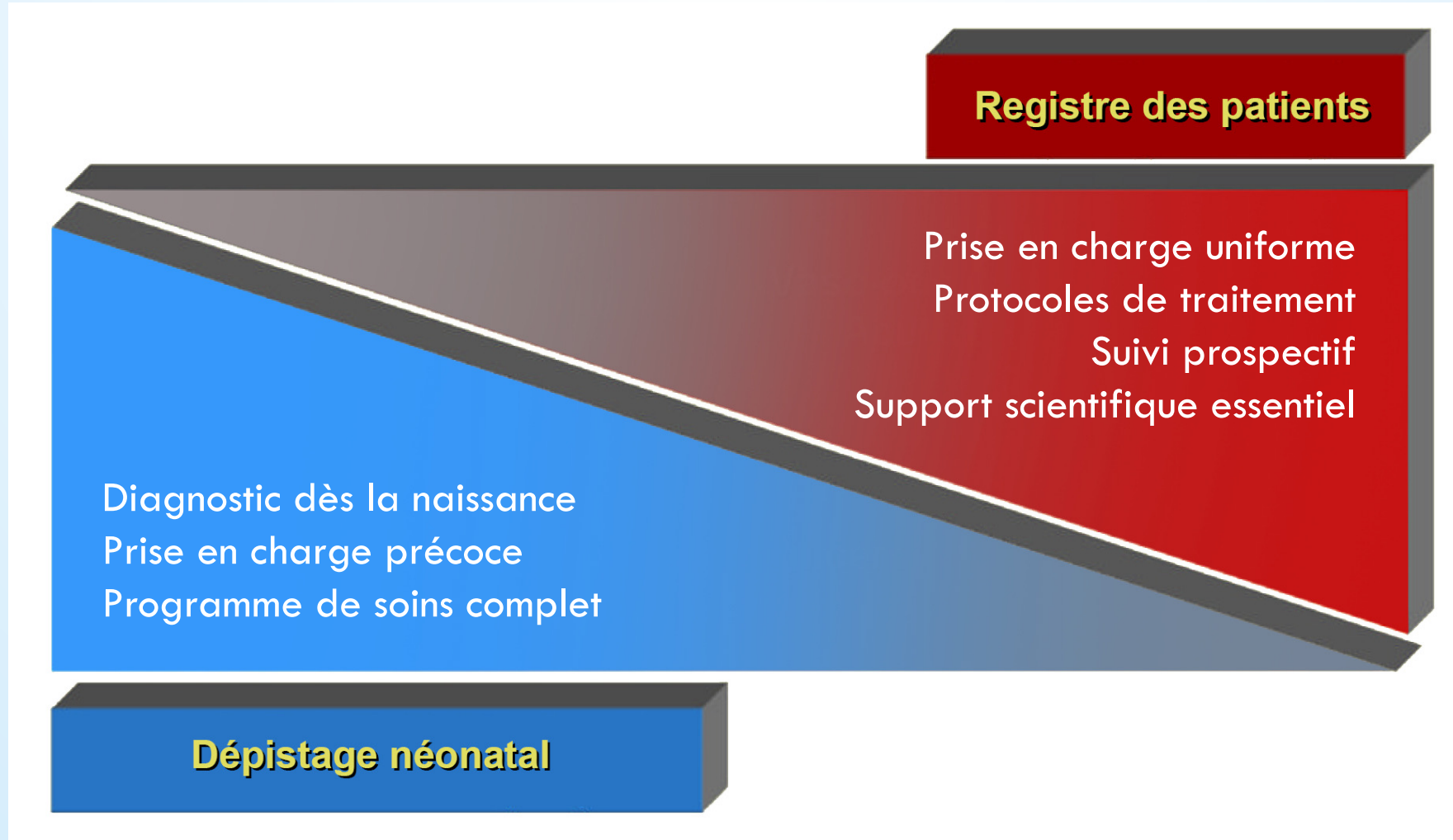
SELON LE TAUX DE MORTALITÉ

	France	Angleterre	Allemagne	Espagne	Belgique
Mortalité/100 PA	0,23	0,17	(4 décès)	0,60	0,25

SELON LES CAUSES DU DÉCÈS

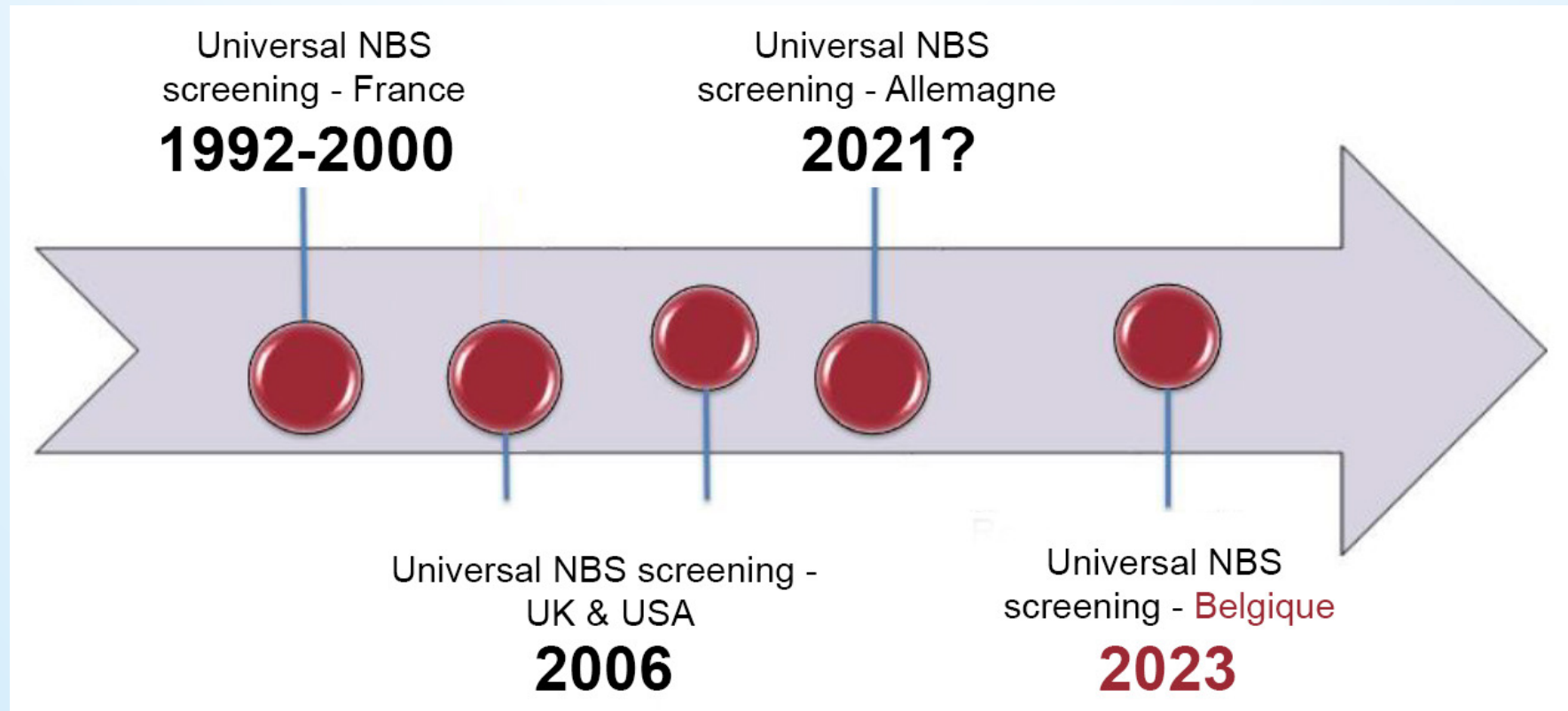
Causes de décès	France	Angleterre	Allemagne	Espagne	Belgique
Infections	7	3	1	3	3
- Pneumocoque	- 4	-3	-1		-3
Autres causes					
- Déshydratation	1				
- Pancréatite aiguë	1				
- Insuffisance cardiorespiratoire aiguë	1		1		3
- Séquestration splénique aiguë	2			3	
- AVC		(2)	1	1	7
- STA				1	
- Réactions transfusionnelles hémolytiques retardées					1
- Anémie aiguë					1
Non liées à la drépanocytose	6	6 (3 prémats)	1	10	17

DISCUSSION



CONCLUSION

Dépistage universel national



CONCLUSION

