

Webinar Experience of France and Brazil in the treatment of sickle cell disease patients affected with Covid-19

Experience of France

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Instituts
thématiques



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Institut national de la santé et
de la recherche médicale



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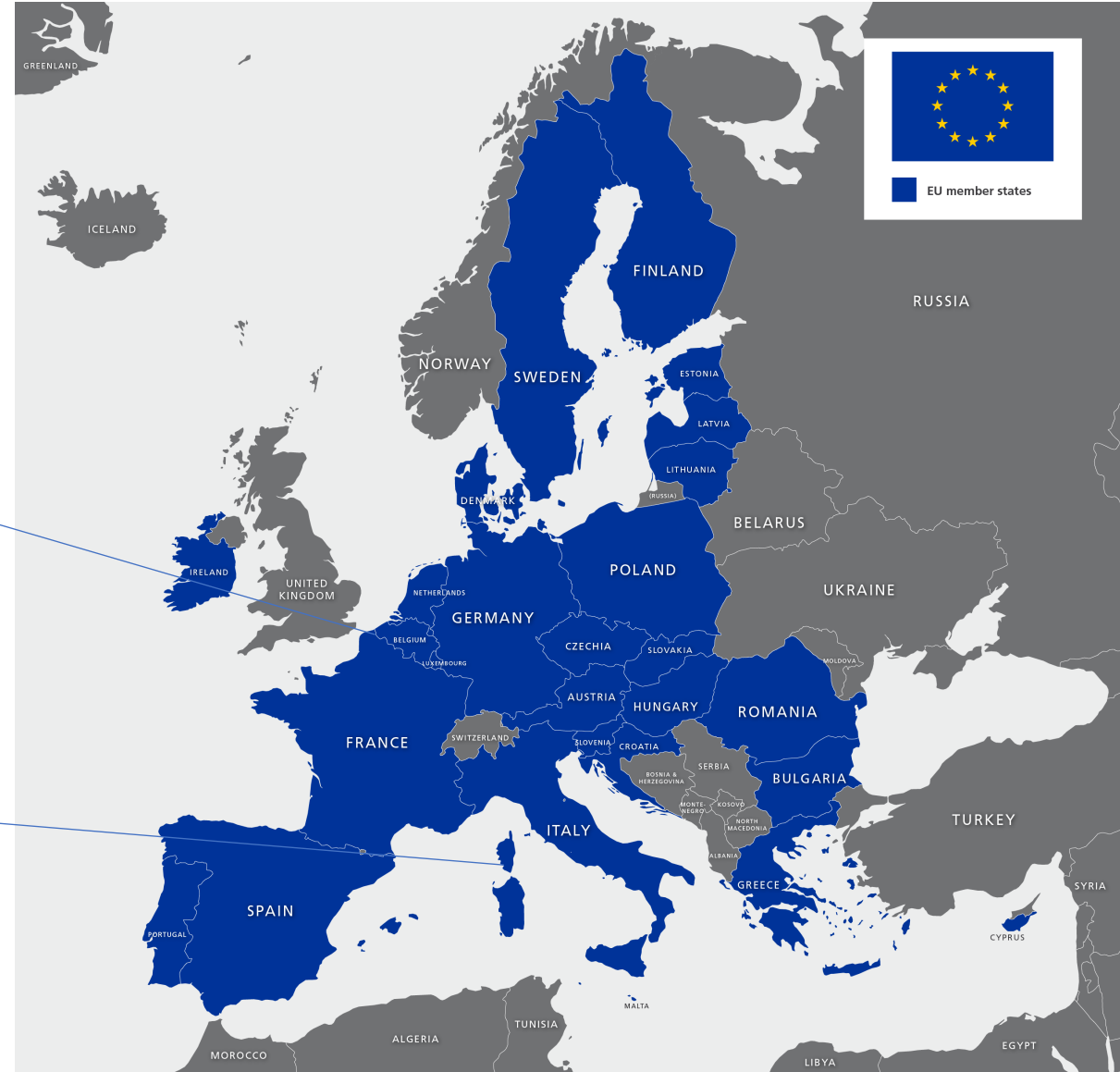
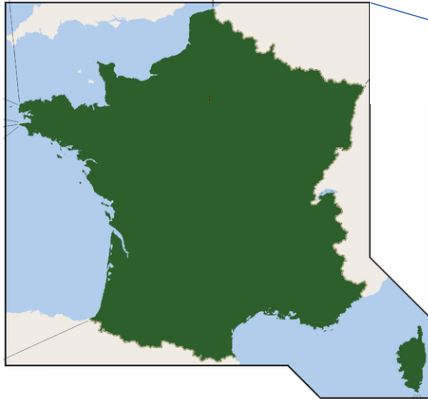
European Union

28 countries

population 445 million

France

population 66 million



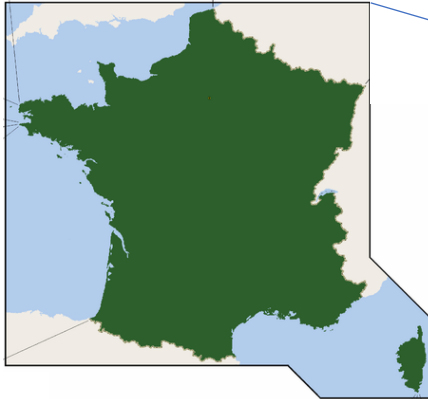
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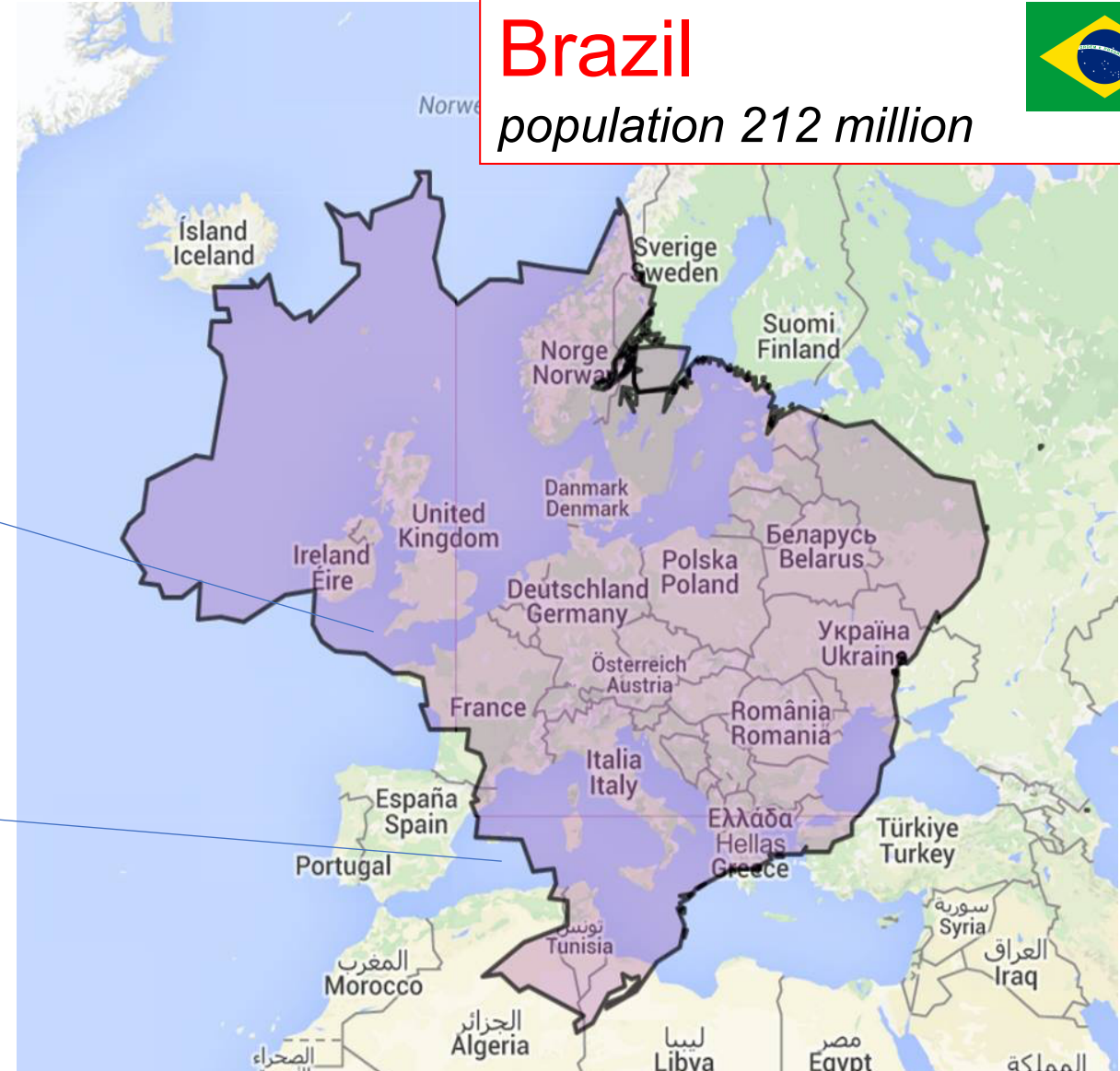
France

population 66 million



Brazil

population 212 million





European Union

population 510 millions

Azores, Madeira & Canarias islands
population 2,5 millions

French Antilles
Guadeloupe
Martinique
French Guiana
population 1 million

Réunion & Mayote islands
population 1 million

EU «outermost» regions

SCD in France

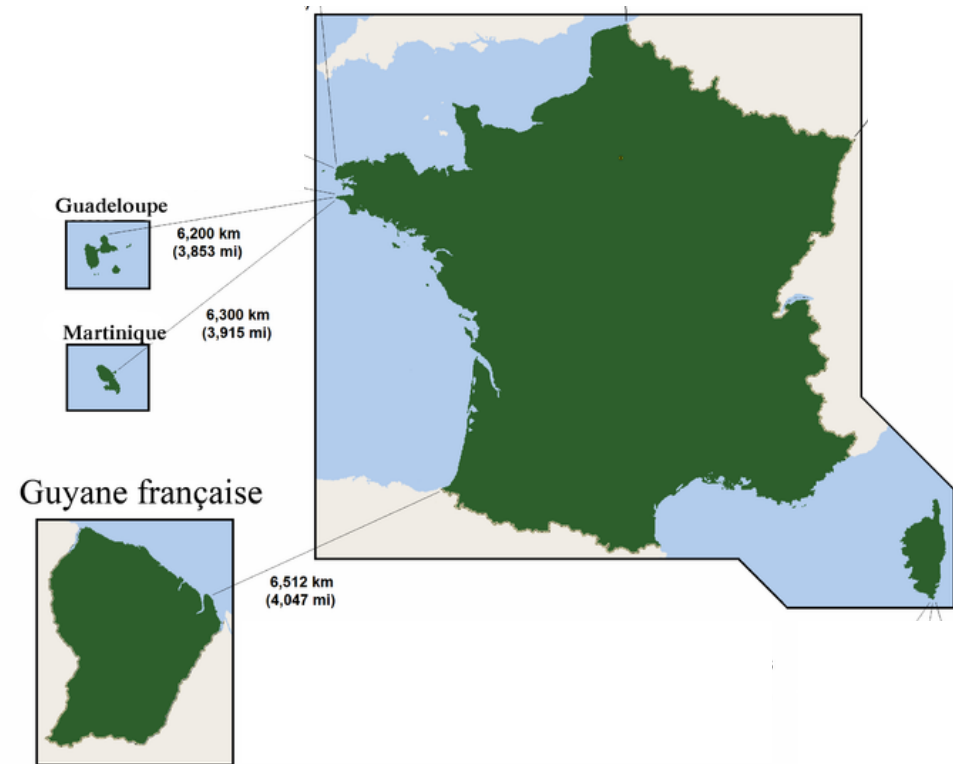
Highest absolute nb of patients in Europe
≈ 22.000 SCD patients

Most frequent
genetic disease

National NBS program

Incidence
1/1,736

Higher
in large megapolises: Paris: 1/765
In the French Antilles: 1/267
In French Guiana: 1/243



SCD in France

National Program for Rare Diseases

dense network of 13 SCD reference centers and 46 competence centers supervised by 2 coordinating centers
(Filières de soins et de santé)

strong connection with general practitioners and patient's associations

and also with clinical and basic research in particular with the Laboratory of Excellence on the Red Cell (GR-Ex).

Free access to care
Sécurité Sociale (1945)



SCD and Hematology in the EU

2017: EU initiative for the implementation of ERNs



Missions:

coordinate and uniformize comprehensive care for hematological diseases including SCD in Europe.

bjh research paper

Newborn screening for sickle cell disease in Europe: recommendations from a Pan-European Consensus Conference

Stephan Lobitz,^{1,2}  Paul Telfer,³ et al.

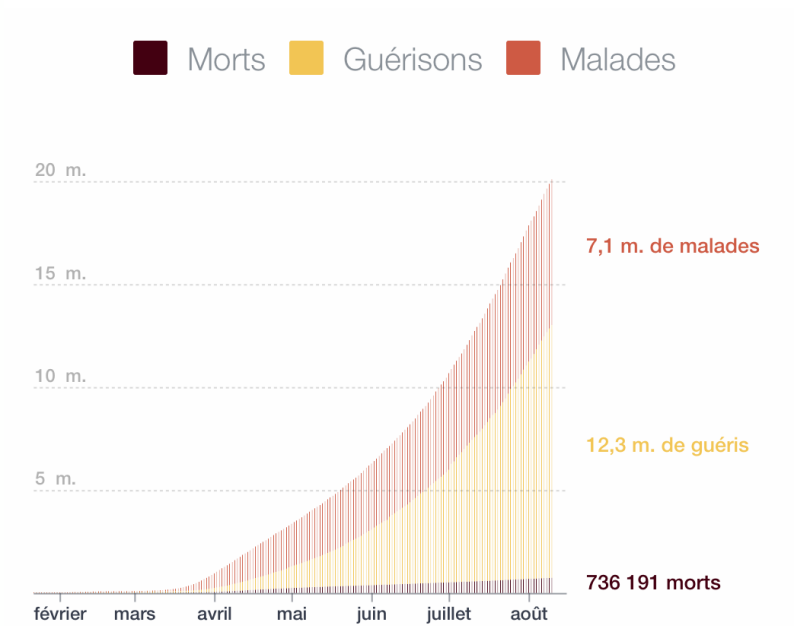
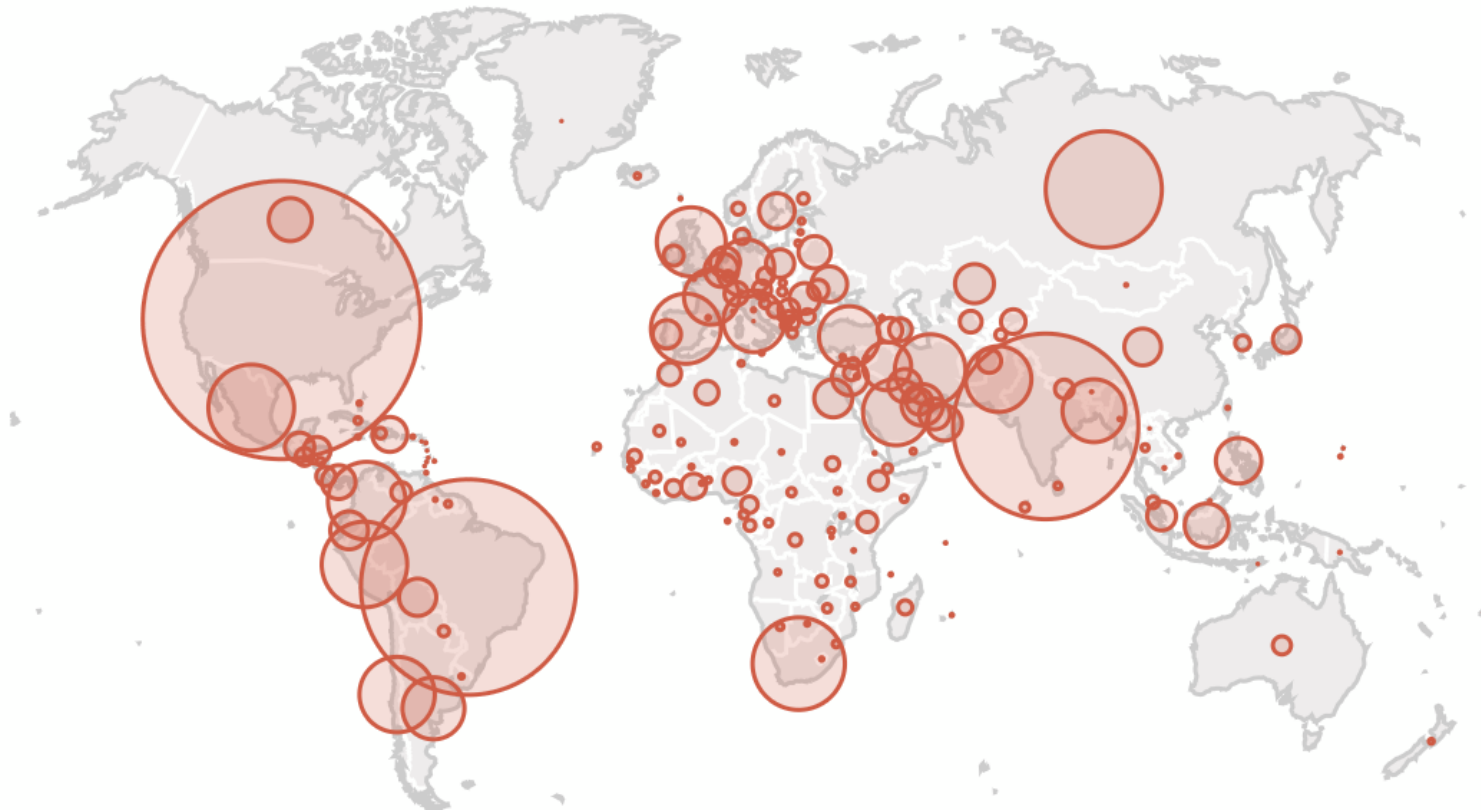
British Journal of Haematology, 2018, **183**, 648–660

Covid-19 pandemics

> 700,000 death worldwide

Aug 11, 2020

Source : Johns Hopkins Univ

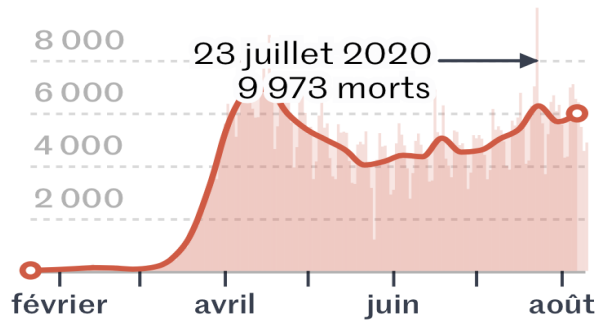


Covid-19 pandemics in France and Brazil

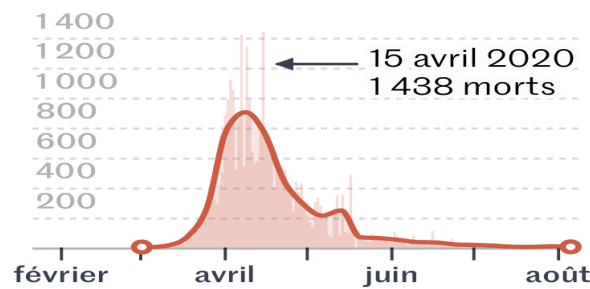
Aug 11, 2020

Source : Johns Hopkins Univ

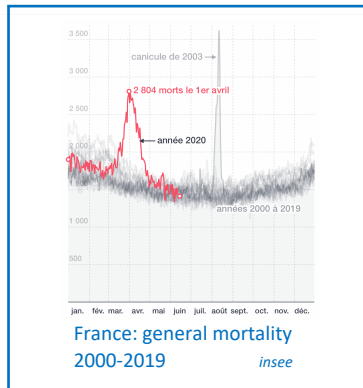
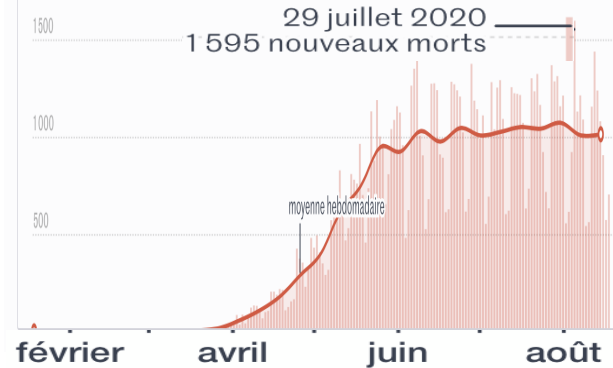
World



France



Brazil



Deaths/million

1. Belgique	864,9	
2. Royaume-Uni	701	
3. Pérou	665,1	
4. Espagne	611,6	
5. Italie	582,6	
6. Suède	566,2	
7. Chili	541,3	
8. Etats-Unis	499,6	
9. Brésil	485,8	← 101,752
10. France	452,7	← 30,340

total

SCD and Covid-19 pandemics

Keep the patients confined and prevent them to come to the hospital +++

Full lockdown: March 15 – May 10, 2020

Lockdown uplift phase 1: May 11 – May 31

phase 2: June 1st – June 21

phase 3: still ongoing

- all the programmed consultations at the reference centers were cancelled

- information is given by phone to the patient

phone consultation, lockdown instructions, stay at home, teleworking or sick leave, social distancing
prevention barriers

continue your treatment

avoid AINS

repeated information on Covid infection warning signs and/or SCD-related signs

listening to the patient and building confidence

- set up of a telephone platform accessible from 9am to 6pm on weekdays,
voluntary colleagues on call on weekends

- dissemination of the information by the patients' associations

- recommendation leaflet for the patients

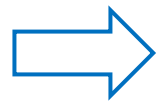
SCD and Covid-19 pandemics

Complications associated with Covid infection:

VOC  ACS

Priority:

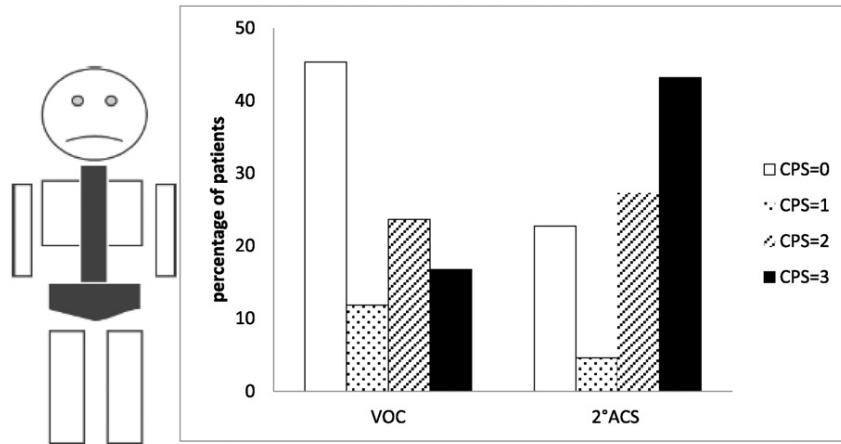
Shorten the sojourn of the patient at the emergency room as much as possible



discriminate patients at very low risk of ACS from those at high risk

use of the Presev score (for adults)

the Presev score



Categorical pain score (CPS) based on spine-and/or-pelvis pain

- 0 No pain
- 1 Mild pain, no pain increase upon mobilization
- 2 Moderate pain, increased by mobilization
- 3 Severe pain with disability

High risk: spine and/or pelvis pain
reticulocytes > 216 G/L (D1)
leukocytes > 11 G/L

BUT

predictive negative value of a score <5 = 95,5%

ACS-predictive model derived from the multivariate analysis.

Day-1 variable	β -Coefficient	aOR [95% CI]	p	Points ^a
<u>Reticulocytes ($10^9/L$)</u>				
≤ 216	0	1		0
> 216	2.153	8.613 [3.01–24.69]	< 0.001	6
<u>Spine and/or pelvis CPS</u>				
0 or 1	0	1		0
2	1.401	4.060 [1.46–11.26]	0.007	4
3	1.852	6.371 [2.37–17.15]	< 0.001	6
<u>Leukocytes ($10^9/L$)</u>				
≤ 11	0	1		0
> 11	1.160	3.190 [1.17–8.72]	0.024	3
<u>Hemoglobin (g/dL)^b</u>				
> 9	0	1		0
≤ 9	0.246	1.279 [0.55–2.96]	0.567	1

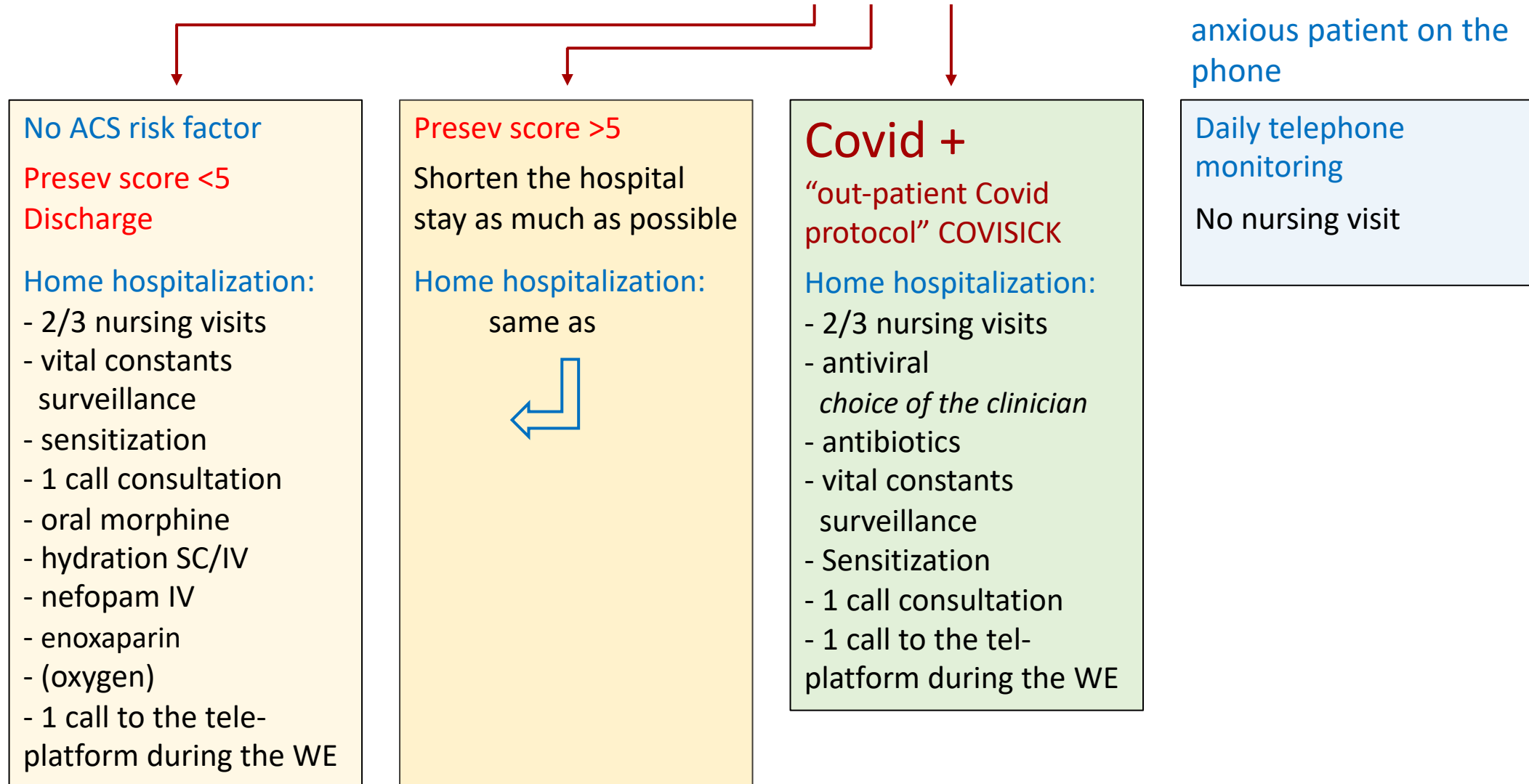
Predictive model performance on the study population

Predictive score ^c	ACSs	VOCs	Total		Risk
≥ 11	21	26	47	PPV = 44.7%	High
6–10	15	75	90		Intermediate
≤ 5	1	88	89	NPV = 98.9%	Low
Total	37	189	226		

[Pablo Bartolucci](#), et al. Score Predicting Acute Chest Syndrome During Vaso-occlusive Crises in Adult Sickle-cell Disease Patients. EBioMedicine. 2016 Aug;10:305-11. doi: 10.1016/j.ebiom.2016.06.038.

not validated for children

Covid-19 pandemics: SCD patient at the emergency room



SCD pediatric patient with suspected Covid-19 admitted at the PICU

for all SCD patients:

Heilbronner C et al, Br J Haematol. 2020 Jul;190(1):e21-e24.
doi: 10.1111/bjh.16802.Epub 2020 Jun 8

- intravenous fluid
- prophylactic enoxaparin for all
- antibiotics: cefotaxim and azithromycin.
- antiviral therapy's left to physicians' choice
- analgesics (except non -steroidal anti-inflammatory drugs)
- hydroxyurea or deferasirox continued except in case of drug toxicity.
- early NIV for respiratory distress, oxygen for hypoxemic patients to obtain a SpO2 > 95%.
- red blood cell (RBC) transfusion or automated exchange transfusion according to the physician's evaluation
- CT-scans not mandatory
- Nasal swab for RT- PCR testing collected in the first 12 hours of the patients' arrival

French registry of hospitalized Covid-19 affected SCD patients

Lancet Haematol 2020

Prognosis of patients with sickle cell disease and COVID-19: a French experience



[Jean-Benoît Arlet¹](#), [Gonzalo de Luna²](#), [Djamal Khimoud³](#), [Marie-Hélène Odièvre⁴](#), [Mariane de Montalembert⁵](#), [Laure Joseph⁵](#), [Christelle Chantalat-Auger⁶](#), [Edouard Flamarion³](#), [Pablo Bartolucci²](#), [François Lionnet⁷](#), [Sebastien Monnier⁸](#), [Cécile Guillaumat⁹](#), [Aline Santin⁷](#)

Lancet Haematol. 2020 Jun 18;S2352-3026(20)30204-0. doi: 10.1016/S2352-3026(20)30204-0. Online ahead of print.

From March 13 to April 16, 2020

83 SCD inpatients infected by Covid—19 from 24 center's were enrolled

85% SS or S β° thal, 10% SC and 5% S β^{+} thal

median age: 33·5 years (range 19–68) for the 66 (80%) adults

12 years (0·3–17) for the 17 (20%) children

VOC was associated with COVID-19 in 54% and ACS in 28% of the inpatients (20% admitted in ICU)

French registry of hospitalized Covid-19 affected SCD patients

Lancet Haematol 2020

	Inpatients with sickle cell disease (n=83)		Hospitalised French population (n=17 745)*		p value†
	ICU admission	Deaths	ICU admission*	Deaths‡	
Age range (years)					
All patients	17 (20)	2 (2)	6075 (34)	2891/42 212 (7)	..
0-14	2/12 (17)	0	32/110 (29)	1/592 (<1)	0.72
15-44	7/56 (13)	0	514/2112 (24)	105/7524 (1)	0.039
45-64	7/14 (50)	2/14 (14)	3049/8422 (36)	1016/19 689 (5)	0.28
65-74	1/1 (100)	0	2480/7101 (35)	1769/14 405 (12)	..

Data are n (%) or n/N (%). *French general population younger than 75 years hospitalised with confirmed COVID-19 during the peak of the pandemic (April 7, 2020).⁴
†Comparison of ICU admission prevalence by age range between inpatients with sickle cell disease and the French general population hospitalised with confirmed COVID-19 (Fisher's exact test). ‡Death prevalence by age range among all confirmed inpatients with COVID-19 younger than 75 years from March 1, 2020, to April 14, 2020, in France.⁴

Table 2: ICU admission in patients with sickle cell disease and COVID-19

These results suggest that COVID-19, even if potentially severe, does not seem to carry an increased risk of morbidity or mortality in patients with SCD

The risk of mortality even seems lower in the 15-44 age range than in the general population

- SCD population in closer contact with doctors and more attentive to its health condition?
- protective effect of SCD (in particular Sβ⁰thal genotype)?

Conclusions (preliminary!)

reactivity, vigilance, coordination

- coordination of the health workers
- set up of the telephone platform
 - «on-call » weekend telephone platform
- transverse experience of seniors in the reference centers
- strong home hospitalization system
- expert and coordinated bibliographic surveillance
- patient adherence to the defined protocol(s)
 - positive appreciation by the patients of the global follow-up at home*
- reassuring results for the moment in terms of morbidity and mortality
 - but vigilance is required in particular for SC patients

Merci

Thank you

Obrigado

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