CoViD -19 pandemic in Cameroon, Africa: Impact on African donors and blood supply

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Outline

1. Background
2. Methods
3. Results and discussion
4. Conclusion

Background

- CoViD-19 pandemic, caused by a novel coronavirus : 2,863,687 in 47 African countries affected and 72,644 deaths *(WHO, 3rd March 2021)*
- The number of cases in Africa: lower compared to the US, China and Europe
- But fast very fast in sub-Saharan countries: delay in diagnosis, weaker health systems
- On the 3rd March 2021 in Cameroon: 35,714 cases registered, the highest number of people affected by the disease in Central Africa *(WHO, 3rd March 2021)*

World Health Organization. WHO Coronavirus Disease (COVID-19) Dashboard 2020. access on the 04th March 2021
https://worldhealthorg.shinyapps.io/covid/
https://covid19.who.int/table

Background

- WHO Survey in 37 African countries (Loua & al, 2021)

Table 1: Comparison of blood donations, blood drives and blood units issued between 1st January to 31st May 2019 and same period in 2020

	2019	2020	Difference	% of decrease
Number of donations	1,800,236	1,498,773	-301,463	**-16,7**
Number of mobile drives	24,467	18,509	-6,258	**-25,3**
Number of blood issued	1,718,594	1,489,711	-228,883	**-13,3**

Loua & al, Vox Sanguinis, 2021

Background

Impact of Covid-19 on donation in Cameroon

- Four main blood services in Cameroon (representing about 40% of blood units collected per year)
- Two main cities of the country
- Total donations in 2019: 42,152 units
- Total donation from VNRBD: 4,847 units (11.8%)
- Retrospective collection of Data on trends of blood donation for the period of 1st January to 30th April 2019 and 2020

Background

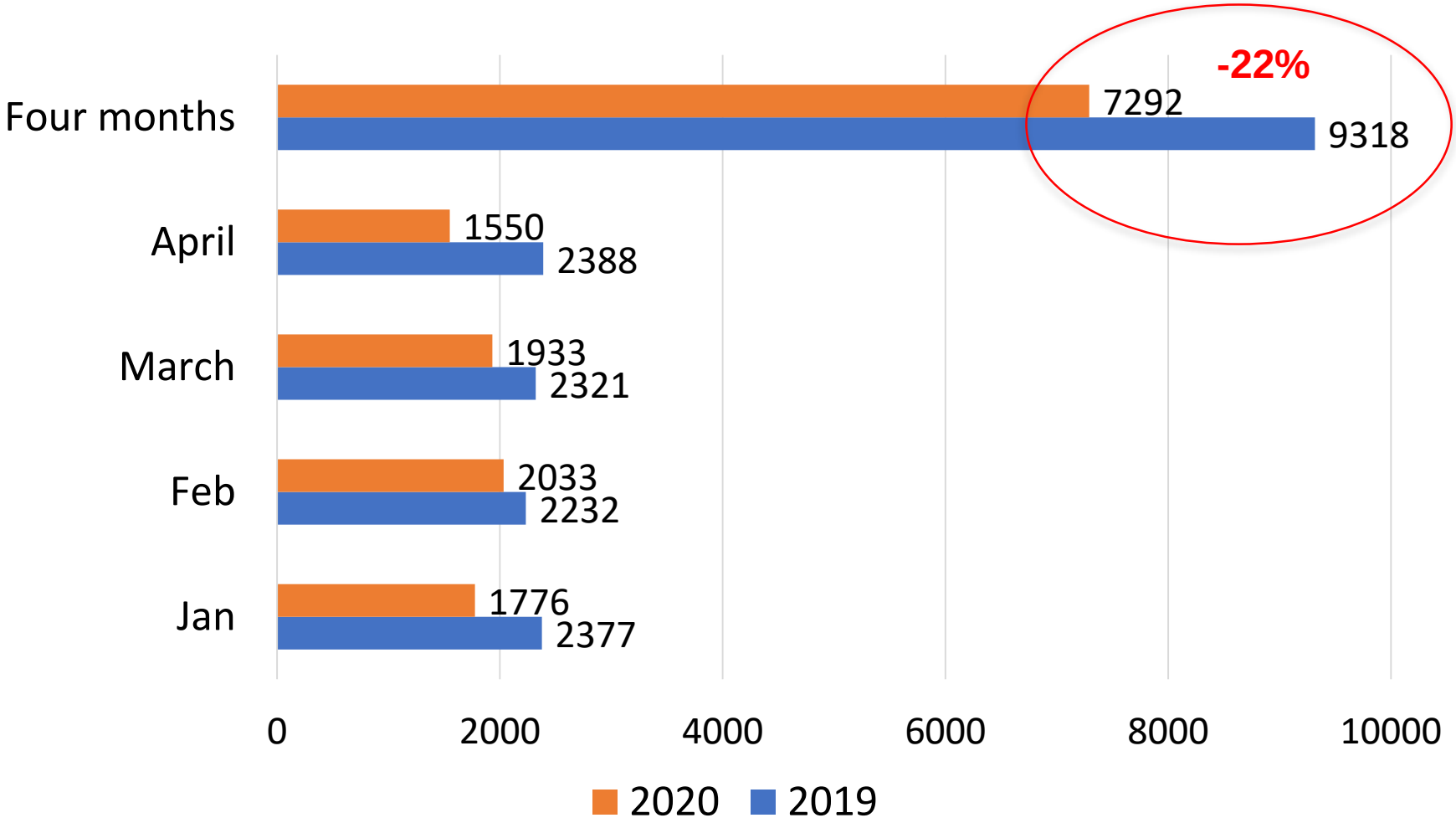

Figure 1: Trends in total blood donations in Cameroonian blood services in the first quarter of 2019 versus the first quarter of 2020

Background

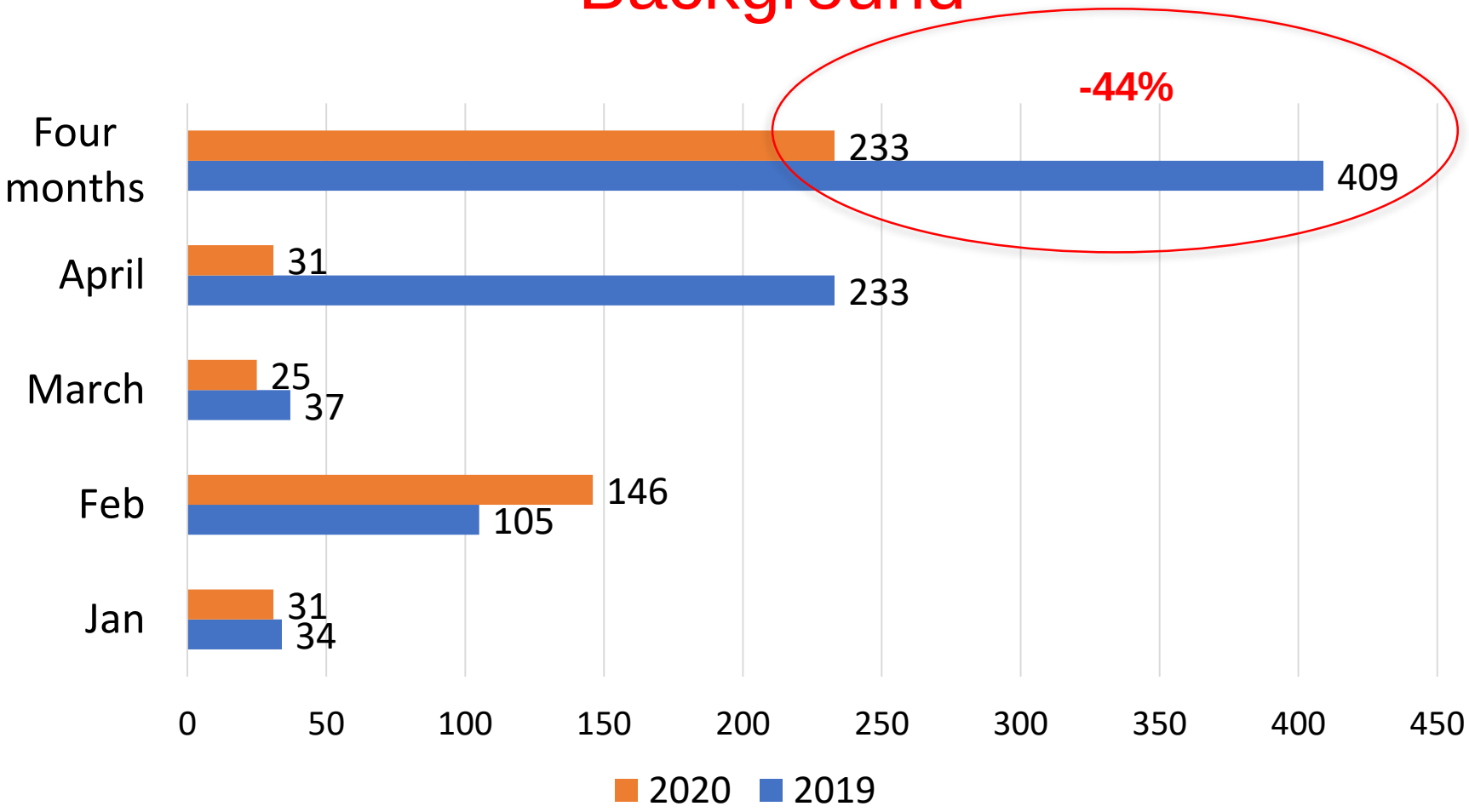

Figure 2: Trends in voluntary non remunerated blood donations in Cameroonian blood services in the first quarter of 2019 versus the first quarter of 2020

Background

- China, Iran, India and the USA *(Mohammadi, 2020; Wang,2020; Raturi, 2020; Pagano, 2020)*

From -16% to -65%

  - Self-exclusions to protect themselves during pandemic crisis
    - Donors afraid of potential contamination?
  - Confinement strategies may limit the ability of donors to attend blood services
  - Restrictions and limitations of blood drives and campaigns (large gatherings reduce the number)
  - the African Region is facing socio-economic disruption due to the COVID-19 pandemic.

Mohammadi S, Tabatabaei Yazdi SM, Eshghi P, Norooznezhad AH. Coronavirus disease 2019 (COVID-19) and decrease in blood donation: experience of Iranian Blood Transfusion Organization (IBTO). Vox Sang. 2020 Apr 9;
Wang Y, Han W, Pan L, Wang C, Liu Y, Hu W, et al. Impact of COVID-19 on blood centres in Zhejiang province China. Vox Sang. 2020 Apr 29;
Raturi M, Kusum A. The blood supply management amid the COVID-19 outbreak. Transfus Clin Biol J Soc Francaise Transfus Sang. 2020 Apr 25;
Pagano MB, Hess JR, Tsang HC, Staley E, Gernsheimer T, Sen N, et al. Prepare to adapt: blood supply and transfusion support during the first 2 weeks of the 2019 novel coronavirus (COVID-19) pandemic affecting Washington State. Transfusion (Paris). 2020;60(5):908–11.

Background

- The several mitigation measures developed but not considering blood donors' behaviour and expectations
- No study conducted in Cameroon to measure to analyse the pandemic from the blood donor's perspective

Methods

Study design

- Cross sectional study conducted during the month of March and April 2020
- Four hospital-based blood services located in the 2 most affected cities in Cameroon (Yaoundé and Douala): The Yaounde University Teaching Hospital (CHU), The Douala Laquintinie Hospital (HLD), the Essos Hospital Center of Yaoundé (CHE), and the Yaoundé Central Hospital (HCY)
- Survey design focusing on subjective and cultural aspects of donors, highlighting cultural features that emerged in the interviews of the participants

Methods

Measurements

- A paper-based semi-structured questionnaire designed and added to the routine donor screening questionnaire
- The questionnaire self-administered at the blood services but administered by phone for the benevolent donors who had not come to donate since November 2019 (6 months)
- The questionnaire structured into a multiple choice questions approach and presented in 3 groups of questions: 1) Knowledge on CoViD-19, 2) Current practices to protect themselves, and 3) their expectation that will motivate them as blood donors

Methods

Analysis

- Data entered in Excel 6.0 according to the blood donor type (benevolent, family) and blood service
- Outcomes: number of blood donation per month, proportion of voluntary non-remunerated blood donation (VNRBD), frequency of donors based on their response to the questions
- Chi-square tests to compare proportions.
- P-value < 0.05 considered significant
- Written agreement of blood services to participate
- Verbal or written agreement of each participating blood donor

Results & discussion

Knowledge, practices and expectations among donors

Study population

- A total of 494 blood donors from 4 blood services in Yaoundé enrolled
- The median age: 28.3 years (IQR 18–55 years) and 31.2 years (IQR 18-65 years) for BD and FRD respectively (p=0.001)
- The sex ratio: 1.7 in the benevolent group and 1.5 in the family replacement group in favor of males

Results & discussion

Table I: Sociodemographic characteristics of the 494 donors enrolled for the survey on level of knowledge, practices and expectations in regard to CoViD-19 in Cameroon

		CHE (n=26)	CHU (n=137)	HCY (n=110)	HLD (n=221)	All blood services (n=494)
Age range	**18-29 n (%)**	2 (7.7)	67(48.9)	18(16.4)	114(51.6)	201(40.7)
	30-39 n (%)	14(53.9)	41(29.9)	69(62.7)	57(25.8)	181(36.6)
	40-49 n (%)	8(30.7)	19(13.9)	21(19.1)	32(14.5)	80(16.2)
	50 or more n (%)	2(7.7)	10(7.3)	2(1.8)	18(8.1)	32(6.4)
Sex	**Male n (%)**	14(53.9)	111(81.0)	87(79.1)	181(81.9)	393(79.5)
	Female n (%)	12(46.1)	26(19.0)	23(20.9)	40(18.1)	101(20.5)
Type of recruitment	**Recruited at fix site n (%)**	19(73.1)	109 (79.5)	91(82.7)	213(96.3)	432(87.4)
	Recruited by Phone n (%)	7(26.9)	28(20.5)	19(17.3)	8(3.7)	62(12.6)
Type of donor	**VNRBD n (%)**	11(42.3)	47(34.3)	28(25.4)	33(14.9)	119(24.1)
	FRD n (%)	15(57.7)	90(65.7)	82(74.6)	188(85.1)	375(75.9)
	RBD n (%)	1(3.8)	2(1.4)	0(0)	6(2.7)	9(1.8)

CHU: Yaoundé University Teaching Hospital
CHE: Essos Hospital Center of Yaoundé
HCY: Yaoundé Central Hospital
HLD: Douala Laquintinie Hospital
VNRBD: Voluntary non remunerated blood donors
FRD: Family replacement donors
RBD: Regular blood donors

Results & discussion

Table II: Level of knowledge and perceptions in regard to CoViD-19 among 494 Cameroonian blood donors

Questions Knowledge and perceptions		TYPE OF DONOR			
		All donors (n=494)	VNRBD (n=119)	FRD (n=375)	P value
Have you heard about the Coronavirus disease called CoViD-19?	Yes	486(98.3)	118(99.1)	368(98.1)	0.30
Which type of disease is it?	Mystical disease	2(0.4)	2(1.6)	0(0)	-
	Lung disease	464(93.9)	117(98.3)	347(92.5)	0.41
	Imaginary disease	38(7.7)	2(1.6)	36(9.6)	0.004
	Blood disease	19(3.8)	5(4.2)	14(3.7)	0.23
	European and Chinese disease	41(8.3)	12(10.1)	29(7.7)	0.06
	Other (pandemic, viral disease)	5(1.0)	1(0.8)	4(1.1)	0.52
How can somebody get the disease?	Saliva	316(63.9)	102(85.7)	214(57.1)	0.000
	Air	361(73.1)	74(62.1)	287(76.5)	0.04
	Sex	4(0.8)	2(1.7)	2(0.5)	0.01
	Hands	376(76.1)	98(82.3)	278(74.1)	0.34
	Blood	16(3.2)	2(1.7)	14(3.7)	0.000
	Other	10(2.0)	2(1.7)	8(2.1)	0.19

Results & discussion

Table II continued: Level of knowledge and perceptions in regard to CoViD-19 among 494 Cameroonian blood donors

Questions Knowledge and perceptions		TYPE OF DONOR			
		All donors (n=494)	VNRBD (n=119)	FRD (n=375)	P value
What are the manifestations of the disease?	Cough	472(95.5)	114(95.8)	358(95.5)	0.47
	Fever	408((85.6)	101(84.9)	307(81.9)	0.38
	Weight loss	9(1.8)	1(0.8)	8(2.1)	0.04
	Sexual weakness	6(1.2)	2(1.7)	4(1.0)	0.14
	No manifestation	0(0)	0(0)	0(0)	-
	Other	0(0)	0(0)	0(0)	-
Can a blood donor contaminate a blood recipient?	Yes	370(74.9)	62(52.1)	308(82.1)	0.000
Do you think that there is a risk for you if you come to donate blood these days?	Yes	380(76.9)	88(73.9)	292(77.9)	0.14
Which risks?	Contamination by someone or something	491(99.4)	118(99.1)	373(99.4)	0.36
	HIV infection	1(0.2)	1(0.8)	0(0)	-
	Faint	1(0.2)	0(0)	1(0.3)	-
	Road accident	1(0.2)	0(0)	1(0.3)	-

Results & discussion

Good knowledge:

- Historic widespread of information, publications and education message from government, international organizations, scientists and journalists through various communication channels;
- Very active communication on the disease between the blood donors through social media.

FEAR: uncertainty and low predictability of CoViD-19, emotion

- Messages related to death, severity and potential mortality of the pandemic
- Lack of confidence to blood services to protect them against the disease

✓ Education to focus on wrong conceptions about the disease and its transmission routes, insisting on the fact that the transmission of the SARS-Cov-2 through blood transfusion is only theoretical

✓ Blood service to work to change the negative perceptions of the blood donors in protecting them

Results & discussion

Table III: Practices and expectations in regard to CoViD-19 of 494 Cameroonian blood donors

Questions on practices and expectations		TYPE OF DONOR			
		All donors (n=494)	VNRBD (n=119)	FRD (n=375)	P value
What do you do to protect yourself?	I wash my hands regularly	474(95.9)	112(94.1)	362(96.5)	0.52
	I use a face mask	438(88.7)	97(81.5)	341(90.9)	0.25
	I practice distancing	401(81.2)	87(73.1)	314(83.7)	0.25
	I do nothing	0(0)	0(0)	0(0)	-
	I take some medicine	55(11.1)	10(8.4)	45(12.0)	0.03
	Other	0(0)	0(0)	0(0)	-

Results & discussion

Table III continued: Practices and expectations in regard to CoViD-19 of 494 Cameroonian blood donors

Questions on practices and expectations		TYPE OF DONOR			
		All donors (n=494)	VNRBD (n=119)	FRD (n=375)	P value
What should the blood service do to encourage you to come and donate?	Distribution of face mask and/or hydroalcoolic solution	457(92.5)	88(73.9)	369(98.4)	0.04
	Sensitization, Education, Information	25(5.1)	14(11.8)	11(2.9)	0.01
	Appropriate welcome and service to donor	19(3.8)	17(14.2)	2(0.5)	0.000
	Protection during transportation from my home to the blood service	8(1.6)	1(0.8)	7(1.8)	0.07
	Payment for the blood donation	7(1.4)	0(0)	7(1.8)	-
	Systematic screening of the CoViD-19 prior to donation	26(5.2)	11(9.2)	15(4.0)	0.02
	Blood collection at home	18(3.6)	3(2.5)	15(4.0)	0.22
	Practice of social distancing and environmental hygiene at the blood service	31(6.3)	18(15.1)	13(3.5)	0.009

Results & discussion

- Regarding motivation, key expectation : protection of the donor during blood donation , probably a condition for some donors to come and donate during this crisis.
- The face masks and the sanitizers : mitigation measure and probably a “motivational” means for blood donors (Iran and China experience)
- Blood services : to deploy protective measures to help prospective blood donors overcome their fears
- However, provision of face masks : consider additional cost for the blood services especially in case of limited budget
- Avoid depriving front-line care workers of the PPE they require.

Conclusion

- Evidence of reduction of blood donations and blood transfusions in Africa
- Good level of knowledge on the CoViD-19 of Cameroonian donors to perceive blood donation without barriers measures as a threat to their health
- Distribution of face masks and sanitizers: protective but also “motivational” means to mitigate the reduction in blood supply
- The effectiveness of such measures (including appropriate message) to be tested in sub-Saharan Africa during this pandemic and included in an appropriate national or regional emergency management plan

Acknowledgement

- A special thanks to the staff of the 4 participating blood services

- We also acknowledge **the charity Global Blood Fund** who provided the funds to conduct the study

Serological study of the SARS-CoV-2 in blood donors in sub-Saharan Africa:

Evaluation of viral dissemination in Francophone Africa

Pierre Cappy, Claude Tayou Tagny, Virginie Sauvage, Syria Laperche

And the Francophone Africa Transfusion Research Network

Who:

- *Institut National de la Transfusion Sanguine*
- *Francophone Africa Transfusion Research Network*

Why:

- Very few reliable data on the status of the pandemic on the continent as more than 90% is asymptomatic
- Very few data on the real impact of the mitigation measures on the progress of the pandemic in the population *(since systematic screening of the population is not done)*

What:

- Calculate the SARS-CoV-2 seroprevalence in selected African countries
- Measure the trends of the pandemic in time and space and extrapolate the results in general population
- Compare the prevalence of the countries and with those of other continents

Where:

Blood services of 6 countries: *Burkina-Faso, Cameroun, Madagascar, Mali, Niger et République Centrafricaine*

How:

Cross sectional study, approved by local ethical committees

1-year study, with 4 sampling periods / 350 BD samples per period and per country,

A total of 8,400 samples (precision of de 1-2 % for a 5% seroprevalence)

The test kit Platelia SARS-CoV-2 Total Ab (Biorad) for anti-SARS-CoV-2 antibody screening (approved by the Institut Pasteur and INTS Paris--*Sensitivity 97.5 % / Specifity 99.6%)*

Current status of the project

- All the samples collected and appropriately stored
- Transportation being organized via *World Courier*
- Screening reagents prepared

Expected outcomes:

- Estimated seroprevalence per country
- Trends of the SARS-CoV-2 prevalence on 1 year
- Factors associated with seropositive status
- Study ending in July 2021

THANK YOU

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