



Quantitative survey on the users' perception of the innovative “Drive & Walk”, drive-through screening centre at the Grenoble Alpes university hospital

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QUANTITATIVE SURVEY ON THE USERS' PERCEPTION OF THE
INNOVATIVE "DRIVE & WALK",
*DRIVE-THROUGH SCREENING CENTRE AT THE GRENOBLE ALPES
UNIVERSITY HOSPITAL*

THÈSE
POUR LE DIPLÔME D'ÉTAT DE DOCTEUR EN MÉDECINE
SPÉCIALITÉ : MÉDECINE GÉNÉRALE

Par Mme Tiphaine CHARTRAIN

[Données à caractère personnel]

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Résumé

Du fait de la pandémie de COVID-19, les organisations de santé internationales et françaises ont appelé au printemps 2020 à un dépistage à grande échelle des personnes contacts et des personnes symptomatiques, afin de diagnostiquer précocement les personnes positives, les isoler, et casser les chaînes de transmission du virus SARS-CoV-2. Un centre de test « Drive & Walk » a dans ce contexte été mis en place au Centre Hospitalier Universitaire Grenoble Alpes (CHUGA) du 11 mai au 19 juin 2020. Il permettait de réaliser tout le processus de dépistage sans que les usagers ne sortent de leur véhicule ; une partie était aussi prévue pour les piétons.

Notre étude avait pour but d'évaluer la perception des usagers de ce centre. Elle était basée sur un questionnaire de recueil des caractéristiques des usagers et de la perception qu'ils avaient de ce centre de dépistage à grande échelle.

Durant les 6 semaines d'ouverture, le « Drive & Walk » a permis de dépister 690 personnes, dont 578 ont accepté de participer. Les participants avaient un âge médian à 35 ans et 53,6% étaient des femmes. 70% des utilisateurs étaient symptomatiques avec une durée moyenne des symptômes de 3 jours.

95,4% des participants pensaient que l'ouverture d'un centre comme le « Drive & Walk » était une bonne chose; 18,4% des usagers n'auraient pas fait le test dans un laboratoire plus classique. De plus, 83,7% des utilisateurs étaient favorables à un tel dépistage à grande échelle.

Nous n'avons pas observé de lien significatif entre la perception des utilisateurs et leur âge, leur sexe ou la présence de symptômes.

Notre étude montre que ce dispositif exceptionnel a été bien perçu par ses usagers, malgré son caractère inédit, et dans une situation de crise globale. En cas de nouvelle nécessité, il sera donc possible d'avoir à nouveau recours à des dispositifs de type « Drive & Walk ».

Summary

As a consequence of the COVID-19 pandemic, international and French health organisations called for large-scale screening of contact people and symptomatic people during spring 2020, in order to diagnose positive people early, isolate them, and break the transmission chains of the SARS-CoV-2 virus.

In this context, a "Drive & Walk" screening centre was set up at the Centre Hospitalier Universitaire Grenoble Alpes (CHUGA) from 11 May to 19 June 2020. It allowed the entire screening process to be carried out without users getting out of their vehicles; a section was also provided for pedestrians.

The aim of our study was to assess the users' perception of this centre at the CHUGA. It was based on a questionnaire collecting users' characteristics and their perception of this large-scale screening centre.

During the opening period (6 weeks), the Drive & Walk screened 690 people, of whom 578 agreed to participate. Participants had a median age of 35 years, and 53.6% were females. 70% of users were symptomatic with an average duration of symptoms of 3 days.

Their perception of the centre was strongly positive, with 95.4% of users considering the opening of a centre like the "Drive & Walk" to be a positive point; 18.4% of users would not have done the test in a more conventional laboratory. Furthermore, 83.7% of users agree with large-scale testing.

We did not observe a significant association between users' perceptions and their age, gender, or with symptoms.

Our study shows that this exceptional system was well received by its users, despite its unprecedented nature, and in a global crisis situation. In the event of a future need, it will therefore be possible to implement "Drive & Walk" systems again.

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ACRONYMS

Ag-RDTs: Antigen-detecting Rapid Diagnostic Tests

CHUGA: Centre Hospitalier Universitaire Grenoble Alpes

COVID-19: Coronavirus disease 2019

CPAM: Caisse Primaire Assurance Maladie

CT: Cycle Threshold

DRCI: Délégation à la Recherche Clinique et à l'Innovation

DT: Drive-Through

GP: General Practitioner

HAS: Haute Autorité de Santé

RDT: Rapid Diagnostic Tests

RT-PCR: Reverse-Transcription Polymerase Chain Reaction

SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus 2

SI-DEP: Système d'Informations de DEPistage

WHO: World Health Organization

KEY WORDS TRANSLATION

Drive-through: Traversée en voiture ou Drive-in

General Practitioner: Médecin Généraliste

Outbreak: Épidémie

Outlier: Valeur aberrante

Outpatient care: Soins ambulatoires

Screening: Dépistage

INTRODUCTION

A new outbreak

In December 2019, an outbreak of a new respiratory syndrome was first detected in Wuhan, China¹, named Coronavirus Disease 2019 (COVID-19). COVID-19 is an infection caused by a virus named Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)². On 11 March 2020 the World Health Organization (WHO) declared COVID-19 to be a pandemic³.

This virus causes respiratory infections mainly, ranging from benign upper airway infection to severe lung infection. The main cause of death is severe acute respiratory syndrome. It is the consequence of an inflammatory reaction that takes place mainly in the lungs after the first week following the infection⁴.

The COVID-19 symptoms are very broad. Some of the most common symptoms are fever or fever-like feeling, cough, tiredness, headache, muscle soreness, unusual tiredness, loss of smell, loss of taste, diarrhea or shortness of breath. The average incubation period is 5 days, with extremes of 2 to 12 days⁵. The virus is transmitted by aerosolization during sneezing or coughing. Sputum can be deposited on hands and objects so the transmission can also occur through contact with surfaces⁶. Contagiousness begins on average 2 days before the onset of symptoms and up to 7-10 days after the onset of symptoms⁷. Asymptomatic people can also be contagious⁸.

COVID-19 diagnosis

Nowadays (August 2021), there are various screening tests with different characteristics^{9, 10, 11} applications and recommendations. Some tests (direct detection of virus) allow diagnosing COVID-19 in the early period of the infection, during the first seven days of the disease, and others (serology) only after 7 to 14 days of infection.

For the early diagnosis, the main tests are the Reverse-Transcriptase Polymerase Chain Reaction (RT-PCR) system and the Antigen-detecting Rapid Diagnostic Test (Ag-RDTs). They are indicated for symptomatic or asymptomatic people¹².

The RT-PCR system is the gold standard test for confirming the diagnosis of SARS-CoV-2 infection. It relies upon Nucleic Acid Amplification^{13, 14, 15, 16, 17}. There are different RT-PCR protocols to proceed for detection of SARS-CoV-2. For instance the Institut Pasteur developed a protocol with two RdRp gene targets: IP2 and IP4¹⁸.

It can be used with nasopharyngeal, oropharyngeal, and salivary secretion samples. The reference is the nasopharyngeal sample because of its higher performances. Sensibility is 92% and specificity is higher than 99%^{19, 20}. RT-PCR tests are semi-quantitative. They can estimate the viral load through the Cycle Threshold (CT). CT is the number of amplification cycles required to reach a threshold fluorescence value, which allows the sample to be declared positive for SARS-CoV-2^{21, 22}. In France, the patient is considered non-contagious if the CT is above 33.

The Antigen-detecting Rapid Diagnostic Tests (Ag-RDTs) allow quicker results but are less sensitive. They detect viral proteins with immunodiagnostic techniques. In France, to be approved by the Haute Autorité de Santé (HAS)²³, an Ag-RDTs should have a sensibility of 80% or higher and a specificity of 99% or higher. There are numerous Ag-RDTs. The french ministry has listed most of them and the validation status is marked²⁴. It should be noted that the lower is the viral load the lower will be the sensibility; for asymptomatic people, sensibility can be only 50%. It is recommended to perform this test within the first 4 days of symptoms. Almost every health care professional can perform this test on patients²⁵. Ag-RDTs can also be performed as self-tests (sampling, performance and interpretation is done by the person him/herself), with an ever lower sensitivity. In France, these tests have been available in retail pharmacies since April 12th, 2021^{26, 27}.

Serology is the third biologic test to diagnose COVID-19. It is a post-infectious time diagnosis. It detects antibodies against SARS-CoV-2²⁸. Such antibodies are detectable 7 days after the onset of symptoms for severe symptomatic hospitalised patients and from the 14th day for symptomatic patients without signs of severity²⁹. This test is performed on an intravenous blood sample, or by capillary sampling (Rapid Diagnostic Test)(RDT).

Other tests are being developed and not yet validated, for instance RT-LAMP tests³⁰.

A Drive-Through (DT) model

At the beginning of the year 2020, there has been a sharp increase worldwide in the number of people suspected of being infected with COVID-19. It soon became clear that the isolation of infected (and therefore contagious) people was a key point in reducing the epidemic. This meant undertaking mass screening. The WHO called worldwide to intensify screening, contact tracing, monitoring, and isolation of contacts with COVID-19^{31, 32}. Consequently, there have been extensive improvements in mass diagnosis processes and facilities. Innovative ways have been developed and implemented such as the Drive-Through model.

During the influenza H1N1 pandemic in 2009³³, the first Drive-Through (DT) model has been described³⁴. It was a facility that had been set up on a hospital parking lot with a covered area. The users made a whole circuit by car, staying in their vehicle (for registration, triage and medical screening exam, etc.). The medical staff stayed under the covered areas to perform the different steps.

It is certain that this organization decreases the risk of infection by reducing contact between patients and between patients and medical staff. Moreover, it is located in an open area. It is also characterized by fast screening times. The DT model is an alternative to walk-in clinics, providing a highly significant added value in the case of a contagious disease.

South Korea was one of the first countries to initiate drive-through screening for the COVID-19 pandemic³⁵. First French DT-centre opened at the end of march 2020³⁶.

French policy and epidemiology

From the beginning of the COVID-19, in France, the Government and the Health General Heading (Direction Générale de la Santé) (DGS), have worked to elaborate strategies to cope with the outbreak³⁷.

This led to a lockdown period in France from March 17th to May 11th 2020. It involved policies that constrain human contact and mobility. Home office work was encouraged, social meetings were forbidden if not necessary and every movement of people needed to be essential for living³⁸.

After the lockdown in mid-May, a national policy, named “Contact Tracing”³⁹ was set to decrease and control the evolution of the epidemic. It aims to trace and break the chain of

transmission of the virus. When someone is tested positive for COVID-19, he/she is registered on the SI-DEP (Système d'Informations de DEPistage) platform⁴⁰. Then, French Health Public Insurance, “Caisse Primaire Assurance Maladie” (CPAM), calls the infected person and lists the close contacts. Then every close contact is contacted. They are informed that they need to be tested and isolated at least for 7 days after seeing the infected person. This policy is also related at every regional scale by the “Agence Régional de Santé” (ARS)⁴¹. The infected people and the close contacts potentially infected have very precise isolation time and modality to respect. The recommendations mention that infected people have to stay isolated for 10 days. The close contacts have 7 days of isolation after the last meeting with the infected person⁴².

Therefore, one of the major points of the Government policies was the capacity for rapid identification of COVID-19 cases among the population, for individual and public health benefit⁴³.

At the end of this first lock-down, on the 11th May 2020, the pandemic was then in decline in France, with epidemic pressure indicators evolving downwards⁴⁴. The decrease of the positivity rate seemed to be related to the mass screening policy, the lock-down, and the contact tracing. This period is the onset of the end of the first “wave” of COVID-19 in France.

In mid-May 2020, the positivity rate of people tested for SARS-CoV-2 in France was low, about 2.2%⁴⁵, in the Auvergne-Rhône-Alpes region it is 1.2% and 0.9% in Isère (Grenoble's department)⁴⁶.

“Drive & Walk” at the CHUGA

In this new climate of mass screening mid-May 2020, a limited number of places were available in the more conventional laboratories and appointments could take up to 48 hours.

It is in this context that Grenoble Hospital opened an exceptional "Drive & Walk" sampling and diagnosis centre, increasing capacities of the urban area for the large-scale screening, from May 11 to June 19, 2020^{47, 48, 49, 50}.

At the “Drive & Walk”, the screening relied on RT-PCR tests on nasopharyngeal samples, according to the WHO and national French recommendations available in May 2020^{32, 51, 52}.

The “Drive & Walk” DT-centre has been in activity for six weeks. It was opened when the need for testing was important. It was closed at the end of the first peak of the epidemic in France when testing needs were low.

Afterward, during autumn 2020, another screening centre opened at the CHUGA. It was an indoor centre at Gilbert Faure hall. Moreover, to meet the need for student screening, another centre was opened at the campus of Grenoble University⁵³.

The study

In the available literature in this research field, we have noticed the lack of study about the perception of the users, and the acceptance of this kind of screening centres by the population. Therefore, the aim of the present study was to explore the users’ perception of the "Drive & Walk".

Noteworthy, from November to June 2020, I was doing my internship in the infectious disease unit of the CHUGA. It was interesting for me to participate in the research work that helps to adapt to the pandemic.

MATERIAL AND METHOD

The “Drive & Walk” centre

The DT-centre was opened from May 11, immediately after the end of the first first lockdown period, to June 19, 2020. Communication for the general population about the opening of the “Drive & Walk” DT screening centre was led by local newspapers, the infectious diseases doctors team, general practitioners, hospital communication team, health authorities (ARS, CPAM...) and the occupational health care service.

The DT-centre was designed for symptomatic people suspected of being infected with COVID-19, those who had contact with confirmed COVID-19 cases, and people requiring pre-operative assessment. To be screened at the “Drive & Walk” DT-centre, users registered on the CHUGA website to have an appointment. Registration was validated only if they had a prescription from their general practitioner, health authorities (ARS, CPAM), or another doctor.

As illustrated in *Figure 1*, the DT-centre was located in the Grenoble-Alpes University Hospital parking. It was composed of 3 open tents as temporary buildings. This area was accessible by car, by bike, walking or with public transport. The DT-centre was conceived to have three paths, guided with clear signs: two for the users coming in their car (*Figure 2*) and one for walking users (*Figure 3*). Once the user arrived at the DT-centre, he/she was guided to follow this order: Entrance, Waiting area (if necessary), Registration, Proposal to fill out the questionnaire, Sample collection, Instructions and Exit.

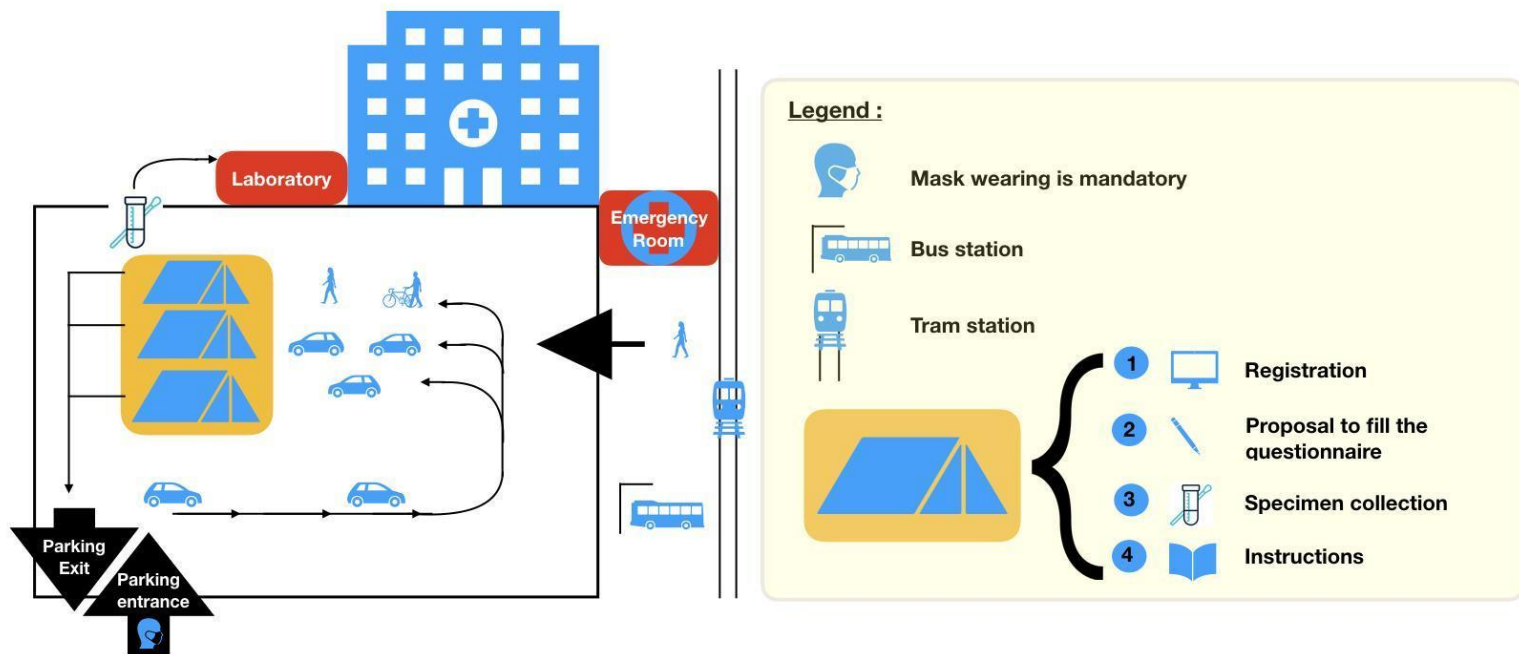


Figure 1: Organization of the CHUGA screening DT-centre



Figure 2: Car user path.



Figure 3: Walking user path.

The Health-worker team was composed of 3 nurses trained for COVID-19 screening (technique of specimen collection, health safety protocol and information delivery). Members of the DT screening team were required to wear full personal protective equipment (PPE) as per WHO and French ministry recommendations: mask (Respirator N95 or FFP2 standard, or equivalent), gown, gloves, eye protection and apron^{54, 55}.

Once the users arrived, they had to show their identity document to check their booking. The nurse used a computer to check the registration. If the user didn't book online before coming they were redirected to a waiting zone and were registered later when it was free of users. The sample was nasopharyngeal swab, for an RT-PCR analysis. Users who came by car were tested through the lowered window and those who came on foot had to sit on a chair.

The sample was collected in a VACUETTE® Virus Stabilization Tubes. It was transported at the CHUGA virology laboratory to be analysed on RT-PCR platforms such as LightCycler® 480 System or Abbott Alinity m®. The entire procedure was reimbursed by social security up to the amount of 54 euros⁵⁶. The user didn't have to advance payment.

Before leaving, a document was given to inform the user of all the modalities to be followed (how to get the test results, the home quarantine procedure until the notification of test results and the procedure in case of positive or negative results, how to contact the healthcare authorities in case of worsening symptoms).

The whole screening procedure lasted a maximum of 10 minutes per person. Appointments were planned every 10 minutes. The DT centre had the capacity to conduct 700 tests per day. The average was 21 tests realized per day. Patients were informed of their results within 12 to 36 hours. The results were automatically registered on the SI-DEP platform. If the result was positive, the user was called by the Health Insurance to proceed to the contact tracing process and to be given necessary advice.

The survey

The survey aimed to assess users' perception of this innovative screening DT-centre. It also aimed to determine the characteristics of the users (gender, age, means of transport) and their clinical presentation (symptomatic or not, symptoms description, contact with confirmed COVID-19 case). Moreover, it aimed to evaluate the number of potential contamination avoided via the number of close people at home and at work, the prescriber and the ease of making an appointment. The survey was designed to fulfill these objectives.

The inclusion criteria for the study was: to have been tested in the DT-centre, to accept to fill the questionnaire, and to be over 16 years old.

A revision of the questionnaire was carried out by the team of physicians in the Infectious Diseases department. It was then sent and accepted by the Research Committee of the Hospital (Délégation à la Recherche Clinique et à l'Innovation, DRCI).

This survey took place from 18th may to 19th june 2020. The survey relied exclusively on a paper questionnaire. It was a one-page, easy to fill document (*Appendix 1*). It was given to the users of the DT-centre by the nurses after registering and before sampling. The users were informed of the voluntary nature of the survey by the nurse and by a written paragraph on the questionnaire. They were aware of the possibility of withdrawing their participation at any time. Once the questionnaire was completed the user placed it in an opaque box.

Statistical analysis

This study was exempted from human subjects research requirements. The data were pseudonymised thanks to a coding number referred on the survey. The questionnaire responses were reported in an Excel secured file. The access of this file was restricted to the investigators of the study. For the statistical analysis StatView computer software was used.

The association between the users' age and their answers to the optional questions was analysed with the nonparametric Mann-Whitney U test, and association with gender was analysed with the nonparametric Chi-square test. The level of statistical significance is set at p-value less than 0,05.

RESULTS

From 18th may to 19th june, 690 people came to the “Drive & Walk” and had a RT-PCR test. Among them, 578 fulfilled the questionnaire, 501 participants met the inclusion criteria (77 were under the age of 16) (*Figure 4*).

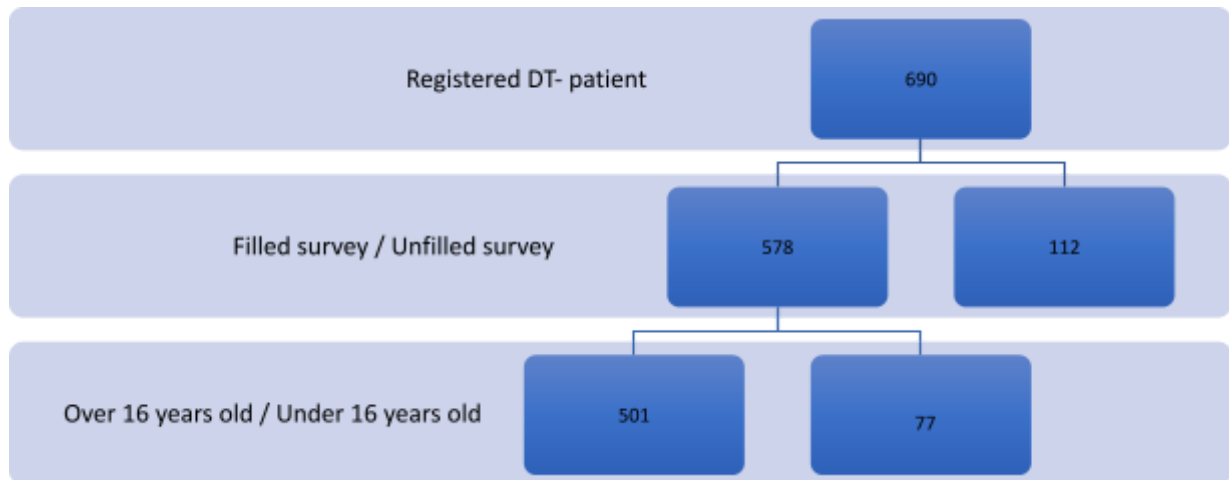


Figure 4: Flow-chart

Population description

The median of the age of the users was 35 years old with an interquartile of 21 ($n=474/501$).

Females represented 53.6% ($n=256/478$) (sex ratio of 0.87).

The participants came to the centre by car for 73.2% ($n=366/500$), by foot for 20.4% ($n=102/500$), and by bike for 6.4% ($n=32/500$). There was no significant difference in the means of transport according to gender ($p=0.099$) or age ($p=0.082$).

At the time of sampling, 70% of all users ($n=348/497$) had symptoms. The median duration of these symptoms was 3 days with 75% between 1 and 6 days (*Figure 5*).

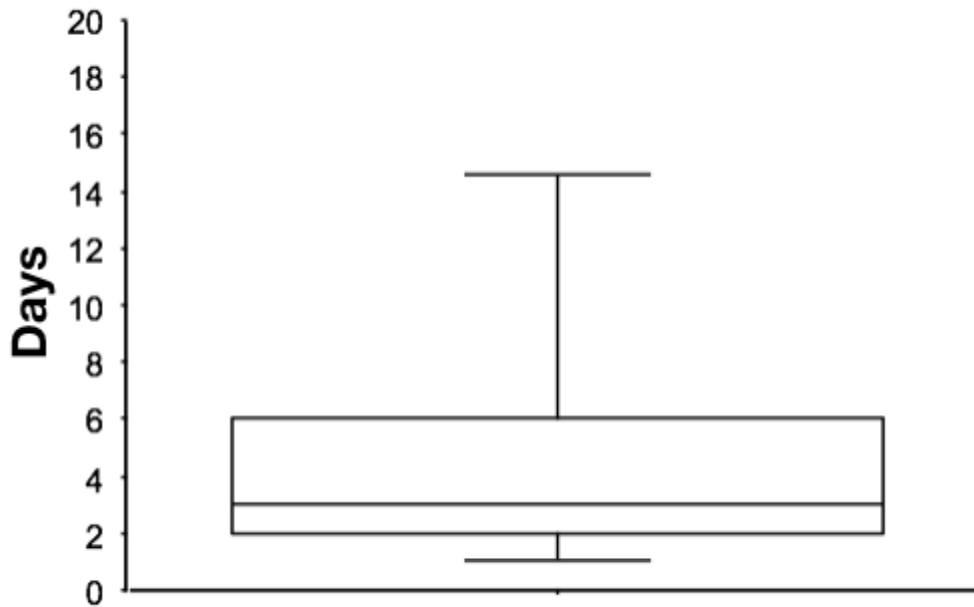


Figure 5: Box plot of the duration of the symptoms at the time of screening

There was no statistical significant association between the symptoms and age or gender.

To the question “How would you describe the intensity of your symptoms today?”, 41.6% (n=142/341) answered that they had light symptoms, 49.6% (n=169/341) moderate symptoms and 8.8% (n=30/341) very intense symptoms.

There was no significant association between the intensity of the symptoms and the duration of the symptoms. No significant association was found between the intensity of the symptoms and the means of transport.

Symptomatic users had one or several symptoms: tiredness in 59.2% (n=206/348) of symptomatic users, fever in 44.0% (n=153/348), headache in 42.8% (n=149/348), cough in 30.4% (n=106/348), muscles soreness in 25% (n=87/348), diarrhea in 24.1% (n=84/348), fever sensation in 22.7% (n=79/348), others symptoms (mainly odynophagia and rhinorrhea) in 20.7% (n=72/348), chest tightness in 14.7% (n=51/348), breathing difficulties in 11.8% (n=41/348), loss of taste in 5.2% (n=18/348), and loss of smell in 3.4% (n=12/348).

Users reported that they came to the “Drive & Walk” through their general practitioner prescription in 44.1 % cases (n=216/490), through the Health Authority in 9.8% (n=48/490), through another doctor in 45.5% (n=223/490), through both general practitioner and health

authority in 0.4% (n=2/490) or through both health authority and another doctor in 0.2% (n=1/490).

Users' opinion

To the question “Do you think a screening centre like this innovative one is a positive point?”, 95.4% (n=474/497) users answered “yes”, 0.4% (n=2/497) answered “no” and 4.2% (n=21/497) had no opinion.

There was no significant association found between a positive opinion of the centre and the age ($p=0.34$), the gender ($p>0.99$), the mean of transport ($p=0.5$), the difficulty of booking ($p=0.6$) or the duration of the symptoms ($p=0.7$).

To the question “Would you have done this test in a more conventional laboratory?”, 18.6% (n=91/490) of the users answered “no”, 43.0% (n=211/490) “yes” and 38.4% (n=188/490) had no opinion.

As illustrated in *Figure 6*, the users who would have not been tested in another laboratory were significantly older ($p=0.021$).

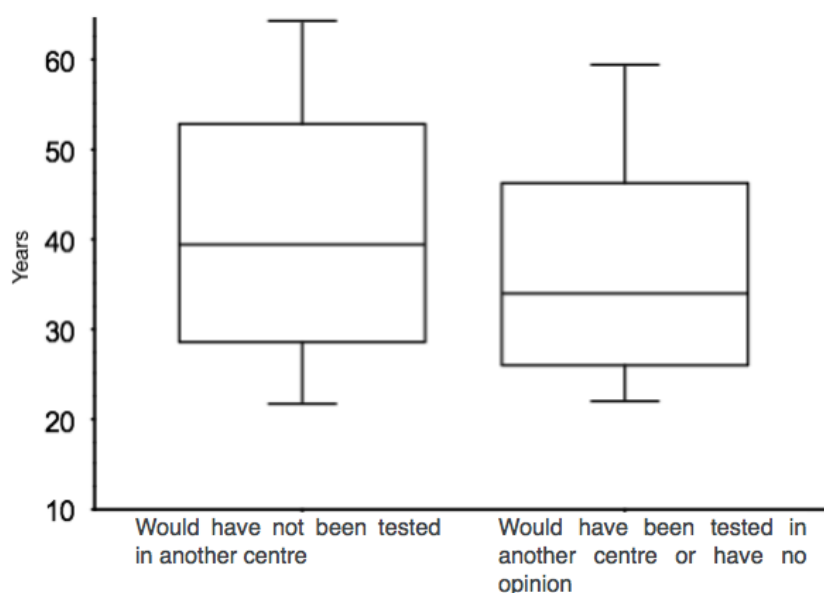


Figure 6: Box plot representing age and willingness to be tested in another centre

There was no significant association with gender and the willingness to be tested in another centre ($p=0.39$).

A link between the intensity of symptoms and the willingness to be tested in a more conventional laboratory was observed. As shown in *Table 1*, the more intense the symptoms were, the more they would not have done the test in a more conventional laboratory.

<i>Would you have done the test in a more conventional laboratory?</i>		<i>Light and mild symptoms</i>	<i>Very intense symptoms</i>
% (n)		% (n)	% (n)
Yes	43.0 (211)	45.6 (140)	37.9 (11)
Others	57.0 (279)	54.4 (167)	62.1 (18)
Total	100 (490)	100 (307)	100 (29)

Table 1: Intensity of the symptoms and willingness to be tested in a more conventional laboratory

To the question “Did you try to make an appointment at another collection center?”, 85.5% (n=361/422) of users answered “no”.

To the question “Do you support the implementation of large-scale COVID-19 screening?”, 83.7% (n=412/492) users answered “yes”, 3.7% (n=18/492) “no” and 12.6% (n=62/492) were indifferent. The users favorable to large-scale COVID-19 screening were significantly younger ($p=0.008$), younger women were significantly more in favour of mass screening ($p=0.004$) but this is an association that was only present in women when considering the 2 genders separately (*Figure 7*). There was no significant association between gender and a positive opinion about mass screening ($p=0.76$).

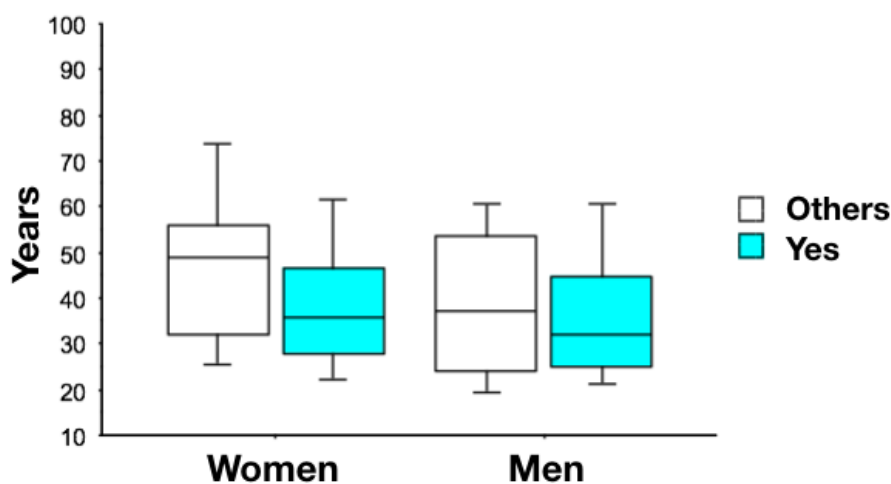


Figure 7: Box plot representing age according to positive or not opinion about mass screening in both genders

To the question “Did you have difficulties making an appointment?”, 88.6% (n=390/440) users answered “no”. The booking difficulties were not associated with age ($p=0.13$) or gender ($p > 0.99$).

The mean number of persons living in the same household was between 2 and 3 persons (2.4). Two outliers (coding number 533 and 295) were excluded.

The mean number of close contacts at work was almost 3 persons (2.9). Two outliers (coding number 49 and 164) were excluded. Therefore, the mean of close contacts per user was 5.

Of note, 23.1% of users (n=115/498) reported having had contact with a known COVID-19 tested positive person.

87 users wrote free comments about the DT-centre being valuable . The mean point, with 98% (n=85/87) of the responses, was about a proper organisation of the DT-centre, using the words “fast”, “practical”, “easy” , “simple” and “efficient”.

59 users wrote free comments at the end of the questionnaire and 75% (n=44/59) were acknowledgements.

DISCUSSION

Context

After the beginning of COVID-19 outbreak, the need to identify rapidly infected people became obvious. There were more and more needs to screen people, that is why mass screening was developed. The international and French policies encouraged testing, in order to isolate infected people and protect the others. To answer the need for mass screening, the Drive-Through centre model was developed around the world. The CHUGA decided right after the first lock-down period to open a DT-centre: the « Drive & Walk ». It was therefore relevant to assess the users' perception in order to have an idea of the acceptance of these emerging DT-centres.

Studies conducted around the world showed that DT-centres are a very efficient and safe model^{35,57,58,59,60}. Our study is the first that describes the users' perception of a drive-through screening centre. In september 2020, one survey study was conducted that showed willingness preference for home specimen collection procedures over drive-through or clinic-based testing⁶¹. This study was carried out on social media users that haven't tried either the drive-through centre or self testing.

The present study is the only one so far to have described the DT-centres users' perception.

Users' opinion

A positive feature of this study was the high participation rate of 84% which allows this study to have a representative picture of the users⁶².

The hypotheses for this high response rate could be the strong involvement of the nursing team. It might also be related to a good organisation with well defined paths to follow for the users. The users filled in the questionnaire at the arrival and before the test was carried out, which left the users in a good disposition. The novelty and originality of the centre could be attractive and make users enthusiastic to participate in the survey.

The results of the questionnaire revealed an almost unanimous positive perception of the centre. It was not expected to have such a great positive opinion percentage. There was no significant association between the age or gender of the population and a positive point of view of the centre. This may be related with the high rate of favorable opinion that prevents

from identifying any associations with the number of participants. It could also be that there was truly no significant association between the user's characteristics and their opinion.

This almost unanimous positive perception could be put into perspective in the context.

It can be noted that 15% of the users were CHUGA workers (data from the hospital administration). They could therefore be more likely to have a positive view of a screening centre at their workplace.

Beyond that, the high positive perspective about the DT-centre could also be explained by the strong support for public health policy about mass screening. More than 80% of the users answered to be in favour of implementing large-scale screening for COVID-19.

Moreover, the centre was attractive with its large testing capacity. It allowed appointments to be made quickly within 24 hours, which was convenient for people in a context of saturated laboratories in the city. It could be the reason why less than 15% of the users tried to make an appointment at another collection center. They could have been satisfied with the appointment scheduling of the "Drive & Walk" and didn't try elsewhere.

It can be suggested that the fact that a DT-centre exists may have encouraged people to undergo a screening test. Almost a fifth of the users would not have done the test in another more conventional laboratory. This could imply that they wouldn't have done the test otherwise. It can be supposed that they were probably more reassured by the idea of coming to the hospital. Those users were significantly older. This may be due to ease of access with no need to walk if wanted.

It was also observed that the more the users had intense symptoms, the less they would have gone to another laboratory. It could be because they would be more comfortable in their car or knew they would have a shorter waiting time than in another laboratory. It could also be related to contagiousness. People may assume that the more symptoms they have, the more contagious they are, and would like to prevent the contamination of other users or medical staff thanks to the drive-through system.

These results highlighted a positive opinion of the population. It can be assumed that it marks a positively received response by the users of a need for screening in a health crisis context.

Many studies have shown the interest of a DT-centre in terms of public health through its efficiency, safety and financial interest^{35, 57, 58, 59, 60}. This innovative study demonstrates that this

great tool is accepted by the population with considerable user satisfaction. This obviously helps to promote mass screening and therefore to contribute to shutting down the epidemic. This clearly favourable opinion also leads to consider that, in the event of a medical procedure being required in the context of a health crisis, the DT-centres would be well accepted by the population. Studies consider drive-throughs as an important tool for the future⁶³. This study increases the value of implementing DT-centres in the future.

Users' characteristics

More women came to the DT-centre, but the sex ratio is near to the regional ratio of 0,94 in the Auvergne-Rhone-Alpes region⁶⁴.

The configuration of 3 screening lines (2 cars and 1 walk/bike) corresponds to the figure in terms of percentages of means of transport. Almost a third of the users came with other means of transport than cars.

According to a study of the Institut National de la Statistique et des Études Économiques (Insee)⁶⁵, 12% to 31% of home-to-work travels in France's largest cities (over 150 000 inhabitants) are made by walking or by bicycle. This difference is mainly due to the use of bicycles, which concerns only 2% of working people living in Marseille, Nice and Saint-Étienne, but 17% in Grenoble and Strasbourg.

Most of the drive-through centres have only lines for cars, a very few also proposed a walk-in line. However there are also walk-through centres with only walk-in lines⁶⁶.

Another point to be noted was the compliance with the recommendations for RT-PCR testing. Indeed, the majority of users were tested within the first 7 days of symptom onset. This reflects proper formation of the general practitioners who were the main prescribers of DT-centre screening. This strong participation of general practitioners in sending patients to the DT-centre suggests a solid city-hospital link.

Potential reach

The DT-centre positivity rate was <1%. It is thus not possible to extrapolate the results regarding the users' perception or the use of the centre in periods of high viral circulation. This positivity rate was in line with departmental data at this time. Therefore, it is foreseeable

to extrapolate the results from this period of low COVID-19 incidence to a period of high endemicity. It is conceivable that in the event of a high incidence of the virus, the DT-centre could isolate a large number of patients and thus avoid a significant amount of infections.

For example, with a departmental positivity rate of 5%, with 700 tests per day and a mean of 5 close contacts, the DT could diagnose 35 cases of COVID-19 infection per day, with 175 associated contact cases. Considering that the result of 5 close contacts is probably underestimated. Indeed, in the questionnaire the question of close contacts is asked only at work or at home but close contacts could also include relatives, friends, hobby activity, etc...

It should be noted that the definition of "close contact" was not specified in the questionnaire. The answers given could therefore concern contacts with or without a mask, more or less distant, of short or long duration, which changes a lot in terms of contamination.

In any case, in a peak of the pandemic, a functional drive would allow a large number of people to be screened, a rapid diagnosis to be made and a large number of infections to be avoided in order to contain the epidemic.

In the event of a further sharp increase in the need for testing, others screening DT-centres could be opened and would probably be well accepted by users.

Possibilities of improvements

It is important to consider the possibilities for improvement, on the one hand, in the execution of this study and, on the other hand, in the operation of the drive.

Concerning the survey, another questionnaire format could be considered. For instance a web-based questionnaire could be more efficient to reduce the time spent in the process of the centre. If the centre is very crowded, this will avoid delay in the collection chain. This also could reduce the time to analyse the study data, by removing the time taken to enter all the data by hand into software. However, this would probably lead to a lower response rate. It is more motivating to answer a questionnaire, with the topic in front of you and when a human person with whom you have an interaction proposes the questionnaire.

It is to be noted that users already had to fill in numerous information on the CHUGA website to register. They had to give their names, age, gender, symptoms, etc... So there were duplicate questions with the survey. It would have been possible to use these data. However this would mean having access to the name of the patient and their personal data and thus,

much more considerable authorizations would be needed. The users were even more motivated to answer this survey knowing the data required for registration.

To take the study further, with the high rate of positive opinion, more questions about their motivations to come could be asked. The answers for the question concerning the users' perception could also be developed.

The composition of the answers' options to the multiple choice questions could be more detailed. For example, concerning the question: "Do you think a screening centre like this innovative one is a positive point?", instead of the 3 possible answers (yes, no, no opinion), there could be 4 possibilities (for example: very interesting, interesting, no opinion, not interesting) or there could be answers with a scale (ruler with a point to put).

The objective of a one-page questionnaire that took very few minutes to complete was a key point in the composition of the multiple choice questions. The choice was made to propose a targeted survey, fast and easy to fill.

On the subject of the centre, the experience of other DT-centres could be used to think of some possible arrangements.

Some DT-centres offer an alternative for people who are unable to move. When making an appointment, if the person is not able to come, an "in home" testing is proposed⁶⁷. A mobile team is therefore seconded to visit these people and carry out the test. This option is important to consider even if in France, the medical transport system reimbursed by social security ensures that many disabled people can travel for medical care.

There was no examination by a doctor at the CHUGA DT-centre. Some centres are set up so that a doctor can see each patient. Other centres even offer consultations for people with respiratory signs who were tested negative, named "respiratory clinic"⁶⁸.

However, to register and be tested at the CHUGA DT-centre, users had to see a doctor before coming, to have a prescription (except for contact cases who had a request from the health authorities). The emergency room was less than a kilometre away. Nurses were fully competent to see if an emergency was required. If necessary, rapid care could be taken.

To facilitate and speed up the registration part of the process, the use of a QR code generated at the time of registration could be considered⁶⁹.

Designing a specific line for people who didn't register before coming could be interesting. This would avoid creating a queue and overcrowding the lines with people without an appointment.

With bad weather conditions, the use of the DT-centre is complicated. Especially for the medical staff who stay in the open tents in the wind and cold. This was not the case at the CHUGA DT-centre in the time of the study. Some centres had to equip themselves with "warming stations"⁵⁹.

Limitations and Strengths

There are limitations to this study. First of all, it is a single-centre study. This centre-effect bias must therefore be taken into careful consideration. The validity of the results is only possible for the Grenoble users of the DT-centre of the University Hospital.

There is a time-related bias. Indeed, the users were included over a period of approximately one month, in a particular epidemiological context. The period of one month corresponds almost to the entire opening of the Drive, so this limit is relative.

These limitations are to be expected considering that this survey is a pilot study.

This study also has strengths. To recall the high participation rate of 84% allows us to consider the answers to the survey as representative of the users' opinion.

It is a prospective study. It is less likely to be biased to know the users' perception, at the very moment they were at the DT-centre.

In addition, the study was observational for most of the time the centre was open.

The study is quantitative, which means that the data are descriptive. It is thus possible to have a picture of the user population and have proper numbers to analyse their perception.

CONCLUSION

The aim of this thesis was to assess the perception of the users relative to the innovative “Drive and Walk” screening centre at the CHUGA. This COVID-19 drive-through screening centre was established after the first lock-down, in May 2020.

The positive opinion of the users is a key point for implementing future DT-centres. This pilot study makes use of a survey to quantify the DT-centre users' positive perception of such a centre.

The main result reveals a very favourable opinion of the users about the DT-centre. This statistic is almost unanimous, regardless of the users' gender, age, means of transport or intensity of their symptoms. A high participation rate allows us to describe a representative opinion of the users.

One way to improve this work would be to explore the users' motivations for such a positive perception. For instance, it would be relevant to ask more detailed questions about the reasons for their positive perception.

Also, this study indicates that the DT-centre operates properly. Indeed the structure is adapted to the users' means of transport and recommendations about COVID-19 screening are respected.

The efficiency of DT-centre is noticed. In case of high COVID-19 positivity rate, it could identify an enormous amount of infected people and avoid numerous contaminations.

As many other studies demonstrate, drive-through screening facilities are a great way to benefit the population.

It is conceivable that when there is a significant need for mass screening, a DT-centre is an essential solution and is accepted by its users.

This pilot study has limits with time-related bias and centre-effect bias. This is why the survey was distributed from september to november 2020 at the indoor centre at Gilbert Faure hall at the CHUGA. The analysis of this survey will allow us to follow the evolution of the users'

opinion according to the context of the evolution of the epidemic, of society and of public health policy.

In order to further analyse the perception of users, it would be interesting to carry out this study in other french DT-centres to see whether the opinion of users is positive at national level or specific to certain cities.

THÈSE SOUTENUE PAR : Tiphaine CHARTRAIN

TITRE :

QUANTITATIVE SURVEY ON THE USERS' PERCEPTION OF THE "DRIVE & WALK",
COVID-19 DRIVE-THROUGH SCREENING CENTRE AT THE GRENOBLE UNIVERSITY HOSPITAL

CONCLUSION :

Du fait de la pandémie de Covid-19, les organisations de santé internationales et françaises appellent au printemps 2020 à un dépistage à grande échelle des personnes contacts et des personnes symptomatiques, afin de diagnostiquer précocement les personnes positives, les isoler, et casser les chaînes de transmission du virus SARS-Cov-2. Un centre de test « Drive & Walk » a dans ce contexte été mis en place au Centre Hospitalier Universitaire Grenoble Alpes (CHUGA) du 11 mai au 18 juin 2020. Il permettait de réaliser tout le processus de dépistage sans que les usagers ne sortent de leur véhicule ; une partie était aussi prévue pour les piétons.

Notre étude avait pour but d'évaluer la perception des usagers de ce centre, du CHUGA. Elle était basée sur un questionnaire de recueil des caractéristiques des usagers et de la perception qu'ils avaient de ce centre de dépistage à grande échelle.

Durant les 6 semaines d'ouverture, le « Drive & Walk » a permis de dépister 690 personnes, dont 578 ont accepté de participer. Les participants avaient un âge médian à 35 ans et un sex ratio de 0,87. 70% des utilisateurs étaient symptomatiques avec une durée moyenne des symptômes de 3 jours. Leur perception est fortement positive quant au centre, avec 95,4% des usagers qui pensent que l'ouverture d'un centre comme le « Drive & Walk » est une bonne chose. On retrouve que 18,4% des usagers n'auraient pas fait le test dans un laboratoire plus classique. De plus, 83,7% des utilisateurs sont favorables au dépistage à grande échelle.

Nous n'avons pas observé de lien significatif entre la perception des utilisateurs et leur âge, leur sexe ou leur symptômes.

Notre étude montre que ce dispositif exceptionnel a été bien perçu par ses usagers, malgré son caractère inédit, et dans une situation de crise globale. En cas de nouvelle nécessité, il sera donc possible d'avoir à nouveau recours à des dispositifs de type « Drive & Walk ».

VU ET PERMIS D'IMPRIMER
Grenoble, le : 27/08/2021

LE DOYEN

LE PRÉSIDENT DE LA THÈSE

Pr. Patrice MORAND

Pr. Olivier EPAULARD

Le Doyen de l'UFR de Médecine

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25 Août
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Centre de prélèvement Covid-19

N° Anonymat :

Bonjour,

Vous venez au centre de prélèvement COVID-19 mis en place exceptionnellement au CHU de Grenoble.

Afin d'optimiser la prise en charge des patient-e-s covid-19 et mieux appréhender l'utilisation du centre, nous vous proposons de répondre aux questions ci-dessous. Cela n'a rien d'obligatoire : si vous préférez ne pas répondre, vous n'aurez pas à vous justifier, et votre prise en charge sera absolument la même. Si vous souhaitez plus tard retirer votre participation à ce questionnaire, vous pourrez le faire en renvoyant le formulaire d'opposition.

Date du jour de réponse au questionnaire : ____ / ____ / ____

Quel est votre âge ? ____

Quel est votre genre ? ☐ FEMININ ☐ MASCULIN ☐ AUTREQuel est votre moyen de locomotion ? ☐ Voiture ☐ Vélo ☐ A pied ☐ Transport en commun
Etes-vous venu-e :

- ☐ Sur prescription de votre médecin traitant
☐ Sur prescription d'un autre médecin
☐ Sur recommandation des autorités de santé

Avez-vous eu des difficultés pour **prendre rendez-vous** ? ☐ oui ☐ nonAvez-vous essayé de prendre un rendez-vous dans un **autre centre** de prélèvement ? ☐ oui ☐ non

Pourquoi ce prélèvement est-il réalisé ?

- ☐ Parce que vous avez des symptômes ; dans ce cas, le(s)quel(s) ? ☐ Diarrhées
☐ Fièvre ☐ Toux ☐ Perte de l'odorat
☐ Sensations de fièvre ☐ Difficultés respiratoires ☐ Perte du goût
☐ Fatigue ☐ Oppression dans la poitrine ☐ Autres : ____
☐ Douleurs musculaires diffuses ☐ Maux de tête

A quelle date est(ont) apparu(s) le(s) **premier(s) symptômes(s)** ? ____ / ____ / ____Comment qualifieriez-vous l'**intensité** de vos symptômes aujourd'hui ?

- ☐ Très intenses ☐ Modérés ☐ Faibles

☐ Parce que vous avez été en contact avec une personne connue positive au Covid-19☐ Autre(s) raison(s) : ____Avec combien de personnes avez-vous des **contacts rapprochés** au quotidien ?

- Nombre de personnes vivant sous le même toit : ____

- Nombre de personnes travaillant dans la même pièce : ____

Pensez-vous qu'un centre de prélèvement exceptionnel comme celui-ci soit une bonne chose ?

☐ Oui

(Optionnel) si oui pour quelle(s) raison(s) ? ____

☐ Non☐ Je n'ai pas d'avis particulier

Auriez-vous fait ce test dans un laboratoire plus « classique » ?

☐ Oui, il n'y a pas de différence☐ Non, je n'aurais pas fait ce test dans un laboratoire « classique »☐ Je n'ai pas d'avis particulier

Etes-vous favorable à la mise en place de dépistage à grande échelle du Covid-19 ?

☐ Oui☐ Non☐ Indifférent

Commentaires libres :

Merci de votre participation

*L*e serment d'Hippocrate

Texte revu par l'Ordre des médecins en 2012

“ Au moment d’être admis(e) à exercer la médecine, je promets et je jure d’être fidèle aux lois de l’honneur et de la probité.

Mon premier souci sera de rétablir, de préserver ou de promouvoir la santé dans tous ses éléments, physiques et mentaux, individuels et sociaux.

Je respecterai toutes les personnes, leur autonomie et leur volonté, sans aucune discrimination selon leur état ou leurs convictions. J'interviendrai pour les protéger si elles sont affaiblies, vulnérables ou menacées dans leur intégrité ou leur dignité. Même sous la contrainte, je ne ferai pas usage de mes connaissances contre les lois de l'humanité.

J'informerai les patients des décisions envisagées, de leurs raisons et de leurs conséquences.

Je ne tromperai jamais leur confiance et n'exploiterai pas le pouvoir hérité des circonstances pour forcer les consciences.

Je donnerai mes soins à l'indigent et à quiconque me les demandera. Je ne me laisserai pas influencer par la soif du gain ou la recherche de la gloire.

Admis(e) dans l'intimité des personnes, je tairai les secrets qui me seront confiés. Reçu(e) à l'intérieur des maisons, je respecterai les secrets des foyers et ma conduite ne servira pas à corrompre les mœurs.

Je ferai tout pour soulager les souffrances. Je ne prolongerai pas abusivement les agonies. Je ne provoquerai jamais la mort délibérément.

Je préserverai l'indépendance nécessaire à l'accomplissement de ma mission. Je n'entreprendrai rien qui dépasse mes compétences. Je les entretiendrai et les perfectionnerai pour assurer au mieux les services qui me seront demandés.

J'apporterai mon aide à mes confrères ainsi qu'à leurs familles dans l'adversité. Que les hommes et mes confrères m'accordent leur estime si je suis fidèle à mes promesses ; que je sois déshonoré(e) et méprisé(e) si j'y manque.

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