Progress of Integrated testing approaches and intensive laboratory training as strategy against SARS-COV-2 spread in Brazzaville

ITAIL-COVID-19

Grant N° RIA2020EF-2947

Dr Mathieu NDOUNGA
Coordonnateur

This project is part of the EDCTP2 Programme supported by the European Union

Webinar EDCTP COVID-19 Emergency Funding Mechanism: Collaborative clinical research studies in sub-Saharan Africa 18-19 March 2021
Plan

1. Introduction
2. Project Partners and Objectives
3. Workpackages
4. Activities/results
5. Challenges
1-Introduction

- March 2020: Ethical approval and administrative authorization of ITAIL-COVID19 project.
- From April 2020, FCRM through its Medical Clinic (CCLAM) and Research Centre (CeRMI), support LNSP (National Laboratory of Public Health) in SARS-COV2 screening in Republic of Congo.
2-1. Partners

Coordinating institution of ITAIL-COVID-19 project
Grant N° RIA2020EF-2947
   Fondation Congolaise pour la Recherche Médicale

Partner institutions of Grant N° RIA2020EF-2947:
   ▪ Bernhard Nocht Institute for Tropical Medicine, (BNITM) Deutschland
   ▪ Institut de Recherche pour le Développement (IRD), France
   ▪ R-Evolution Worldwide Community Interest Company, United Kingdom
   ▪ Coris BioConcept, Belgium

Duration: May 2020 - October 2021, 18 months
Main objective of Grant N° RIA2020EF-2947
To better understand the COVID-19 infection epidemiology in Congo-Brazzaville and to strengthen the country's national surveillance system

Specific objectives of Grant N° RIA2020EF-2947
1- To determine the Covid-19 spreads through semi-rural and urban communities using standard molecular testing (RT-PCR) and sequencing.
2- To validate an ultrasensitive diagnostic tool (APoH RT-PCR) and point-of-care antigenic rapid diagnostic tests (Ag-RDT)
3- To implement serological tests in Congo Brazzaville to trace the spread of SARS-CoV-2 in community
3. **Workpackages of ITAIL-COVID-19**

6 Wokpackages:

1. Clinical study preparation, coordination and execution (samples collection); conducted by FCRM
2. Compare the RT-PCR method versus the addition of the ultra-sensitive ApoH-sample prep method to identify COVID-19 carriers; FCRM and IRD involved
3. Validation of Rapid Diagnostic Test for COVID-19 antigens Ag-RDT; FCRM and CORIS involved
4. Sero-epidemiological investigation; FRCM and BNITM involved
5. Dissemination, communication and exploitation; FCRM and R-Evolution involved
6. Management; FCRM involved
4.1 Activities/results of the project

WP1: Clinical study preparation, coordination and execution (samples collection)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Resultats</th>
</tr>
</thead>
</table>
| SARS-COV-2 detection using conventional RT-PCR test, with oropharyngeal swabs | From March 20 to January 21,  
- 13735 screened samples in FCRM Health center (CCLAM),  
- 1152 SARS-COV-2 positive samples: 8.4% |

Screening in Congo: Feb 22, 2020 – March 3, 2021 (SITREP N° 133)  
104 366 screened persons  
9 179 SARS-COV-2 positive: 8.8%
### 4.2 Activities/results of the project

**WP1**: Clinical study preparation, coordination and execution (samples collection)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Results</th>
</tr>
</thead>
</table>
| Sequencing SARS-COV2 Virus circulating in Brazzaville, Congo | - October 2020: first (eleven) sequences of the SARS-COV2 virus circulating in the Republic of Congo during the first wave published; GISAID website  
- Dec 2020-Jan 2021: 42 sequences published in GISAID website |
### 4.3 - Activities/results of the projects

**WP2**: Compare the conventional RT-PCR method versus the addition of the ultra-sensitive ApoH-sample prep method to identify COVID-19 carriers

<table>
<thead>
<tr>
<th>Activity</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>ApoH-sample prep method for ultra-sensitive detection of COVID-19 using RT-PCR</td>
<td><strong>1&lt;sup&gt;st&lt;/sup&gt; webinar, 11 septembre 2020</strong>&lt;br&gt;1-Protocol of viral capture from swab samples in ITM&lt;br&gt;2-Protocol on viral capture from saliva samples</td>
</tr>
<tr>
<td></td>
<td><strong>2&lt;sup&gt;nd&lt;/sup&gt; webinar, 14 January 2021</strong>&lt;br&gt;1- Viral Capture with Peps6 CaptoVIR kit : protocol application, RNA preparation using QIAGEN commercial kit and RT-PCR detection&lt;br&gt;2- Classic RNA preparation using QIAGEN commercial kit and RT-PCR detection</td>
</tr>
<tr>
<td></td>
<td><strong>Since February 2021</strong>: Process of Validation of ApoH-sample prep method for ultra-sensitive detection of COVID-19 using RT-PCR</td>
</tr>
</tbody>
</table>
### 4.4 Activities/results of the project

**WP 3: Validation of Rapid Diagnostic Test for COVID-19 antigens (Ag-RDT)**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Results</th>
</tr>
</thead>
</table>
| Validation of Rapid Diagnostic Test for COVID-19 antigens (Ag-RDT) on RT-PCR positive samples | **First step**: 438 Swab RT-PCR positive samples preserved in Universal Transport Medium (UTM) were tested on COVID-19 Ag Respi-Strip RDT.  
From these 438 samples, only 31 (7.1%) samples were positive on Ag-RDT.  
This data indicates a low sensibility of the test. |
### 4.5 Activities/results of the project

**WP4 : Sero-epidemiological investigation**

<table>
<thead>
<tr>
<th>Activities</th>
<th>Results</th>
</tr>
</thead>
</table>
| Using serological rapid diagnostic test (RDT) to determine herd-immunity in Congo-Brazzaville population | 2\textsuperscript{nd} Communication of ITAIL-COVID-19 Consortium to this webinar presented by Dr AL. BATCHI at this webinar  
*Title : Seroprevalence in Brazzaville using serological Rapid Diagnostic Test (RDT) from March to July 2020* |
| Performing serological ELISA on serum samples collected from asymptomatic subjects | 1070 samples from asymptomatic persons living in Brazzaville were performed by ELISA Assay of IgG and IgM to Spike protein SARS-CoV-2:  
1- While the prevalence of SARS-CoV-2 RT-qPCR positive is 3.7% in these asymptomatic persons,  
2- The seroprevalence of IgG, 26.7%, in asymptomatic persons living in Brazzaville |
4.6 - Activities/results of the project

WP 5: Dissemination, communication and exploitation

1. 4 – 5 August, 25e session of Carrefour Forum: covid-19, Healthcare and vaccine (Pr NTOUMI, Chair of session)
   Pr F Ntoumi presentation: RDT serological data

2. Memo preparation and diffusion to Congolese stakeholders: September 2020: Seroprevalence pilot study against SARS-COV2 within the population of Brazzaville

3. ITAIL-COVID-19 first press release, September 2020
4.7 - Activities/results of the project

WP 5: Dissemination, communication and exploitation


4.8 Activities/results of the projects

WP 5: Dissemination, communication and exploitation

6 - Line Lobaloba Ingoba, Etude de la séroprévalence des anticorps contre la protéine Spike de SARS-COV2 dans la population Congolaise; WEBINAIRE Contribution des femmes scientifiques d’Afrique centrale dans la lutte contre la COVID-19, 11 Février 2021, Journée Internationale des Filles et Femmes de Sciences

7 - F Ntoumi, Mythes et réalités sur les variants de SARS-CO2. Moyens disponibles pour traquer les variants dans la sous-région? Webinaire Contribution des femmes scientifiques d’Afrique centrale dans la lutte contre la COVID-19, 11 Février 2021, Journée Internationale des Filles et Femmes de Sciences

8 - ITAIL-COVID-19 second press release, February 19, 2021
4.9 Activities/results of the projects

WP 6: project management

1. Project team meetings (webinar)
   - First meeting: 22 June 2020
   - 2nd meeting: 24 September 2020
   - 3rd meeting: 2 October 2020

2. Project Activities follow up
5. Challenges

**WP1**: To continue genomic surveillance of SARS-COV2 variants circulating in RoC

**WP2**: To finalize the validation of ApoH-sample prep method for ultra-sensitive detection of COVID-19 using RT-PCR

**WP3**: To continue the validation of Rapid Diagnostic Test for COVID-19 antigens (Ag-RDT) on RT-PCR negative and positive samples SARS-COV-2

**WP4**: To follow up RT-PCR positive patients post-infection to evaluate immune responses over the time

**WP5**: To intensify the exploitation, dissemination and the communication of results
Thank you for your attention