


# Telemonitoring programme on COVID-19 for a low-income community in Brazil: case study

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## INTRODUCTION

Brazil reported its first case of COVID-19 in February 2020 and by the date of this article, the Brazilian Ministry of Health had registered 6674.999 confirmed cases and 178.159 deaths associated with COVID-19.<sup>1</sup>

In March 2020, Public Health Emergency of National Importance was declared<sup>2</sup> and at that time, the recommendations of the Federal Council of Medicine included the suspension of outpatient care.<sup>3</sup> As a result, telemedicine became an alternative for maintaining healthcare during the pandemic and minimising people's exposure to crowded environments with a high risk of contagion. During the pandemic, a telemonitoring programme was implemented to provide guidance and healthcare related to COVID-19 for a low-income community in São Paulo, Brazil.

This case study aims to (1) report on the process of creating and implementing a programme for following patients with confirmed diagnosis or suspicion of COVID-19 by telemonitoring; and (2) present the barriers, facilitating elements and lessons learnt.

## METHODS

### Design

This is a descriptive case study, conducted at the Sociedade Beneficente de Senhoras Hospital Sírio-Libanês.

### Setting

Since 2001, the Sociedade Beneficente de Senhoras Hospital Sírio-Libanês has maintained a voluntary social initiative called *Abrace seu Bairro* (in English, Embrace

## Summary box

### What are the new findings?

- ▶ We report the process of creating and implementing a programme to provide telehealth care for low-income patients with diagnosis or suspicion of COVID-19 in São Paulo, Brazil.
- ▶ From May to July 2020, 73 volunteer residents attended 1076 patients by means of 4891 telemonitoring sessions, avoiding unnecessary visits to health services and reinforcing preventive advice.

### How might it impact on healthcare in the future?

- ▶ This type of voluntary programme is feasible, low cost and could be implemented elsewhere in support of pandemics.

your neighbourhood), whose mission is to implement activities for improving the quality of life of low-income families from its neighbourhood, in São Paulo, Brazil. The latest health programme of the *Abrace seu Bairro* was conducted to provide healthcare and informative support related to COVID-19 to this community during the pandemic.

## RESULTS

### Professionals involved

From May to July 2020, 73 professionals coursing the first or second year of medical or nursing residency from Hospital Sírio-Libanês were invited voluntarily and agreed to participate in the programme.

As a training strategy, one guide encompassing Standard Operating Procedures was provided for the volunteers, detailing



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a script for the remote care, including content of the consulting, signalling questions, flow and direction to the actions. A second guide focused on data collection and use of the REDCap platform (<https://www.project-redcap.org/>) was prepared and offered to them.

Additionally, 1 week before starting the telemonitoring, the volunteers attended a meeting via Zoom platform, when the project and its objectives were presented and debated. In the aftermath, small groups of volunteers received a 4-hour practical training for testing the login and the access to REDCap and a realistic simulation of telemonitoring.

### Population attended

The telemonitoring was offered to the patients with an active register at one of the primary care units of the Hospital Sírio-Libanês neighbourhood (namely N. Sra do Brasil, Humaitá, Cambuci, Sé and República units).

Individuals looking for the primary care unit due to influenza symptoms, with suspected COVID-19 or mild symptomatic confirmed COVID-19 were referred to the telemonitoring programme. No exclusion criteria were adopted for receiving remote care; and at the end of the programme, 1076 participants, with a mean age of 40 years (ranging from 6 to 70), were followed up.

### Telemonitoring description

Consultations by telephone were made from a unique physical setting, located in the administrative building of Hospital Sírio-Libanês, from Monday to Friday, from 07:30 to 20:00 and on Saturdays, from 08:00 to 18:00. A standard workspace for the project is presented in [figure 1](#).

At the end of the initiative, 4891 teleconsultations were completed. The contents of the teleconsultations were stored by the volunteer professionals in specific forms (first consultation and subsequent consultations) from the REDCap platform. The workflow of the telemonitoring programme is depicted in [figure 2](#).

All the recommendations provided to patients followed those made available by the Brazilian Ministry of Health for the care of patients diagnosed or suspected of COVID-19 in the primary healthcare



**Figure 1** Standard workspace for the project.

setting.<sup>4</sup> The recommendations included a flow chart of conduct based on the initial and evolutionary clinical condition of the patient, with stratification of severity and prioritisation of risk groups.

At the end of each teleconsultation, the following directions could occur:

1. Cases with significant or complete clinical improvement with disappearance of signs and symptoms for at least 2 days were discharged from telemonitoring with reinforcement of preventive advice. The same occurred when the patient reported a negative test for COVID-19. However, if a patient with a negative test for COVID-19 was still symptomatic, additional guidance was given for the patient to seek medical assistance in the persistence or worsening of the symptoms.
2. Cases without signs of severity and/or stable—continuation of daily remote care or request that the unit provide home care in specific cases such as difficulty in locomotion and/or very elderly people or people with some physical, psychic or social vulnerability, with a maximum period of 14 days from the date of onset of symptoms.
3. Cases with clinical worsening such as shortness of breath at small efforts and persistent fever received guidance to return to the primary care unit of origin to continue face-to-face follow-up (action previously agreed with the unit). There was reinforcement as to the orientation of protective measures, such as physical distance and use of personal protective equipment. The reference unit was contacted by email containing the description of the case and the reason for the referral, and a request for prioritising the consultation, to avoid longer exposure time. If the remote consultation took place on time after the original unit was closed, the same procedure was carried out, but for the 24-hour assistance unit.

Thus, the telemonitoring was considered finished for the following reasons: maximum period of 14 days after the symptoms were reached, loss of follow-up (no contact with the patient after attempts for 3 consecutive days), at the patient's request, need for hospital admission (information obtained from the user, family or unit) or death.

### Monitoring procedures

Remote meetings were held weekly with the team of telemonitoring professionals to adjust the process and update recommendations following local COVID-19 management guidelines.

### Data setting generated from the monitoring

A dataset was created in the REDCap platform to compile the information collected over the programme. These datasets comprised personal information of population served (social, demographic, clinical manifestations of COVID-19, comorbidities and so on), details about each remote assistance, follow-up and unfolding of each case attended. This file was created to maintain the anonymity of the participants and for the sole purpose of patient follow-up.

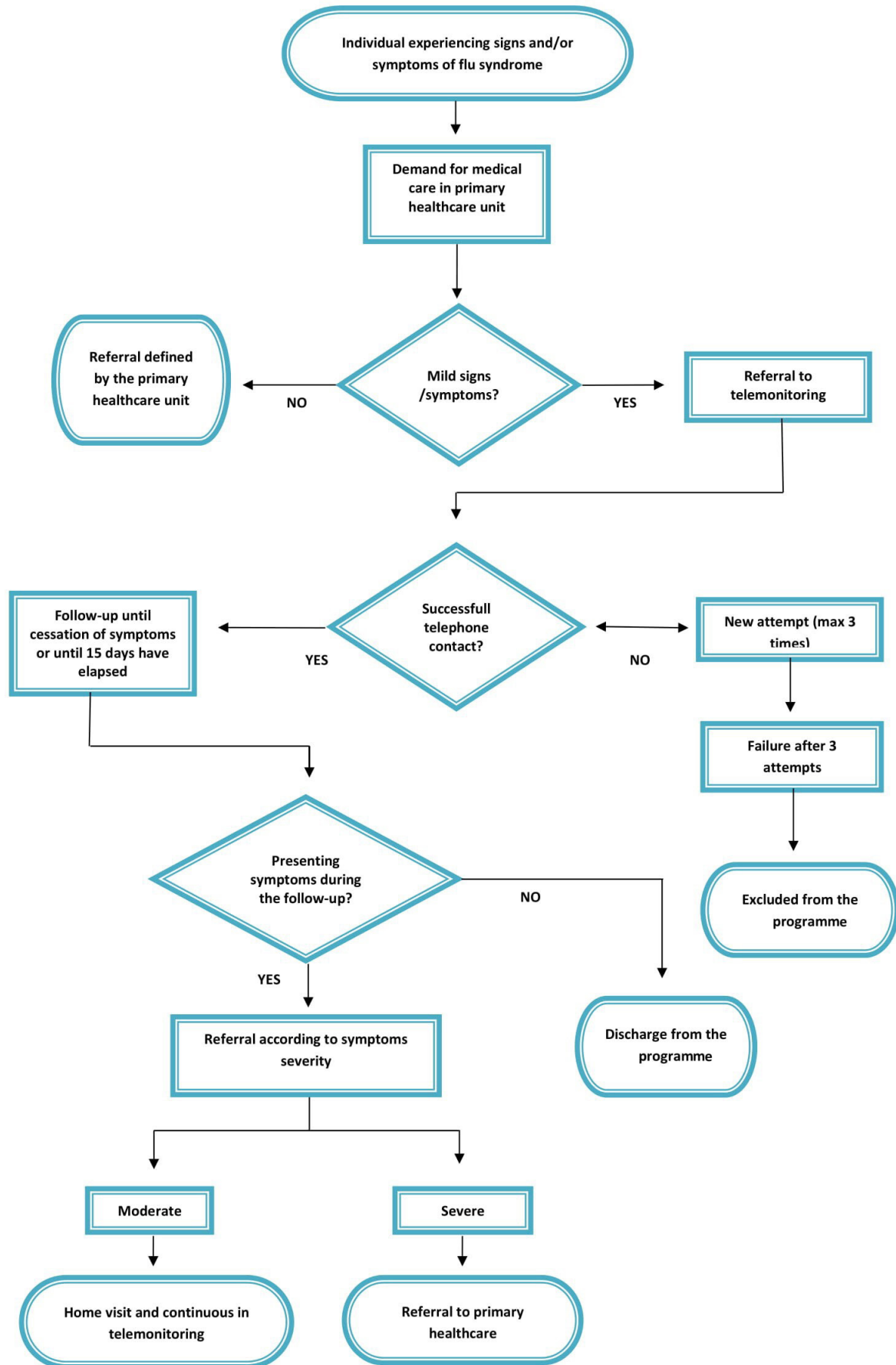


Figure 2 The workflow of the telemonitoring programme.

## DISCUSSION

During the planning phases, the implementation and monitoring of the programme, some barriers were identified and needed to be overcome. We present the main barriers below.

Considering the scenario in which the patients lived, a certain distrust was expected when they received the first call from the telemonitoring team. To minimise this situation, by identifying a potential case to be referred to the programme, the primary care unit would alert the patient to contact via telephone and the patient would also receive an official standard message from the Hospital Sírio-Libanês with initial information.

A difficulty in using the REDCap platform was identified at the beginning of the programme. To mitigate this barrier, four short videos of tips on the use of the platform were prepared, with step-by-step instructions for its use, from login to completion of care. A WhatsApp group was also created with volunteer residents to allow them to exchange experiences and support materials, resolve doubts about the attendance flow and assure the feeling of collaboration.

The monitoring procedures over the programme identified a considerable rate of missing data in the REDCap data form. Adjustment in the online form was made to make it compulsory to fill out the most relevant information. The training material and videos were also reformulated to reinforce the importance of completeness of information.

Actions to maintain the initial commitment of volunteers included weekly remote meetings, bringing reports of people assisted and the impact of the programme on their own lives and their families.

As the programme was conducted, a considerable number of situations were identified in which more than one component of the same family was receiving the telemonitoring. Adjustments were made to allow a single call, optimising the time of participants and the team, and standardising the advice for the family.

Some factors were identified as contributors to the successful conduct and completion of the programme. Among them, we highlight (a) the partnerships with the primary care units and with the coordination of the residency programme, (b) the high level of commitment of the volunteers themselves and of the management team involved in the social programmes of *Abrace seu Bairro* allows for planning and implementation of the programme in a short term and (c) the support from the directive board of the Hospital Sírio-Libanês.

By the end of the programme, lessons have been learnt and will be fundamental to the planning and implementation of further social activities of the *Abrace seu Bairro* initiative.

Training assistance professionals in technology tools to deal with data, adopting strategies to reduce missing data and measuring the impact of programmes on the health and life of the population are critical.

Planning the dissemination of the programme and its results through scientific publications should be a mandatory part of social projects and include fundraising for this and rigorous data collection and analysis. A clear and detailed disclosure of the whole process allows its reproducibility for similar scenarios and enhances social projects around the world.

In the context of the pandemic, all support is needed. In Brazil, where public and private health services overlap, private institutions have taken on the role of implementing strategies to improve the health of the population, such as reducing the spread of COVID-19. Such strategies include direct assistance, research, health technology assessment and capacity building.

Lastly, as a main lesson, we learnt that it is possible to implement a programme with few financial resources by engaging people with different skills even in a disadvantageous setting. As already identified by another project in Brazil,<sup>5</sup> this report shows that volunteering in healthcare is a valid and effective force for action, which should be considered for both routine and exceptional situations.

## CONCLUSIONS

For 3 months during the pandemic, a telemonitoring programme, counted with 73 volunteers, medical or nursing residents, assisted 1076 people with confirmed or suspected COVID-19 living in a low-income community in São Paulo, Brazil. Participants received guidance on their health condition and on measures to reduce the contamination of their relatives and neighbours. Therefore, unnecessary visits to health services were avoided. This type of voluntary programme is feasible, low cost and could be implemented elsewhere in support of pandemics.

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