

COVID-19: The New Caledonia experience

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Abstract:

New Caledonia is a French associated territory in the South Pacific Ocean. While COVID-19 is expanding over the world, we seem to be well preserved with a total of 18 documented cases. We report the measures implemented on our island that probably helped containing an epidemic spread.

Keywords :

COVID-19, SARS-CoV-2, containment, quarantine, epidemic, New Caledonia

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Introduction:

In December 2019, multiple patients were hospitalized in Wuhan (China) for severe pneumonia. On the 7th of January 2020, a new coronavirus was isolated, called now SARS-CoV-2 (1). The 10th of February, 40.261 cases were diagnosed with an exponential raise of patient's number and an extension to multiple countries around the world (<https://www.worldometers.info/coronavirus/>). In Wuhan, 2 hospitals were built within 10 days due to an important flow of patients (2;3). At that time, some European and American countries took the situation lightly, comparing it to an Influenza epidemic (4;5;6).

The pandemic spread very quickly all over Europe, and the world, and important lockdown and management measures were put in place to try and contain it. At this time, 20th of April 2020, 2.4M people got reported all over the world with more than 165.000 deaths (7).

Main article:

New Caledonia is a French associated Territory in the South Pacific Ocean, composed of a main island and 4 inhabited small islands, with a population number around 300.000. It has one international airport. This French overseas territory has its own competence in health policy.

A clinical screening of all passengers arriving from SARS-CoV-2 high risk areas was started on the 28th of January in the international airport. The high risk areas were updated regularly following the pandemic spread and were defined by areas with active viral circulation. The airport control was reinforced by thermal cameras on the 6th of March. Every passenger with fever or cough was hospitalized in the Centre Hospitalier Territorial CHT (the main island's hospital, reference center in Infectious Diseases) and tested by SARS-CoV-2 reverse transcriptase Polymerase Chain Reaction (RT-PCR).

On February 10, screening by SARS-CoV-2 RT-PCR started for all patients hospitalized for an Influenza like illness or a severe acute respiratory infection (SARI). The hospital's laboratory collected also samples from the influenza sentinel network and tested them for SARS-CoV-2.

Our first positive cases of COVID-19 (Disease caused by SARS-CoV-2) were confirmed on March 18 2020, a nonresident couple arriving from France. They presented mild fever, cough, fatigue and anosmia. They were hospitalized in the Infectious Diseases ward of the CHT for surveillance and isolation. They spent less than 18 hours in their hotel room and had very few contacts before diagnosis. The sanitary and health department traced the contacts of these patients before they sought care. All contacts were quarantined in a center that was arranged for this purpose.

Since the 19th of March, government of New Caledonia mandate a 14 days quarantine for all visitors and residents returning to the territory. Travelers were transferred to a government designated hotel under strict surveillance, and all international flights were stopped on the 21st of March. All close contact to person confirmed with COVID-19 infection were isolated in a quarantine facility for 14 days.

Inside flights or boat transfers to the other islands were stopped right after the first documented case (on the 18th of March).

On the 23rd of March, officials put the whole territory under complete lockdown. Schools and every non-essential business were closed. Restaurants, bars, night clubs were closed, meetings were unauthorized. People were permitted to go out for a one hour period every day within 1km of their homes.

After the detection of the first cases, testing centers were implemented all over the main island, with the raise of 2 screening tents in front of the main hospital. Nasopharyngeal and pharyngeal samples were collected in every health care facility. The swabs were all sent to the microbiology laboratory of the CHT for RT-PCR testing. We decided to test every person having influenza like illness (fever, cough, anosmia, chills). Symptomatic persons who traveled or were in close contact with someone positive were hospitalized and immediately screened for SARS-CoV-2. Additionally, patients with negative RT-PCR test and typical symptoms of pneumonia, were CT scanned.

Around 2.000 people have to be repatriated in New Caledonia after the closure of international flights mostly from France, Australia, and New Zealand. These resident will be authorized to reach their

household after a 14 days quarantine in hotels and a negative RT-PCR. Since the beginning of the pandemic and with a large screening program, 4000 RT-PCR tests were practiced by the 24th of April 2020 (a calculated average of 14.800 per million inhabitant). A total of 18 COVID-19 cases were diagnosed from the 18th of March until the 4th of April, among those, 14 imported cases, 2 flight attendants and 2 close contacts (1 bus driver and 1 husband of a COVID-19 patient). The median age of the patients was 48 years old, the youngest had 19 and the oldest 71 years old. Among the patients 11 were males and 7 females with a Sex Ratio Male/Female of 1.57. One female patient was admitted to the ICU and received mechanical ventilation for 13 days with a good post discharged outcome. This 52 years old lady has a medical history of diabetes mellitus and hypertension. Among the patients, 6 had a specific treatment due to the presence of mild or extended pneumonia on CT-scanner, 3 under Hydroxychloroquine and 3 under Hydroxychloroquine and Azithromycin. During this period no death susceptible to be linked to a COVID-19 infection was registered.

The CHT was reorganized to prepare for the potential influx of patients. We emptied our Infectious diseases ward after the first COVID-19 case (28 beds), then very quickly the Pneumology ward (28 beds). The patients were diverted to other wards or other hospitals and clinics. In the ICU we emptied a 10 beds ward. We planned to open very quickly if needed more than 112 beds in medicine wards and 49 beds in ICU (Figure 1).

All persons detected positive for SARS-CoV-2 (even with mild or no symptoms) were hospitalized and isolated until they got asymptomatic and had 2 negative tests for SARS-CoV-2 at 48 hours intervals.

On the 24th of April 2020, we are on day 20 without any new documented case.

Discussion:

Some islands like Iceland or Japan have been very successful in managing the epidemic and were able to flatten the curve without being overwhelmed by patients. Iceland has quickly considered all travels outside the island as high risk, has done a large population screening and important tracking of SARS-

CoV-2 infections, associating these measures with quarantine, self-isolation and social distancing (8). Japan has done an early detection and early response to infection clusters, with an enhancement of intensive care units (9).

Multiple reasons could explain the low actual viral spread in New Caledonia.

The fact that we have one international airport helped in the management of all travelers. Few people that arrived by boat were focused to one harbor, controlled, and placed in quarantine. Our insularity and hot weather/ humidity could have had an impact on a lower contagiousness (10;11). The surveillance, quarantine measures, the hospitalization of all detected COVID-19 positive patients and the rapid lockdown had probably an impact on stopping the spread. Our large testing policy helped us to have a good idea on the viral spread. Preparedness and anticipation seem very important factors to contain this epidemic spread. As Iceland and Japan, we implemented epidemic control strategies very soon after our first documented case and we tried to exclude new imported cases from general population.

The difficult part will probably start now, after 4 weeks of lockdown, we will start to put in place measures of decontainment. Our population is still non-immune and a low viral undetected circulation could evolve in an epidemic. Also a viral introduction cannot be excluded even with the most drastic measures: few international flights are still necessary for freight or sanitary evacuation to France.

A change of habits is needed, especially social habits, within a heterogeneous population where the western way of life rubs shoulders with a more traditional one. Important distances should be kept between people in enterprises or schools, drastic hand hygiene policy must be taken and masks should be given to all population at risk to prevent a rapid viral spread. This issue is even more important concerning the gatherings of people linked to the Melanesian cultural calendar and way of life.

The opening of the international airport should be also rethought for the long term. This situation could persist for months or years (until a vaccine or effective treatment are put in place); and has to be compatible with economic and social viability.

As complete lockdown is not an option in the long term, especially for a remote island territory that is not self-sufficient. We have to change our social paradigms and never let our guard down to be able to win over this pandemic and not get a slap on our face when we expect it the less. New-Caledonia must create its own plan to fight the COVID-19 pandemic, by implementing a bold and rigorous system, including the specific characteristics of the territory, to allow its population to avoid the occurrence of a massive epidemic spread and its dramatic consequences currently seen in Europe and several parts of the world.

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Figure 1 Legend: Territorial and hospital measures and strategies timeline

