



## First Case of Covid-19 in Rivers State: A Case Report on the Public Health Response

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### Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Study

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### ABSTRACT

Five days after arrival in Nigeria, a 19-year-old female model called the Public Health Emergency Operation Centre with complaints of fever, cough, sore throat, catarrh, sneezing, and diarrhea. A nasopharyngeal swab Polymerase Chain Reaction (PCR) confirmed the diagnosis of COVID-19 on the 26th of March 2020 making her the very first coronavirus (COVID-19) case in Rivers State. Following the diagnosis, the case was moved to the treatment center. Contact tracing of all possible contacts was conducted; one hundred and five contacts were located and asked to self-isolate for fourteen days. The patient had a relatively mild illness; she was treated and discharged home after two weeks when she had two consecutive negative PCR results.

*Keywords: COVID-19; polymerase chain reaction; treatment centre; contact tracing.*

## 1. INTRODUCTION

Corona viruses have been known to infect humans since the 1960s. They are enveloped in positive-stranded RNA viruses in the order of Nidovirales [1]. Most Corona viruses infect animals that act as intermediate hosts but sometimes infect humans. Presently, there are seven corona viruses known to infect man. Four of these cause mild to moderate disease while three cause very severe diseases. Specifically, human corona viruses OC43, HKU1, and 229E cause common colds and severe lower respiratory tract infections in the youngest and oldest age groups; while human corona virus NL63 is an important cause of pseudo croup and bronchiolitis in children [2]. The severe acute respiratory syndrome corona virus (SARS-CoV) caused the severe acute respiratory syndrome (SARS) in 2002; the Middle East respiratory syndrome corona virus (MERS-CoV) caused the Middle East Respiratory Syndrome (MERS) in, and the severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) caused the corona virus disease known as COVID-19 [3–6]. COVID-19 was first linked to a cluster of pneumonia cases in late 2019 in Wuhan, China. Illness in man usually affects the respiratory tract with symptoms ranging from the common cold to severe lower respiratory tract symptoms that could lead to death [7]. Still, most people infected may not show any signs [8]. The transmission of COVID-19 can occur directly, indirectly, or in close contact through respiratory droplets, saliva, and fomites of an infected person [9]. These are expelled when an infected person talks, sneezes, coughs, or sings. Airborne transmission may occur during a medical procedure that generates aerosol [9]. Some studies have shown the presence of COVID-19 in plasma and blood, but its role in blood-borne infection is not known [10-14]. The international plan for managing COVID-19 is to reduce transmission of the virus, care for those affected, and maintain essential health care during these periods [15].

## 2. CASE PRESENTATION

The first case in River state was a 19-year-old female who was a professional model. She traveled back to Nigeria after a fashion modelling in Paris (France). She started her traveling through France on the 14<sup>th</sup> of March, 2020 then to Milan (Italy), to Athens (Greece,) and back to Paris for the fashion show. She Arrived at the Port Harcourt International Airport in Rivers State on the 16<sup>th</sup> of March via an international airline and was picked up at the airport in a private car by her manager, father, and younger sister. On arrival in Nigeria, she visited some friends and attended a church service. Before going on self-isolation on the 22<sup>nd</sup> of March 2022. The case called the River State Public Health Emergency Operation Centre (RSPHEOC) on the 23<sup>rd</sup> of March, 2020 with a 2-day history of cough, sore throat, catarrh, and sneezing. On the 25<sup>th</sup> of March 2020, she developed diarrhea and had five episodes per day. The symptoms were initially thought to be due to malaria and was treated with antimalaria and antibiotics bought from a patent drug dealer. With the persistence of symptoms, she called the RSPHEOC. On receiving the notification, RSPHEOC mobilized a team to investigate the case on the 23<sup>rd</sup> of March. The case was investigated and nasopharyngeal and throat swabs were taken and sent to the reference laboratory Abakaliki, Ebonyi State, for analysis. COVID-19 PCR test was done, and Open Reading Frames (ORF) gene for COVID-19 was detected. This result was transmitted to the RSPHEOC on the 25<sup>th</sup> of March 2022, the case was then moved to the treatment centre at Eleme general hospital in Rivers State.

At the presentation at the treatment facility at Eleme, the case was in a stable clinical state with oxygen saturation (SPO<sub>2</sub>) of 98% at room temperature, Pulse rate -76 beats per minute, Blood Pressure -114/75 mmHg, and a respiratory rate of 24 cycles per minute, and afebrile (36.8°C). The Modified Early Warning Score (MEWS) was medium.

### 3. RESULT OF INVESTIGATION

Table 1. Result of full blood count

Investigation	Result
Red Blood Cell Count	4.81 x 10 <sup>12</sup> /L
Hemoglobin	10.7g/dL*
Hematocrit	32.9%*
Mean Corpuscular Hemoglobin Concentration	32.7g/dl
Mean Corpuscular Hemoglobin	22.3pg*
Mean Corpuscular Volume	68.3ft*
Total White Blood Count	6.03 x 10 <sup>9</sup> /l
Lymphocytes	40.6 x 10 <sup>12</sup> /l
Intermediate	4.6%
Granulocytes	54.8%
Lymphocytes	2.45 x 10 <sup>9</sup> /l
Intermediate	0.28 x 10 <sup>9</sup> /l*
Granulocytes	3.30 x 10 <sup>9</sup> /l**
Red Cell Distribution Width (RDW-SD)	41.2ft
Red Cell Distribution (RDW-CV)	12.8%
Platelet Count	252 x 10 <sup>9</sup> /l
Platelet crit	0.184%
Mean Platelet Volume	7.3ft
Platelet Distribution Width	16.4%
Sodium Chloride	89.4 mmol/l*
Bicarbonate	23.1 mmol/l
Serum Calcium	0.65mmol/l*
Serum Phosphate	1.47mmol/l
Urea	3.89mmol/l
Creatinine	38.4umol/l*
Albumin	44.0g/l
Uric Acid	201umol/l*
Glucose	4.13mmol/l
Total Bilirubin	4umol/l
S G O T (AST)	17u/l
SGPT (ALT)	11u/l
Total Proteins	77.7g/l
Albumin	43.5g/l
Globulin	34.3g/l
Amylase	41U/L
GGT	17U/L
ALP	≤ 20*
A/G	1.25mmol/l*

\*Below Normal Range

\*\*Above Normal Range

### 4. INTERVENTION

The Public health emergency Operations Centre was quickly activated to response mode with all statutory pillars at the State level. At the patient level, she was given various medications for her presentations. The complete prescription is listed in Table 2. All medications were well tolerated

with no adverse drug reactions recorded. During the admission period, the patient's vital signs were broadly stable with SpO<sub>2</sub> between 95 and 98. The patient made consistent clinical improvements over time and symptoms resolved; she was discharged on the 7th of April 2020 after two consecutive negative COVID-19 RT-PCR results.

**Table 2. The summary of treatment**

	<b>Drug</b>	<b>Weight (mg)</b>	<b>Dosage</b>	<b>Frequency</b>	<b>Means of administration</b>
COVID-19	Levofloxacin				Oral
	Azithromycin	500	1 tablet	Daily	Oral
	Zinc	20	1 tablet	Twice Daily	Oral
	Vitamin C	1000	1 tablet	Daily	Oral
	Lopinavir/Ritonavir	200/50	2 tablets	Twice Daily	Oral
	Paracetamol	1000		As needed	Oral
Cough	Antitussives		10 mls	Thrice daily	Oral
Diarrhea	ORS			As required	Oral

## 5. PATIENT PERSPECTIVE

In her words: "Covid-19 is real, and I am a survivor. My first symptoms were cough, sore throat, and catarrh, which I noticed five days after arriving in Nigeria from my fashion show in Paris. Five days after my initial symptoms, I started having diarrhoea. I called the health authorities in Rivers State, and they responded to my call, came to my house, and took samples from my nostrils and throat for the COVID-19 test. The test result came out two days after the sample was collected and it was positive for covid-19. I was subsequently moved to the Rivers State isolation treatment centre Eleme where I was admitted and treated for COVID-19. The options for treatment were clearly explained to me, including the process of contact tracing everyone I came in touch with since my arrival in Nigeria. So, my contacts were my family, friends and the church where I worshiped on a Sunday. Although, I stayed at the treatment centre for about two weeks, I recovered without complications nor any side effects from the medications administered. Before discharge from the treatment centre, I had two PCR tests done 48 hours apart; the results were negative. The treatment team checked up on me two weeks after discharge. My advice to others is to "avoid crowded places, stay at home, wash hands regularly with running water and use a hand sanitizer. If you had exposure from travel or places in the country with cases of COVID-19, please self-isolate for 14 days and also reach out to the response team". "If you develop a cough, fever, difficulty in breathing, please call the response team". The people on the other end would give you advice or tell you what to do. Do not lie to health workers or the response team members; you would be putting your life in danger. Don't stigmatize those who have or have had the disease. It could have happened to anyone. Much respect to the frontline healthcare workers who nursed me back to health and are

working hard to stop the disease. Thank you so much. All of us working together can chase Covid-19 out of our State and Country."

She spoke to the local radio stations driving preventive behaviour using her modelling platform and recorded a short video to create public awareness of COVID-19. She accepted to function as an advocate and State Champion in the future to ensure better compliance with COVID-19 protocols.

## 6. DISCUSSION

The Public health Emergency Operations Centre (PHEOC) for COVID-19 at the State level moved up to the *response mode* to ensure early case detection, reduce the risk of transmission and secondary cases, and support cases to receive appropriate clinical management for overall public safety. These responses were supported by key members of the Emergency Preparedness and Response Committee (EPRC) of the PHEOC with National and international colleagues, the Nigeria Centre for Disease Control (NCDC), and other partners. This multi-sectoral and multi-disciplinary State committee met daily for critical review, data evaluation, and strategic decision making. As part of the response, the PHEOC of Rivers State Ministry of health developed and adapted extant national and international protocols and guidelines for COVID-19 management in the State [16].

The PHEOC identified all possible contacts in Rivers State to carry out a risk assessment of their contacts with the case and provided them with advice, information, and monitoring for fourteen days. A contact-based approach was used in categorizing contacts. A contact was defined as a person who has experienced any of the following exposures during the two days before and the 14 days after the onset of symptoms of a probable or confirmed cas

[17,18]: Face-to-face contact with a probable or confirmed case within one metre and for more than 15 minutes, direct physical contact with a probable or confirmed case and direct care for a patient with probable or confirmed COVID-19 disease without using proper personal protective equipment (PPE). Other scenarios were also considered for risk assessment including exposure to closed environments such as classrooms, places of worship, hospital waiting rooms, and shared transport. The patient's contacts were categorized into two - high-risk and low-risk contacts. Any individual was classified as high risk if they live in the same household as the case or was close (within 1 meter) to the confirmed case without precautions. This category includes all the family members of the case and some friends. Also, any person who touched or cleaned the linens, clothes, or dishes of the patient or had direct physical contact with the patient's body, including physical examination without PPE. All passengers within one meter in a conveyance (especially the transport craft) with a symptomatic person who later tested positive for COVID-19 since the index case arrived the State through the international airport, all passengers that were within one metre of the radius of the case in the aircraft (58 passengers) were contacted and followed up for fourteen days. Also, all contacts who touched the body fluids of the case without appropriate PPE (respiratory tract secretions, blood, vomit, saliva, urine, feces) were categorized [6]. However none of the contacts of the case were in this category.

Any contact not fitting into the above high-risk contact description was considered to be a low-risk contact. In this category were church members of the church where the case worshiped. But the forty-seven of the church members that she had visited were also followed up for fourteen days. Their vital signs were monitored in an excel chart for temperature spike (fever) and related symptoms from available protocol literature [6].

Furthermore, all contacts of the case (high-risk and low-risk) were actively monitored and quarantined at home for fourteen days from the date of last exposure to the confirmed case, but testing according to the adopted national protocol was reserved for contacts that become symptomatic but during the quarantine period. No contacts of the case were symptomatic. Perhaps we may have missed some

asymptomatic carriers at the time as the knowledge of the epidemiology of the virus was still evolving. All contacts were counseled and advised to practice physical distancing, cough etiquettes, and hand hygiene and immediately call State helplines if they develop any symptoms. They were asked to ensure that they were reachable by the State team for active monitoring. A total of one hundred and five contacts were monitored and discharged without symptoms at the end of the fourteen days of isolation.

## 7. CONCLUSION

The first case of COVID-19 in Rivers State was imported through international travel and was actively managed at the treatment center. Contact tracing revealed 105 contacts who were followed up for fourteen days by the State PHEOC but none developed any symptoms and consequently were exited from the State surveillance grid. Testing was not offered to high-risk contacts because it was not part of the national protocol at that time. The index case, having recovered fully, assisted in creating awareness and driving preventing behaviour using her modelling platform.

## CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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