

The Current Global Trend of COVID-19 Pandemic

Nsanabaganwa Christian^{1,*}, Byiringiro Fidele¹, Hitimana Nadia², Mutesa Leon^{3,4}

¹Rwanda Military Hospital, Kigali, Rwanda

²Clinton Health Access Initiative (CHAI), Kigali, Rwanda

³Centre for Human Genetics, University of Rwanda, Kigali, Rwanda

⁴COVID-19 Joint Task Force Committee, Kigali, Rwanda

***Corresponding author:**
Dr. Christian Nsanabaganwa
Rwanda Military Hospital
Kigali-Rwanda
E-mail: nsanzechriss@gmail.com

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INTRODUCTION

Since it was reported in Wuhan, China, in December 2019, the 2019 novel coronavirus disease (COVID-19) has spread worldwide, presenting one of the most serious global health pandemics [1]. Worldwide, over 32 million COVID-19 cases have been reported with over 300,000 new cases in 24 hours, and over 980,000 deaths [2,3].

Daily statistics show that Africa remains the region with the least number of both COVID-19 infection cases and deaths with 1,1 million confirmed cases and 244 daily increase and 143 deaths as of 25 September 2020 (Figure 1 and 2) [2].

Rwanda has been experiencing a decrease in COVID-19 infection cases and deaths and an increase in recovered cases. Rwanda has made progress in increasing the number of daily tests, and as of 25 September 2020, Rwanda reported 4,789 infection cases and 29 deaths (Figure 3).

In the absence of any curative treatment or vaccine, supportive treatment

options usually used to treat various diseases have been shown to be effective in treating COVID-19. Preventive measures to minimize the spread and break the transmission continue to be the best options available [1,4]. However, scientists worldwide are racing to develop the treatments and vaccines to stop the pandemic, which is

continuously claiming lives and paralyzing the global economy [5].

The number of reported daily cases has been rapidly increasing; with the Americas being the most affected region: with 53% of all newly confirmed cases [6].

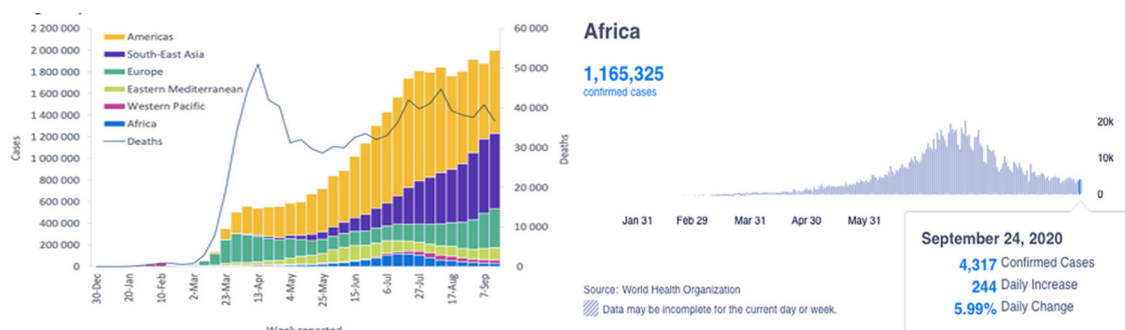


Figure 1: Number of COVID-19 cases reported weekly by the WHO Regions 30 December 2019 through 20 September 2020 (Left) and by Africa (Right) as of 24 September 2020 (Adapted from WHO COVID-19 Situation report).

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Asia has seen a steady increase in reported cases and deaths, with India reporting the majority of cases, up to 85% of all confirmed cases in the region. In China, the cases have slowly declined since the start in Wuhan and peak in February 2020 due to drastic measures to slow down the pandemic by the Chinese authority [6].

In the mid-April to early June, the trend in the European Union and the United Kingdom declined, after which it reached a plateau, however in recent weeks, there has been a resurgence in countries like France, Germany, Netherlands, Spain, and the United Kingdom [2,4].

Africa has seen a 2% decrease in newly confirmed cases and a 17% decrease in deaths. South Africa consistently reports the largest number of cases

with a 6% increase in cases in the past seven days, followed by Ethiopia, Algeria, and Mozambique [5]. South Africa accounts for 64% of reported deaths in Africa. The majority of African countries report ongoing community transmission [2].

Since the report of the first case of COVID-19 on 14th March 2020, Rwanda has also experienced the increase in the number of new infections with the highest daily increase reported on 25 August 2020 of 231 new cases. The decrease in newly infected cases was reported from early September 2020. Rwanda reported the first deaths on 4th June 2020, and as of 25 September 2020, 29 deaths were reported. Recovery cases have been increasing to 3092 recovered patients as of 26 September 2020 (Figure3).

Africa

25,307

deaths



Figure 2: Number of COVID-19 deaths reported weekly by Africa as of 24 September 2020 (Adapted from WHO COVID-19 Situation report).

VACCINE DEVELOPMENT

A new pandemic vaccine development paradigm that compresses the vaccine development timeline from 10-15 years to 1-2 years has been implemented. Researchers worldwide have been racing to develop COVID-19 vaccines, with over 166 vaccine products in development [7]. Scientists have entered clinical trials on humans with 42 vaccines, and at least 93 preclinical vaccines in animals.

In September 2020, Novavax launched a Phase 3 trial in the United Kingdom, and a larger Phase 3 trial is scheduled in the United States in October

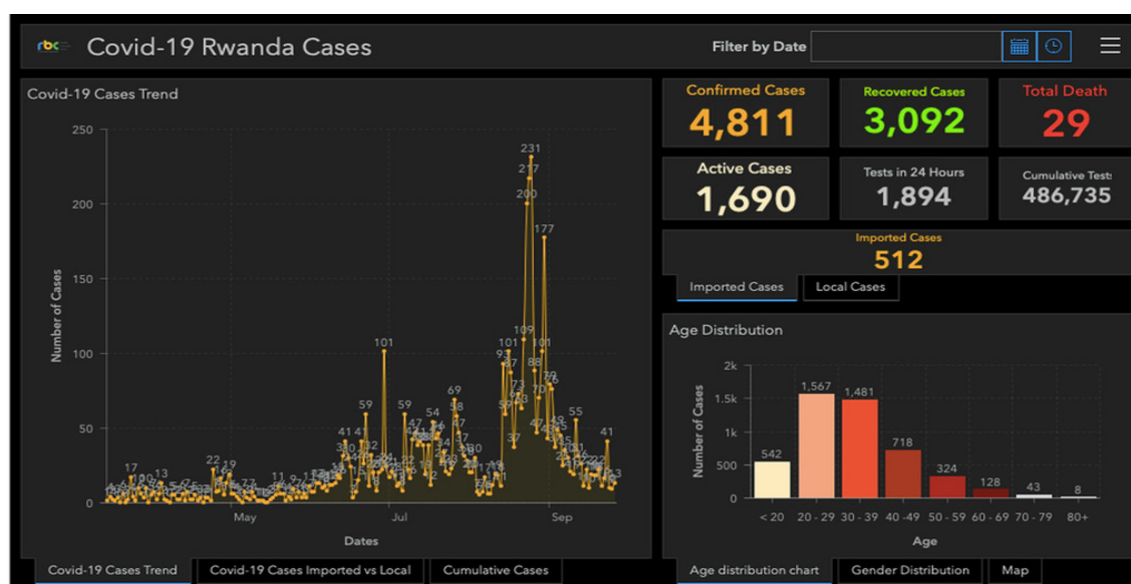


Figure 3: COVID-19 cases trend in Rwanda as of 26 September 2020 (Adapted from RBC "COVID-19 Cases Trend" Report of 26 September 2020, <https://www.rbc.gov.rw/index.php?id=707>).

2020 [8]. Its vaccine, called NVX-CoV2373, is a stable, prefusion protein made using Novavax' recombinant protein nanoparticle technology [9].

CanSino Biologics, in partnership with the Institute of Biology at the country's Academy of Military Medical Sciences, developed a vaccine based on an adenovirus called Ad5-nCoV. In August 2020, they began Phase 3 trials in Saudi Arabia, Pakistan and Russia [10].

Johnson & Johnson, which developed a vaccine against Ebola, began a Phase 3 trial in September. Its COVID-19 (JNJ-78436735) vaccine is based on making vaccines out of a virus called Adenovirus 26, developed by Beth Israel Deaconess Medical Center decades ago [11].

There are currently 27 vaccines testing safety and dosage, 14 vaccines in expanded safety trials, and 11 in large scale efficacy tests [10].

There five vaccines emergently approved for early or limited use such as the vaccines developed by CanSino Biologics in China approved by the Chinese military for a year as a "specially

needed drug [12], Gam-COVID-Vac (Sputnik V) developed by the Gamaleya Research Institute, part of Russia's Ministry of Health [13]. Two-Phase three vaccines by Sinopharm were given emergency approval in the United Arab Emirates [10].

The vaccines approved for early or limited use while still under phase 3 clinical trials. They were approved for limited use on a specific group of people based on their promising clinical trial results [10,12,13].

Although most of the vaccine products give promising results, there are still many uncertainties about the epidemic, and currently, the number of COVID-19 cases keeps increasing in many countries, including Rwanda. Yet, no cure or vaccine is proven to be definitely effective against the virus. Preventive and hygiene measures remain the best options for combatting the pandemic and people should be kept informed and sensitized to maintain efforts in the fight against COVID-19 as they resume normal activities.

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