



## COMMENTARY

## Crimean-Congo haemorrhagic fever during the COVID-19 pandemic in Africa: Efforts, recommendations and challenges at hand



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## ABSTRACT

Since the beginning of the COVID-19 pandemic, millions have suffered globally and as a result, attention and resources for other diseases, such as Crimean-Congo Haemorrhagic Fever (CCHF), has declined. Despite a significantly lower incidence rate compared to COVID-19, CCHF has a considerably higher mortality rate at approximately 30%. Both diseases share symptoms such as headache, fever, nausea and vomiting, fatigue, sore throat, however they have different modes of transmission, mortality rates, and incubation periods. Public health professionals have faced several challenges when attempting to prevent and control the spread of both diseases and despite their differences, many of the prevention methods remain the same. These include increasing public awareness regarding avoiding contact with infected individuals and animals, training healthcare professionals in emergency and preparedness for disease outbreaks and increasing the investment in medical supplies and treatment to control the spread of both diseases.

## Introduction

In December 2019, the severe acute respiratory syndrome coronavirus 2, SARS-CoV-2 infection, later known as COVID-19, was discovered in Wuhan, China. Symptoms of this virus include fever, dry cough, and lung involvement [1]. The global pandemic that followed has posed a severe threat to public health worldwide.

COVID-19 continues to jeopardise many health programs, especially in low and middle-income countries. Over 1.3 million people missed their first measles vaccinations, and 362,000 women in Nigeria missed antenatal treatment, resulting in a 50% increase in maternal deaths in health facilities from 2019, according to the World Health Organization (WHO) [2].

Crimean-Congo haemorrhagic fever (CCHF) was first described following World War II during an outbreak amongst 200 Soviet military recruits in the Crimean Peninsula [3]. In 1967, a virus isolated from a sick child in what is now Kisangani, Democratic Republic of Congo, was later found to be identical to a virus from Crimea, hence the name Crimean-Congo haemorrhagic fever virus [4]. According to the Africa Centres for Disease Control and Prevention (CDC), there were 62 cases of CCHF from 2003 to 2018. Mauritania had the highest number of cases at 35 in 2003 and Uganda had the lowest number of cases at six. CCHF is endemic in Africa with a 40% case fatality rate [5] Fig. 1. provides a clear distribution of CCHF in Africa.

CCHF is a deadly, viral borne zoonotic disease belonging to the Nairovirus genus of the Bunyaviridae family of arboviruses. Hyalomma

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Fig. 1. Distribution of Crimean-Congo haemorrhagic fever.

ticks spread CCHF to humans through direct contact with bodily fluids. The incubation period is 2–14 days and varies depending on the mode of transmission and viral load (2–7 days after a tick bite or 10–14 days after a blood transfusion). Symptoms include haemorrhage (petechiae, ecchymoses, epistaxis, pulmonary haemorrhage, haematuria, melen), and multiorgan failure [6].

During the current COVID-19 pandemic, the numbers of CCHF infections were extremely negligible when compared to COVID-19 infections. According to the WHO geographical distribution of the CCHF infections in 2017, Africa had no country exceeding 50 cases per year. Sudan, Mauritania, and South Africa are the leading countries with infections ranging between 5 and 49 per year [7]. The most recent outbreak of CCHF was reported on February 2, 2020, in Mali, a few weeks before COVID-19 reached Africa in which 14 cases were reported that led to seven deaths. A 60-year-old patient infected with CCHF was reported in Mauritania on May 2, 2020 [8], however, outbreaks have become less common within recent years.

CCHF has many unique symptoms that can help clinically differentiate between a COVID-19 infection. Employment history plays a major factor as well with people working in the cattle sector, such as agricultural laborers, slaughterhouse employees, and veterinarians, at a higher

risk of contracting CCHF [9]. A week after initial symptoms, the clinical difference becomes much clearer with the increased risk of bleeding in patients with CCHF infections which does not occur in COVID-19 infections [10]. Disease characteristics of COVID-19 and CCHF are listed in Table 1.

CCHF is a contagious, viral-borne tick disease and controlling ticks is very difficult. One major challenge to CCHF response is that data is not yet available from routine surveillance systems. This could be due to the inability of physicians to identify signs and symptoms of CCHF for an accurate diagnosis, the shortage of resources for laboratory diagnosis, the lack of specific treatment options, and inadequate national CCHF prevention and control programs. To implement an effective prevention and control program, it is crucial to have a better understanding of the epidemiology of CCHF [15]. The best method of control and prevention of CCHF viral infection should be a reduction at the community level [16].

Despite these challenges, current strategies to control disease transmission focus on using enhanced surveillance mechanisms and increasing health infrastructure and laboratory capacity in endemic and high-risk areas. Some strategies for managing tick infestation include identifying host animals carrying ticks for pesticide use, cutting and/or mowing

**Table 1**  
Comparison between COVID-19 and Crimean-Congo haemorrhagic fever.

Disease characteristics	Covid-19	Crimean-Congo haemorrhagic fever
Common symptoms	Fever, cough, shortness of breath	Fever, headache, body aches, vomiting (early onset) large areas of severe bruising, severe nosebleeds, and uncontrolled bleeding at injection sites (4–18 days after initial symptoms) [11]
Similar symptoms	Headache, fever, nausea and vomiting, fatigue, sore throat	Back pain, joint pain, red eyes, flushed face, red throat, petechiae on the palate, petechial rash, hepatomegaly, photophobia [13]
Unique symptoms	New loss of taste or smell, congestion, runny nose [12]	Jaundice, changes in mood and sensory perception, ecchymoses
Less common symptoms	Conjunctivitis, rash on skin	1–9 days (tick bite transmission) 5–13 days (infected human or animal blood transmission)
Incubation period	2–14 days	~30% [11]
Mortality rate	2–7% [14]	Tick bites, animal blood and tissues (after slaughter), human blood and bodily fluids
Way of transmission	Respiratory droplets	

vegetation to control tick breeding in places such as campsites and parks, and removing host animals. Additionally, measures are often taken to limit or prevent the entry of wild animals into areas of human habitation. These methods have helped to reduce the transmission of the disease and control the number of cases of infection. At the individual level, spreading awareness and educating people about preventative measures against CCHF can also reduce the risk of exposure to the disease [17].

Further measures include limiting the contact between livestock and humans, using tick repellents, regularly examining skin and clothing for ticks, and limiting the consumption of unpasteurised milk and uncooked meat. In addition to CCHF, some African countries have faced other infectious diseases and viral outbreaks such as Bird flu, HIV/AIDS, Plague, Lassa Fever, viral infections, Rift Valley Fever, Ebola and Cholera [18–26].

## Recommendations

Despite their differences, CCHF and COVID-19 can be controlled using similar methods, particularly at the community level. Raising public awareness about modes of transmission and symptoms to be aware of is crucial to disease prevention. Currently, COVID-19 has several vaccines that are being distributed across the globe. Creating a vaccine for CCHF would assist with disease prevention as well. Additionally, financial investment into research to develop adequate treatments help to control the spread of both diseases.

Given the challenges involved with controlling CCHF, several actions should be implemented to minimise its effects and eventually prevent the spread of the disease. The public should be informed on ways to protect themselves from human-to-animal transmission such as wearing gloves and light-coloured, long-sleeved clothes covered in acaricides and tick repellents. They should also avoid unpasteurised milk, cook food at an appropriate temperature, and disinfect materials used in both kitchens and butchery. Healthcare professionals need proper training to differentiate between symptoms of CCHF and COVID-19. Furthermore, medical facilities need more protective equipment (PPE), hygiene products, disposable isolative curtains, properly equipped medical laboratories with advanced diagnostic equipment such as CT scanners and PCR tests, and medical supplies such as disposable needles and syringes. Mobile field hospitals should also be set up exclusively for treating CCHF and COVID-19 separately and promoting safe burial practices and proper guidelines for disposing of medical waste.

## Conclusion

Since the start of the COVID-19 pandemic, other diseases such as CCHF have been neglected. While the ongoing pandemic has been a public health focus globally, attention to other diseases should not necessarily decrease. CCHF and COVID-19 both pose a serious threat. A combination of a high infection rate with COVID-19 and a high mortality rate with CCHF should provide an incentive to public officials

and healthcare professionals to establish prevention programs for both diseases. At the conclusion of the COVID-19 pandemic, CCHF and other infectious diseases will still exist; therefore, exhausting all resources into minimising the effects of the current pandemic will have adverse effects on the spread of CCHF thereby exacerbating the problem.

CCHF and COVID-19 have clinical differences in terms of symptoms, mortality, and morbidity; however, CCHF has a clearer and more extensive disease history with years of research on the disease mechanism and virology. Thus, public health professionals and public officials need to commit to researching the epidemiology of CCHF to develop standardised treatments for individuals in endemic areas. Creating a comprehensive epidemiologic profile of the disease provides public health professionals with a unique perspective on how to control and eventually prevent the spread of the disease. It also creates a clear picture of the disease burden on the most vulnerable populations. Upon further research, public health professionals can relay this information to public officials when creating prevention and intervention programs. Public officials have a responsibility to create informed decisions based on the expertise of public health professionals for CCHF just as they have for COVID-19. Despite its high mortality rate and severe symptoms, collaborating between health professionals and policymakers will minimise the effects of CCHF on individuals in endemic areas.

## Authors' contribution

Authors contributed as follow to the conception or design of the work; the acquisition, analysis, or interpretation of data for the work; and drafting the work or revising it critically for important intellectual content: LG contributed 50%; OU 25%; FEAM 10%; and AN, AK, CB, EA and CK 3% each. All authors approved the version to be published and agreed to be accountable for all aspects of the work.

## Declaration of Competing Interest

The authors declared no conflict of interest.

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