

Addressing the Ripple Effect of Crimean-Congo Hemorrhagic Fever in Pakistan and the Imminent Risk of a Global Health Crisis

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To the Editor,

The Crimean–Congo hemorrhagic fever (CCHF) virus was first identified in 1944 in the Crimean Peninsula in Eastern Europe and subsequently in the Congo in 1956 (1). It belongs to the genus *Nairovirus* from the family *Bunyaviridae*. It causes a severe disease which is spread to humans through an infected tick bite and/or contact with blood or tissue from infected humans or animals. CCHF virus has been a major threat for multiple outbreaks worldwide since its discovery, with mortality ranging from 10-40%, particularly in the Middle East, Asia, and Africa (2).

Pakistan has experienced intermittent annual outbreaks of CCHF virus infection in recent years, along with other countries in the Middle East and South Asia. With a climate conducive to the spread of infectious diseases because of its geographical location, Pakistan is affected by CCHF biannually (3). Since the first discovery of the CCHF virus in Rawalpindi city in 1976, it has been endemic in Pakistan. Cases have continued to occur sporadically, especially during the occasion of Eid-ul-Adha, when people are more likely to come into contact with infected animals (1). The disease has spread rapidly since the first case was discovered in Rawalpindi, with cases now primarily coming from Sindh and Balochistan.

The National Institutes of Health (NIH) in Islamabad, Pakistan, released statistics showing that there were 365 documented cases of CCHF with a 25% fatality rate between 2014 and 2020 (1). The province of Balochistan reported 14 cases and six deaths in 2021 (3). Subsequently, in 2022, four cases emerged in the first half of the year, and seven additional cases were reported from Balochistan and Khyber Pakhtunkhwa provinces in the second half (3). Six recorded deaths occurred in the country as of June 2023 (4). In November 2023, there was an alarming situation when the health department of Balochistan reported 11 new cases in healthcare providers amidst an ongoing outbreak. It was reported that the cases were acquired following treatment of two cases of viral hemorrhagic fever at the Sandeman Provincial Hospital. In order to prevent the virus from spreading throughout the province, the provincial government sent an alert to the

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relevant departments after one of the medical professionals died while being transported to Karachi for treatment (5).

It is difficult to pinpoint exactly what led to this crisis because the issue at hand is multifaceted and necessitates a thorough inquiry into the potential reasons. One of the most likely explanations is a lack of emergency preparedness as well as failure to prioritize the safety of healthcare workers on the front lines. Some strategies that can be useful in dealing with such situations in the future should concentrate on providing comprehensive support to frontline healthcare professionals, including appropriate protective equipment, specialized training, and psychological support. Also, to facilitate swift identification, isolation, treatment, and contact tracing of cases, it is crucial to establish specialized rapid response teams comprising experts in infectious diseases, epidemiology, and healthcare.

The annual CCHF statistics in Pakistan show a pattern that may indicate the involvement of the rural livestock, which is later brought into the city, particularly during the Eid-ul-Adha period. Animals brought into the major urban centers for sacrifice are usually from rural regions where measures for vector control are not adequately met, increasing the risk of transmission (3). Furthermore, proper hygienic procedures, including the use of gloves during slaughter or any prior animal vaccinations or isolation, are not properly observed. Direct contact with the infected blood or tissue can cause CCHF infection, spreading to more individuals via the same transmission route. Moreover, concerns have been raised about the rise in CCHF disease in Pakistan due to the country's heavy monsoon seasons in recent years. The nation's inadequate irrigation systems lead to large amounts of stagnant water on the streets, which serve as an ideal breeding ground for various infectious diseases (3).

The District Health officers are advised by the Sindh Government of Pakistan to put standard operating procedures into place one week before Eid-ul-Adha. This includes donning gloves to completely avoid coming in direct contact with blood during the animal's sacrificial procedure in an effort to stop the virus from spreading and to prevent fatalities. According to recent news, the Khyber Pakhtunkhwa provincial government has been taking strict measures, such as setting up animal crossing checkpoints and ensuring that all animals are subjected to anti-tick spray while passing its borders. However, animal quarantining and uniform application of control measures across the country remain lacking despite the efforts. Also lacking are adequate vector control measures in the rural regions, which are the epicenter of cases.

Through this communication, we emphasize the urgent need to curtail the annual outbreaks in the country and prevent further CCHF cases and associated mortality. There exists an imminent threat of a global health crisis sparked by the ongoing resurgence of arboviruses in the South Asian region, which poses a potential risk for spread to the neighboring regions. The key measures include annual or biannual screenings of individuals, particularly in rural communities where the majority of cases occur. A surveillance system or local database should be established by the health district in order to maintain official records of cases and other statistics related to CCHF, which will aid in the early detection and prevention of future outbreaks. Sentinel surveillance should be included in the curriculum of all undergraduate programs that offer community medicine and health courses. This will help to emphasize the value of sentinel surveillance and its advantages for the medical community concerning endemic diseases.

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