



The Impact of Ebola Virus Disease: Challenges, Functions and Causes

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Description

Ebola Virus Disease (EVD) is a severe and often fatal illness caused by the Ebola virus, a member of the Filoviridae family. First identified in 1976 during outbreaks in the Democratic Republic of Congo (formerly Zaire), EVD has since emerged as a significant public health threat, particularly in sub-Saharan Africa. This study discusses about the causes of Ebola, the challenges it poses to health systems, its functions within ecosystems, and the underlying causes of its outbreaks.

Causes of Ebola virus disease

Ebola is caused by one of five known species of the Ebola virus: *Zaire*, *Sudan*, *Tai Forest*, *Bundibugyo*, and *Reston*, with the *Zaire* strain being the most virulent. Understanding the causes of Ebola outbreaks is important for prevention and control. The primary cause of Ebola outbreaks is zoonotic transmission, meaning the virus is transmitted from animals to humans. Bats are considered the natural reservoir for the Ebola virus, though other animals like primates, antelopes, and porcupines can also be infected. The virus can spill over to humans through direct contact with infected animals this can occur when individuals hunt, prepare, or consume bushmeat from infected animals. Environmental exposure virus particles can persist in the environment, and humans can be exposed to the virus through contact with contaminated surfaces or fluids. Once an outbreak begins, EVD can spread rapidly through human-to-human transmission *via* body fluids the virus is present in blood, saliva, sweat, vomit, feces, and other bodily fluids of infected individuals, especially during the later stages of the disease. Healthcare settings inadequate infection control measures can lead to healthcare-associated infections, particularly in regions with limited resources. Healthcare workers are at high risk if proper precautions are not taken. Cultural practices

surrounding burial and caregiving can also contribute to the spread of Ebola. In many communities, traditional funeral practices involve close contact with the deceased, which can facilitate transmission if the individual died from EVD. Misinformation and stigma can further complicate outbreak response efforts.

Challenges posed by Ebola virus disease

EVD presents numerous challenges that affect individuals, communities, and healthcare systems Public health infrastructure outbreaks often occur in regions with weak public health infrastructures. Many affected countries struggle with inadequate healthcare facilities, shortage of trained personnel, and lack of essential medical supplies, making it difficult to respond effectively to outbreaks. Early detection of Ebola cases is important for controlling outbreaks, but many health systems lack robust surveillance mechanisms, leading to delayed responses. The socioeconomic consequences of Ebola outbreaks can be devastating fear of infection can lead to reduced economic activity, affecting agriculture, trade, and tourism. For example, the 2014-2016 West African outbreak led to significant declines in GDP in affected countries. Survivors and families affected by EVD often face stigma, grief, and mental health challenges, leading to long-term psychosocial impacts. Healthcare workers are on the frontlines during Ebola outbreaks, and their safety is most important. The high mortality rate among healthcare workers highlights the need for adequate protective measures, training, and support systems to prevent infections. Prolonged exposure to high-stress environments can lead to burnout, trauma, and mental health issues among healthcare providers. Disparities in funding and resources for outbreak responses can lead to delayed assistance and inadequate support for affected regions. Effective response to EVD outbreaks necessitates cooperation among countries, NGOs, and international organiza-

tions. However, political and logistical barriers can hinder timely interventions.

Functions of the Ebola virus

While Ebola is a serious human health threat, it also serves essential functions. Ebola is part of the complex interplay of pathogens and hosts within ecosystems. The virus helps regulate populations of its animal reservoirs, contributing to ecological balance. Ebola has spurred significant scientific research into viral pathogenesis, immune responses, and potential therapies. Understanding how the virus interacts with the host immune system can inform vaccine development and treatment strategies. The urgent need to control EVD has led to accelerated vaccine research. The rVSV-ZEBOV vaccine, which proved effective during the 2014-2016 outbreak, exemplifies the progress made in combating the disease. Ebola outbreaks have heightened global awareness of emerging infectious diseases and

the importance of public health preparedness. Lessons learned from Ebola can inform responses to future outbreaks, including those caused by different pathogens.

Ebola virus disease poses significant challenges to public health, economic stability, and healthcare systems, particularly in regions with limited resources. Understanding the causes of outbreaks and the complexities of Ebola's impact is important for effective prevention and response. While the Ebola virus serves important ecological functions and has driven advancements in scientific research, the human toll of the disease remains significant. Continued efforts are needed to enhance public health infrastructure, improve global coordination, and encourage community engagement to combat Ebola effectively and mitigate its impact in the future. As the world grapples with the challenges posed by EVD, lessons learned from past outbreaks will be essential in shaping a proactive and resilient public health response.