

## Emerging viral threats: Zika, ebola, and beyond.

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### Introduction

In the dynamic landscape of infectious diseases, emerging viral threats continue to pose significant challenges to global health security. Among the most notable in recent decades are Zika virus and Ebola virus, both of which have sparked international concern due to their rapid spread, severe clinical manifestations, and potential for devastating outbreaks. Understanding these viruses, their origins, epidemiology, clinical impact, and the global response they have triggered is crucial for preparedness against future emerging viral threats [1, 2].

Zika virus, first identified in Uganda in 1947, remained relatively obscure until the large-scale outbreak in the Americas in 2015-2016. The virus, primarily transmitted by *Aedes* mosquitoes, gained international attention due to its association with congenital Zika syndrome, a constellation of birth defects including microcephaly and other neurological abnormalities in infants born to infected mothers [3, 4].

While Zika virus infection in adults is often mild or asymptomatic, its impact on pregnant women can be devastating. Infection during pregnancy increases the risk of fetal abnormalities, including microcephaly, impaired growth, and neurodevelopmental delays. Beyond congenital Zika syndrome, the virus has been linked to Guillain-Barré syndrome and other neurological complications in adults [5, 6].

Ebola virus, a member of the Filoviridae family, causes severe hemorrhagic fever with high mortality rates among infected individuals. The virus was first identified in 1976 in simultaneous outbreaks in Sudan and the Democratic Republic of Congo (formerly Zaire). Since then, sporadic outbreaks have occurred primarily in Central and West Africa, with the 2014-2016 West African Ebola epidemic marking a turning point in global awareness and response [7, 8].

Ebola virus spreads through direct contact with bodily fluids of infected individuals or contact with contaminated surfaces and materials. The virus causes a range of symptoms, including fever, severe headache, muscle pain, and hemorrhagic manifestations in severe cases. Outbreaks are characterized by high fatality rates, strained healthcare systems, and significant social and economic impacts on affected communities [9, 10].

### Conclusion

The emergence of Zika virus, Ebola virus, and other infectious diseases underscores the interconnected nature of global health and the urgent need for proactive preparedness and response strategies. While significant progress has been made in understanding these viruses and developing countermeasures, ongoing vigilance and investment in public health infrastructure are essential to mitigate the impact of future outbreaks.

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Received: 31-Oct-2023, Manuscript No. AAJIDMM-24-142940; Editor assigned: 03-Nov-2023, PreQC No. AAJIDMM-24-142940 (PQ); Reviewed: 17-Nov-2023, QCNo. AAJIDMM-24-142940; Revised: 20-Nov-2023, Manuscript No. AAJIDMM-24-142940 (R); Published: 27-Nov-2023, DOI:10.35841/ajidmm-7.6.178

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*Citation:* Gilly S. Emerging viral threats: Zika, ebola, and beyond. *J Infect Dis Med Microbiol.* 2023;7(6):178.