

# Disease X: A Global Threat in the Making

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## **Abstract:**

In this letter to the editor, concerns about Disease X have been discussed, highlighting the need for preparedness measures. Disease X represents an unidentified pathogen that could lead to a future epidemic or pandemic, emphasizing the unpredictability of emerging infectious diseases. This letter underscores the importance of proactive surveillance, research, and international collaboration to address potential threats posed by Disease X and other unknown pathogens.

**Keywords:** Disease X, Emergency Disease, Virus, WHO, COVID-19, Pandemic, Pathogen

The world is on high alert as scientists race to understand Disease X, a mysterious illness that has been spreading rapidly across borders. This emerging infectious disease poses a significant threat not only to public health but also to global security. As we grapple with the challenges of containing its spread and developing effective treatments, it's crucial for governments, healthcare professionals, and citizens alike to stay informed and take action against this looming menace. Disease X refers to a highly contagious pathogen that could cause a pandemic if left unchecked. It shares similarities with known diseases like COVID-19, Ebola, and Marburg virus infection, making it difficult to identify without proper testing. The World Health Organization (WHO) has warned that Disease X could be more deadly than any other outbreak since HIV/AIDS. While researchers work tirelessly to develop vaccines and treatments, the best defense against Disease X remains prevention through education and awareness.

In the 21st century, there will be a growing focus on infectious diseases due to the ongoing challenges posed by emerging and recurring illnesses. This is driven by globalization, which has heightened awareness and commitment to tackling the significant impact of infectious diseases, particularly in developing countries.[1]

WHO added a new category to its emergency priority list called Disease X, which refers to a potential epidemic or pandemic-causing illness resulting from an unknown pathogen. Disease X represents an "unknown unknown" in the taxonomy of knowledge, and it corresponds to the possibility of a serious international epidemic caused by a pathogen that was then unknown to cause human disease. They created the term Disease X to ensure that their planning was sufficiently flexible to address future outbreaks of emerging diseases. The category includes diseases such as HIV, which was not known to cause disease in humans when doctors first began treating patients with AIDS in 1980. Disease X is expected to have a mortality rate higher than a seasonal flu and spread as easily as the flu, posing significant challenges in tracking and controlling outbreaks. Ongoing surveillance efforts and the

optimization of platform technologies for rapid responses are crucial in predicting and addressing future outbreaks of Disease X and other emerging diseases [2]

WHO identified "Disease X" as a potential epidemic or pandemic-causing illness resulting from an unknown pathogen. It was believed that Disease X could be a transmissible infectious disease caused by a new coronavirus originating from bats. This belief was based on the discovery of SARS-related coronaviruses in bat fecal samples, which shared a high percentage of their genome with known SARS-related coronaviruses found in Chinese horseshoe bats. The identification of these coronaviruses prompted an acceleration of efforts to develop broad-spectrum antiviral agents effective against various human coronaviruses and SARS-related coronaviruses. Disease X was expected to have a mortality rate higher than a seasonal flu and spread as easily as the flu, posing significant challenges in tracking and controlling outbreaks. Ongoing surveillance efforts and the optimization of platform technologies for rapid responses were deemed crucial in predicting and addressing future outbreaks of Disease X and other emerging diseases.[3]

As Disease X continues to evolve and adapt, it becomes increasingly challenging to contain its spread. Countries must collaborate closely to share information, resources, and expertise to combat this global threat effectively. Governments should invest in research and development of new technologies to detect and respond to potential pandemics before they become unmanageable. Additionally, individuals can play a role by practicing good hygiene habits, staying informed about local outbreaks, and following guidelines from public health officials.

COVID-19 and recent pandemics may be less severe versions of a future major outbreak, termed "Disease X". Despite this somber prospect, proactive measures can be taken to mitigate its impact. These include: developing global protocols to handle bioterrorism, seeking impartial advice from academics, implementing immediate travel restrictions and screenings, fostering collaborative efforts among scientists and clinicians, conducting widespread testing and contact tracing, investing in medical countermeasures, and surveilling virus laboratories to prevent potential leaks. Additionally, a comprehensive One Health approach is recommended to address various factors contributing to the spread of Disease X. There is need for prompt preparation for future outbreaks, as COVID-19 is not the first nor will it be the last global health crisis.[4]

Efforts to create a Zika virus (ZIKV) vaccine have shown promise despite limited initial knowledge. Current focus is on developing vaccines for emergency use, aiming for short-term immunity lasting at least a year. However, a challenge is that outbreaks often end before vaccines are ready. Progress has been made using various vaccine platforms such as mRNA technology. Despite challenges, rapid progress in vaccine development highlights the ability to respond to pandemics, providing a model for future emerging diseases. Continuous surveillance and technology optimization are essential for predicting and addressing future ZIKV and other emerging disease outbreaks. [5]

Disease X is a potential unknown disease that could lead to a severe pandemic, most likely caused by the zoonotic transmission of a highly virulent RNA virus. It is expected to emerge from an area where various risk factors lead to sustained human-to-human transmission. Healthcare professionals are

preparing for Disease X by developing plans for early detection, sample movement, and data sharing to facilitate the rapid development of medical countermeasures. This preparation includes implementing uniform containment and mitigation strategies, such as widespread testing and aggressive contact tracing, to effectively control potential outbreaks. Disease X could also be the result of an engineered pandemic pathogen or bioterrorism, making it crucial to address both natural and biotechnology-related threats to public health. [6]

WHO has identified COVID-19 and Disease X as top priority diseases due to their potential to cause widespread outbreaks and the lack of effective treatments. Disease X could lead to a severe pandemic, most likely a respiratory virus originating from animals. Examples of Disease X include HIV, SARS, Zika, Ebola, and COVID-19. While it is not an actual illness, scientists and healthcare experts are working to develop vaccines, antivirals, and tests to prepare for future potential outbreaks. In addition to understanding the zoonotic origins of diseases like COVID-19, it is important to consider the potential for engineered pandemic pathogens and to address both natural and biotechnology-related threats to public health through transparency, governance, and global discussions on biotechnology's role in causing future Disease X outbreaks. [7], [8].

To mitigate the risks associated with Disease X, countries need to strengthen their preparedness plans and improve their response capabilities. This includes investing in surveillance systems, stockpiling essential medical supplies, and training healthcare workers to recognize and treat emerging infectious diseases. By taking these steps now, nations can better protect themselves and future generations from the devastating consequences of another pandemic. It represents a grave concern for our collective well-being, requiring immediate attention and action from all stakeholders. As we navigate the complex landscape of this emerging threat, let us remember that unity, collaboration, and vigilance are our most powerful weapons in the fight against infectious diseases. Only by working together can we hope to prevent another catastrophic pandemic and ensure a safer, healthier future for everyone.

### Conflict of Interest

Nil.

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