



International Journal of Virology and AIDS is Committed to Publishing High Quality Papers in Current Virology and AIDS Research

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It is with great pleasure that I welcome you to the inaugural issue of the *International Journal of Virology and AIDS*. We envision this journal to publish articles that contain high quality recent findings in virology and AIDS research. We also hope that this journal will provide a solid foundation for young researchers and investigators in developing countries. The goal of this journal is to increase the pace of research, discovery, and innovations in virology and AIDS clinical applications around the world.

Understanding how viruses work and interact with the host is of the utmost importance. For example, the Ebola virus disease (formerly known as Ebola hemorrhagic fever) first appeared in 1976 in two simultaneous outbreaks, one in Nzara, Sudan, and the other in Yambuku, Democratic Republic of Congo. The latter occurred in a village near the Ebola River, from which the disease takes its name. But it was not until December 2013 that the Ebola outbreak began and it was not noticed until March 2014 when the first case was confirmed. This delay of 3 months was due to lack of essential detection methods in the field as well as a scarcity of knowledgeable healthcare workers to control the transmission to new individuals [1]. This outbreak has spread between countries starting in Guinea then spreading across land borders to Sierra Leone and Liberia, by air (1 traveller only) to Nigeria, and by land (1 traveller) to Senegal. This Ebola viral infection outbreak has killed more people than all other outbreaks of Ebola combined according to the World Health Organization (WHO). According to the latest WHO update on March 4, 2015 (<http://apps.who.int/ebola/current-situation/ebola-situation-report-4-march-2015>), a total of 23,934 confirmed, probable, and suspected cases of Ebola and 9,792 Ebola-related deaths had been reported from the three West African countries including Guinea, Liberia, and Sierra Leone where Ebola virus transmission has been widespread and intense. The total number of confirmed and probable cases is similar in males and females. Compared with children (people aged 14 years and under), people aged 15 to 44 are approximately three times more likely to be affected. People aged 45 and over are nearly four times more likely to be affected than children. Of note, a total of 839 confirmed health worker infections have been reported in the 3 intense-transmission countries; there have been 491 reported deaths. Six countries (Mali, Nigeria, Senegal, Spain, the United Kingdom and the United States of America) have reported a case or cases imported from a country with widespread and intense transmission.

The virus family Filoviridae includes 3 genera: Cuevavirus, Marburgvirus, and Ebolavirus. There are 5 species that have been identified: Zaire, Bundibugyo, Sudan, Reston and Tai Forest. The first 3, Bundibugyo ebolavirus, Zaire ebolavirus, and Sudan ebolavirus have been associated with large outbreaks in Africa. The virus causing the 2014 west African outbreak belongs to the Zaire species. It is thought that fruit bats of the Pteropodidae family are natural Ebola virus hosts. Ebola is introduced into the human population through close contact with the blood, secretions, organs or other bodily fluids of infected animals such as chimpanzees, gorillas, fruit bats, monkeys, forest antelope and porcupines found ill or dead or in the rainforest [1-6]. Ebola then spreads through human-to-human transmission via direct contact (through broken skin or mucous membranes) with the blood, secretions, organs or other bodily fluids of infected people, and with surfaces and materials (e.g. bedding, clothing) contaminated with these fluids [2-5]. So far, no drugs for Ebola viruses have been approved by the Food and Drug Administration and other regulatory authorities worldwide. There is still no vaccination for the Ebola virus, but there are two candidates that are currently undergoing human safety evaluation [7-9].

Most virus outbreaks will not reach the pandemic level, but viruses are constantly changing, so our knowledge of them must also continue to evolve. Every year thousands of people are infected with an Influenza virus [10,11]. Globally, influenza activity remained high in the northern hemisphere with influenza A (H3N2) viruses predominating. Some countries in Africa, Asia and southern part of Europe reported an increased influenza A (H1N1) pdm09 activity. Each year we do our best to predict the most prevalent and prominent strain that is likely to infect individuals and vaccines are mass-produced thanks to major advances in the field of virology. An area in which great strides need to be made relates to how viruses adapt to infect people from life host reservoirs. We also must discover what the natural host is for emerging viruses. Uncovering this mystery could lead to new approaches for treating and preventing diseases, as well as revealing mechanisms and preventing transmission and emergence of new potentially deadly viruses [12].

Virus outbreaks are not spread evenly across all geographical locations. Most outbreaks begin in highly populated and developing countries where there are poor healthcare systems. Intensive research

in the fields of virology and viral genomes has greatly increased doctors' ability to treat various viruses in developed countries. In developing or underdeveloped countries, however, this is not the case. Viruses can easily spread from person to person in these countries because education on how to prevent the spread of the viral infections is lacking. By the time the infections reach a level in which they are noticed by developed countries, treating the virus is no longer the main focus. The main focus becomes isolating the infected individuals and preventing the further spread.

According to WHO, HIV has killed more than 39 million people and infected almost 78 million people in the world thus far (<http://www.who.int/hiv/data/en/>). In 2013, 1.5 million people died of AIDS-related illnesses worldwide. It is also estimated that 19 million of the 35 million people in the world today are infected with the HIV virus do not know they are infected. An estimated 0.8% of adults aged 15–49 years worldwide are living with HIV, although the burden of the epidemic continues to vary considerably between countries and regions. The sub-Saharan Africa region, in 2013, had 24.7 million people living with HIV, which accounts for 71% of the global HIV infections. In the US, more than 1.2 million people are living with HIV infection, and almost 1 in 7 (14%) are unaware of their infection (<http://www.cdc.gov/hiv/statistics/basics/ata glance.html>). An estimated 13,834 people with an AIDS diagnosis died in the US in 2011, and approximately 648,459 people in the US with an AIDS diagnosis have overall. Gay, bisexual, and other men who have sex with men (particularly young black/African American), are most seriously affected by HIV. Blacks represent approximately 12% of the US population, but accounted for an estimated 44% of new HIV infections in 2010. Pregnant female will pass the virus to their children during birth if measures are not taken to prevent the mother and baby's blood from mixing. Progress has been made with 23% of children in need received treatment compared to 37% of adults. There is no cure for HIV but there are antiretroviral (ART) drugs available to control the virus, but this does not prevent transmission to others through the exchange of bodily fluids. No vaccines for HIV have been approved by the FDA so far.

Continued research is needed to improve diagnosis, prevention, control, and treatment of viral outbreaks. Improvements on vaccines are also a key tool that will be used to fight these outbreaks. Developing more cost-effective tests and analysis tools, as well as strengthening surveillance capacity will improve our ability to reduce the impact of viral outbreaks worldwide. We would like to drive research to parallel the WHO view of ending the AIDS epidemic by 2030. Significant progress has been made in reducing the number of new HIV cases from 2.5 million in 2009 to 2.1 million in 2013. Our goal should be to parallel the WHO view of ending the AIDS epidemic by 2030 with no new cases of HIV reported. This can be accomplished by continuing to reduce the number of children that are infected with HIV at birth. In developed countries, great strides have been made in this area but in developing countries, the technology to ensure transmission of HIV from mother to child does not occur due not exist.

On behalf of the editorial team, I welcome you to read the inaugural issue of the *International Journal of Virology and AIDS*. We hope you find interest in this journal and consider submitting your important virology and AIDS research findings to us.

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