The probability of the end of the Ebola virus disease epidemic with Sexual transmission

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West Africa had been most widespread outbreak of Ebola virus disease (EVD) in 2014-16. The end of outbreak should be carefully declared in a timely manner due to a substantial impact on the healthcare system and economic activities such as restoration of international travel. According to World Health Organization (WHO), it requires 42 days to declare an offical end to the outbreak. Unfortunitely, there have been erroneous declarations of EVD when adhering to the WHO's 42-day wating period partly caused by sexual transmission from Ebola survivors. The long persistence of the virus increases the risk of sexual transmission. This research was motivated by the need of the objective approach to decide the end of an epidemic. We suggest the model derived in [1] to compute the probability of the end of an EVD. In this talk, first, the renewal equation is formulated to assesses the risk of sexual transmission and under-ascertainment of cases. Second, the effective reproduction number (R_t) in the tail of epidemic is estimated using the maximum likelihood estimation method. Finally, the objectively appropriate time to declare free of Ebola transmission in Guinea, Liberia and Sierra Leone are coumputed depending on the sexual behaviours of survivors and other epidemiological factors which play a important role in determining the absence of additional cases after declartion.

References

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