

Ebola Virus Disease Outbreak in Lagos, Nigeria; 2014: an Epidemiological Investigation

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Objective

To describe the socio-demographic characteristics of Ebola virus disease (EVD) patients and their contacts, magnitude of the outbreak and factors associated with outcome in patients.

Introduction

West Africa recently experienced the most persistent epidemic of EVD recorded in history. The reported morbidity and mortality of the highly virulent, emerging zoonotic filovirus infection is far larger than all previous epidemics combined¹. Its spread to Nigeria (Africa's most populous country) and to densely populated Lagos (a city in Nigeria with approximate combined population of Guinea, Sierra Leone, and Liberia) raised significant public health concern². The Federal Ministry of Health was notified of a suspected case of viral haemorrhagic fever on the 22nd July, 2014. A 40-year old male Liberian presented in a private health facility on account of fever, vomiting and diarrhea. On the 23rd July, the index case was confirmed to have EVD and on 25th July, he died.

Methods

An Emergency operation centre was set up on 25th July, 2014. We adapted case and contact definitions from the World Health Organization (WHO) guidelines. Active case search in health facilities, communities, religious centers and various ports of entry into the country was done by well-trained epidemiologists and surveillance officers. We traced EVD contacts by contact identification, listing and active follow-up; taking daily temperature measurements and monitoring of symptoms to identify suspected cases. Laboratory confirmation of cases was done by reverse transcriptase-polymerase chain reaction. Prompt case management was commenced for positive cases with strict adherence to infection prevention and control measures. Data on socio-demographic characteristics, clinical symptoms and disease outcomes was collected using contact listing, contact follow-up, case listing forms and Open Data Kit (ODK) for real time data collation. Univariate and bivariate analysis was done.

Results

Fourteen out of the 16 cases identified (87.5%) were contacts under follow-up. From these cases, 293 contacts were identified. None of the contacts was lost to follow-up. The mean age of cases and contacts were 39.1 ± 11.9 years and 33.2 ± 13.9 years respectively. Majority of the cases (43.8%) and contacts (33.0%) were aged 30 – 39 years. Of the 16 cases, 8 (50.0%) were females and 10 (62.5%) were health workers. Of the 293 contacts 150 (52.0%) were females and 138(47.0%) were health workers. Of the 15 cases traced to the index case, 13 (86.7%) were first generation cases while 2(13.3%) were second generation cases. The case reproduction number for the outbreak was 13 and the secondary attack rate was 4.4%. The most reported symptom was fever (85.7%). Case fatality rate (CFR) among all the cases was 37.5% (6/16), while CFR among health workers was 40.0% (4/10). Health workers proportional mortality rate was 66.7% (4/6). The epidemic curve revealed a common source pattern at the early phase and a propagated pattern thereafter. Average duration of illness from onset of symptoms to survival and death was 16 ± 4.8

days and 11.6 ± 5.0 days respectively. There were no statistically significant association between the duration of illness and the outcome of disease (odds ratio (OR) = 1.14, 95% CI = 0.08 - 16.95), and between occupation of cases (health workers versus non-health workers) and outcome (OR = 1.33, CI = 0.16 - 11.08)

Conclusions

Health care workers and the active age group were more affected during the outbreak. The outbreak was contained through effective contact tracing and surveillance. Duration of illness and occupation were not significantly associated with outcome

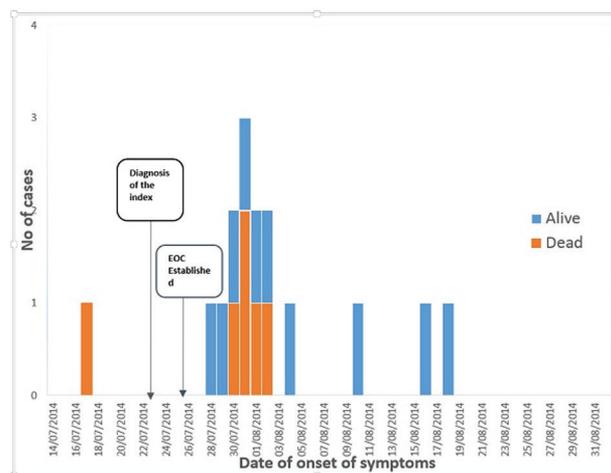


Figure: Epidemic curve of EVD in Lagos State, July to September, 2014

Keywords

Ebola virus disease; outbreak investigation; disease outcome; Lagos State

References

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