Estimates of Ebola Virus Case-Fatality Ratio in the 2014 West African Outbreak

TO THE EDITOR—The World Health Organization (WHO) website informs visitors that “the average EVD [Ebola virus disease] case fatality rate is around 50%” [1]. Although it is tempting to speculate that the more a virus circulates, the less lethal it becomes, we believe that lethality estimates based on the proportion of fatal cases (PFC) [2] are largely inaccurate because they do not take into account the time required for a patient to eventually die. Delayed case definition and poor supportive measures are common in difficult settings such as the countries involved in the current West African outbreak; taking these variables into account, we estimate the time from diagnosis to death at about 10 days based on published reports [3].

Exploiting the published WHO Global Alert and Response Disease Outbreak News (GAR-DON) [4], we excluded the initial period (March–June 2014), when underreporting of cases was more likely. We restricted our analysis on reports from 30 June to 6 October 2014, and on laboratory-confirmed cases/deaths only. A confirmed case is defined by WHO as a suspected case with laboratory confirmation (positive immunoglobulin M antibody, positive polymerase chain reaction, or viral isolation). We calculated an adjusted case-fatality ratio (CFR) by dividing the number of deaths at dates provided by WHO by the number of cases reported 10 days before ±1 day. Such tolerance was required because of the WHO GAR-DON update publishing policy; whenever the denominator was not available within the required date range, the adjusted CFR was not calculated.

Figure 1 shows that the adjusted CFR in the current outbreak is about 60%–70%, and shows a decline in the last days but remains substantially higher than that reported by WHO. This is in line with the end-outbreak CFR expected from previous outbreaks caused by Zaire Ebolavirus from 1976 to 2008 [5]. Because adjusted CFR is substantially higher than the PFC currently reported by WHO, we suggest that the adjusted CFR methodology should be implemented by WHO to better estimate the impact of the current and other outbreaks [2], and develop appropriate countermeasures.

Figure 1. Case-fatality ratio (CFR) (proportion of fatal cases [PFC]) as reported by the World Health Organization (WHO) vs CFR adjusted taking into account the time required for a patient to eventually die.

Note

Potential conflict of interest. Both authors: No potential conflicts of interest.

Both authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

Daniele Focosi and Fabrizio Maggi
Division of Virology and Retrovirus Centre, Pisa University Hospital, Italy

References


Correspondence: Daniele Focosi, MD, via Paradisa 2, Division of Virology and Retrovirus Centre, Pisa University Hospital, 56124 Pisa, Italy (d.focosi@ao-pisa.toscana.it).

Clinical Infectious Diseases® 2015;60(5):829
© The Author 2014. Published by Oxford University Press on behalf of the Infectious Diseases Society of America. All rights reserved. For Permissions, please e-mail: journals.permissions@oup.com.
DOI: 10.1093/cid/ciu921