Ebola virus disease: 11 323 deaths later, how far have we come?

An ongoing outbreak of Ebola virus disease in Équateur Province, Democratic Republic of the Congo, has caused 57 suspected, probable, and confirmed cases as of June 16, 2018. The spread of cases across remote communities and into Mbandaka, a city with land and river connections to Kinshasa and Congo (Brazzaville), has made this the most challenging Ebola virus disease outbreak in the Democratic Republic of the Congo to respond to. As the first major Ebola virus disease outbreak since 2014, the current outbreak holds additional meaning as a test of recent progress by the international community toward global health security objectives.

In The Lancet, the Ebola Outbreak Epidemiology Team presents epidemiological data summarising early phases of the outbreak and response measures as of May 30, 2018. Although it is too early to know whether further chains of transmission remain to be intercepted and interrupted, the decreasing rate of new case identification prompts cautious optimism that aggressive response by international, domestic, and local actors might have averted a larger crisis. Without additional interventions to slow transmission, the authors project roughly 78 cases by June 21, 2018. With this date now having passed, the gap between forecasted and true incidence provides a crucial measure of cases prevented by recent intensification of public health interventions.

The data presented by the Ebola Outbreak Epidemiology Team indicate key areas of progress since the 2014 outbreak in west Africa. By contrast with a 5-0 day average time from illness onset to hospitalisation in that outbreak, and 4-7 days in an outbreak in the Democratic Republic of the Congo in the same year, the median time from illness onset to first hospitalisation was 1 day (range 0–10). Rapid case ascertainment and isolation narrows a crucial period of transmission risk within households and communities, and was facilitated by installation of Ebola virus disease treatment centres in Bikoro, Iboko, and Mbandaka by Médecins Sans Frontières mere days after the outbreak declaration. Modelling studies indicate that such timely mobilisation could have averted thousands of deaths from Ebola virus disease in west Africa, many outside the doors of treatment centres that were already operating at capacity.

An efficacious, field-tested vaccine (rVSV-ZEBOV) is among the most important developments since 2014. Within 2 weeks of the outbreak declaration, more than 7500 doses were delivered to the Democratic Republic of the Congo for administration to primary and secondary contacts of cases. The authors report coverage among 496 of 504 vaccine-eligible contacts as of May 30, 2018; by June 16, 2920 contacts had been reached. On-the-ground vaccination teams—some operating in communities without electricity or telecommunications, and maintaining -70°C cold chains on the backs of motorcycles—have performed a heroic feat in this first use of the vaccine outside Guinea. Ongoing studies of clinical outcomes, immunological parameters, and adverse events among recipients will provide important data about vaccine safety and effectiveness.

The authors estimate a case-fatality ratio of 56% (95% CI 39–72) in the early phases of the outbreak, adjusting for censoring biases that typically affect such interim calculations. Notably, this is not the final tally, and several variables underlying the estimate required imputation from observations in west Africa. Nonetheless, this figure suggests improvements have been made since previous Zaire ebolavirus outbreaks. Although expansions in the number and capacity of Ebola treatment centres ultimately reduced mortality in west Africa, early phases of that epidemic had mortality exceeding 70%. It is too early to know how rapid hospitalisation and clinical measures
have affected outcomes in the current outbreak; however, this question will be crucial to future responses.

Other data presented by the authors highlight persisting challenges. In a reminder of the risks to clinical personnel, five cases and two deaths have occurred among health-care workers. 60% of exposures involved funeral participation. Uncertainty surrounds the origin of the outbreak, including its connection to a cluster of fatal haemorrhagic fever of unknown cause in December, 2017, to February, 2018. The authors indicate that 24 cases occurred before May 5, 2018, when an investigation team arrived to collect clinical specimens for testing in Kinshasa. These circumstances present opportunities when the epidemic could have evaded control, and illustrate the outstanding need for rapid, low-cost, and field-deployable diagnostics to improve surveillance through real-time viral identification.11

Although the outbreak is not yet over, the data presented by the Ebola Outbreak Epidemiology Team document progress by the international community since 2014, in its capacity for rapid outbreak response. However, Ebola virus disease is a familiar foe against which we have developed clinical protocols, public health strategies, and a vaccine. For our next challenge, these countermeasures are not assured.

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