

The Ebola outbreak highlights shortcomings in disease surveillance and response – and where we can do better

May 25 2015, by Arinjay Banerjee, Colin Brown, And Grant Hill-Cawthorne



Two women walk in front of a billboard, which says “Ebola must go. Stopping Ebola is Everybody’s Business” in Monrovia, Liberia, January 15 2015. Credit: UNMEER/Emmanuel Tobey, CC BY-ND

Right now the World Health Organization (WHO) is holding its annual [World Health Assembly \(WHA\)](#). At this time last year, Ebola Virus Disease (EVD) was rapidly spreading through West Africa, and the outbreak is rightly a major item on this year's assembly agenda. Attention will be paid to the decisions made in response to the outbreak and what this tells us about how best to respond to the next one, including for advance preparation and early warning.

WHO Director-General Margaret Chan has already outlined her plans for a US\$100 million [contingency fund](#) to support emergency response capacity in future outbreaks. This is welcome news.

The EVD [outbreak](#) in West Africa demonstrates how important the interaction between human and animal health is. It is a zoonotic infection, which means it originated in animals (bats, in this case) before spreading into humans. So, alongside better strategies to respond to outbreaks in human populations, we also need to have a stronger focus on [disease surveillance](#) in animals to identify [infectious diseases](#) before they pose a risk to human health.

[One Health](#), a discipline through which we examine how the interactions of humans, animals and the environment come together to allow an infectious threat to arise, develop and become a sustained outbreak, could have informed a better preemptive response to the virus.

How did Ebola become a major outbreak?

Ebola causes harmless, asymptomatic infection in bats. It took one encounter (or entry cause) for the virus to spill into humans. After that initial encounter, the disease was able to spread through communities in West Africa because of [limited public health infrastructure](#). The regional population is [highly connected](#), which led to an exponential increases in cases. There was also a lack of diagnostics for other [infectious diseases](#).

Unfortunately, the global community was slow to take action.

In the affected areas, there was a [lack of awareness](#) about EVD and its transmission, which allowed the spread of disease. This emphasizes the need for education and communication in the community that involve local leaders as well.

Responding to the outbreak

When it became clear that EVD had the potential to go from a severe regional outbreak to a [pandemic](#), interdisciplinary teams arrived to help the overwhelmed domestic healthcare system control the epidemic.

[Doctors Without Borders](#) (MSF) was the first to highlight that this was an unprecedented outbreak, as early as March 2014, following the first reporting of the outbreak. Local development partners such as King's Sierra Leone Partnership, an international health link through King's College London, took on leadership roles in [outbreak control](#) in partnership with national government response.

But it was only in the latter part of the outbreak that epidemiologists and wildlife scientists began assisting in identifying the potential [source](#) of the outbreak – possibly bats roosting inside a hollow tree in Meliandou, Guinea.

One Health wasn't applied in the early stages of the outbreak to assess the likelihood of multiple entry points into the human population, and no pre-outbreak surveillance had been undertaken in West Africa.

The social context of the Ebola outbreak

The cultural setting of West Africa has been much [discussed](#), but [hinders](#)

the understanding of this outbreak by ignoring the political and economic global forces that left West Africa vulnerable.

Long-standing [cultural practices](#), such as washing deceased relatives, further spread the disease. Early and targeted engagement with local community leaders about infection control should be a key component of future outbreak control.

However, simply focusing on human [public health](#) isn't enough when it comes to a zoonotic infection. We also need to focus on how an outbreak like this can affect animal populations. The debate on the Ebola response has focused nearly entirely on human fatalities, ignoring the potentially far-reaching and largely undocumented [impact on nonhuman primates](#).

And discussions focused on banning [bushmeat](#) ignore human economic concerns and the critically endangered nature of at-risk animal populations being [further decimated by EVD in West Africa](#).

Prediction and surveillance

Prediction, or at the very least understanding, of possible threats should be a key goal of future risk reduction strategies, to ensure we prevent another "[Black Swan](#)": an unexpected major event that comes as a complete surprise, "[rationalized after the fact with the benefit of hindsight](#)."

For infectious diseases, prediction rests on strong disease surveillance in both human and animal populations. We could have predicted West Africa was susceptible to [EVD](#), but such surveillance doesn't currently form any of the decision-making processes that are used globally.

The main international treaty underpinning health security, the [International Health Regulations \(2005\)](#) (IHR 2005), requires the 195

member states of the WHO to have in place "core capacity requirements for surveillance and response to events."

By the initial deadline of 2012, [only 42 countries](#) had met their core capacity requirements. By the end of June 2014, four months into the Ebola outbreak, only a further 21 met these requirements. Fewer than one-third of the WHO member states have declared their compliance with IHR 2005. Efforts to help poorer nations to achieve this have not been forthcoming. This means that the majority of member states still lack adequate human disease surveillance.

However, complying with IHR 2005 does not guarantee that countries are able to detect emerging zoonotic diseases. The checklist for monitoring progress toward IHR core capacities does not include animal or wildlife disease surveillance.

The WHA 2015 has focused on renewed calls to strengthen human disease surveillance. But as an international community, we need to consider early combined surveillance of both humans and animals. There should no longer be a complete division between ministries of health and wildlife agencies.

The goals of the WHO in curbing the spread of the infectious disease must align with those of the [World Organization for Animal Health](#) and [Food and Agriculture Organization of the United Nations](#) to ensure that infectious disease threats are targeted from their transmission from animals to humans through to managing their quarantine and public health control.

The \$100 million contingency fund is a welcome step in the right direction. But now international aid needs to focus on developing public [health](#) systems that are robust, effective and cross-species. Disregard of animal well-being comes at our own cost.

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Citation: The Ebola outbreak highlights shortcomings in disease surveillance and response – and where we can do better (2015, May 25) retrieved 20 March 2024 from <https://medicalxpress.com/news/2015-05-ebola-outbreak-highlights-shortcomings-disease.html>

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