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Outsmarting Ebola through stronger national health systems

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Letter to the Editor

Outsmarting Ebola through stronger national health systems

The most recent Ebola outbreak in the Democratic Republic of Congo (DRC) highlights the ongoing challenge the continent of Africa faces with Ebola and the importance of strong health systems in dealing with such outbreaks. Since the first recorded Ebola outbreak occurred simultaneously in DRC and in Sudan in 1976, there have been 29 outbreaks in Africa, affecting 10 countries (Figure 1), with the most severe occurring in Guinea, Liberia and Sierra Leone in 2014 [5,19].

Ebola outbreaks usually occur in rural forest areas, affecting only a few hundred individuals and are quickly brought under control. However, in the West African epidemic in 2014, the virus was able to spread to urban areas, infecting more than 28,000 people in Guinea, Sierra Leone, Liberia, with a few cases in Nigeria and Mali. This outbreak and the most recent DRC outbreak were also unique in that it spread from one country to another, across borders. The Ebola virus is a complex zoonosis and each outbreak is the result of independent zoonotic events. It is now clear that for an Ebola outbreak to occur, at least one contact between humans and wildlife is required [12]. However, there are still uncertainties about the reservoir animal species, and about the modes of transmission between different animal species and between animals and humans. Although also inconclusive, studies have suggested that the Ebola outbreak in West Africa resulted from spillover from an animal reservoir, an environment where the virus seems well adjusted and survives waiting for another opportunity to cross the species barrier to initiate another outbreak [11,12] Paradoxically, the Ebola virus might be regarded as a "dumb" pathogen in human hosts, in the sense that the virus has not sufficiently adjusted and adapted to the human environment in such a way that it is tolerated and causes minimal amount of morbidity and mortality and thus can continue to live and thrive [7]. Rather it kills up to 80% of those it infects [13], it kills relatively rapidly and burns out quickly in the human population retreating to its natural sylvan hosts, which are thought to be fruit bats [4]. Alas with increasing drivers linking the human host to virus reservoirs, such as deforestation [2,15], spillover events that might lead to outbreaks are bound to keep occurring in Africa.

The effective control of these outbreaks is predicated on health services such as early detection of cases, contact tracing, rapid isolation and quick access to laboratory services, which are all reliant on a strong health system. One way to evaluate the strength of a health system is to use the Healthcare Access and Quality (HAQ) Index [9], which is primarily derived from an assessment of the incidences of 32 causes of preventable death. Where country populations have access to strong healthcare systems, there should be lower incidences of these afflictions. Using carefully weighted methods, each country is scored on a scale from 0-100 where 0 represents the worst levels of the incidences of these preventable diseases. This index provides an overall score of personal health-care access and quality on a scale of 0–100 for each country.

Out of the lowest 30 ranked countries on the HAQ Index, 26 of these countries were in Africa. Not surprisingly, the three countries that have suffered the highest number of cases from Ebola – Sierra Leone, Guinea and Liberia are on this list [9]. The health systems of these countries are not sufficiently resilient, as was revealed during the Ebola outbreak in 2014, governments and external partners focused on reducing transmission at the expense of other health-related needs [10], leading to a further break down of the health system in these countries and affecting primary health care [20]. The HAQ Index has been shown to be positively associated with higher levels of total health spending per capita, as well as health systems inputs [9]. In other words, the more that is spent on healthcare, the higher the country is on the list. In 2001, African governments committed to allocate 15% of their annual budget to improve the health sector, however as at 2011 only one country had achieved that goal [22]. This relatively low investment in health funding leads to a shortage in human resources for health [16]. Although HAQ in sub-Saharan Africa (SSA) and other regions improved between 2000 and 2016, HAQ for SSA remained the lowest at 31.9 (Table 1).

The importance of a strong and resilient health system in controlling the West African Ebola outbreak was highlighted in a recent systematic review. It showed the importance of a strong health system in mounting a quick response, and that health financing and management were crucial to ensure availability of medical products, to fund payments to staff and to purchase necessary equipment during an outbreak [18]. To strengthen national health systems, national governments should increase the amount of funding allocated to health care and increase the quality and quantity of the health workforce. We

Table 1
Estimates of the HAQ index for 2016.

|	2016 HAQ Index (95% UI)	2016 HAQ Index (95% UI)
High income	83.2 (82.3–83.8)	89.8 (89.2–90.4)
Southeast Asia, east Asia, and Oceania	44.9 (43.9–46.2)	62.9 (61.8–64.2)
Central Europe, eastern Europe, and central Asia	59.5 (58.1–60.8)	71.4 (68.1–74.3)
Latin America and Caribbean	52.6 (51.3–53.7)	61.8 (60.4–63.0)
North Africa and Middle East	42.3 (40.5–44.0)	55.8 (54.0–57.8)
South Asia	27.6 (26.1–29.3)	40.4 (38.7–42.2)
Sub–Saharan Africa	22.3 (20.9–23.8)	31.9 (30.5–33.7)

Source: [9].
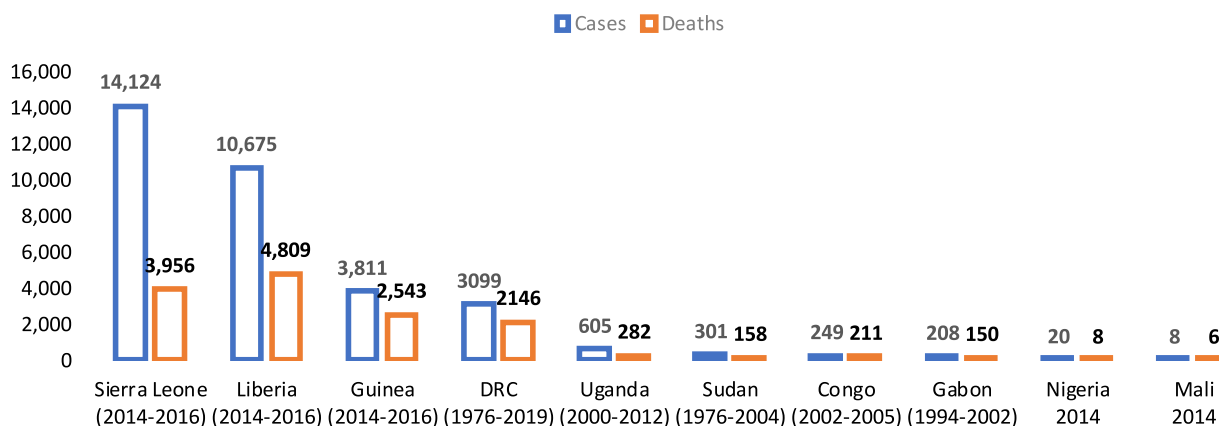
Figure 1. Number of cases and deaths from Ebola virus outbreaks between 1976 and 2019 in Africa, by country (Includes Suspect, Probable and Confirmed EVD cases). *Source:* [21].

believe that these two components – finances and health workforce are critical for the implementation of the strategies needed to respond to Ebola outbreaks. For example, through adequate funding, the Ugandan government was able to establish a national viral haemorrhagic fever surveillance system that helped support the early case identification which was shown to prevent outbreaks from spreading in Uganda [17]. In addition, when an outbreak occurs, a well-funded and strong health system is important for carrying out health services that are critical for controlling the outbreak, such as effective service delivery, contact tracing, adequate health information systems, community engagement, supply chain management and rapid isolation.

Finances are critical to support the role of community health workers, initiate and coordinate public-private partnerships for health, as well as an inter-border prompt healthcare services with the most affected countries. It helps getting the right knowledge, skills and resources where they are needed including better training of health professionals in epidemic management, strengthening the surveillance system for febrile diseases, which would lead to early identification of cases and contacts through early diagnosis as was seen in Uganda. Furthermore, a well funded health system helps deploy resources needed in building trust such as well-trained community health workers that can effectively engage and empower patients and their families in managing Ebola within their communities, or the development of culturally- relevant behavior change communication materials that dispel myths and avert the spread of misinformation. The lack of trust has been has been a significant challenge for public health crises particularly during Ebola outbreaks [3,6,8]. For example, despite the Ebola treatment centres, many people in current Ebola affected regions of DRC are not seeking help due a distrust of health care providers and the government's health system [1]. Further highlighting the importance of trust in light of the news of the two new Ebola drugs that have shown promise [14].

Regrettably, the most recent Ebola outbreak in Congo is not going to be last outbreak in Africa and only a well-funded national health system with a well-trained workforce can bring to fruition the services and strategies needed in outsmarting Ebola in the region.

Declaration of Competing Interest

None.

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