

## Ebola in urban slums: the elephant in the room

A host of factors has been cited as causes of the current Ebola virus disease (EVD) epidemic in west Africa: local cultural practices, poverty, inadequate health infrastructure, and the region's recent strife-filled history. These factors alone, however, cannot completely explain the epidemic's uncontrolled nature. There is an "elephant in the room" in the international discourse concerning this epidemic: urban informal human settlements or slums.

The UN defines slums as settlements with inadequate access to safe water, sanitation, and other infrastructure; poor structural housing quality; overcrowding; and insecure residential status.<sup>1</sup> These conditions are the perfect breeding ground for EVD. Previously reported outbreaks of EVD occurred in rural and geographically isolated communities.<sup>2-6</sup> The presumed introduction of the virus to the slums of Kenema and Freetown in Sierra Leone has undoubtedly augmented its spread.<sup>7</sup> Sierra Leone is urbanising at a rate of 3% each year, and in 2005 more than 97% of its urban population lived in slums.<sup>8</sup>

The West Point slum in Monrovia, Liberia, has been a flashpoint for that country's epidemic. The community's poor health infrastructure, lack of health education, and inadequate government-enforced quarantine have all contributed to the disease's spread. WHO has reported that the bodies of West Point EVD victims were being thrown into an adjacent river in a desperate attempt to stem the disease and deal with the overwhelming death toll.<sup>9</sup> This inhumane situation is another simple means for the disease's transmission to new areas.

Slum residents can be a highly mobile population. Limited economic opportunities force slum residents to migrate, clandestinely and often illegally, to new cities and countries. This type of migration subverts

anti-EVD screening measures and presents an imminent threat to other informal communities and the rest of the world.

The primary factor contributing to slum dwellers' disproportionate disease burden—their invisibility and neglect—also makes them an ideal vehicle for the epidemic. EVD is only the beginning and only one disease; even if we are to control the current epidemic, the future introduction of this and other highly contagious and virulent microbes to and from global slums is inevitable. It is not sufficient just to talk about poverty, lack of health-care access, cultural practices, etc. It will be impossible to stem this epidemic and prevent future epidemics of emerging diseases without addressing the underlying structural and socioeconomic determinants of disease unique to slums. Experts and politicians must acknowledge their existence now and divert resources towards improving the conditions of urban slums.

We declare no competing interests.

© Snyder et al. Open access article published under the terms of CC BY.

Robert E Snyder, Mariel A Marlow,  
\*Lee W Riley  
lrwiley@berkeley.edu

Division of Epidemiology (RES, MAM) and Division of Infectious Diseases and Vaccinology (LWR, MAM), University of California—Berkeley, Berkeley, CA 94720, USA

- 1 United Nations Human Settlements Program. The challenge of slums: global report on human settlements 2003. <http://mirror.unhabitat.org/pmss/listItemDetails.aspx?publicationID=1156> (accessed Oct 27, 2014).
- 2 WHO/International Study Team. Ebola haemorrhagic fever in Zaire, 1976. *Bull World Health Organ* 1978; **56**: 271–93.
- 3 Borchert M, Mutyaba I, Van Kerkhove MD, et al. Ebola haemorrhagic fever outbreak in Masindi District, Uganda: outbreak description and lessons learned. *BMC Infect Dis* 2011; **11**: 357.
- 4 Roddy P, Howard N, Van Kerkhove MD, et al. Clinical manifestations and case management of Ebola haemorrhagic fever caused by a newly identified virus strain, Bundibugyo, Uganda, 2007–2008. *PLoS One* 2012; **7**: e52986.
- 5 Bwaka MA, Bonnet MJ, Calain P, et al. Ebola hemorrhagic fever in Kikwit, Democratic Republic of the Congo: clinical observations in 103 patients. *J Infect Dis* 1999; **179** (suppl 1): S1–7.

- 6 Ndambi R, Akamituna P, Bonnet MJ, et al. Epidemiologic and clinical aspects of the Ebola virus epidemic in Mosango, Democratic Republic of the Congo, 1995. *J Infect Dis* 1999; **179** (suppl 1): S8–10.
- 7 Gire SK, Goba A, Andersen KG, et al. Genomic surveillance elucidates Ebola virus origin and transmission during the 2014 outbreak. *Science* 2014; **345**: 1369–72.
- 8 United Nations Human Settlements Program. The state of the world's cities 2006/2007. <http://mirror.unhabitat.org/pmss/listItemDetails.aspx?publicationID=2101> (accessed Oct 27, 2014).
- 9 WHO. Why the Ebola outbreak has been underestimated: situation assessment 22 August 2014. <http://www.who.int/mediacentre/news/ebola/22-august-2014/en/> (accessed Oct 27, 2014).



Published Online  
October 30, 2014  
[http://dx.doi.org/10.1016/S2214-109X\(14\)70339-0](http://dx.doi.org/10.1016/S2214-109X(14)70339-0)