

Infectious diseases and One Health: a new research project

by Rashid Ansumana, Eniola Olubukola
Cadmus, Osman A. Dar and Robyn Alders

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Members of the West African One Health project team at Njala University in Sierra Leone
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In West Africa, as in many parts of the world, people are interacting more and more with many and different animal species. This interaction is changing host-pathogen dynamics and infection epidemiologies, increasing the risk of zoonotic diseases (diseases that are transmitted between humans and animals), and the emergence of novel pathogens in new species or habitats. In particular, zoonotic threats like **Ebola virus disease and Lassa fever have created serious challenges** in West Africa. Their recurrence, coupled with the COVID-19 pandemic and associated economic woes, is posing a multifaceted threat in the region.

A One Health lens is being employed to identify sustainable options for managing this risk through a **new three-year research project**. One Health is an **integrated approach** that “recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and interdependent”.

A diverse consortium of universities, government institutions, civil society organisations and community action networks in Guinea, Nigeria, Liberia and Sierra Leone are collaborating with researchers in the UK and Australia. This timely research is supported by the national governments in each of the four West African countries and the International Development Research Centre in Canada.

The project research activities seek to answer a range of questions. Has land use change influenced the incidence of Ebola virus disease, Lassa fever and other zoonotic diseases? What is the extent of interruptions of health services from outbreaks? Have outbreak regulations impacted livestock animal health and production? What is the impact of disease outbreaks on rural women in border towns and on food security? Can a community-participatory, gender-sensitive and artificial intelligence-supported disease surveillance system combined with social action for livestock food security work to understand, prevent and mitigate

outbreaks?

Addressing these questions will require understanding the relationships between changing demographics, gender equity, land use change and emerging diseases in West Africa. An inclusive and equity-focused participatory approach integrated into socioecological systems research will be used to investigate the impacts of Ebola virus disease, Lassa fever and COVID-19 on access to health for humans and animals, environmental health, livestock food security and sociocultural practices. In addition, we plan to explore the effects of the disease outbreaks on gender equity, and seek innovative approaches to improve this.

Using gender mainstreaming and codesign methodologies with community action networks, we aim to support participatory, community-based, animal, human and environmental disease surveillance. We will also explore agricultural and development practices that mitigate zoonoses and emerging human, animal and plant pathogens through a One Health and One Biosecurity approach.

The field, laboratory and social science activities will run in parallel with engagement of key policymakers and policy implementers at all levels, from regional to local. The aim will be to build consensus around possible policy changes, strategies or systems. In turn, the impact of our research and the likelihood of our recommendations being acted on will be maximised by engaging policymakers through all stages of the project.

We anticipate that the findings of this project will highlight how land use change and other factors have influenced disease outbreaks, persistence, re-emergence or emergence; explain the impacts of outbreaks across sectors; and demonstrate social action intervention for mitigation. We hope that robust and sustainable community engagement in disease surveillance and prevention will identify feasible and sustainable approaches and policies.

The project is in its first year and the team would welcome feedback from those working in related geographical and thematic areas. The increasing magnitude of the negative impacts due to climate change, biodiversity loss and food insecurity means that we can no longer work in isolation or in sectoral silos to tackle these issues. We must work together cooperatively to deliver outcomes that yield multiple benefits for all, especially local communities and their landscapes. We thank you in anticipation of your engagement.

Author/s:

Rashid Ansumana

Rashid Ansumana is Dean of the School of Community Health Sciences of Njala University in Sierra Leone, and Principal Investigator for the West African One Health actions project funded by the International Development Research Centre (IDRC). He is also an adjunct assistant professor at the Tulane School of Public Health and Tropical Medicine (US).

Eniola Olubukola Cadmus

Eniola Olubukola Cadmus is a senior lecturer at the Department of Community Medicine, College of Medicine at the University of Ibadan in Nigeria; and an honorary consultant at the Chief Tony Anenih Geriatric Centre, University College Hospital, Ibadan.

Osman A. Dar

Osman A. Dar is Director of the One Health Project at the Global Health Programme, Chatham House, Royal Institute of International Affairs, UK.

Robyn Alders

Robyn Alders is a veterinarian and an Honorary Professor with the ANU Development Policy Centre, ANU Institute for Climate, Energy and Disaster Solutions and Veterinary Department of Infectious Disease and Global Health, Tufts University. She is also the Lead of the **OFFLU** Socio-Economic Working Group and Co-Chair of the Global Advisory Committee of the FAO-WOAH Peste des Petits Ruminants Global Eradication Programme.

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