PERSPECTIVES

Recovering from an Anthrax epidemic: What are the control strategy challenges and policy options?

A Moraes

Ministry of Health, Ndeke House, Lusaka, Zambia

Correspondence: Albertina Moraes (albertina.ngomah@gmail.com**)**

Citation style for this article:
Moraes A. Recovering from an Anthrax epidemic: What are the control strategy challenges and policy options? Health Press Zambia Bull. 2017;1(1) [Inclusive page numbers]

Anthrax is endemic in parts of Zambia, triggered annually by an interplay of environmental factors and human activity. Anthrax cases are typically reported between June and December, coinciding with the period when the human population density on the floodplain is high. Case fatality rate usually ranges from 4-20%. Anthrax impacts negatively on both public health and the livestock industry.

Zambia's Western province is currently in the middle of an anthrax epidemic; both humans and animals are affected. There have been 77 human cases (with 5 deaths reported) since the outbreak began in November 2016. The number of animal cases is unconfirmed as some livestock owners withhold information of animal deaths from officials.

Zambia presently relies on the *Technical Guidelines for Integrated Disease Surveillance and Response* as well as the *WHO Anthrax Guidelines* to guide its actions during anthrax outbreaks.

Quarantines, mass vaccinations and restricted movement of livestock, as well as public awareness campaigns have been initiated to contain the outbreak.

Key Surveillance Findings as of 31 January 2017

As of 29 January 2017, no new cases had been reported. A total of 72 cumulative cases have been recorded since the outbreak began: 25 from Shangombo, 9 from Nalolo, 37 from Kalabo and 1 from Limulunga. Of the 5 deaths reported, 3 were reported from the facility in Kalabo while 2 were reported from the communities in Shangombo and Kalabo. There are six cases currently under treatment as out-patients. The case fatality rate presently stands at 4%.

The Provincial Health Office has been transporting specimens to Lusaka for official analysis and results. Collaboration with the veterinary department is yielding results as the department has begun distributing vaccines to vaccinate animals in affected

areas. Information, Education and Communication (IEC) campaigns have continued. However, one of the major challenges being faced is community members who have continued to eat the meat from infected carcasses, disregarding sensitisation messages against this practice.

The above is a depiction of the outbreak in Shangombo, one of the affected Districts. The index case, whose illness was associated with consuming meat from bovine carcasses, was reported on 11/11/2016 from Tukombwe village. There was a spike in the number of cases after 3 animals died in Sikowe village. Remains were destroyed by a combined team of Provincial Health Office, District Health Office and health facility staff. Sensitisation of the community was done. All cases were put on treatment. District and health centre staff are conducting active case investigation and community sensitisation

Research gaps and control challenges

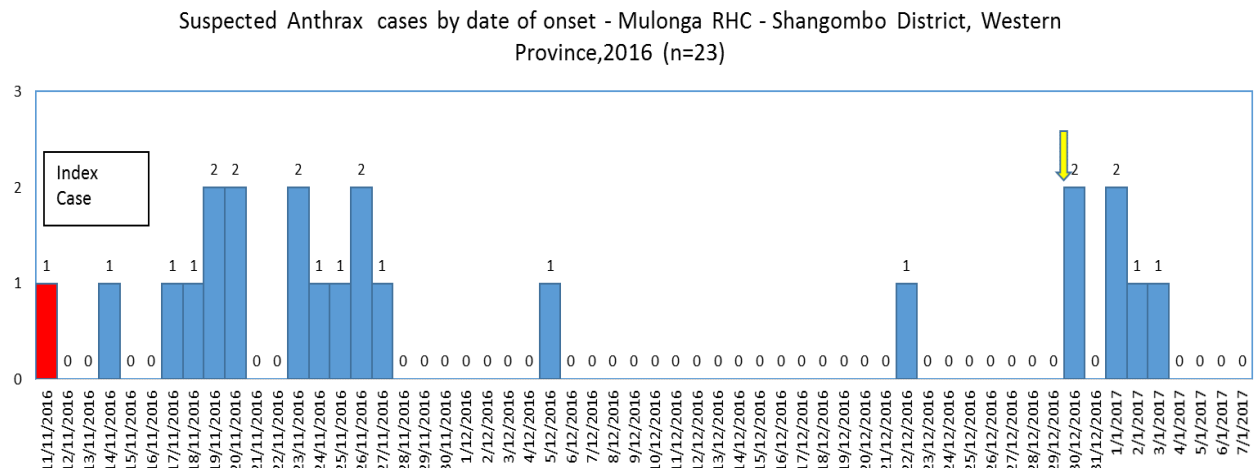
Further research into the molecular epidemiology of the disease as well as strain identification and differentiation will enhance epidemiological investigations and understanding of anthrax not only at national level, but at regional level as well.

Currently used control strategies involving mass vaccinations, quarantine, burning or burying of animal carcasses and community sensitisation fall short in the control of anthrax. Farmers tend to be uncooperative with vaccination of livestock as it coincides with the farming season and thus is viewed as a disruption to the maximum usage of animals for farming activities. Quarantine tends to be difficult to enforce due to numerous illegal routes used to transport livestock.

Communities are often reluctant to burn or bury carcasses as advised. In the flood plains where epidemics commonly occur, there is a lack of firewood to burn the carcasses. The burning of carcasses is also seen as time consuming and a distraction from farming activities. Carcasses are salvaged for meat, despite health warnings, which results in human cases. Furthermore, inhalation of spores through exposure to hides from infected carcasses that were processed for use as sleeping mats or drums has been noted to play a minor role in proliferation of epidemics.

Policy options

A one-health approach is key to achieving lasting control of anthrax. Surveillance systems must be strengthened for early detection and response.



Human Vaccination campaigns: The most effective method for mass protection against anthrax is through vaccination. Mandatory vaccinations in endemic areas (with the exception of individuals with a history of anthrax disease and pregnant women until after delivery) would reduce disease incidence by up to 92.5%, based on human and animal data.

Animal vaccination campaigns must be conducted at regular intervals. The timing of these campaigns must not coincide with the farming season so as to increase uptake by farmers.

Increasing the vaccination coverage through continued collaboration between the public and private sector, and instituting a systematic quality control programme to evaluate the performance of vaccination campaigns will increase the likelihood of success of such programmes.

Investing in infrastructure for local vaccine production: the Central Veterinary Laboratory under the Department of Veterinary and Livestock Development, currently produces a local vaccine with high potency and no side effects. This should be scaled up throughout the provinces so as to decentralise the technical and administrative support required for control of epidemics. Stockpiles of the vaccine should be available for use during epidemics; these can then be transported promptly to outbreak areas by means such as drones.

Scaling up community outreach activities in endemic areas to ensure timely treatment of cases and a reduction in anthrax mortalities, especially for communities in hard to reach areas where the long distances to facilities often affects access to care. Furthermore,

salient health information and mass media campaigns must be designed and implemented regularly to further educate the public regarding the dangers of consuming meat from infected carcasses as well as using hides from animals dying of anthrax

Improving food security in outbreak prone areas will further reduce instance of carcass salvage by local communities.

Available literature

1.Ministry of Health Situation Reports, Surveillance Data, 2016-2017.

2.Hang'ombe, M.B., Mwansa, J.C., Muwowo, S., Mulenga, P., Kapina, M., Musenga, E., Squarre, D., Mataa, L., Thomas, S.Y., Ogawa, H. and Sawa, H., 2012. Human–animal anthrax outbreak in the Luangwa valley of Zambia in 2011. Tropical doctor, *42*(3), pp.136-139.

3.Munang'andu, H.M., Banda, F., Siamudaala, V.M., Munyeme, M., Kasanga, C.J. and Hamududu, B., 2012. The effect of seasonal variation on anthrax epidemiology in the upper Zambezi floodplain of western Zambia. Journal of veterinary science, 13(3), pp.293-298.

4.Ohnishi, N., Maruyama, F., Ogawa, H., Kachi, H., Yamada, S., Fujikura, D., Nakagawa, I., Hang'ombe, M.B., Thomas, Y., Mweene, A.S. and Higashi, H., 2014. Genome sequence of a Bacillus anthracis outbreak strain from Zambia, 2011. *Genome announcements*, *2*(2), pp.e00116-14.

5.Siamudaala, V.M., Bwalya, J.M., Munang'andu, H.M., Sinyangwe, P.G., Banda, F., Mweene, A.S., Takada, A. and Kida, H., 2006. Ecology and epidemiology of anthrax in cattle and humans in Zambia. Japanese Journal of Veterinary Research, 54(1), pp.15-23.

6.Turnbull, P.C., Bell, R.H., Saigawa, K., Munyenyembe, F.E., Mulenga, C.K. and Makala, L.H., 1991. Anthrax in wildlife in the Luangwa Valley, Zambia. The Veterinary Record, 128(17), pp.399-403.