

Symposium

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One Health for the Real World: zoonoses, ecosystems and wellbeing

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'Healthy ecosystems, healthy people'

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Dynamic Drivers of Disease in Africa Consortium



#OneHealth2016

americanus and *N. gorillae*. We conclude that *Necator* species of great apes can infect humans and *vice versa*. We report a novel hookworm species, *N. gorillae*, in humans.

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Pets, pests and pestilence: understanding social aspects of zoonotic disease transmission

Charlotte Robin, University of Liverpool

Neglecting to explore social aspects of zoonotic disease transmission has led to public health interventions making assumptions about knowledge; that we, the scientific community know what is best for the general public. Individuals understand disease and risk differently; this concept is vital in understanding transmission. This project will explore these constructions of risk, using hantavirus as a model. As rats are the predominant host, interactions between rats and humans will be explored in three at-risk groups; pet rat owners, farmers and pest control workers. In-depth, semi-structured interviews are being analysed using a Grounded Theory approach. This iterative approach allows new theories to be explored and conceptualised. Initial interviews with pet rat owners have revealed a concept of fatalism in relation to hantavirus; “it’s just one of those things”. Risk is constructed as “not significant”, and although there is awareness of it being asymptomatic in rats, there is dissonance between this knowledge and believing pet rats are safe because “they live in a protected environment”; it is the outside world that poses the risk. Other zoonoses including leptospirosis are more accepted; “a completely kind of different risk, and more contained”, whereas the uncertainty and lack of control surrounding hantavirus means management is “just not possible” and could lead to isolation from the pet rat community, an important part of their social identity. This study will provide a deeper understanding of hantavirus transmission and facilitate the effective communication of socially-targeted interventions, reducing the risk of hantavirus infection within these communities.

Co-authors: Rob Christley, Francine Watkins and Liz Perkins (University of Liverpool)

MERS-CoV (Middle East Respiratory Syndrome Coronavirus) outside the Arabian Peninsula an One Health approach:

Understanding the role of wildlife, livestock and human in the virus dynamic

Dr Benjamin Roche, Université de Montpellier

One of the big paradoxes of the MERS-CoV epidemiology is the apparent lack of human cases in large parts Africa where the virus and an animal host, the dromedary camel, are present. Understanding the differences between Africa and the Arabian Peninsula (where MERS-CoV is now endemic) would provide crucial understanding on how to reduce zoonotic infection. We set up field protocols for estimating (i) the prevalence of MERS-CoV infection in camel populations and other sensitive species outside Arabian Peninsula, (ii) the ‘at risk’ farming practices that facilitate transmission between camels, (iii) infection variation pattern in both camels and humans. The first project phase consisted in a descriptive serological and virological mapping of MERS-CoV in Africa

and central Asia in camel populations (i.e. dromedary and Bactrian). The second project phase consists in a longitudinal epidemiological monitoring (monthly time step) in camel populations from Morocco and Ethiopia (blood, swabs, urine, milk); complemented by a questionnaire based survey of camel owners' practices. Finally, in parallel a cross-sectional sero-prevalence survey in human, particularly camel owners and animal workers in abattoirs is conducted by the Institut Pasteur in Morocco. A cross-sectional sero-prevalence survey is also conducted on bats in houses and 'oasis' close to farms in Ethiopia. Addressing these questions is crucial for developing recommendations for animal and human health institutions and countries.

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Minimizing disease incidence among rural communities in Sierra Leone

Roland Suluku, Njala University, Sierra Leone

Ebola killed 11,290 people in Sierra Leone, majority live in rural communities. Most rural communities lack proper toilet and waste disposal facilities, good drinking water, sleep with animals and are constantly interacting with wildlife and domestic animals. Majority of the rural population earn less than one dollar a day and are unable to properly feed themselves, their domesticated animals, pay for health services and lack basic knowledge in disease control and prevention. Most of the roads are in bad shape or inaccessible. Building the best health facility and providing the best health professionals will not alleviate their problems. The Animal Health Club has established disease monitoring and surveillance committees and guide the people formulate by-laws in 30 rural villages. They will monitor Toilets and garbage dumps, drinking water, ruminants, poultry birds, pets and wildlife, crops and human beings on a daily bases and report to club executives who will then report to town chiefs and responsible line Ministries or NGOs operating in the project areas. People contract diseases from these seven major sources in rural communities. Proper monitoring of these components with enforced bylaws, will not only improve disease control and prevention, but increase income, food security, livelihood, and improved standard of living and prolong the lives of rural people in a clean environment which fulfil the One Health concept for developing nations of the world.

Key words: diseases, monitoring, rural, communities, One Health.

Arctic parasitology in a changing ecology: Establishment of a baseline dataset for detecting Apicomplexan parasite population shifts at the Arctic/Subarctic interface

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The Arctic is currently undergoing significant climate change. Ecosystem flux due to climate change in the Arctic is well-studied, but whether these effects have altered disease transmission dynamics among Arctic pathogens and their definitive and intermediate hosts has not been assessed. Our study sought to establish baseline data for the Apicomplexa, protozoal parasites with complex lifecycles and multiple routes of transmission, including important zoonoses with environmentally stable life cycle stages that can take advantage of this changing ecology. We determined diversity and prevalence of apicomplexan parasites infecting over 30 species of stranding resident and migratory species of marine mammals across the Arctic and subarctic climate zones. Marine