Researchers also recorded reproductive illnesses, similar disease data for animals. For animals, fever, diarrhea, and respiratory illnesses and they collected data on humans such as study, researchers visited 1,500 households.

Visit the families. During the first year of the interviewers, usually traveling by bicycle, once every two weeks, community makes it ideal for communicating with survey towers are “off-the-grid” getting their power from diesel generators, says Mwangi. Families from streams or Lake Victoria, are also a source of nutrition, says Mwangi. “This is not the standard approach in the surveillance of infectious diseases.”

Living with livestock is part of everyday life for these families. It is a source of nutrition, but also a source of income. More than 90 percent of families own some type of livestock. Of those, nearly 90 percent have chickens, more than 50 percent have cattle, roughly 40 percent own goats, and about 20 percent of families have sheep.

Farm products are the main source of cash for most families, says Mwangi. “Milk and eggs are a rich source of protein and easy to sell, but if they only have small quantities, families are likely to struggle between eating them or selling them to buy other items.”

From the study researchers have found that families who owned more livestock were also more likely to eat eggs and milk, meaning they are keeping eggs and milk for their families rather than selling it all for other needed items. And that could improve their nutrition.


“It was easy to visualize the concept of ‘one health,’ says Olsen-Mikitowicz. “Seeing the connection between human, animal, and environmental health, through infections such as malaria, East Coast Fever, and helminths [parasitic worms]—and, all too common, malnutrition.”

As a WSU veterinary student, she has mastered the technical skills, such as analyzing samples or quantifying data, to be a top-notch researcher. But what she learned during her time in Africa was that building relationships with fellow researchers, community interviewers, veterinarians, and community members is key to successful research.

“I learned the importance of developing trust within the community and team to accomplish research,” says Olsen-Mikitowicz. “Because of those relationships, I was better able to collect samples, gather survey information, and help ensure people get the information they need.”

“One of the greatest benefits of this research is that we will be able to determine which animal diseases have the greatest impact on human health and welfare,” says Mwangi. “From there we will be able to conduct intervention studies to reduce disease in animals and improve human health and wellbeing.”

Newcastle disease is thought to be the main cause of chicken mortality. Future vaccination campaigns against Newcastle are predicted to result in increased survival for chickens, more egg production per household, and access to eggs for children under 5 years of age, which has significant nutritional benefits, says Mwangi.

“There is a strong correlation between cases of human disease and animal disease in the same households,” said Mwangi. “We need to conduct more diagnostic work to know if they are driven by the same pathogens, but the finding shows that surveillance of animal diseases is useful for understanding the health problems of people.”

Population-based animal syndromic surveillance and the socioeconomic survey are conducted by the Paul G. Allen School for Global Animal Health in collaboration with the Kenya Medical Research Institute—Center for Global Health Research, and the Centers for Disease Control and Prevention.

Victoria Olsen-Mikitowicz (’15 DVM) spent one month in Kenya working on several research projects including the population-based animal syndromic surveillance project, or PBASS. She plans to pursue a career in veterinary public health, education, and research in global animal health.

Tracking Animal Disease to Improve Human Health

In rural Kenyan villages where few families have electricity or indoor plumbing, a surprising technology helps researchers study the health of animals and people: the cell phone.

Families who are part of the population-based animal syndromic surveillance project, or PBASS, use their cell phones to call a veterinarian toll free when an animal is sick. More than 70 percent of families participating in the survey have cell phones; only three percent are connected to the electricity grid.

“Mobile telephony is actually very well developed in most of Africa, especially in Kenya,” says Thumbi Mwangi, clinical assistant professor in the Paul G. Allen School for Global Animal Health, who has been collecting data since the survey began in February 2013.

Unlike electricity and water infrastructure, cell phone infrastructure is relatively cheap to build. There is cell network coverage in almost every rural village, and where there isn’t electricity the towers are “off-the-grid” getting their power from diesel generators, says Mwangi. Families who are using firewood to cook or gathering water from streams or Lake Victoria, are also going to local shopping centers to charge their energy-efficient phones for a very small fee. One charge could last for many days. And that makes it ideal for communicating with survey families.

Once every two weeks, community interviewers, usually traveling by bicycle, visit the families. During the first year of the study, researchers visited 1,500 household. They collected data on humans such as fever, diarrhea, and respiratory illnesses and similar disease data for animals. For animals, researchers also recorded reproductive illnesses, nervous system illnesses, mastitis, and death. And they collected socioeconomic data for the families including age of family members, household income, and number of children. If an animal gets sick, the families can call the toll free number and a veterinarian will come out within 24 hours so the family doesn’t have to wait until the next scheduled visit.

“One of the big things is that we have been able to simultaneously monitor health in people and the animals they live with,” said Mwangi. “This is not the standard approach in the surveillance of infectious diseases.”

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More News

Dog disease in lions spread by multiple species
go.wsu.edu/dogdiseasemultispecies

Zoonotic Highway: Tracking the ‘how’ of salmonella infections
go.wsu.edu/salmonellainfections
Faculty News

William Sischo has been awarded a USDA-NIFA grant of $2.2 million for his project “Integrating Biology, Psychology, and Ecology to Mitigate Antibiotic Resistance in Food Animal Production Systems.” Drs. Douglas Call, Margaret Davis, and Dale Moore are co-PIs on the project.

Douglas Call was named a fellow by the American Association for the Advancement of Science (AAAS).

Student and Fellow News

Congratulations to graduate student Jackie Stone (advisor Hector Aguilar-Carreno) and Carolynn Fitterer (‘16 DVM; advisor Gretchen Kaufman) who were awarded first and second place respectively for their posters at the 16th annual College of Veterinary Medicine Student Research Symposium on October 30.

Matt Sammons (‘16 DVM) won first place in the 2014 Zoobiquity Conference student poster competition held November 1 in Seattle. Sammons’s poster was titled “One House-One Health approach to childhood growth and development: Identifying and resetting high-risk household gut microorganisms.” He is a student in the Global Animal Health Professional Certificate Program and is mentored by Dr. Douglas Call.

Message from the Director

Dr. Thumbi Mwangi’s work into connecting livestock health with the health of mothers and their children is at the center of the Allen School’s efforts to reduce the high level of physical and cognitive stunting in African children. This research will not only identify which interventions are most effective, but the data collected will create the evidence base for broader intervention at community and national levels. At the Allen School, we believe an interdisciplinary approach is key to solving global issues. When a major global health priority, such as reducing physical and cognitive stunting, is the goal, a dynamic team of medical anthropologists, epidemiologists, nutritionists, and information technologists, as well as physicians and veterinarians, comes together to work toward a common solution. This type of collaborative work and helping people around the world is the original vision of what the Allen School was created to do.

Guy Palmer
Creighton Endowed Chair and Director of the Paul G. Allen School for Global Animal Health

For past newsletters and more news about the Allen School, visit go.wsu.edu/AllenNews.