The Ebola virus outbreak in west Africa has been a painful reminder about the importance of investing in infectious disease prevention, early detection, and prompt control—three areas central to the Allen School mission. The outbreak shows the need to better understand not only the virus itself, but also the inadequate disease detection and response capacity in vulnerable regions, and a lack of trust in health interventions within the affected communities. The virus, named for the Ebola River in the Democratic Republic of Congo, is zoonotic (meaning that it can be transmitted from animals to humans). In this case, bats were most likely the animal source of the virus. Understanding its origin and how it spread to humans in the first place will be essential for targeting early detection. But the inadequate human resources and infrastructure for detection and response are not disease specific. Investment in detection and response will be effective across the board and

Notes from the Field
“Notes from the Field,” a new column in The Global Health Perspective, features personal accounts by Allen School scientists and gives a first-hand glimpse of the work they are doing to help the lives of people and their animals.

Visiting Risper Oyogo: Just One of 1,500 Families Allen School Scientists Are Following in Western Kenya to Help Improve Health and Wellbeing
by Dr. Thumbi Mwangi, assistant research professor in the Allen School

It’s the last Thursday in August and today I am having the Kisumu County medical epidemiologist, Dr. Dickens Onyango, accompany me for a field visit to the Allen School research projects in the Lwak area, by the shores of Lake Victoria. At about 8 a.m., Dickens and I meet up at the West mall, the newest mall in Kisumu, where we quickly grab coffee and set off in one of the Kenya Medical Research Institute (KEMRI) field trucks. Our first stop is 14 kilometers north at the KEMRI Kisian Campus, a beautiful campus with neatly-manicured lawns and rows of well-aligned and mature umbrella trees providing a welcoming cool calm of shade.

Here we only get to exchange a few morning greetings with colleagues, before being joined by Dr. Elkanah Otiang, a young energetic field veterinarian who will often be heard belting a hearty often loud, but pleasant laugh. Elkanah doesn’t like to spend time at his desk, and will find every reason to be in the field talking with farmers and treating their animals. He has a team of 15 animal health assistants and community interviewers that work directly under him in the field, and who are involved in the collection of invaluable surveillance data for the Allen School and its partners.

The drive from the campus to Lwak takes about an hour on the fairly good bitumen road. This is Dickens’ first visit to our field studies, and I can sense his increasing excitement with every kilometer covered. He keeps Elkanah and I fully engaged with
questions about our four ongoing studies. It is always exciting for me to discuss these research projects, which I find easy to think of as one comprehensive study, a “four-in-one” project.

For the last two years, the Allen School, in collaboration with KEMRI and the Centers for Disease Control and Prevention (CDC-Kenya), has been following over 1,500 rural households in western Kenya at least every two weeks. These study households, we have been investigating the burden of infectious diseases in people living there (project 1), and the number of illnesses in their cattle, goats, sheep, and chicken (project 2), as well as their socio-economic status (project 4) concurrently. The field team has now made approximately 50,000 unique household visits in the last year. Effectively, we have assembled a unique dataset containing information on human health, animal health, and their relationship to the socio-economic status all linked to each of the 1,500 study households. This is an exceptional resource for determining how the health of people and their livestock are related and, ultimately, for developing interventions that target livestock health to improve human health and welfare.

We head straight to the homestead scheduled for the first visit of the day. By this time Dickens has heard as much about the four-in-one project, and is fascinated that we are already finding interesting relationships between the health of people and that of animals from the same households. Data from the last year is showing that households with a high number of illnesses in animals also have a high number of illnesses in humans, and that households with more livestock are more likely to seek health care when a member of the household falls sick.

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Isadiah, the community interviewer scheduled to interview Risper on her homestead, we visit, referring to the team of animal health technicians who carry out the disease surveillance in livestock. She quickly reaches out for a large card placed under the cushion of the seat nearest to her displaying it for us to see. The card has a picture of a cow, goat, sheep, and chickens, and some writings in Dholuo, the predominant local language, and a phone number in large fonts indicated as “Toll Free Number.”

“Anytime I have a sick animal, I reach out for this card and dial this number which does not cost me anything,” she says pointing to the toll-free number in large fonts, “and your team of animal health doctors is here in 20 minutes,” she adds with her face lighting up. “They are an ambulance service for my animals! The other day I had accidentally overdoze one of my bulls with deworming medicine and he almost died. These friends were here in no time and now my bull is here; he had to use it to plough my land wherever it is planting time,” she adds looking straight into my eyes. I nod at Elikanah and I can see a smile forming on his face; he and the field team of 15 have done an excellent job building the good rapport we now enjoy with the local farmers.

Risper is such a jovial person and great fun to visit with. The next five minutes are spent with Risper voluntarily telling us about her family. She has three grown children—a daughter and two sons—all living and working in Nairobi. She lost her husband 24 years ago, and wonders how she would have managed to raise three children and give them a good education without her farm.

“I hope if you don’t farm, you become a beggar,” she says, her eyes fixed to a tree outside her house near where she buried her husband, as if in deep thought.

Isadiah, the community interviewer scheduled to interview Risper on her homestead, that of the people living with her, and of the animals she owns, is beginning to get restless. He still has another eight home visits to make before the end of the day, and I can sense he is getting worried that this first home visit is taking a bit more time that he can afford. We get a chance to reintroduce ourselves, stating our names and which part of the country we were raised in. In the background is a radio playing some local tunes, a bit too loudly that our conversation is a bit of a strain for each other. Risper reaches out to the radio and switches it off. The conversation is now easier; the house is silent except for our chatting and frequent laughter. Risper is a funny lady.

Director Continued

allow early control of any emerging or reemerging disease, including the Ebola virus, before it can spread to neighboring countries and then globally.

The Allen School is already working to improve disease detection in Africa. Dr. Terry McElwain is an international expert in zoonotic disease detection systems and has devoted much of the last year to developing a capacity-strengthening plan in east Africa. We are also working to create positive relationships between public health scientists and communities. This requires engagement in their day-to-day challenges, not just when a new disease outbreak occurs. The article you will read in this issue by Dr. Thumbi Mwangi, an Allen School professor based in Kenya, illustrates the level of engagement and the trust it develops. On behalf of the faculty, staff, and students of the Allen School—across the globe—I thank you for your continued support.

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

Visiting Risper Oyogo Continued

Isadiah begins the household interview by confirming Risper’s full name and the number of people who live with her. She explains that although her children have grown up and living away from home, she has three other people she lives with; Solomon and Millicent who are both orphaned, and Bryan whose dad is Risper’s relative but seeking help with raising the child. None of the three are home, and Risper has not only to answer questions as to whether she has suffered any illness such as fever, diarrhea, jaundice or such as pneumonia in the last two weeks, but also whether Bryan, Solomon and Millicent have reported such sickness. For today, none of the people living in her household has been ill in the last two weeks. In a fortnight, Isadiah or one of his fellow community interviewers will revisit Risper and ask the same questions.

“These human people, I have not needed you often,” Risper says interrupting Isadiah. “In fact, the last I came to your hospital was in 2006 when I was suffering from a sore throat,” she explains. “I am a very healthy human being,” she adds as to whether she has suffered any illness in the human morbidity surveillance study have access to free medical care at the St. Elizabeth Lwak Hospital, which is within a 5 kilometer radius of most study households. I am a very lucky lady that I have not needed to see a doctor for such a long time,” he adds jokingly, “At me, don’t I look healthy? Here we drink all the milk we get from these cows, and eat all the eggs we get from our chicken. Perhaps that is where my health comes from,” she says with a big smile. Risper is lucky; on average for every 100 people, nearly half will need to visit a clinic each year, and that number is higher for children. Young children in this region suffer as many as four episodes of malaria per year. This is a huge burden of disease, and has significant social and economic effects on these households.

After a few more questions on human health, Isadiah switches to the questions on animals and their health. He begins by gathering information on the number of cattle, goats, sheep, and chickens that Risper currently owns, and whether there have been any new births, sales, or losses in the preceding two weeks. Risper reports that she owns 11 cattle, 7 sheep, no goats, and 15 chickens, which is close to the average number of animals owned in the area (5 cattle, 4 goats, 5 sheep, and 14 chickens).

For each species, Isadiah then inquires if any of the animals has suffered one of nine syndromes listed in his handheld computer that he uses to electronically record all the data collected. During this visit, Risper has two main problems with her chickens! They have had a high number of deaths in the last two weeks she has lost seven chicks. We learn this has not been due to disease, but rather her free-range brooding chickens have come back several evenings with a chick or two lost, perhaps to some birds of prey or mongooses. She now plans to build a house for the chickens where she can feed them and minimize her losses. She wonders, though, whether that will be sustainable or if she is better off letting them scavenge, and she worries less about feeding them and hopes a good number survive. Although her chick losses are not due to disease, she may suffer from a stock larger losses if there is an epidemic of Newcastle Disease that frequently occurs in the area. Risper, like most other poultry farmers in the area, does not frequently vaccinate her chickens against any diseases.

The second problem is with one of her calves. She explains that the calf has been grazing in a region related to a few cases of rabies, out of 30 kilometers in nine months. In the last 24 hours it has suffered several diarrhea episodes, and we can see its back and tail are soiled. The calf is struggling to get up. The average weight gain for these animals is about 130 grams, or a third of a pound, per day, less than a quarter of the growth rates attained in commercial dairy farms. These animals are constantly exposed to rabies and infected with multiple pathogens, and their energy investments may be more toward survival than it is toward growth. From these studies, we will determine not only which disease syndromes are most frequent in the chickens, cattle, goats, and sheep but also which of these syndromes have the greatest economic impact on the households. The animal health team will review the data collected by Isadiah later in the evening, and will visit Risper the next day to examine and possibly treat her sick calf.

We have now spent about 40 minutes with Risper, and must leave for a second home visit. “You should have let me know your coming to visit at least two hours before arriving. I would have prepared you my favourite meal of fish and Ugali (corn cake), and I would have some food eaten in the area and you would go to the next home well eaten,” Risper tells us as she shakes our hands and we part ways.

We leave Risper’s home feeling rather jubilated. Dickens has been silent but keenly following the data entry on the handheld computers. We have barely settled back to the KEMRI truck on our way to the day’s second home visit before Dickens starts asking questions related to the interview with Risper. He is a keen chap with an eye for details, and we have interesting discussions on how to best make sense of all human health, animal health and socio-economic data we are collecting.

The second home we are visiting belongs to a family with two young children who are participating in Project 2 that is collecting data on nutritional intakes and anthropometric measures in children below five years. The day has just started.

More News

Rabies: Disease in the shadows
recognized Sunday
moreewsu.edu/RabiesDisease

Ebola outbreak surprising, but not the ‘Next Big One’
moreewsu.edu/Ebola

Paul G. Allen School for Global Animal Health

Fall 2014
Faculty News

Dr. Michelle (Shelley) McGuire, associate professor in the School of Biological Sciences, is a new affiliate faculty member in the Allen School. Shelley’s expertise is related to human nutrition during the lifecycle, especially during lactation and infancy.

Dr. Mohammad Obaidat, professor of food safety and zoonotic diseases at Jordan University of Science and Technology, visited Dr. Margaret Davis’s lab to learn techniques for genotyping bacterial pathogens. Dr. Obaidat is conducting field studies in Jordan to assess antimicrobial resistance in dairy cattle and small ruminants.

Student and Fellow News

Congratulations to doctoral students Quan Liu and Jackie Stone who were each awarded a one-year, $24,780 Poncin Scholarship to study the Nipah virus. Liu and Stone work with Dr. Hector Aguilar-Carreno, assistant professor in the Allen School.

Paul Ervin, a graduate student in the School of Economic Sciences, was awarded a $15,000 grant with the United Nations Development Programme. Ervin, who works with Dr. Jon Yoder, will research the economics consequences of dengue fever in Paraguay.