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Pre-empting the spread of Ebola [1]

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By **Chris Casey** | *CU Denver*

Colorado School of Public Health [2] doctoral students Nnamdi Ezeanochie and Ebele Mogo are half a world away from their African home, but that's not stopping them from doing all they can to halt the spread of the deadly Ebola virus.

Advocating the use of mobile health technology and other outreach, they are working with community leaders in Nigeria, where both of their families are from, to develop emergency response plans and gather real-time health data.

"We knew we couldn't afford to wait for the spread to happen, so we decided to take some proactive steps," Ezeanochie said. "We're not working on the clinical drug treatment of Ebola, but rather a population-based approach to slow down an outbreak."

In the current crisis, the world's largest Ebola outbreak since the disease was discovered in 1976, more than 1,200 people have died. The outbreak began in West Africa—Guinea, Liberia, Sierra Leone—but is now feared to be moving into other parts of Africa.

A few weeks ago, before the first confirmed case emerged in Nigeria, Ezeanochie was contacted by some leaders in the local tier of the Nigerian government to help develop a plan to address a potential Ebola outbreak. Ezeanochie, M.D., MPH, is a doctoral student working in the Colorado School of Public Health's mHealth Impact Laboratory, which researches the use of devices such as phones and tablets to promote surveillance and other public health efforts.

Mogo, MSc., was also recruited, given her leadership in stemming chronic illness in Africa. She is the President of Engage Africa Foundation, which works to curb the growing epidemic of hypertension, diabetes, cardiovascular disease and other chronic illnesses with a strong focus on prevention. She and Ezeanochie are fellow cohort members of the Community and Behavioral Health [3] doctoral program.

They used software to design a mobile platform storage—commonly known as a "data cloud"— that they manage from the Anschutz Medical Campus. "The world has become so technology compatible that even when you are here (in Colorado), you make changes that have an effect, that are measurable (in Africa)," Ezeanochie said.

The students are also in contact with community leaders in Anambra, an urban-rural state in southeastern Nigeria. They are encouraging the local leaders to hold community meetings where about a dozen people, including health care workers, spend a day creating an emergency plan. The leaders work off a detailed document, written by Ezeanochie and Mogo, that poses a number of health emergency scenarios they may encounter.

"It's our job to make sure they are exposed to the right information about the disease's epidemiology and potential spread," Ezeanochie said. "But it's their job to come up with the plan based on the attributes of their community. We help them create their own plan rather than give them the plan ourselves. They can take ownership of it."

The students created an "Ebola Management Cascade" that provides an orderly approach to sifting through individuals who may or may not have Ebola and how to go about grouping people and recording cases. The cascade helps rural health workers, who may have modest training, to understand basic step-by-step methods to promote health and, hopefully, curtail the spread of Ebola.

Nigeria, Liberia, Sierra Leone and Guinea have declared a national health emergency. As of mid-August Nigeria had eight confirmed cases and about 142 people who were being monitored closely.

"You can't cure it, but you can prevent it from becoming a catastrophe," Mogo said of the virus. "We're trying to preempt its spread. We're engaging community leaders, working to motivate them to take proactive steps to be ready in the event of a health emergency."

Sheana Bull, PhD, MPH, director of the mHealth Impact Laboratory and professor and chair of the Community and Behavioral Health program, said Ezeanochie and Mogo "saw an opportunity to apply their public health skills acquired in our program to the emergent Ebola

crisis in West Africa and seized upon it."

Bull said when the students began their work, she encouraged them to consider ways to integrate mobile technologies into planning for outbreak mitigation. "The widespread proliferation of phones globally suggests that they can be used effectively to communicate about potential cases and need for quarantine, and that doing so might contribute to a more effective and rapid response to control Ebola," Bull said.

The students recently talked with the chairman of Idemili South Local Government Area about public health planning. The community leader plans to forward his village's emergency response plan to the state governor in hopes that the official will replicate the effort in other local jurisdictions "so it has a more cohesive effect," Ezeanochie said.

"As public health students, we may not be able to intervene at the national, regional or state level, but we can start at the local community," Ezeanochie said.

They have reason to be optimistic. Ezeanochie has been supported by the mHealth Impact Lab to use mobile health technology for prenatal health interventions in Guatemala and Tanzania. "It's just an example of the little things we're trying to do to make sure we're being proactive in protecting the community against something that could be quite harmful," he said.

There's nothing "little," however, about the amount of effort they're putting into this project.

Ezeanochie points out that people don't have to wait for policy-makers to take action in times of crisis. "You can just start on your own and see if what you do catches on and becomes something bigger," he said. "It just requires hard work, a good education and sleepless nights. If that's all we can contribute, then that's fine."

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