
SARAH BONES

Make diagnostic centres a priority for Ebola crisis

Bottlenecks in testing samples for Ebola leave patients stranded for days in isolation wards and raise fears of seeking treatment, says **J. Daniel Kelly**.

I will never forget the first time I walked into an Ebola isolation ward at Connaught Hospital in Freetown, Sierra Leone. It was 20 August. Inside, eight people thought to have the disease were organized into three patient-care rooms. Patients in the first room appeared to be healthy, and we greeted each other.

In the second room, patients barely had the strength to sit. Still, they were able to articulate how they felt. In the last room there were two patients. One was a woman who seemed confused and agitated, and was later confirmed to have the disease. On the other side of the room, a young man was curled into the corner of his bed. He seemed healthy but was terrified.

He had been deathly ill when he was admitted three days earlier. He recovered, but had watched Ebola kill two others in that room.

I could only imagine how I would feel in that situation, watching others get sick and die, wondering if I would be next. Then I considered the deplorable conditions — no visitors were allowed, and a bucket served as a bathroom — and how I, wearing my protective 'spacesuit', must have looked to the curled man. The idea of becoming sick with Ebola in Sierra Leone frightened me.

It frightened him too, and much of his fear could have been avoided. It took four days for his blood to be tested and shown to be free of Ebola. At that point, Sierra Leone had two facilities able to diagnose the virus. The nearest — Kenema Government Hospital — was five hours away and was overloaded with blood samples from around the country.

The evening the curled man arrived at Connaught, there was no nursing staff to oversee patient care. The Sierra Leonean doctor who had supervised the ward had died, and no Sierra Leonean doctor had taken his place. The man was locked in this terrifying environment until someone could draw his blood for testing. Blood samples and sick patients were sent to Kenema by ambulance only at the end of each day. Even after the man's blood sample arrived in Kenema, it was not tested until the next day.

I began working in Sierra Leone eight years ago, when I co-founded Wellbody Alliance, a non-profit health-care organization in Kono, so I am familiar with the logistical challenges facing the country's collapsing health-care system. But the desperate shortage of Ebola diagnostic centres in Sierra Leone is fuelling the Ebola outbreak. People who think that they might have the disease do not want to spend several days trapped in an isolation unit, away from their families and surrounded by workers in spacesuits.

This fear means that patients go to isolation wards only when their symptoms are severe, if they go at all. If Sierra Leone's Ministry of Health and Sanitation could scale up diagnostic facilities, it would reduce fear and help to curb transmission from very sick people who are reluctant to seek treatment.

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Take Freetown, for example. A four-person team from South Africa arrived there on the same flight that I did. They came with a machine for analysing viral RNA and created a diagnostic site in the outskirts of Freetown at the National Laboratory of Sierra Leone. Within a week, the team was sending Ebola test results to the isolation ward twice a day. Some patients did not even have to stay overnight. That kind of experience feels less daunting and more acceptable.

Even though Freetown now has a faster turnaround time on test results, Port Loko, the latest Ebola hot spot, is still sending blood samples to Kenema. In Kono, where I have also visited, three patients had to wait for their blood sample results to come back from Kenema for confirmation of diagnosis. The delay meant that all three died before they could be transferred to a treatment centre.

Two weeks ago, Tom Frieden, director of the US Centers for Disease Control and Prevention (CDC), warned that it was only a matter of time before the Ebola outbreak in Sierra Leone would escalate to match the situation in Liberia. The World Health Organization (WHO) and other modelling experts have predicted 20,000–100,000 Ebola infections before the epidemic is over. We need to minimize delays in care and if we cannot speed up the health system's lethargy, then we need to bring diagnostics closer to the people. That means we need more diagnostic sites. So far, all such sites have been developed as adjunctive services to treatment centres. We need to expand these services to every district, even those that have only an isolation centre.

Because most of the clinical-care focus has been on isolation and treatment centres, the strategy for diagnostic sites has been overlooked.

One of the challenges is the need to standardize equipment, techniques and results. The Ministry of Health and Sanitation wants standard diagnostics, and international agencies such as the CDC and the WHO agree. Standardization takes time, but it is necessary. Sierra Leone uses at least four different types of donated protective suit in its isolation wards, which can change the decontamination process and confuse health workers.

As the number of suspected Ebola infections in Sierra Leone rises, its health system will be under increasing strain to deliver test results in a timely fashion. Three diagnostic sites are not enough. ■

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