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Ebola Afterlives

2019-03-22 17:38:37

By Eva Vernooij

Image by Eva Vernooij

Adiatu[1], a young Sierra Leonean laboratory scientist, turns on the light in the high risk room of the molecular unit of the recently renovated laboratory in Sierra Leone's largest governmental hospital. The sterile, all-white laboratory space is filled with high-end equipment for the detection of Ebola virus. The biosafety cabinets, -80°C freezers, hotplates and buckets of chlorine that populate the room were brought in by the British government during the refurbishment of the laboratory, completed two years after the 2014-2016 Ebola outbreak was declared over.

Adiatu wipes a few particles of dust from the workbench and says she is supposed to clean the high risk room every day, but the only time she has ever received a suspected Ebola sample was in June 2018. At that time, she was by herself in the molecular unit and, without a "buddy" available to help her put on the protective equipment, prepared a bucket of chlorine to take with her to the specimen collection window to receive the sample (see photo). The Ebola testing procedure consists of a series of steps, starting with in-activating the blood sample in the biosafety cabinet and ending with inserting the specimen into the cartridge of the GeneXpert diagnostic device, produced by the American company Cepheid. The

point-of-care GeneXpert machine uses an automated molecular diagnostic method known as “real-time polymerase chain reaction” (RT-PCR) to detect the Ebola virus’s genomic material. RT-PCR is the primary diagnostic device used in the current Ebola outbreak in the Democratic Republic of Congo (Butler 2018).

Adiatu recalls that when she inserted the specimen into the GeneXpert machine, the machine started beeping and rejected the sample; *“I wasted my energy, no work done!”* she sighs, as she recounts finding out that the Xpert cartridge reagents were expired. The Xpert cartridges have a limited shelf-life of three months, which results in boxes of expired cartridges sitting on the shelf in the PCR analysis room. Adiatu later found out that the Sierra Leone Ministry of Health and Sanitation also sent samples from the same patient to be tested in two other laboratories with newly established molecular diagnostic facilities in the Western Area District. Fortunately, both test results were negative.

I am in Sierra Leone conducting ethnographic fieldwork as part of the DiaDev research project, funded by the European Research Council to investigate the design, development and use of diagnostic tools in Global Health. In my fieldwork, I am tracing the legacy of the diagnostic interventions that were deployed during the Ebola outbreak and researching how current local and international efforts to strengthen laboratory infrastructure in Sierra Leone are transforming the health system. In particular, I am studying how these changes are experienced and perceived by policy makers, laboratory workers, health workers and patients, while exploring what a sustainable and appropriate national laboratory system might look like in a chronically under-resourced health system.

During the Ebola outbreak in Sierra Leone, there were numerous international laboratories supporting the government. Some support was of a temporary nature and consisted of mobile laboratories that are no longer present, whilst other international investment, in the form of refurbished laboratory spaces and high-end equipment to track emergent pathogens, remains in place. Towards the end of the outbreak, a range of rapid diagnostic tests (RDTs) in addition to PCR-based methods were developed to be used in clinical sites without access to a laboratory. The dwindling number of cases meant that the RDTs were never widely deployed and the outbreak response remained largely dependent on laboratory-based PCR testing. Only one of the RDTs developed in West Africa is currently in use in the Democratic Republic of Congo, due in part to manufacturer-related barriers to sustain the availability of the RDTs, and in other part, to lesser-known country-level regulatory frameworks and deployment of diagnostic devices (Cnops et al 2019).

There is a stark contrast between the high-end, Ebola-focused technology brought in by international parties during and/or after the outbreak, which is largely situated in central hospital laboratories, and the limited investments in and capacity for RDTs for endemic illnesses such as malaria and typhoid available at primary health facilities in Sierra Leone. A rapid assessment undertaken by the Sierra Leone Ministry of Health and Sanitation in 2015 revealed that only 24 out of 181 Community Health Centers (CHC) sampled were able to perform a selection of basic diagnostic tests, including, for example, blood glucose, malaria RDTs and general microscopy for stool parasite testing. Furthermore, the assessment found that 30% of the CHCs did not have a laboratory worker on staff, and only around a quarter of the primary health facilities were referring specimens to higher level facilities. These severe infrastructural disparities speak to debates about effective strategies for strengthening laboratories in resource-poor settings, which are at the heart of the DiaDev research project. Specifically, these disparities raise questions about the relative benefits of deploying single-plex point-of-care devices versus investment in central laboratories, and the role that central laboratories can potentially play in strengthening diagnosis in primary health care.

Another infrastructural investment in the hospital where Adiatu worked was the construction of what the former King's Sierra Leone Partnership (KSLP) country director, Dr Oliver Johnson, called a "dream isolation unit" (Walsh & Johnson 2018: 327). During the Ebola outbreak, KSLP was heading the hospital's isolation unit, which was awkwardly located inside the Emergency department. Hundreds of patients pass the Emergency department each day on their way to the triage, resuscitation area and consultation rooms, making it a risky location to hold suspected Ebola patients. Towards the end of the outbreak, with support of the UK Military, the dream isolation unit was constructed at the back of the hospital grounds, which included private rooms, a video intercom system to communicate between the high risk zone and office, and a new incinerator for medical waste. To prevent the loss of facilities and skills learned by the nursing staff during the Ebola outbreak, the unit's policy stipulates that the unit will be opened to patients with a broader range of diagnoses, including Cholera, Lassa, HIV, Measles, and Chickenpox.

Currently, the dream isolation unit has yet to be fully integrated into the everyday running of the hospital. Few medical doctors visit patients, out of fear of being infected with respiratory illnesses such as TB, which make up the majority of its admitted patients. In an interview with the nurse-in-charge of the infectious disease unit, he asserted; *"Look at this guy laying over here!"* whilst pointing at one of his volunteer staff members, who lay curled up on a hospital stretcher in a dark corner of the room. The young man on the stretcher volunteered at the unit during the Ebola outbreak and does not have money to pay for his hernia operation.

The in-charge's attempts to get the hospital management to assist with the operation were unsuccessful. The in-charge explained: *"During Ebola times there was massive support for the unit, but for now…we the staff are not taken care of."* The sentiment of not feeling cared for by hospital management or by the national government is widely shared amongst other cadres of hospital staffs. As an expression of this sentiment, in December 2018, medical doctors in Sierra Leone undertook a three-week-long, nationwide strike to demand better payment and safer working conditions in government hospitals.

During my remaining time in Sierra Leone, I intend to explore the connections and disconnections between infrastructural investments and remainders from the Ebola epidemic, as well as the everyday challenges of health workers practicing medicine in a precarious public health care system. What can these different investments in Ebola diagnostics, buildings and people tell us about divergent models for strengthening health systems, and how do external investments differ from local and national priorities for improving laboratory medicine? What kind of interactions characterise the relationships between health workers who do not feel cared for, and patients who are seeking care from them? And, how do diagnostic tests become embedded and valued in such interactions? The DiaDev research project seeks to answer such questions through participant observation in hospital laboratories, interviewing national-level policy makers and health workers, mapping the availability of diagnostics tests, and following patients with fever-based illnesses through the health care system.

Notes

[1] All names are pseudonyms.

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Eva Vernooij *is a research fellow in the department of Social Anthropology at the University of Edinburgh. She is conducting ethnographic research about the use of diagnostic devices in health systems strengthening in Sierra Leone as part of a ERC-funded project 'Investigating the Design and Use of Diagnostic Devices in Global Health' (DiaDev). Her PhD research at the University of Amsterdam focused on the translation practices of policy makers, scientists, health workers and people living with HIV involved in an implementation study about HIV Treatment as Prevention in Swaziland.*

This project has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme under grant agreement No 715450.