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Implementation of HIV Drug Resistance Testing in Kenya

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1505. Implementation of HIV Drug Resistance Testing in Kenya

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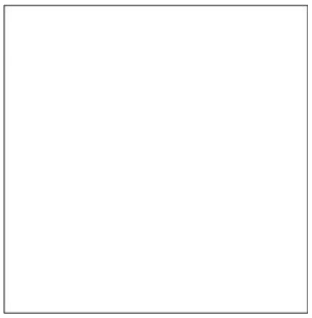
Background. Testing for HIV drug resistance prior to antiretroviral therapy (ART) is standard of care in the United States but is rarely performed in Africa due to its high cost. The prevalence of HIV drug resistance is increasing in resource-limited settings (RLS). An affordable and feasible strategy is needed in RLS to identify individuals with drug resistance and prescribe effective ART. Our group developed a low-cost oligonucleotide ligation assay (OLA) that detects mutations conferring resistance. Little data exists on implementing HIV drug resistance testing in RLS. Here, we describe the implementation of OLA in one laboratory in Kenya and discuss practical aspects of executing the OLA over two years.

Methods. The OLA was transferred to a research laboratory at the Coptic Hope Center in Nairobi, Kenya, as part of a randomized trial testing use of the OLA in individuals starting first-line ART to improve virologic outcome. The Seattle Lab Manager (SLM) transported equipment needed for OLA to Nairobi, set up the laboratory, and trained two Kenyan lab technicians to perform OLA. Two additional technicians were later trained. Technicians had education either as a lab technologist or lab scientist, with limited training in molecular techniques.



Results. OLA was successfully performed by Kenyan lab technicians on 565 blood samples. Each week, OLA was performed on approximately 7 samples, requiring an estimated 10 hours of technician labor, and 2 hours of remote technical support, review of test results and oversight from the SLM. Some sample results were delayed during two temporary, month-long pauses in testing of specimens, due to suboptimal performance of the OLA. This required trouble-shooting by the SLM in conjunction with lab personnel.

Conclusion. OLA technology was successfully transferred to the Kenyan laboratory. However, it required time-intensive technician labor and substantial oversight by the SLM. The complexity of OLA, and a paucity of lab technicians and on-site supervisors trained in molecular techniques are potential bottlenecks for implementation of the current version of OLA at a larger population-level. Research is ongoing to develop OLA Simple, a simplified kit aimed to address these challenges and serve as a point-of-care assay.

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