Making Health Services Accessible

ESC204 Winter 2023 Opportunity Statement

Location Abuja, Nigeria
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Introduction

Overview

Malaria is endemic in Nigeria, and most of Nigeria's residents and healthcare facilities bear the burden of this deadly disease. Communities in less urban areas especially are less likely to have easy access to health facilities, and hence are more likely to suffer more from diseases such as malaria. Organizations such as the non-profit eHealth Africa (eHA) are working on the frontlines of the fight to reduce malaria rates in Nigeria with malaria-testing clinics. Healthcare professionals, who are in short supply, and the Nigerian government are dealing with the economic ramifications of treating malaria in public healthcare facilities and are key stakeholders in reducing malaria rates.

The rural-urban divide, compounded by al large wealth gap, leads to limited access to malaria testing and treatment throughout Nigeria. There are a number of issues at play including access to testing as well as the efficiency of the testing process to increase the rate at which diseases can be identified and treated. Clinics, such as eHA, mainly cater to patients who are from urban settings and can access their physical lab reports in person but are interested in increasing their reach in less urban areas.

Increasing the reach of diagnostics facilities can help with better public health surveillance and inform policies that can improve preventative measures for disease as well as treatment availability and planning of placement of future health facilities.

Challenge Statement

The Opportunity Champions, Tolu and Obinna, believe there is opportunity to innovate in the ways tests are accessed as well as performed in the lab to improve the accessibility and efficiency of tests for various communities. Key challenges are:

1. Making tests such as Malaria Rapid Diagnostics tests available to communities in more rural settings

2. Ensuring better turnaround time for tests by helping technicians keep better track of various diagnostics tests that have different test run times or coordinating when and where tests happen across multiple lab locations.

3. Improving the efficiency of testing procedures such as microscopy (and others) through various automations of manual tasks, freeing up technician time to focus on test interpretation and other more complex tasks where automation is difficult.

Opportunity Champion

Tolulope (Tolu) Oginni is Research Project Manager at eHA Clinics. He is a trained public health researcher skilled at supporting laboratory capacity and health systems strengthening intervention in low resource setting. He has years of experience in the management of biomedical, clinical and nutrition projects. He has experience building cohesion, inspiring ownership, and ensuring results delivery from teams scattered throughout the globe with diverging agendas. Tolu is passionate about healthcare, and though has held multiple positions, he has kept one focus: applying his technical expertise and strategic thinking to complex health issues affecting underserved populations.

Background

eHealth Africa is an NGO whose mission is to provide health services to underserved communities in Nigeria. The organization is interested in increasing access to fast malaria test results, addressing logistical issues around providing diagnoses in rural areas, and improving data-driven solutions to health crises.

Existing diagnostic processes for Malaria testing

The standard test for malaria is performed by analyzing a patient's blood under a microscope and searching for parasites in over 100 different microscope fields. This process is labor intensive, taking a clinician up to 10 minutes to analyze a single sample. Easier testing methods exist, such as Rapid Diagnostic Tests (RDTs), but they are less accurate. Automating parts of this process such as moving slide inserts through microscopes or managing image processing has the potential to significantly decrease wait-time for test results, especially in clinics that support several rural communities. Hence, streamlining the diagnostic process for malaria while yielding reliable results, may lead to quicker and/or better diagnoses. Existing lab diagnostic equipment is expensive assets and when augmented to replace manual and/or time-intensive tasks could alleviate the slow and arduous process.

Access to Tests

Malaria is a deadly mosquito-borne illness, which bears a significant burden on the Nigerian healthcare system. Though a malaria-positive patient can die within 24 hours after the first onset of symptoms, fever, headache, and chills can be difficult symptoms to distinguish from general illness without proper testing frameworks. Nigeria has many malaria cases; however, many people being treated for Malaria are not actually infected with the parasite. Because of its deadly nature, symptomatic individuals frequently choose to medicate under the assumption of having malaria, rather than undergoing testing as shared by the opportunity champion. Access to testing can be difficult in rural settings both in terms of physical access and in terms of cost. RDTs can complement microscopy-based tests and provide cost effective ways to make diagnosis more accessible. Samples can be collected by the patient and submitted to the lab.

Diagnostic Testing Environment

The clinics have skilled technologists who can identify malarial parasites from analyzing microscopy blood smears. Supporting results from malarial microscopy analysis, rapid diagnostic testing (RDT) is done which requires separate equipment for different parameters. Each of these pieces of equipment may have a different diagnosis time. As shown in Video 1 (see Resources) the urinalysis strip is the only one read on a machine. Technicians also spend their time performing tests for other diseases. Technicians can be running multiple other RDTs (Strep Ag, COVID IgG, and IgM etc.) in addition to malaria as part of their work. Video 2 (see Resources) shows an example of running RDTs. Typically, there are about 5 machines (Microscope, hematology analyzer, chemistry analyzer, urinalysis machine, Glucometer) that are running simultaneously. There is an opportunity to help technicians coordinate their work better to increase the volume of tests labs can handle which would allow labs to reach more patients and return results faster.

Resources

- World Health Organization (2022). Malaria. https://www.who.int/news-room/fact-sheets/detail/malaria
- Clinic Website: https://www.eha.ng/
- The following resources are provided by eHA as an example of what might transpire in a laboratory in a clinic in Nigera:
    - Video 1 - Tolu_Video1.mp4
    - Video 2 - Tolu_Video2.mp4
    - eHa - https://www.ehealthafrica.org/
    - Here is a list of equipment in the eHA laboratory:

Department	Equipment Name	Model Number
Chemical Pathology	Urine reader	LAURA SMART
Chemical Pathology	LAB PRO Weighing Scale	SR-250AZ
Chemical Pathology	i-ISTAT 1 analyser	MN:300-G
Parasitology	Premiere Slide Warmer	XH-2002
Hematology	Hemocue 301	Hemocue HB 301 Analyser
Haematology	Norma icon 3	icon 3
Haematology	Norma icon 3	icon 3
Chemical Pathology	Accu-Check Active Glucometer	GB
Chemical Pathology	CadioCheck PA	PTS