



# COST-EFFECTIVE PRACTICES IN GHANA

Associate Practitioner in blood science **Christina Silby** discusses the lessons learned from a recent trip volunteering in a Ghanaian laboratory.

One day I thought to myself, I need to experience what it means to work in a clinical laboratory that has fewer resources and to discover exactly how they can sustain the running of the lab.

I acted on that impulse and six months later I was among the hustle and bustle of Accra, capital of Ghana. I decided to embark upon a two-week volunteering project through Kaya Volunteer, in partnership with

VPWA (Volunteer Partnerships for West Africa). The laboratory to which I was assigned, Anezka Medical Laboratory Services, was a community-based, small-to medium-sized operating laboratory. The staff are dedicated to meet the needs of the clinicians and patients coming from the nearby hospitals to provide diagnosis and aid their treatment.

During my time in this laboratory, my tasks included drawing blood from patients, using the laboratory equipment to diagnose, learning new manual







## GHANA A LOOK AT HEALTH IN THE COUNTRY

Medical illnesses in Ghana overlap with those in developed countries, but infection, trauma, and women's health problems are much more prominent.



### Limited resources

Medical practice in rural Africa faces extremely limited resources, a multiplicity of languages (hundreds in Ghana), and presentation of severe illnesses at later stages than seen elsewhere. Despite these limitations, Ghana has established a relatively successful national medical insurance system.

### Common diseases

According to the World Health Organization (WHO), the most common diseases in Ghana include those endemic to sub-Saharan African countries, particularly: cholera, typhoid, pulmonary tuberculosis, anthrax, pertussis, tetanus, chicken pox, yellow fever, measles, infectious hepatitis, trachoma, malaria, HIV and schistosomiasis.

### Common causes of death

The most recent report from the WHO identifies the top causes of death in Ghana as lower respiratory infections (11%), stroke (9%), malaria (8%), ischemic heart disease (6%), HIV/AIDS (5%), preterm birth complications (4%), birth asphyxia and birth trauma (4%), meningitis (3%), and protein-energy malnutrition (3%).



diagnostic techniques and data handling. The two main analysers the laboratory possessed are commonly used in a small laboratory setting. The semi-automated analyser, Mindray BA-88A, is used to run up to 200 biochemistry tests, while the fully-automated analyser, Mindray BC-2800, can be used for all parameters and three-part differentiation of white blood cells.

### My challenges

I knew straight away that the most challenging experience was going to be drawing blood from the patients. In Ghana, all biomedical scientists are capable of drawing blood. As this was my first time, I had to learn the syringe method patiently and understand the techniques. It was very important to follow the health and safety regulations, such as wearing gloves, disinfecting the skin, finding the appropriate vein for draw and the technique of emptying the blood to the right tube. By practising, I became more confident. When it came to children, I watched the staff drawing blood since I wasn't confident with them – I found the process more complicated with children, especially as they can find the process upsetting and their behaviour can be unpredictable.

Another challenge I faced was the daily commute to and from the laboratory. The public transport, called “tro tro”, can be very confusing for a foreigner. As they don't have a fixed stop, they can collect and drop anywhere on the route. I had to wait in the middle of a road construction site every day, while trying to listen for the conductor shouting the name of the destination in a language that was completely new. It was initially difficult, but with more exposure to this routine, I became more confident.

### Government vs private

One of the common perceptions of the Ghanaian people was that work based in private labs is more efficient than that of



## *I had to learn the syringe method and understand the techniques*

government labs. To understand the reasoning behind this, after a few days working in the Anezka Lab, I visited the nearby government-based lab of GA West Municipal hospital. I saw straightaway that there were more staff for different sections and everyone was extremely busy, as patients were coming in and out continually. I also noticed that there were trainees as well. I understood that the immense load of the work coming in probably produces poor efficiency. However, the stream of patients coming to the Anezka lab was quite steady, so the reporting of results was done in an organised manner. I also noted that the patient will pay much less per test in a

government lab in comparison to the private. If the majority of people can only afford the government charges, it makes sense that there is such an imbalance between the work of these two sectors.

### Rapid dipstick tests

Most virology and pregnancy tests were performed by the rapid dipstick kit (see table 1), which was new to me, as I am more used to seeing these tests done on analysers. I noticed that this was not only used in Anezka lab, but also in the government hospital labs. The main reasons for this are that they are quick and cost-efficient, compared to analyser tests. The specificity and sensitivity





values suggest they are reliable and only when they are positive, do the doctors ask the patients to go to bigger labs, such as MDS Lancet, which has the analysers to provide more accurate results. The price of one dipstick can be around 10 Ghanaian cedi, while analyser tests could cost to about five to six times more. So it is understandable that rapid dipstick kits are used for initial screening, to save costs for both the lab and the patient.

### Strategies to be cost effective

My current role as an Associate Practitioner means that I do not have any responsibility in managing the budget for the running of a lab. But when you are working in a small laboratory, such as Anezka, all the staff take responsibility.

This was seen with staff working together to clean, bleach and sterilise the EP tube V bottom vials, slides, urine

Test	Rapid strip test		
	Specificity (%)	Sensitivity (%)	Confidence interval(%)
hCG	100	100	95
HIV	100	100	95
SYPHILIS	>99.9	99.7	95
HCV	100	97.5	95
HBSAG	>99.9	99.9	95

**Table 1:** Differences in specificity, sensitivity, accuracy and confidence interval against other commercially available tests.

containers and pipettes every day.


During my time in the lab, I saw that doctors more often requested HB (haemoglobin) only, rather than FBC (full blood count). This was perfect for the analyser Mindray BC-2800, because you can change the mode and enable it to perform only one test, which in return saves the use of other reagents or even consumables. Also, depending on the proximity, a hospital or clinic can give an indication of the tests or even analysers that the laboratory would need, avoiding the stocking of unnecessary supplies.

Additionally, as mentioned in the previous section, use of rapid dipstick kits is cost-effective, quicker and produces accurate screening method. As most tests in labs only require EDTA plasma, using EDTA tubes would be cheaper than SST tubes and would also help maintain costs within the lab.

### Final thoughts

One of my biggest expectations before I started this two-week project was to see and study more examples of positive malaria or parasites. But this wasn't the case. Instead, I learnt the importance of the presence of a small laboratory in a developing community along with a government lab. This gives people the option to choose, depending on the urgency of the results and the cost of a test. All staff take equal responsibility for the maintenance and running of the lab, showing that dedication and team work is necessary for success in this environment. This consequently is connected to the

cost-effective practices within the management of a small laboratory.

Ultimately, no matter how big or small the lab, it's about everyone working together to provide the most accurate diagnosis for the people in the community. My dream is to help build clinical labs in developing communities, so next year I plan to do another project where I want to be located in a more rural part of the world. 

**Christina Silby** is an Associate Practitioner in the automated blood sciences department of Health Services Laboratories, central London. To see the references for Table 1, view the article online at [thebiomedicalscientist.net](http://thebiomedicalscientist.net)

