



*Fredrick Were, the medical technologist at Navakholo Sub County Hospital prepares a sample for TB testing using the molecular TrueNat machine placed in the facility by the Ministry of Health's National TB Program.*

## Strengthening TB Diagnosis in Kakamega County through the Rollout of the Truenat Machine

By Diana Munjuri CHS - USAID TB ARC II

**O**n a brighter Thursday morning in March 2023, we set on a journey from Kisumu to Navakholo Sub County Hospital, Kakamega County, one of the beneficiaries of the 38 TB molecular Truenat machines rolled out in the country last year.

After driving for at least 45 minutes down the tarmacked road that offered scenic views of the lush green surroundings we arrived at Kakamega town and diverted to join an earthen road leading to Navakholo Sub County

Hospital. What was supposed to be a 30 minute drive took us two and half hours due to the bumpy, slippery and thicketed boarded off road terrain despite using a four wheel vehicle driven by one of our organization most experienced drivers. By the time we were getting to the facility, our backs were aching from frictions of uncontrolled body movements as the vehicle navigated over rocks and pot holes along the way. The terrain was so tough that some colleagues joked the Rhino Charge off-road challenge to be held there. Never the less, we arrived in one piece.

A few meters to the hospital, some road construction has began, but still these enhanced road capacities do not necessarily reflect efficient mobility of the local population. Public transport is limited to expensive infrequent public service vehicles or motorbike connections to and from Kakamega town, the county hub.

The impassability of the road leading to the facility has also hampered provision of health services including TB services due to sub-optimal sample networking to the nearest GeneXpert sites hindering TB control.

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“Before the installation of the Truenat machine here, we had a challenge in TB diagnosis as we don’t have a geneXpert machine in the entire Sub-county. Previously, we were using microscopy and referring samples to Kakamega County referral hospital for geneXpert which is located over 80 kilometers away. The sample networking was sub-optimal due to the poor terrain,” Emily Vukusa, Kakamega County TB, Leprosy and Lung Disease Coordinator shares.

In July last year, the Ministry of Health’s National TB Program, USAID Kenya, Stop TB Partnership, Centre for Health Solutions - Kenya (CHS) through the introducing New Tools Project (iNTP) installed a Truenat machine to strengthen TB diagnosis in the sub county.

“Before the placement of the Truenat machine, there was a site assessment of the need to place the machine there, the availability of staff and a safe room to place the machine . Two laboratory staff were then trained on how to operate the Truenat machine and how to report/relay the results,” Emily shares.

As a result of having the machine at Navakholo, TB case identification has improved in the Sub-county. All facilities in the sub-county refer their samples to the site.

“In 2022 we diagnosed 121 cases compared to 2021 where we diagnosed only 76 cases. The presence of the machine has improved bacteriological diagnosis given TB is a laboratory diagnosis as per WHO guidelines . Of the 121 cases reported in 2022, 78% were bacteriologically and only 22% were clinically diagnosed,” Emily says.

According to Antony Were the facility TB clinician, the presence of the machine has led to early diagnosis and treatment initiation for the patients.

“Our turn around for the getting the results has also gone down. Before the installation of the Truenat machine we used to send samples out for geneXpert and we were reliant on a rider which was very inefficient and unreliable due to the bad roads. It was taking more than five days to get

the results. This lead to late diagnosis and community disease transmission,” Antony shares.

He adds, “The machine has also improved our management of patients as we are able to detect which patient is resistant to rifampicin.”

Fredrick Were, the medical technologist at the facility and one of the end users of the molecular Truenat machine shares that since the installation of the machine from July 9, 2022 to mid-March 2023, they have processed 855 samples, of which 64 were positive, and one multi drug resistant TB. All the positives were put on treatment.

“When we compare our previous diagnostic tests with microscopy with Truenat, Truenat has improved our TB case finding across the sub county. Truenat is more sensitive compared to microscopy hence chances of missing TB are very minimal,” Were says.

In a day they test an average of eight samples. In case, of cartridge stock out in the geneXpert sites in the neighboring counties the sample are sent to Navakholo since the Truenat doesn’t use a cartridge.

“We use sputum to test for TB and we test an average of five from within the facility. We receive samples from three zones within the sub county through the USAID Afya Nuru project enabled sample networking with the subcounty,” Were shares

The Truenat machine capability to function off grid has also favored them since electricity is unreliable in the area.

“The machine is also able to run on battery power when power from the national grid goes off which is the trend here daily. We always ensure that the machine is well charged so that we are able to continue with our work in the absence of electricity,” Were says.

Were terms the machine efficient and effective in diagnosing TB, “With the presence of the Truenat machine, work is easier for me. Previously, I used to read more slides with the microscope which was time consuming and cumbersome. As you read more slides

you are likely to miss the TB bacilli in the slides. Truenat is molecular ,and more sensitive and has the capability of detecting Rifampicin resistance”

They look forward to utilising the Truenat machine to carry out targeted outreaches as its portable. To ensure there is no disruption of services in case of their absence, they are cascading the knowledge on its usage through on job training to colleagues as well as sensitizing the neighboring facilities of its availability for optimal use in TB control in the sub county.

32 year old Ruth Waithera,, a mother of two boys and a resident of the area is one of the beneficiaries of the Truenat machine at Navakholo. When she presented in the facility after coughing up blood while doing laundry, she expected to be diagnosed with TB as she had battled the disease five years ago after having similar symptoms as those experienced that day, but not as fast as it happened.

“One day in November 2022, I started coughing at night but the cough went away. The following day in the morning while doing laundry, the cough came back but this time while accompanied by a bloody sputum. It reminded me of the similar symptoms I had in 2017 and was diagnosed with TB. I immediately made up my mind and came to Navakholo where I was requested to produce a sputum for testing,” Ruth shares.

She adds, “Unlike my encounter in 2017 where I had to wait for results for like a week, this time the results were back quickly confirming I had TB. After counseling on the importance of completing treatment and how to not spread the disease to others, I was initiated on treatment the same day. Since then, I am been progressing well. The coughing is gone. My weight has increased from 55 to 58 kilograms and I look forward to completing treatment to be completely cured.”

Her husband and children were also tested for TB using the Truenat machine. None of them had developed active TB disease and because they

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# Turning The Page on Illness: Achieng's journey towards recovery

By John Gitau and Mbetera Felix | DNTLD-P

The elation of finally receiving a TB diagnosis came as a pleasant relief to 30 year old Anne Achieng. She sits calmly alongside her doctor, who offers to translate as we delved deeper into her story. A mother of 2, who hails from Miwani in Kisumu, narrates of how her life had been crippled by TB from her diagnosis in September last year but has been buoyant ever since her recovery.

"I used to operate a small vegetable business where I'd fend for my small family..."she testifies through her doctor.

"I struggled to regain a foothold of my life....

Alot has changed since!!!!..." she adds.

She vividly recalls feeling overwhelmingly tired and excessive sweating.Her cough grew heavy as she reconciled to visit a hospital [Ahero Hospital]

"They conducted multiple tests there, including Salmonella and Typhoid but all in vain!!..."she concedes.Her family was put under lots of distress and agony as they slowly came to terms with the strain of seeking treatment.

"Financially it was draining for us as I had to make constant trips to the hospital all without a proper diagnosis."

Her turning point came in March of last year, when she made her way to "Russia" Hospital [Jaramogi Oginga Odinga Teaching and Referral Hospital. It was there that a GeneXpert test was administered revealing a positive result for TB.She greeted the diagnosis



Anne Achieng former TB client with Effie Awuor a clinician at the Jaramogi Odiga Hospital TB clinic, Kisumu County during review.

all but with mixed feelings citing the fact that she believed it had no cure.

"I had to self isolate and stayed aloof.I steered clear of all interactions outside my family..."she exclaims through her doctor.

"I feared crowded places!!..."she remarks.

But her doctors counseled her,attributing treatment adherence as key to a cure and eventually reconnecting with society.She confesses that it wasn't easy with bus fare in particular posing a constant challenge with countless hospital visits.

She appeals to persons experiencing symptoms of such as coughing ,chest

pain and sweating to seek immediate medical attention.She advocates for early screening of TB and encourages families of patients to stand by their own during treatment as a means of reducing stigmatization in society.

"TB is curable...I held plenty of reservation and even dreaded the treatment process when I began but I'm delighted I went ahead with it. I am recovered and living healthy again!!..." she proclaims. ●

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were her contacts and she had active TB disease, they were put on TB preventive therapy treatment to protect them from developing active TB disease.

“We are all progressing well with our treatments. I am grateful that the TB services are now readily available, free of charge and closer home,” Ruth concludes.

42 year old, Caroline Masinde, a TB/HIV champion at the facility had always felt the urge to go for TB testing due to regular interaction with TB patients.

“I usually assist in tracing patients who are lost to follow up after treatment initiation for both TB and HIV. During TB sensitisation meetings the importance of regularly screening and testing for TB as health workers had always been emphasized due to our regular interaction with the patients however, this was hampered by the sub-optimal diagnostic services in the facility. I really wanted to test for TB but I thought of giving priority to the patients who seemed sickly as I did not have any symptoms,” Caroline shares.

She adds, “With the availability of the machine at the facility, in November 2022, I decided to produce a sputum for testing using the Truenat machine. The results came back the same day confirming I had TB. After counseling on the importance of completing treatment, I was initiated on treatment. I am progressing on well and will be completing treatment soon.”

Caroline concludes by urging other health workers to regularly screen for TB as well as support those battling the disease. She calls for the scale up of the Truenat machine in the country to strengthen TB control especially in the peripheral facilities.

The Truenat machine at Navakholo is among the 38 molecular tools rolled out in the country through the iNTP. Other WHO-approved tools for TB screening, diagnosis, and prevention rolled out since June last year include;

- Treatment courses for TB preventative therapy: the 3RH regimen to benefit 13,000 persons
- Digital Adherence Technology using medication sleeves
- Eight digital chest X-ray equipment kits with accompanying software for the computer-aided detection of TB
- Two interferon-gamma release assay (IGRA) machines to aid in the detection of TB infection
- Connectivity solution for all TB diagnostic equipment known as TIBULIMS. ●

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