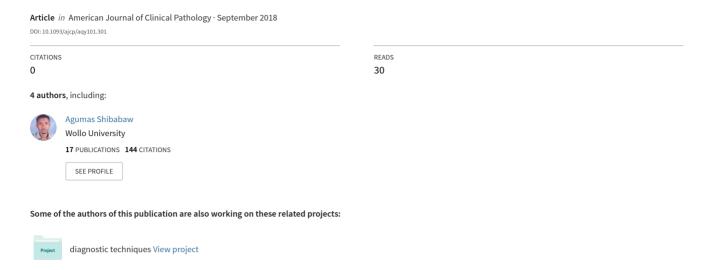# Accuracy of the Color Plate Microcolony Detection for the Diagnosis of Mycobacterium tuberculosis Complex in Northwest Ethiopia

4 authors, including:

Agumas Shibabaw
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and 565 (79%) tested negative, 342 of whom were sent for confirmatory culture. Only one of the 342 negative cases was positive by culture. Sensitivity is calculated as 99.3% with a negative predictive value of 99.7%.

Conclusions: Our results show that molecular POCT is an excellent screening method for GAS in a population of both adults and children. There was only one false negative in the cases with confirmatory cultures, suggesting that these cultures may not be required. Larger studies may be needed to determine whether the high sensitivity and negative predictive values are stable with a solely pediatric population.

Malaria—Case Management in Lagos, Nigeria, With SD–BIOLINE HRP-2–Based RDTS

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Objectives: This study was carried out to evaluate the performance characteristics of SD Bioline HRP-2 RDT in malaria case management using microscopy as a gold standard among patients at a primary health care center in Lagos, Nigeria.

Methods: Study comprised 1,276 consenting patients who were randomly selected from the outpatient department of a primary health center in the community. Venous blood samples of patients were collected and screened for malaria parasite infection using microscopy and SD Bioline HRP-2 RDT diagnostic methods. An analysis was performed to determine the sensitivity, specificity, positive predictive value, and negative predictive value of the SD Bioline HRP-2 RDT. Patients were administered with a case report form.

Results: Among 1,276 patients recruited for the study, only 197 (15.4%) and 186 (14.6%) were positive for *P falciparum* by HRP-2 RDT and microscopy (*P* > .05). The sensitivity, specificity, positive predictive value, and negative predictive values were 94%, 98.5%, 91.4%, and 98.2%, respectively. Using RDT to correlate symptoms, afebrile fever recorded the highest in all age groups (810, 63%), while febrile fever with temperature ≥37°C recorded 229 (17.9%) in all age groups; 45.8% (584) of the patients had access to medication.

Conclusion: SD Bioline HRP-2 RDT is reliable for parasite-based diagnosis of malaria infection but unreliable for correlating symptoms of malaria, especially fever with parasite identification.

Spoligotyping-Based Genetic Diversity of *Mycobacterium tuberculosis* in Ethiopia: A Systematic Review

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Objectives: To review and compile the results of studies conducted on strains and lineages of *M tuberculosis* in Ethiopia.

Methods: A systematic search and review of articles published on *M tuberculosis* strains and lineages in Ethiopia were made. PubMed and Google Scholar databases were considered for the search while the keywords used were *M tuberculosis*, *molecular epidemiology*, *molecular typing spoligotyping*, and *Ethiopia*.

Results: Twenty-one studies were considered in this review, and a total of 3,071 *M tuberculosis* isolates and 3,067 strains were included. These studies used spoligotyping and identified five lineages, including Indo-Ocean, East Asian/Beijing, East African-Indian, Euro-American, and Ethiopian, in a proportion of 7.1%, 0.2%, 23.0%, 64.8%, and 4.1%, respectively. Thus, Euro-American was the most frequently (64.8%) occurring lineage while East Asian was the least (0.2%) frequently occurring lineage in the country. Surprisingly, the Ethiopian lineage seemed to be localized to northeastern Ethiopia. In addition, the top five clades identified by this review were T, CAS, H, Manu, and Ethiopian, comprising 48.0%, 23.0%, 11.0%, 6.0%, and 4.1% of the strains, respectively. Furthermore, predominant shared types (spoligotype patterns) identified were SIT149, SIT53, SIT25, SIT37, and SIT21, each consisting of 420, 343, 266, 162, and 102 isolates, respectively, while on the other hand, 15% of the strains were orphan.

Conclusion: According to the summary of the results of this review, diversified strains and lineages of *M tuberculosis* were found in Ethiopia, and the frequencies of occurrence of these strains and lineages were variable in different regions of the country. This systematic review is registered in the PRISMA with the registration number of 42017059263.

Accuracy of the Color Plate Microcolony Detection for the Diagnosis of *Mycobacterium tuberculosis* Complex in Northwest Ethiopia

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Introduction: Accurate and timely tuberculosis (TB) disease diagnosis is the primary step for initiating effective treatment. However, currently available TB diagnostic tools have their own limitations. The color plate agar-based culture test (TB-CX test) is low cost, is simple to use, and detects *Mycobacterium tuberculosis* (MTB) faster. Therefore, the main objective of this study is to compare the diagnostic accuracy and time to detection of positive cultures using color TB-CX test as compared to Löwenstein Jensen (LJ) culture.

Methods: A comparative cross-sectional study was conducted at University of Gondar Hospital from March 2016 to August 2017. A total of 200 sputum samples were collected from confirmed or clinically suspected TB patients with age 15 years and older. Sputum samples were processed for direct smear microscopy and culture on color TB-CX test and LJ medium. Time to detection was recorded for each culture medium. Statistical analysis was performed using SPSS version 20.

Results: A total of 200 study participants were enrolled in this study. Sixty-five percent were found positive on both methods, but four (2%) were positive on LJ culture and negative on the color TB-CX test. The median time from sample processing to detection of MTB growth was significantly shorter using the color TB-CX test (median, 12 days; IQR, 9–16) than LJ culture (median, 21 days; IQR, 14–21) ($P < .0001$). The overall sensitivity and specificity of the color TB-CX test compared to conventional LJ culture were 97% (95% CI, 92.5–99.2) and 100% (95% CI, 93.5–100), respectively. The positive and negative predictive values of the color TB-CX test were 100% and 93.2%, respectively, compared to LJ culture.

Conclusions: The color plate microcolony detection allows early and accurate TB diagnosis in a median time of 12 days. This rapid method could be an option for diagnosis of pulmonary TB in resource-limited settings.

Malaria Overtreatment Still Very Common in Kenya Despite Negative Malaria Tests

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Objectives: The CDC estimates that about 3.2 billion people are at risk of malaria transmission across the world, with WHO estimating that 212 million clinical episodes and 429,000 deaths were reported in 2015. The initial symptoms and signs of malaria are nonspecific, and hence diagnostic testing is required for confirmation. Rapid diagnostic tests (RDTs) and microscopic-based tests are widely available for use. The study aim was to assess the use of malaria tests in management of malaria.

Methods: The aim of this study was to assess the current use of malaria testing results in guiding prescription of antimalarial drugs. This is a retrospective analysis carried out from January 1 to December 31, 2016, in our facility. Testing for malaria is routinely offered through RDT and QBC methods. The study assessed the number/type of malaria tests requested, malaria test results, and the number of antimalarial full doses prescribed by clinicians over the same period. For patients with multiple requests, only the first one was included in the final analysis.

Results: A total of 32,611 malaria tests requests were made, with 3,642 cases (11.1%) reported as positive. The average number of positive malaria tests per month were 303.5. QBC was the most common testing method employed in 83%. A total of 16,814 full doses of antimalarials were prescribed over the same duration, making an average of 1,401 doses of malaria prescribed each month. The number of antimalaria drugs prescribed was 4.6 higher than the number of positive tests for malaria reported.

Conclusion: Malaria overtreatment is very common in our hospital, implying that clinicians are still treating many patients without malaria, leading increased risk of drug resistance and harm. The reasons for overprescription were not assessed. Clinician sensitization needs to be carried out to ensure good use of antimalarials.

Seroprevalence of *Chlamydia trachomatis* Among Sexually Active Women in Osun State

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Objectives: To determine the seroprevalence of IgM to *Chlamydia trachomatis* among the sexually active women in Osun State, southwestern Nigeria; to determine the seroprevalence of IgG to *Chlamydia trachomatis* among sexually active women; and to determine the risk factors of *Chlamydia trachomatis* genital infections in Osun State.

Methods: Enzyme-linked immunosorbent assay (ELISA) was used in this research to detect *C trachomatis* in sexually active women. Venous blood collected from 420 women between 16 and 55 years of age was tested using ELISA IgG and IgM Diagnostic Automation kits to detect post-infections and primary infection stages, respectively. The data were analyzed using χ^2 test of SPSS version 20.0 to determine the levels of statistical significance at $P < .05$.

Results: Twenty percent of the women were positive to *Chlamydia* infection, of which 80% had IgG positivity and 20% IgM positivity ($P = .004$). The frequency of detection of *C trachomatis* infection was highest among women between 26 and 30 years and lowest between 51 and 55 years ($P = .003$). The number of sexual partners and history of sexually transmitted infection were significantly associated with *C trachomatis* ($P = .001$).

Conclusion: This report showed a high prevalence of *C trachomatis* among sexually active women. The seroprevalence of IgG is also significantly higher than IgM. This result calls for urgent advocacy for national policy on routine screening for *C trachomatis* in the prophylactic as well as the diagnostic schemes for women as treatment is cheap and effective. Detection of IgG antibodies is an effective and noninvasive tool for the detection of *C trachomatis* infection.

Antibody and Host Inflammatory Biomarker Combinations as Diagnostic Tools for TB Disease