carbapenemase-producing organisms rapidly and reliably. In this study, the performance of the commercially available RAPIDEC CARBA NP test (bioMérieux, Durham, NC) was evaluated against the performance of the conventional CarbaNP and the modified Carbapenem Inactivation Method (mCIM) for the detection of carbapenemase activity in Enterobacteriaceae and Pseudomonas aeruginosa.

A total of 73 Enterobacteriaceae and 32 Pseudomonas aeruginosa isolates were tested for carbapenemase activity using the RAPIDEC CARBA NP, conventional CarbaNP, and mCIM methods. Using available whole-genome sequence information, this collection included 72 isolates with and 33 isolates without carbapenemase genes. The isolates harboring a carbapenemase gene encoded 20 class A, 47 class B, and 5 class D–type β-lactamases. All methods were performed using bacteria from a single overnight blood agar plate. The conventional CarbaNP and mCIM were performed according to guidelines from the Clinical and Laboratory Standards Institute. The RAPIDEC CARBA NP was performed per the manufacturer’s instructions.

The RAPIDEC CARBA NP detected 65 of 72 (90%) carbapenemase-producing isolates; the seven isolates yielding false-negative results included five Enterobacteriaceae with blaOXA-48-like, and two with blaKPC-4 genes. The sensitivity and specificity were 90.2% and 100%, respectively, for the RAPIDEC test; 94.4% and 100% for conventional CarbaNP; and 100% and 81.8% for mCIM. The conventional CarbaNP detected all carbapenemase producers except four OXA-48-like–producing isolates. The mCIM, which accurately detected all carbapenemase producers, yielded false-positive results in six isolates of P aeruginosa. Overall, the RAPIDEC CARBA NP was easy to use and required less hands-on time than the conventional CarbaNP and mCIM methods. However, the RAPIDEC CARBA NP showed decreased sensitivity for detecting low-level activity carbapenemases such as OXA-48-like enzymes and KPC-4.

Detection of Mycobacterium tuberculosis From the Urine of People Living With Human Immunodeficiency Virus Suspected Pulmonary Tuberculosis

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Objectives: The aim of this study was to evaluate the utility of urine as a clinical specimen for the diagnosis of pulmonary tuberculosis in people living with HIV.

Methods: A total of 117 HIV-seropositive individuals from three public health facilities in Addis Ababa, Ethiopia, were enrolled consecutively from December 2013 to July 2014. A total of 117 paired morning sputum and urine samples were simultaneously collected from antiretroviral therapy (ART) naïve PTB-suspected individuals living with HIV. Both sputum and urine samples were processed for culture using Lowenstein-Jensen medium and the left were subjected to PCR using RD9 primers. Chi-square test and k value were used to compare different methods used.

Results: Out of 117 suspected PTB HIV-infected individuals, sputum culture alone detected more mycobacterial isolates (33, 28.2%) than the urine specimen alone (17, 14.5%). Of 33 individuals positive for sputum culture, 13 individuals were observed to be urine culture positive. Of the 84 individuals negative for mycobacteria by sputum culture, four (4.8%) were urine culture positive, and thus, the sensitivity and agreement between urine culture as compared to sputum culture were 39.4% and 0.49, respectively. On the other hand, the sensitivity of RD9-based PCR directly on urine was 72.7% by considering sputum culture as a reference standard. Moreover, RD9-based PCR directly on sputum detected nine (7.7%) individuals who were sputum culture negative for M tuberculosis. The detection rate of M tuberculosis from urine in patients those who couldn’t produce sputum was nine (34.6%).

Conclusion: PCR and culture examination of urine samples significantly improved the detection rate of M tuberculosis in PTB-suspected HIV-positive individuals.

Group A Streptococcus Molecular Point-of-Care Testing: Performance and Assessment of Culture Requirements for Negative Results

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Introduction: Point-of-care testing (POCT) for the diagnosis of group A Streptococcus (GAS) is an established practice. The standard method has been the rapid antigen detection test. Due to a variable sensitivity, manufacturers have stated that negative results should be confirmed with culture; however, as techniques have improved, current clinical guidelines state that this culture may not be necessary in most adults. Molecular techniques are now available with higher sensitivity and specificity. We performed a 1-year review of our point-of-care molecular GAS testing to assess performance characteristics that will help inform our decision on the need for confirmatory cultures.

Methods: Resulted point-of-care GAS cases using the Alere i platform (Abbott Laboratories, Chicago, IL) were reviewed using the electronic medical record and test logs from January 1, 2017, to December 31, 2017. Corresponding data on bacterial cultures were also gathered. The sensitivity and the negative predictive value were calculated using culture as the gold standard and accepting molecular positive tests as true positives.

Results: A total of 718 cases were reviewed; 434 (60%) adults and 284 (40%) pediatric patients were included in the study. 153 (21%) were positive on molecular POCT,
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**

**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 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.

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

**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 71.0%, 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**

**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 71.0%, 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.

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