

Analysis of the Annual Proficiency Testing Procedure for Intermediate Reference Laboratories Conducted by the National Reference Laboratory from 2013 to 2017

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Abstract : Objectives: The annual proficiency testing of intermediate reference laboratories is conducted by the National Reference Laboratory (NRL) to assess the efficiency of the laboratories to correctly identify Mycobacterium tuberculosis and to determine its drug susceptibility pattern. The proficiency testing results from 2013 to 2017 were analyzed to determine laboratories that were consistent in reporting quality results and those that had difficulty in doing so. Methods: A panel of twenty cultures were sent out to each of these laboratories. The laboratories were expected to grow the cultures in their own laboratories, set up drug susceptibility testing by all the methods they were certified for and report the results within the stipulated time period. The turnaround time for reporting results, specificity, sensitivity positive and negative predictive values and efficiency of the laboratory in identifying the cultures were analyzed. Results: Most of the laboratories had reported their results within the stipulated time period. However, there was enormous delay in reporting results from few of the laboratories. This was mainly due to improper functioning of the biosafety level III laboratory. Only 40% of the laboratories had 100% efficiency in solid culture using Lowenstein Jensen medium. This was expected as a solid culture, and drug susceptibility testing is not used for diagnosing drug resistance. Rapid molecular methods such as Line probe assay and Genexpert are used to determine drug resistance. Automated liquid culture system such as the Mycobacterial growth indicator tube is used to determine prognosis of the patient while on treatment. It was observed that 90% of the laboratories had achieved 100% in the liquid culture method. Almost all laboratories had achieved 100% efficiency in the line probe assay method which is the method of choice for determining drug-resistant tuberculosis. Conclusion: Since the liquid culture and line probe assay technologies are routinely used for the detection of drug-resistant tuberculosis the laboratories exhibited higher level of efficiency as compared to solid culture and drug susceptibility testing which are rarely used. The infrastructure of the laboratory should be maintained properly so that samples can be processed safely and results could be declared on time.

Keywords : annual proficiency testing, drug susceptibility testing, intermediate reference laboratory, national reference laboratory

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