

Establishment of a National Tuberculosis Drug Resistance System

Abstract:

Purpose

To establish a laboratory network based national tuberculosis drug resistance surveillance system.

Materials and Methods

To ensure efficient and accurate laboratory performance, a panel of 20 reference *Mycobacterium tuberculosis* strains was sent to 9 CDC contract Mycobacteriology laboratories and 100% of any resistant and 15% of susceptible *Mycobacterium tuberculosis* strains deposited in the reference laboratory were selected for rechecking. In addition, on-site evaluation was performed to find out the causes of the discrepancy and to take corrective actions. Drug resistant data of one strain isolated from each patient were collected and analyzed to understand the actual prevalence of drug resistance.

Results and Discussion

The results of panel testing revealed that 2, 1, 1 and 3 laboratories did not reached the 95% sensitivity for isoniazid (INH), rifampin (RIF), streptomycin (SM) and ethambutol (EMB), respectively. While the results of strain rechecking showed that 4, 2, 3 and 2 laboratories did not reached the sensitivity of 95% for INH, RIF, SM and EMB, respectively. Furthermore, the Taiwan CDC contract Mycobacteriology laboratory based survey demonstrated that the combined drug resistance rates were: 11.3% and 10.1% to INH, 7.5% and 6.2% to RIF, 10.6% and 9.8% to SM, 4.3 and 2.1% to EMB, 12.8% and 18.1% to any drug, and 5.3% and 4.0% to multiple-drug resistance (MDR) in 2005 and 2005, respectively.

Conclusion and Suggestions

Long-term technical supervision and monitoring seem to be necessary, as rapid turnover of laboratory staff cutting down efficiency of human resources. A routine EQA program must be included in the National Tuberculosis Program to assurance the highest quality possible of laboratory testing. Therefore, the accuracy of a laboratory surveillance system for the Taiwan Surveillance of Drug Resistance in Tuberculosis (TSDRTB) program could be assured.

Key Words: Tuberculosis, drug resistance, laboratory surveillance system