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**ALGORITHM TO USE DIAGNOSIS OF MULTIPLE
DRUGS RESISTANT OF MYCOBACTERIUM
TUBERCULOSIS PATIENTS**

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Algorithm to Use Diagnosis of Multiple Drugs Resistant Of Mycobacterium Tuberculosis Patients

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Abstract – The emergence of multidrug-resistant tuberculosis [MDR-TB] and, more recently, extensively drug-resistant TB [XDR-TB] is widely considered a serious threat to global TB control.

Keywords: Ant tuberculosis, World Health Organization, Mycobacterium Tuberculosis

INTRODUCTION

Tuberculosis [TB] remains a major global health problem despite the availability of effective ant tuberculosis therapy for over 50 years. The World Health Organization [WHO] estimates that approximately one-third of the global community is infected with *Mycobacterium tuberculosis*. According to WHO data, with regard to infection rates, Romania is among the top five countries from the European region, with high notification rates both for new and relapse cases of TB; more than 25000 new and relapse cases are recorded every year [1-2].

Since the early 1990s, an alarming trend and a growing source of public health concern has been the emergence of resistance to multiple drugs. Multidrug resistance [MDR] is defined as resistance to at least isoniazid [INH] and rifampicin [RMP]. Although it remains unclear whether the drug-resistant strains are less transmissible than the susceptible strains [3], infection-control precautions need to be maintained, since patients with drug-resistant TB are likely to remain infectious for long periods. Thus the public health consequences of drug-resistant tuberculosis might be more serious than those of drug-susceptible disease.

The emergence of multidrug-resistant tuberculosis [MDR-TB] and, more recently, extensively drug-resistant TB [XDR-TB] is a major threat to global TB control [4-7]. MDR-TB is resistant to isoniazid [INH] and rifampicin [RIF]. While MDR-TB has been documented in the past [6], the term XDR-TB appeared in the literature for the first time in March 2006, in a report jointly published by the World Health Organization [WHO] and the US Centers for Disease Control and Prevention. This report described a severe

form of disease caused by strains of *Mycobacterium tuberculosis* which were resistant not only to INH and RIF but also to at least three of the six classes of second-line anti-TB drugs [fluoroquinolones, aminoglycosides, polypeptides, thioamides, cycloserine and para-aminosalicylic acid]

REVIEW OF LITERATURE:

Liquid culture-based methods:

Automated liquid culture systems are more sensitive than solid media cultures, and they significantly reduce turnaround time. However, even with liquid cultures, two to four weeks are still needed to obtain results, and their substantially higher cost is an issue for resource-limited countries. The BACTEC 460 TB radiometric system [Becton Dickinson, USA] was considered to be a major advancement when it was introduced, but has been replaced by the Mycobacteria Growth Indicator Tube system [Becton Dickinson, USA]. Several published studies have shown the excellent performance of the Mycobacteria Growth Indicator Tube system for the rapid detection of resistance to first- and second-line anti-TB drugs [8]. Detection of drug resistance can be accomplished in days rather than weeks, although still constrained by high cost [equipment and consumables].

In 2007, the WHO issued policy guidance on the use of liquid TB culture, DST and rapid species identification in low-resource settings [9]. The WHO policy recommends phased implementation of these systems as a part of a country-specific comprehensive plan for laboratory capacity strengthening, and addresses key issues including biosafety, customer support, staff training,

maintenance of infrastructure and equipment, specimen transport and reporting of results.

Terminology of drug resistance:

Primary resistance is that which has not resulted from the treatment of the patient with the drug concerned. It includes resistance in wild strains which have never come into contact with the drug (natural resistance) and the resistance occurring as a result of exposure of the strain to the drug but in another patient. Initial resistance is the resistance in patients who give a history of never having received chemotherapy in the past. It includes primary resistance and resistance to previous treatment concealed by the patient or of which the patient was unaware.

CONCLUSION:

Tuberculosis [TB] is a major infectious disease killing nearly two million people, mostly in developing countries, every year. The increasing incidence of resistance of *Mycobacterium tuberculosis* strains to the most-effective [first-line] anti-TB drugs is a major factor contributing to the current TB epidemic. Drug-resistant strains have evolved mainly due to incomplete or improper treatment of TB patients. Resistance of *M. tuberculosis* to anti-TB drugs is caused by chromosomal mutations in genes encoding drug targets.

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