

TB laboratory in DR TB patient management

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Introduction

- **MSF and TB**

- 100 TB projects in 40 countries
- 25,404 patients (2006)

- **MSF and DR TB**

- 12 projects (4 GLC approved) in 10 countries
- Access to DR TB care for 25% of TB patients
- 259 MDR TB included in 2006

Objectives

From the examples of these 12 projects

- **Describe**
 - **The place of the laboratory**
 - In the case finding strategy
 - In the follow-up strategy
 - **MSF support to the laboratory component**
- **Highlight the main difficulties encountered**
- **Outline the future involvements**

Settings

12 projects in diverse contexts

- 5 in high prevalence of DR TB
- 5 in high HIV prevalence
- 4 in Africa, 3 in Asia, 5 in Caucasus and Central Asia
- 7 in rural districts, 4 in urban settings, 1 in prison

Detection of DRTB

- **Reliable diagnostic**
 - clinical screening
 - sputum microscopy
 - culture, DST 1st and 2nd line
- **Adequate case finding strategy**
 - Who? When ? Where ?
 - Risk groups, time of detection, laboratory
 - How ?
 - DST methods

Defining case-finding strategies

- **What is our tolerance for missing DR cases?**
- **What is our tolerance for screening non-DR patients?**
- **What is the acceptable delay to get the results ?**
- **What drugs should be tested ?**
- **What are the necessary resources (human, technical, financial) for each strategy**

Who, when, where ?

- **Target patients ?**
 - All PTB cases
 - Only smear +
 - Risk groups (HIV+, contacts to known MDR TB case, etc.)
- **Time during treatment course ?**
 - Baseline
 - Failure of Cat 1 or Cat 2 therapy
 - Beginning of Cat 2 therapy
 - During Cat 1 or Cat 2 therapy (end of intensive phase?)
- **Identify appropriate laboratory**
 - District, NRL, SNRL

How ?

	Methods		Direct ?	Cost/ equipment	coverage	TAT
Culture (phenotype)	Conventional	Lowenstein Jensen	No	Low	All	8 weeks (7-14 weeks)
	Liquid medium	MGIT manual	No	Low	1 st line + Km, FQ	20 days (15-54 days)
		Automated MGIT	No	High	All	20 days (15-54 days)
	Micro-colonies	MODS	Yes	Medium	H, R	10-15 days
		TLA	Yes	Low	H, R	10-15 days
	Colorimetric	Nitrate reductase	?	Low	1st line	3-8 weeks + 10 days
Phage based	Bacteriophage	Fast-plaque RIF	No ?	Medium	R	4 weeks + 48 h
Molecular (genotype)	RpoB mutations	Inno-Lipa Rif TB	Yes	High	R	48 hours
	RpoB and KatG mutations	Genotype MDR TB	?	High	R, H	?+48 h

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Factors taken into account

- **Prevalence of DR TB in target population**
- **HIV prevalence in TB patients**
 - Lethality
 - Sputum smear sensitivity
- **Use of 2nd line drugs**
- **Existing laboratories at country level**
 - Reliability (QC), availability of adequate tests
 - Possibilities of collaboration

Follow-up strategy

- **Bacteriology**
 - Sputum smear microscopy
 - Rapid culture and DST 1st and 2nd line
 - Every month during intensive phase (from month 3)
 - Every other month during continuation phase
- **Biochemistry**
 - LFT, RFT
 - Electrolytes
 - TSH

Who do we screen ?

Target	# of projects	(%)
Rx failures	12	(100)
End intensive phase	3	(25)
All smear +	5	(42)
All PTB	2	(17)

Little access to systematic culture and DST for smear negative

How ?

DST techniques used at country level

Technique	DST 1st line	DST 2nd line
TLA (HR)	1 (pilot)	0
Manual MGIT (1st line Ofx, Km)	1	1 (pilot)
Automated MGIT	2 (1 pilot)	0
LJ only	1	1
In country/total	5/12	2/12

Where ?

Laboratories performing the tests

Level	Microscopy	(%)	DST 1st line	(%)	DST 2nd line	(%)
Periphery	12	(100)	0	-	0	
District	0	-	2	(17)	0	
Region	0	-	1	(8)	1	(8)
NRL	0	-	2	(17)	1 (Ofx,Km)	(8)
SNRL	0	-	8	(66)	11	(92)

MSF support

- **Microscopy (all projects)**
- **Support to 2 district/regional laboratories**
 - TLA, MGIT, LJ
- **Collaboration with 1 NRL (manual MGIT)**
- **Collaboration with 2 SNRL**
 - **Technical support, routine**
 - **1 biologist + 1 lab technician in ITM Antwerp (2,164 specimens, 1/2 for follow-up)**
- **Logistic for shipment of specimens**

Difficulties

- **HIV-TB**
 - Poor sensitivity of microscopy
 - Huge workload
 - Lack of tests adapted to peripheral laboratories
- **At country level**
 - Limited access to rapid methods
 - Limited access to DST 2nd line
 - Limited DRS data (1st and 2nd line)
- **Lack of field evaluation of new tests**

Future orientations

- **Evaluation/adaptation of each strategy**
- **DRS in 4 countries with high HIV prevalence**
- **More focus on HIV**
 - Introduction/evaluation of simplified DST techniques
 - (TLA in 2 new projects)
 - Explore possibilities of decentralized PCR

