

Michigan Department of Community Health (MDCH)

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TB/Mycology Lab Manager

MDCH THEN (1974)



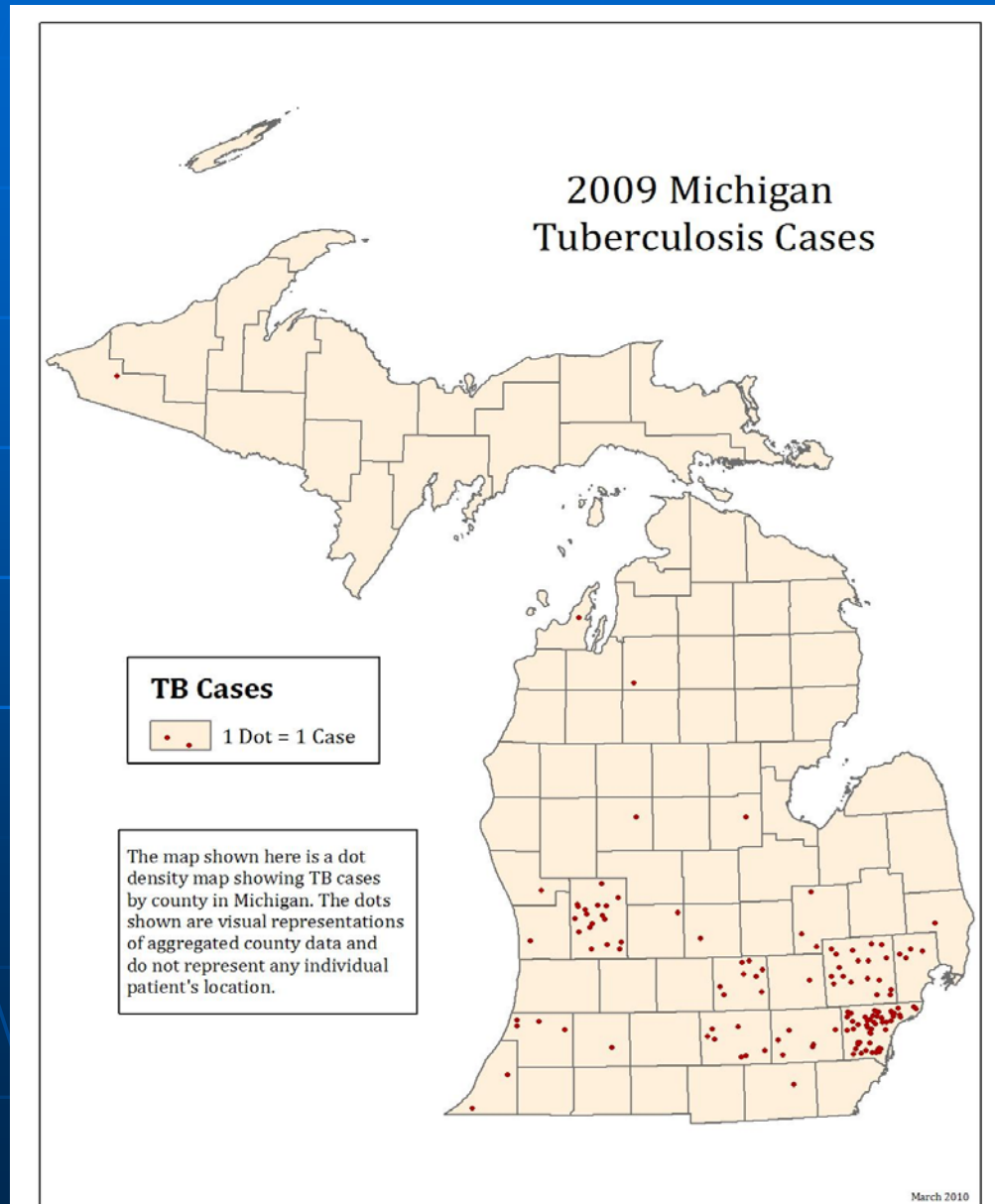
MDCH NOW



TB CASES

■ DATE	USA	MICH
■ 1955	77,300	6000 (7.8%)
■ 1970	37,000	2000
■ 1980	28,000	1100
■ 1990	25,700	550
■ 2000	16,300	400
■ 2003	14,873	250
■ 2006	13,727	221
■ 2007	13,288	226
■ 2008	12,904	188 (1.5%)
■ 2009	11,540	144 (1.4/10 ⁵ pop)

144 New TB Cases in 2009



MDCH TB Lab 2009

- 55 agencies submitted specimens
- 34 labs referred AFB isolates
- 23 labs referred spun seds for MTD
- 27 Non-Michigan jurisdictions referred TB isolates for genotyping

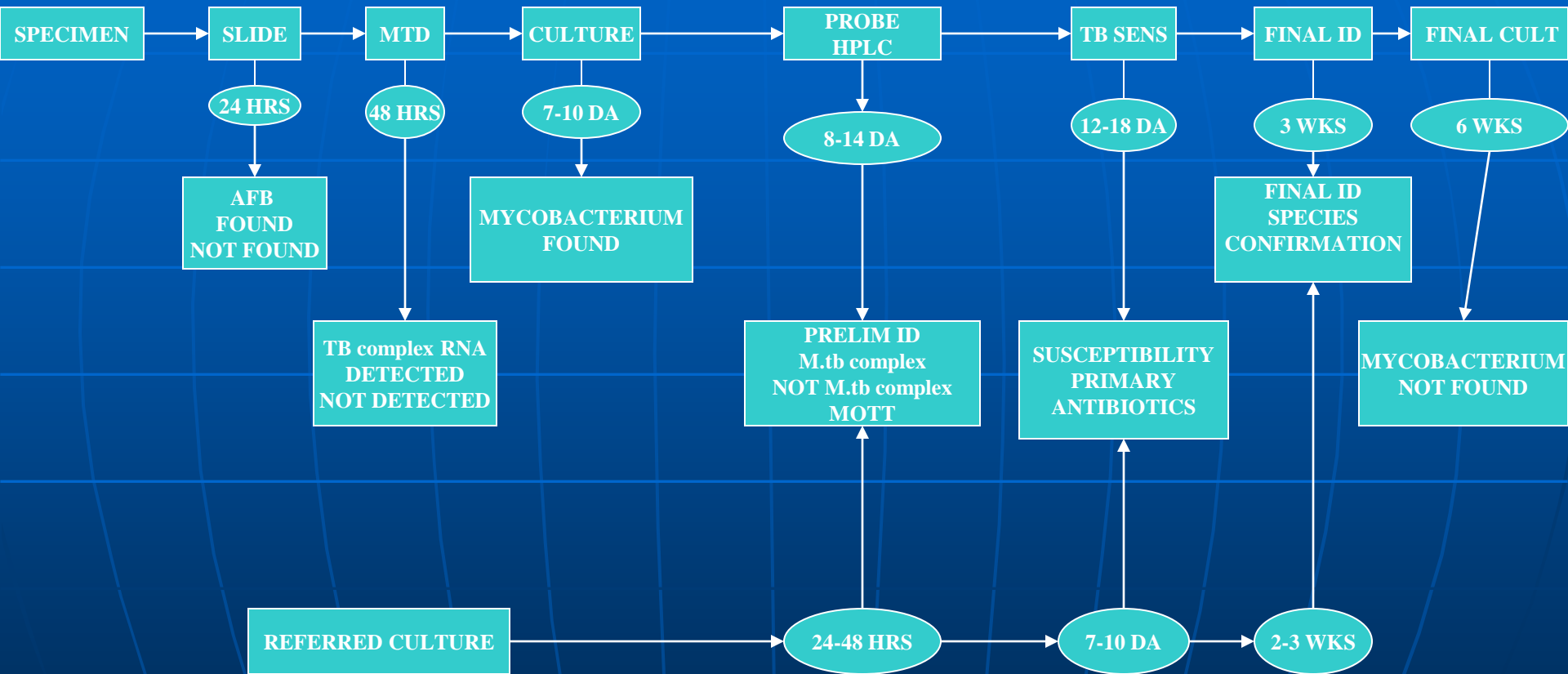
AFB Testing Submitted to MDCH

■ DATE	CLIN SPEC	REF CULT
■ 1978	<13,000	
■ 1986	8,500	1,000
■ 1996	7,600	1,300
■ 2006	6,200	1,300
■ 2007	5,500	1,300
■ 2008	5,500	1,235
■ 2009	5,600	1,316

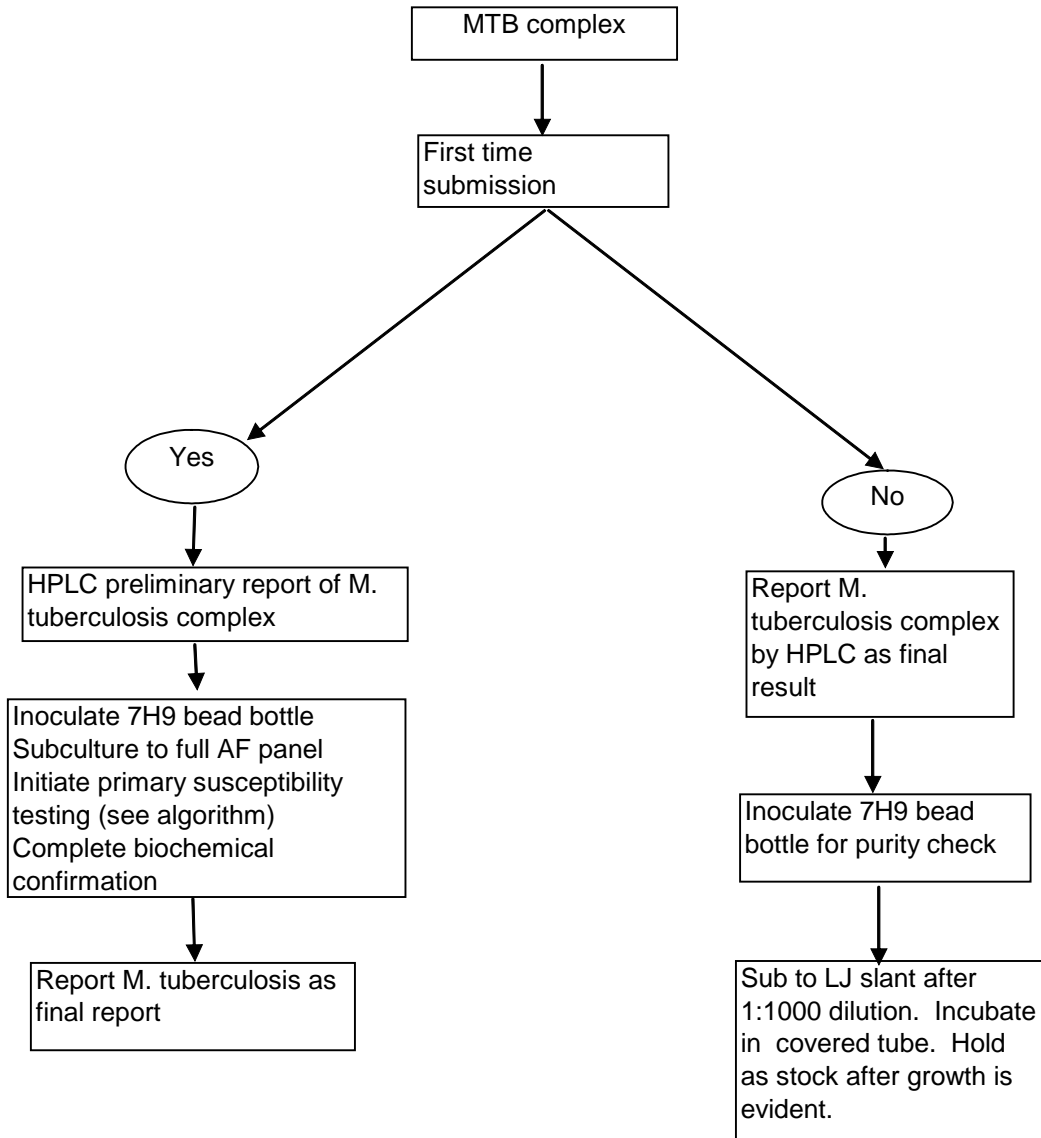
MDCH 2009 AFB Testing Volume

- 5600 clinical specimens tested
 - 35% multiple specimens
 - 32% non-pulmonary specimens
 - 10.4% culture positive
- 1900 AFB isolate identifications
- 150 TB susceptibilities
- 5000 TB isolates genotyped

MDCH AFB TEST TIME-LINE



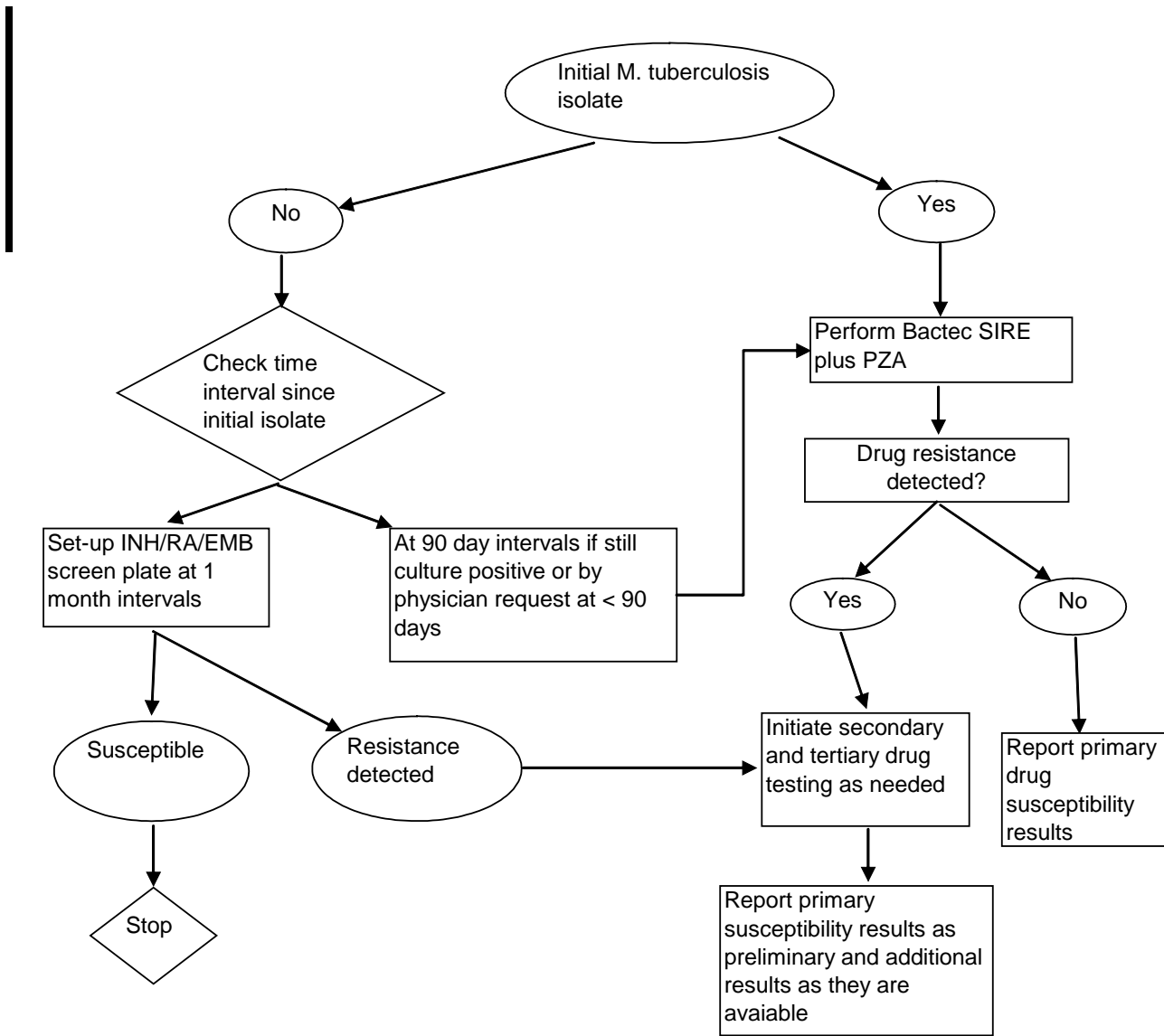
Algorithm for *M. tuberculosis* complex: Initial and subsequent positives



TB Identification

- NAAT
- HPLC
- Genetic Probe
- Biochemicals
 - 68 ° catalase
 - SQ catalase
 - Nitrate reduction
 - Pyrazinamidase
 - TCH susceptibility

Susceptibility Testing Algorithm



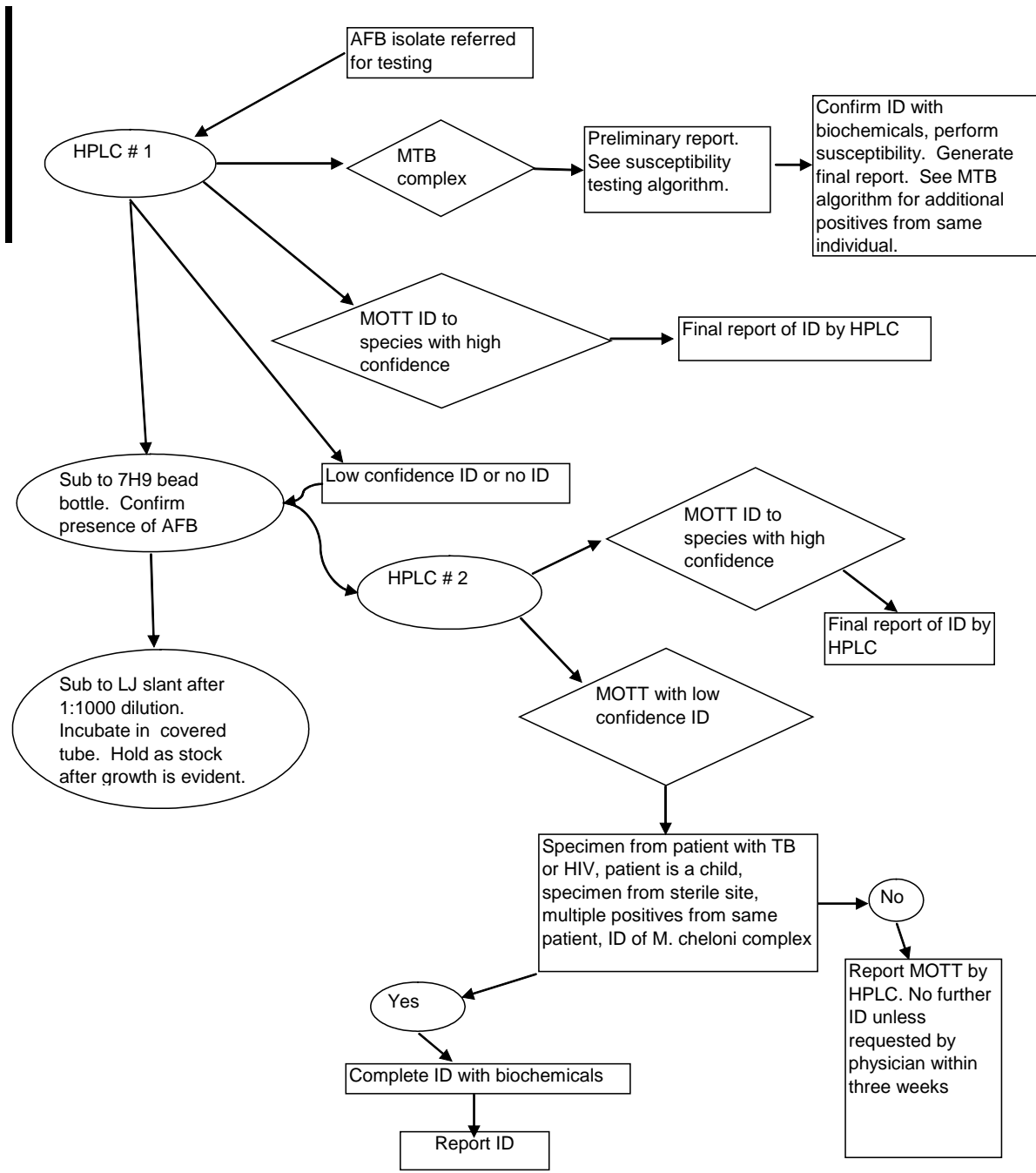
TB Antibiotics Tested

- Primary (Bactec 460)
 - INH 0.1
 - RA 2.0
 - EMB 2.5
 - PZA 100

- Secondary (7H10 Proportion Plate)
 - INH 0.2/1.0
 - ST 2.0/10.0
 - RA 1.0
 - EMB 5.0
 - KAN 6.0
 - EA 5.0
 - CS 30.0
 - CM 10.0
 - CIP2.0

- Third-line (7H10 Proportion Plate)
 - EMB 10.0
 - AN 6.0
 - OFX 2.0
 - PAS 2.0/10.0

Algorithm For AFB Identification



HPLC Identifications

- 95% High Confidence – report as final ID
 - *M.tuberculosis* complex
 - *M.avium* complex
 - *M.gordonae*
 - *M.xenopi*
 - *M.kansasii*
 - *M.fortuitum* spp. group
 - *M.chelonae* spp. group
- 85% Moderate Confidence – report as probable ID
 - *M.terrae* complex
 - *M.marinum*
 - *M.simiae*
- <85% Low Confidence – report *M.spp.* other than *M.tb* complex
- Complete Identification performed if:
 - Patient is a child or cancer patient, has HIV, is from sterile site or special request

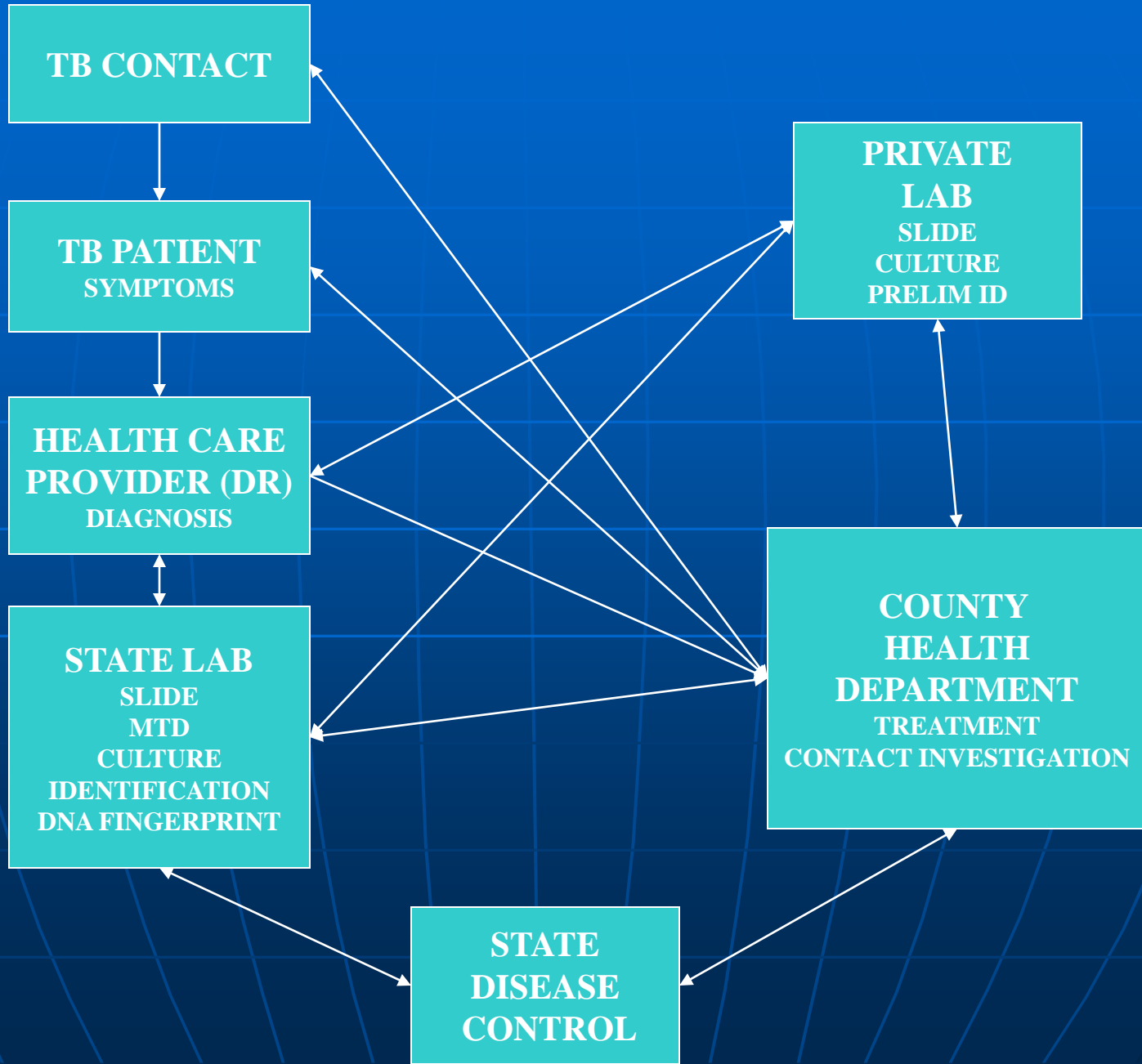
NTM Identification

- HPLC
- Genetic Probe
- Growth
 - Rate
 - Temperature preference
 - Pigmentation
 - Morphology
- Biochemicals
 - Niacin
 - Catalase
 - Nitrate
 - Arysulfatase
 - Tellurite reduction
 - Iron uptake
 - 10% NaCl
 - Tween hydrolysis
 - Urease
 - Pyrazinamidase

AFB Result Reporting

- Slide and culture results reported to submitter (new positives telephoned).
- All AFB ID's are reported to submitter, County Health Department of submitter or patient if known and MDCH Disease Control (new positive TB's are telephoned to submitter).
- New "Resistance" to antibiotics is reported as above.
- Results are reported to additional HCP's as requested.
- Reports by hard-copy, FAX and telephone.

Lab Result Communication Networking



Communications with TB Partners

- American Lung Association Bi-Annual conference
- MDCH Communicable Disease Annual conference
- Michigan Advisory Committee for the Elimination of Tuberculosis (MI-ACET) Semi-annual meetings
- TB Nurse Network quarterly meetings
- TB Lab-Epi monthly meetings
- Periodic Local Health conferences
- Daily communications