APHL Global Health
TB-related Activities

5th National TB Conference
11-13 August 2008
San Diego, CA

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APHL Global Health Program

APHL partners with leading health and international assistance agencies to strengthen laboratory capacity and build national laboratory networks in countries with limited resources.

Overview of Activities

- Strategic National Planning
- Lab Management Workshops
- GWU-APHL International Institute for Public Health Laboratory Management
- Lab Information Systems
- Quality Systems assessments and support
- Activity support – PEPFAR
- WHO Twinning partnerships
- Supplies Acquisition
APHL Global Health
TB-related Activities

• Goal: Increase and strengthen testing capacity for TB in resource-limited settings
• Current and future global TB-related activities include:
  • Laboratory assessment and design
  • Development and implementation of reference documentation
  • Technical assistance and training
  • Quality Assurance support
  • Supply acquisition
APHL involvement
TB-related activities

• EQA guidelines
• Global Laboratory Initiative
• Botswana
• Nigeria
• Mozambique
EQA Guidelines

• Authors:
  • John Ridderhof (CDC)
  • Rosemary Humes (APHL)
  • Fadila Boulahbal (National Reference Lab, Algeria)

• Primary topics:
  • On-site Evaluations
  • Panel Testing
  • Blinded Rechecking

Global Laboratory Initiative

APHL a partner in developing documents and training guidelines

- Lab Management
- Bio-Safety, standards and norms for TB labs
- Technical Assistance and Training
- Developing strategies for capacity building
  - 3 Supra-national reference labs
  - Lab Accreditation: minimally acceptable performance standards
- Country-specific plans
Botswana

- Consultant: Valentina Asinimova
  - Two 3-month visits (2007) – Technical Assistance
- Support of NTRL – National Tuberculosis Reference Laboratory
  - NTRL is only laboratory providing mycobacteria isolation and drug susceptibility services in Botswana
### Botswana

**Surveys of drug resistance**
**MDR TB rates – 2002 survey**

<table>
<thead>
<tr>
<th>Year</th>
<th>New cases</th>
<th>Re-treatment cases</th>
</tr>
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<tbody>
<tr>
<td>1996</td>
<td>4%</td>
<td>14.9%</td>
</tr>
<tr>
<td>1999</td>
<td>6%</td>
<td>22.8%</td>
</tr>
<tr>
<td>2002</td>
<td>14.5%</td>
<td>22.6%</td>
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</tbody>
</table>

**Prevalence of MDR TB**

<table>
<thead>
<tr>
<th>Year</th>
<th>Prevalence</th>
</tr>
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<tbody>
<tr>
<td>2002</td>
<td>0.8%</td>
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Prevalence of any drug resistance

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[Association of Public Health Laboratories (APHL)]
Botswana

Objectives

- Assess NTRL facilities and workflow with emphasis on culture and DST
- Assess QA and QC systems within the laboratory

Initial assessment of NTRL (Mar. 2007)

- “Currently QC/QA systems are not in place. The Quality Control of reagents, equipment and procedures followed seldom and of unsatisfactory quality. Proficiency testing, blinded slides rechecking and on-site visits not conducted.”
- Staff: Chief, two full-time lab technicians, one half-time lab technician. Also two technicians from BOTUSA – three days a week.
Botswana

Scope of Work:

• Basic training and safety
• Specimen prep and processing
• QA: SOP’s, QC training, reporting forms
• Fluorescent smear microscopy training
• LJ media prep and QC
• DST (SIRE) media prep, QC, results
• EQA: proficiency testing, blinded slide re-checking, on-site visits
• Lab design and workflow recommendations
• MGIT culture and DST
• Prepare for drug resistance survey
Botswana

Drug Resistance Survey

- July – Dec 2007
- Valentina (Sept – Dec 2007)
- Backlog of work
- Dec report:
  - LJ media
    - 90% of smear+ specimens in DRS are culture+ vs. 60% in 2005
  - Cultures
    - 3 – 5 days a week versus 2 days a month in 2006
  - DST
    - 2 - 5 days a week versus 8 times/year in 2006
Mozambique
Mozambique

National TB Lab Assessment (2006)
• Kenneth Jost (APHL)
• Dr. Charity Alfredo (CDC)
• Sandra da Gloria Oficiano (MoH)

TB-Smear Microscopy Workshop
• Translated into Portuguese (2008)
Mozambique

- TB Lab Assessments
  - National lab in Maputo – culture and DST
  - Nampula and Beira labs – culture
  - 2 smaller labs – AFB smear microscopy
- Objectives: to recommend specific strategies and actions needed to strengthen capacity and improve quality for:
  - Culture
  - DST
  - transport of isolates for DST to the National TB laboratory in Maputo
Mozambique

National TB Lab

- 10 staff
- 2005 workload:
  - 13,672 specimens by AFB smear microscopy: 17.4% positive
  - 4,859 specimens by culture: 21.4% pos, 2.9% contam
  - 418 DST: 72.5% Pan-Sus., 27.5% Res. (18.4% MDR)
- Manage AFB smear microscopy EQA program
Mozambique

- TB Lab Assessment Conclusions
  - Renovations needed
  - Replace key Equipment
  - QA systems need strengthening
  - Specimen referral system needed
  - Improve safety practices
  - Continue expert consultant support
“Staining may be accomplished by the use of Ziehl’s carbol-fuchsin solution, the cover-slip being flooded with stain, which is boiled for one-half minute. Follow this treatment by decolorization with acid alcohol (2 per cent. HCl in 80 per cent. Alcohol), and contrast staining with methylene-blue. The peculiar resistance of the tubercle bacillus to decolorization depends not upon any impermeability of the cell-envelop to acids, but upon the constitution of the cell body. The constituent of the cell especially responsible for the their behavior is a peculiar wax-like substance.”

- A Text-Book of General Bacteriology
- By Edwin O. Jordan, PhD
- Copyright 1908
TB training package

- Translated into Portuguese (2008)
- Currently undergoing review by Ministry of Health - Mozambique

http://www.cn.cdc.gov/dls/ila/acidfasttraining/
Nigeria
Nigeria

Zaria TB and Leprosy Training School
Nigeria

Equipment Support

- **BSC’s**
  - 6 in 2004
  - 2 for Zaria for culture and DST
- **MGIT 960 (2007)**
  - Zaria TB and Leprosy Training School
- **X-ray Equipment – 2 purchased**
  - MinXray mobile X-ray – procured March 2008
  - Institute of Human Virology
  - currently operating at the Zaria TB and Leprosy Training School
  - will be fully mobile once a fixed unit has been placed here (most likely by Fall 08)
Future Activities
TB testing support

• EQA
• Global Laboratory Initiative
• Mozambique
  • TB-smear microscopy training workshops
  • Zambezia Province, Mozambique – “Twinning” with US labs for consultation in basic lab practices (Vanderbilt University)
• Botswana
  • Continued support for QA?
• Nigeria
  • Mobile X-ray equipment
“Quality means doing it right when no one is looking.”

- Henry Ford
Thank You

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