Bacteriological examinations and laboratory

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Outline of presentation

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• Specimen transportation
• Specimen reception at central lab
• Laboratory procedure
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Introduction

Laboratory tests on sputum (smear and culture) is the essential component of TB prevalence survey to measure the burden of *bacteriologically-confirmed pulmonary TB in the community*
Introduction

For Reliable Laboratory Results:

- Quality
- Quantity
- Appropriate method to deliver the specimen
  - Transportation (From field site to the lab)
  - Time
- Qualified personnel
Lab examination center of TB Prevalence survey

• All specimen collected in the field were transported and examined for microscopy and culture at Ethiopian Health and Nutrition Health Institute (EHNRI).

• EHNRI is the national TB referral laboratory which runs the quality assurance TB laboratory in the country and serve as DST center for TB control program.
Specimen collection at field site

1. Collect two specimens (Spot and Morning) from eligible participants and store in cold box

2. Fill sample transfer form
Specimen transportation

• From each cluster specimens were sent to the central laboratory to in two phases
• Phase I: specimen collected day 1 and day 2 sent
• Phase II: Specimen collected on from day 3-5 sent
• Each specimen sent in cold box
• Ice will be changed at the site and during transporting incase of ice melt.
Specimen reception at central Lab

- The specimen will be counted and cross checked with the sample transfer form
- Sign (The person delivering and receiving)
- Information transferred to the lab log book

Laboratory Log book
Laboratory Procedures Used

1. Microscopy
   - Fluorescence microscopy (iLED microscope)
   - Both the spot and morning specimens
Laboratory Procedures Used

2. Culture
   • Sample processing
     . Usually morning processed

Media
   • LJ
   • Modified Petroff’s method

• Identification (MTBC/NTM)
  • Lateral flow immunochromatographic slide test kit
Reporting

- **Smear**
  - The moment they are confirmed shall be sent to survey coordinator

- **Culture**
  - After identification procedure is done
    - Morphologically (smear and culture)
    - A lateral flow immunochromatographic slide test kit
How and to Whom lab result is reported?

1. All positives (smear and culture) shall be sent to survey coordinator using individual lab result form

2. All results (negative and positive) of smear and culture shall be sent to data manager using lab result sheet
Quality control

**Internal**

- **Media**
  - Incubation for 48 hrs
- **Culture**
  - Start and end control for every batch of process
- **Smear**
  - Negatives
    - 10% of the slides evaluated by senor staff
  - Positives
    - All positives checked by senor staff
Quality Control/Assurance

External

• EQA team : CDC, AHRI and TB-CARE I
• WHO
TB Laboratory weekly supervision checklist

Ethiopian NATIONAL TB Prevalence Survey TB Laboratory supervision checklist.

Date of Supervision__________Cluster operation week___________Person Met during supervision:1._______
                        2._______ 3._______ 4._______ 5._______

| Clu  | Total | Phase | Date of | Date of | No of | Date of | Date of | No of | Number | Number | Total | Result | Remark |
| No   | eligibl| (1 or 2) | sputum | arrival | days | smear | inoculation | days | samples | Smear | culture | Report |        |
|      | e for |    | collection | to the lab | for transport | examination | before inoculation | inoculated | done | done | done | to data mgt |        |
|      | sputum |    |            |         |       |           |                |      |         |       |        |        |        |
| 1    | 1     | S  | 37         | S       | 6     | S       | 31               | M     | 31     | M     |        |        | Cu     |        |
|      | 2     | M  | 31         | M       | 31    | M       |                   |       |        |        |        |        |        |        |
| 2    | 1     | S  |            | S       | 31    | M       | 31               | M     | 31     | M     |        |        | Cu     |        |
|      | 2     | M  |            | M       | 31    | M       |                   |       |        |        |        |        |        |        |
| 3    | 1     | S  |            | S       | 31    | M       | 31               | M     | 31     | M     |        |        | Cu     |        |
|      | 2     | M  |            | M       | 31    | M       |                   |       |        |        |        |        |        |        |

P- spot collected during phase 1, N- Spt collected during phase 2
Comment

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Summery of lab work

- 5996 Participants submitted sputum
- 5996 specimens were processed for culture
- Smear: 11100 specimen smear don
- Culture result completed: 4952 and Ongoing: 1044
- Overall contamination rate = 5.6%.
Challenges

• Transportation of specimen from remote area
• Very high number of specimen and small lab space
• Work over load on the lab
• Few specimen
  • Saliva
  • Artifacts
Corrective actions taken

• Supervision
• On site training
• Work on weekends and late hours to cope the work load
• Recruit additional staff
Thank you