THE REPUBLIC OF UGANDA
MINISTRY OF HEALTH

UGANDA Supranational® Reference Laboratory

Timely Accurate Diagonostics for a TB-Free Africa

Training on EQA and National TB Laboratory Network

Module 7: INTERPRETATION OF RECHECKING RESULTS AND FEEDBACK

Date

Uganda Supranational Reference Laboratory

Content Overview

- Feedback
- problem identification and solving

Feedback (1)

- Regular feedback
  - Indispensable
  - Encouragement and motivation
  - Improving performance, if applicable
  - No criticism unless serious negligence/bad will

Feedback (1) Cont.…

- Visit by TB supervisor
  - Feedback; return of slides with serious errors
  - May identify possible causes of errors with checklist
  - May propose remedy, such as replacement of microscope

Feedback (2)

- Identify priority centres for problem solving
  - Several HFP and/or HFN
  - HFN and many LFN, or just many LFN
  - Many LFP
- On-site visit by an expert for identification of causes and problem solving

Problem Identification and Solving (1)

- In case of unsatisfactory performance of microscopy centres
  - Identify possible causes
  - Investigate
  - Take appropriate action
- Consider overall pattern of errors: (many) HFP, HFN, QE, combination of errors

Problem Identification and Solving (2)

- Many (or almost all) HFP and HFN
- Possible causes
  - Lack of training
  - Unusable microscope
  - Smears not examined
- Investigations
  - Examine 3+ with that microscope
  - Request staff to examine 2+, or 3+ and negative smear with good microscope

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Problem Identification and Solving (3)

- Occasional HFP
- Possible causes
  - Administrative error
  - Failure of controllers
- Investigation
  - Compare lab. register with rechecking list for correct number and result

Problem Identification and Solving (4)

- Few HFP, with/without LFP
- Possible causes
  - Administrative error
  - Recognition of AFB?
  - No systematic restaining
  - Copying positive result 1st smear to 2nd and/or 3rd smear (workload?)

Problem Identification and Solving (4)

- Investigations
  - Check admin. procedures: use of lab register, sputum request form, labeling sputum container
  - Inconsistent smear results: regular isolated + or scanty?
  - Restain and re-examine HFP to exclude that fading caused confusion and that it is not true FP

Problem Identification and Solving (5)

- Rare LFP
  - Ignore if at frequency comparable to other centres and controller

Problem Identification and Solving (6)

- Several LFP, with/without low grade HFP
- Possible causes
  - Bad microscope, artifacts taken as AFB?
  - Lack of experience
  - Contaminated carbol fuchsin stain
  - Poor counterchecks - FN by both controllers
- Investigations
  - Return FP to microscopy centre for showing AFB
  - Test carbol fuchsin on known negative smear

Problem Identification and Solving (7)

- Single HFN
- Possible causes
  - Administrative error
  - Smear not examined, 2nd and 3rd smear copied (workload?)
- Investigations
  - Check administrative procedures
  - Check workload
  - Smear not examined: difficult to prove

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Problem Identification and Solving (8)

- Several HFN and/or LFN and/or low quantification
- Possible causes
  - Very thick smear
  - Poor light in microscope
  - Bad stain or poor staining (if smears were all restained)
  - Contaminated methylene blue or rinsing water (after restaining)
  - Superficial / no examination

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Problem Identification and Solving (9)

- Several HFN and/or LFN and/or low quantification
- Investigations
  - Check thickness of smears
  - Check microscope: position condenser and diaphragm and remove filters
  - Check carbolfuchsin stain: dark, red, shiny when poured on slide
  - Check if AFB are well stained in fresh not restained pos. smear
  - Check staining procedure: sufficient time, heating
  - Use methylene blue on known neg-atypical AFB?
  - Check workload (overload)
  - If all above fail to show cause; superficial reading may be the cause

Problem Identification and Solving (10)

- Serious QE
- Possible causes
  - Poor stain/staining
  - Problems with microscope, only few AFB in high positive smears
  - Lack of quantification skills
- Investigations
  - Check if AFB are well stained with carbol fuchsin
  - Observe staining procedure: sufficient time, heating
  - Ask staff to quantify a few positives

Summary

- Regular feedback to laboratories is very important for improving or maintaining motivation and performance

- A finding of poor performance has to be completed by a problem identification and solving visit. The problem and its cause(s) are rarely clear from rechecking as such.

Summary (Cont….)

- Feedback should include returning slides with discordant results to be reread by the peripheral laboratory personnel.
- All potential sources of error should be considered, including quality of stains and staining procedure, quality of microscopes, and administrative procedures that may contribute to recording errors.
- All problems contributing to errors must be resolved.

References

- WHO Laboratory Quality Management System Handbook
- WHO/GLI Tools.
- John, R. (1999). External Quality Assessment for AFB Smear Microscopy. *Public Health Practice Program Office Centers for Disease Control and Prevention, Rosemary Humes. Association of Public Health Laboratories, 17.*
- GLI Training package on EQA overview & Planning

Acknowledgments

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