Training on EQA and National TB Laboratory Network

Module 4:

IDENTIFICATION AND MANAGEMENT OF DISCORDANT SLIDES

Date

Uganda Supranational Reference Laboratory

Content Overview

- Identification of discordants

- Management of discordants

- Validation of rechecking results

- Identification and allocation of errors

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Classification of Discordants

- Discordant slides are slides found positive (scanty, 1+, 2+ or 3+) by the microscopy centre and negative by the first controller or the reverse.

- Quantification differences that need to be rechecked by a second controller are differences in positive grading of more than one step: scanty versus 2 + or 3+ and 1+ versus 3+.

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Discordants Countercheck

- Discordants between the first controller and the laboratories are counterchecked by the second controller
  - to resolve discrepancies
  - first controllers can make mistakes, so results need validation
  - misconception that there should not be any errors; if no errors in large numbers rechecked, non-blinding or cheating may be suspected
  - best at higher level to avoid bias

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Principle of Countercheck

- Second controller may know both results from the laboratory centre first controller.

- Second controller uses both results as guidance

- May require prolonged search to find or exclude AFB

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Management of Discordants (1)

- Rechecking coordinator
  - Identifies discordants
  - Lists discordant results of all microscopy centres under one first controller on discordants form
    - Result 1 randomly for some entries of microscopy centre, others for results of first controller; reversing for result 2

Management of Discordants (2)

- Rechecking coordinator
  - Requests discordant sides of all centres on discordant form from first controller packed in separate box
  - Sends box to second controller
  - No feedback yet to microscopy centres, unless no discordants identified

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Management of Discordants (3)

- Second controller (1)
  - Restains all ZN slides if restaining of all sample slides was not done at 1st control level
  - Restains all auramine stained slides if fading was not protected since restaining
  - Or restains all ZN and auramine stained slides restained at 1st control level if fading was not protected since restaining

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Management of Discordants (4)

- Second controller (2)
  - Examines the slides
    - 2 lengths for a difference negative versus clear positive (1+ to 3+)
    - 5 lengths for scanty versus negative
    - for QE as required
      - quantification of positive results, e.g. 98/200, 20/500

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Management of Discordants (5)

- Second controller
  - Notes quantified results on discordant form
  - Adds qualitative remarks
- Makes copy of form for file
- Sends original form to rechecking coordinator

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Management of Discordants (6)

- Rechecking coordinator
    - Receives discordant form with both results from second controller
    - Fills results on rechecking forms, one form for each of the laboratories
    - Fills tables at the bottom of rechecking form with numbers of slides rechecked and errors identified, for laboratories centres and first controller

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Validation of Results (1)

- Validation essential before analysis and interpretation since controllers do not always perform well

- Rechecking coordinator checks all results of a quarter:
  - no discordants in many slides: blinded rechecking?
  - more FN by 1st controller than the laboratories controlled: superficial examination?
  - FP in many laboratories: quality of the second controller ?, restaining done ?

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Validation of Results (2)

- Validation using 1-3+ FP smears
  - Feedback from microscopists and visiting supervisors returning these slides to those who made the error
  - May show positives missed by both controllers
    - allows correction of results
    - need to replace a second controller?

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Classification and Definition of Errors

Classification and definition of errors found in rechecking

Registered result being controlled	Final result				
	negative	scanty	1+	2+	3+
negative	correct	LFN	HFN	HFN	HFN
scanty	LFP	correct	correct	QE	QE
1+	HFP	correct	correct	correct	QE
2+	HFP	QE	correct	correct	correct
3+	HFP	QE	QE	correct	correct

HFP: high false positive, negative versus clearly positive result

HFN: high false negative, positive versus totally negative result

LFP: low false positive, negative versus scanty result

LFN: low false negative, scanty versus totally negative result

QE: quantification error, at least two steps difference in quantification

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Analysis and Compilation of Errors

- After rechecking of each series of slides
  - Allows for early investigation and action if serious problems
  - Provides opportunity to monitor whether centers with a serious problem improve during further checks

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Summary

- Discordant results between the first controller and the laboratory should be counterchecked by the second controller

- The second controller will know the two results but must not know who those results belong to – to the laboratory or to the first controller

- Validation of the rechecking results is needed to ensure the quality of the controlling process.

- Identification and allocation of errors should be done after rechecking of each series of slides

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REFERENCES

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- 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

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Acknowledgments