Use of GeneXpert in Discontinuing Airborne Infection Isolation

**STEP 1.**
Collect sputum* for AFB smear microscopy, AFB culture, and Xpert

- **Positive Xpert result:**
  - *M. tb* complex detected
  - TB likely
  - Stop Xpert testing and continue A.I.I.

- **Negative Xpert result:**
  - *M. tb* complex not detected
  - Infectious TB not excluded
  - Continue A.I.I.

- **Invalid Xpert result**

**STEP 2.**
Collect second sputum specimen at least 8 hours after first specimen for AFB smear microscopy, AFB culture, and Xpert

- **Positive Xpert result:**
  - *M. tb* complex detected
  - TB likely
  - Stop Xpert testing and continue A.I.I.

- **Negative Xpert result:**
  - *M. tb* complex not detected
  - Infectious TB not likely
  - Make the decision to discontinue A.I.I. in conjunction with clinical data****

- **Invalid Xpert result**
  - Continue A.I.I. and use AFB smear results with Xpert result and clinical judgment to make decision to discontinue A.I.I.

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*M. tb*: *Mycobacterium tuberculosis*  
A.I.I.: Airborne infection isolation

*First morning specimen preferred to maximize diagnostic yield of AFB sputum smear, culture, and Xpert.

**Most laboratories/protocols will automatically retest leftover sample if an initial invalid (failed) result is obtained; in such cases, a reported invalid result reflects repeat testing of a single specimen.

***If this result is Negative following an initial invalid result in Step 1 and infectious TB still is clinically suspected, a repeat test (repeat Step 2) using a new specimen, if available, is recommended in order to improve sensitivity. Alternatively, the clinician may use the single Negative Xpert result from Step 2 with smear results and clinical information to make the decision to discontinue or maintain A.I.I.

**** Note: This process does not rule out tuberculosis with 100% certainty. Refer to Appendix IIIb Application of AFB Smear Microscopy to Negative Xpert Results to assist in diagnostic evaluation.
Application of AFB Sputum Smear Microscopy to Negative Xpert Results

Two negative Xpert results
*M. tb complex not detected*

Review AFB smear results

AFB positive on 2 tests

TB not likely; NTM likely*

Follow up final AFB culture results

AFB negative on 2 tests

TB not ruled out; continue diagnostic evaluation

AFB discordant 1 positive and 1 negative result

Infectious TB not likely; NTM possible*

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NTM: nontuberculous mycobacteria