Sputum Collection and Induction Procedures

Bill White
VDH, Division of Disease Prevention
TB Control
Results from sputum testing can

- provide initial diagnosis
- provide drug susceptibility testing
Initial Monitoring for smear conversion

- Frequency
  - Every 2 weeks after week 2 of therapy

- Number of specimens
  - 1 sample – Collection observed by health care worker
Monitoring for imminent smear conversion

- Frequency
  - Every few days to weekly

- Number of specimens
  - Total of 3 samples on three different days.
  - Once first negative smear is determined during periodic monitoring for conversion, collect 2 additional samples – At least one should be observed by health care worker.
Monitoring for culture conversion

- **Frequency**
  - Monthly

- **Number of specimens**
  - 3 samples on three different days – At least one should be observed by health care worker
Monitoring after culture conversion

- **Frequency**
  - Only if clinically indicated

- **Number of specimens**
  - 3 samples on three different days – At least one should be observed by health care worker
Recommendations for Sputum Collection

- **Initial Monitoring for smear conversion**
  - Every 2 weeks after week 2 of therapy
    - 1 sample
    - Collection observed by health care worker

- **Monitoring for imminent smear conversion**
  - Every few days to weekly
    - 3 samples on three different days
    - One collection observed by health care worker
Recommendations for Sputum Collection

- Monitoring for culture conversion
  - Continue to collect monthly until sputum culture negative
    - 3 samples on three different days
    - One collection observed by health care worker
Supplies and Equipment

- Approved respiratory protection mask
  - Follow infection control procedures!
- Completed laboratory form – write legibly
- Sputum collection container with mailing carton and patient ID label
  - Name
  - DOB
  - Date of collection
Supplies and Equipment - continued

- Gloves
- Bag for biohazard waste
- Tissues and bag for disposal
- Small glass of water
Additional Supplies for Induced Specimens

- Nebulizer
- Disposable tubing with upmist chamber and mouthpiece
- Sterile water or hypertonic saline (10%) for nebulizer
Spontaneous Collection Procedures

- Explain purpose of procedure to patient/family
- Give instructions for how to collect and handle specimen
- Early morning specimen preferable
- Patient should rinse mouth and/or brush teeth – no mouthwash
Instruct to breathe deeply several times, then cough vigorously
Discuss need for sputum – deep secretions – not saliva or spit
About 5-10 ml needed – send what you get
Hot shower, boiling water may help
Spontaneous Collection Procedures – cont.

- Sample placed directly in inner tube
- Tube cleansed with antiseptic wipe
- TIGHTEN, TIGHTEN, TIGHTEN!
- Packaging for shipment
- Arrange for pick-up for non-observed specimens
- Refrigeration preferred if delay in transport
  - Holds down growth of contaminates
Spontaneous Collection Procedures – Induced Specimens

- Be sure to label as “induced specimen”
- Assemble machine
- May need to discuss disposable supplies and cleaning of machine to reassure patient
- Assure that nebulizer is producing adequate mist
Spontaneous Collection Procedures

- Instruct patient to breathe mist in deeply
- As soon as begins coughing, collect sample
- If does not produce cough, instruct to cough vigorously
- May take 5 minutes of mist time!
Infection control

- Cover with tissue while coughing unless actually producing sample
- HCW should wear approved mask (N95)
- LOCATION, LOCATION, LOCATION
  - Healthcare setting
    - Negative pressure
    - 12 ACH
    - Outside exhaust
Infection control

- Home
  - Exclude other family members
  - Well ventilated area - room with window and door or outside!
  - Vacate room for several hours following procedure, if possible
  - Shut door!
After the collection

- Discard tubing and other contaminated supplies in approved biohazard containers, places
- Clean nebulizer with 1:10 bleach solution (change filters as needed)
- Patient should remain isolated until coughing subsides
  - Tissues/disposal
After the collection

- Specimens to lab through normal process
- Discuss timeframe for results with patient
- Schedule additional samples, if needed
Yield of smear and culture from repeated sputum induction for the diagnosis of pulmonary tuberculosis.

<table>
<thead>
<tr>
<th>specimen</th>
<th>one</th>
<th>two</th>
<th>three</th>
<th>four</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFB smear</td>
<td>64</td>
<td>81</td>
<td>91</td>
<td>98</td>
</tr>
<tr>
<td>AFB culture</td>
<td>70</td>
<td>91</td>
<td>99</td>
<td>100</td>
</tr>
</tbody>
</table>