Reducing Redundant Specimens: Indiana’s Sputum Collection Algorithm

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8th National Conference on Laboratory Aspects of TB
Objectives

• Background
• Specimen Collection Algorithm
  - Why do we need it?
  - What is it?
• LimsNet
Background

- Approx. 100 cases of TB annually
  - Largest Burmese population outside of Burma
- State PHL tests approximately 2000 specimens/year
  - Majority of samples submitted by local health departments (LHDs)
- AFB and culture performed for every specimen
  - AFB rated with CAP scale
    - >50/field, >10/field, 1-10/field, <1/field, <1/smear (very few)
2012 Indiana TB Cases by County

From 2012 TB Control Annual Report
Background, (con’t.)

- Indiana is a “home rule” state
- TB Control regulated by the Indiana Communicable Disease Rule (CDR)
  - Investigation must be performed immediately by local health officer
  - Infectiousness determined by set of 3 sputa
    - 3 smear negative sputa = release from isolation
- As a direct result of the CDR, one of the primary functions of ISDH Lab is for monitoring of therapy
Lab Challenges--2009

- Staff Shortages
- Funding Decreases
- Costs increasing due to addition of PCR and pyrosequencing

- How do we continue to provide quality services while maximizing our resources???
Observations

- Many LHDs sending an excessive number of specimens per TB patient
  - Allen CHD—coll. 48 samples in 10 week period
  - Clark CHD—coll. 3x weekly for 8 weeks (>50/field)
  - Kosciusko CHD—coll. 27 samples in 8 week period
  - Many smear/culture negatives collected

- Many LHDs sending an excessive number of specimens/NTM patients
  - 51% of culture positive specimens were NTMs
Proposed Solution

Reduce numbers of unnecessary specimens

Specimen Collection Algorithm

• Is designed to assist the clinician by:
  • Collecting the most appropriate number of sputums
  • Collecting the most appropriately timed sputums
  • Interpretation of results

• Helps to conserve resources by eliminating unnecessary sputum collections
**Tuberculosis Sputum Collection Algorithm**

**Initial ISDH Lab Result**

- **Smear Negative**
  - 3 Sputa
  - Collect 3 sputa after month one
  - Collect 3 sputa after month two
  - Culture Negative
    - Clinical Case/Provider Decision
  - Culture Positive MTB**
    - Continue to collect 3 sputa monthly until 2 consecutive sputa culture negative

- **Smear Positive**
  - (Any positive result out of 3 sputa)
  - PCR/MTB Positive
    - Positive smear result Less than 1/field
      - Collect 3 sputa every week until smear negative
    - Positive smear result Greater than or equal to 1/field
      - Collect 3 sputa every 2 weeks until <1/field
  - PCR/MTB Negative
    - Collect 3 additional sputa within 1 month
    - Culture Positive MTB**
      - Continue to collect 3 sputa monthly until 2 consecutive sputa are culture negative
    - No growth
      - STOP
    - Culture Non-TB Mycobacteria (NTM)
      - STOP

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*If you need to submit specimens outside of these parameters, please contact the ISDH TB/Refugee Division at 317.233.7434 or your TB Regional Nurse Consultant (contact information in Section 1 – Introduction).

**#**TB sputum collection algorithm does not apply to Non Tuberculous Mycobacteria (NTM)
Section 1—Smear Negative

- Smear negative 3x
  - Collect 3x sputa after one month
  - Collect 3x sputa after two months
    - If both are culture negative—stop collecting
    - If culture positive, continue monthly collections
- Must end with two consecutive months of culture negativity
Section 2—Smear Positives

- <1/field
  - 3x sputa weekly until smear negative
- >1/field
  - 3x sputa every 2 weeks until smear negative
- Must end with two consecutive months of culture negativity
- NTM (MTBC neg) cultured—STOP collecting
Comparison of Sample Volumes

Specimens processed

Culture positive TB patients
Continuing Challenges

- Re-education of PHNs
  - LHD staffing turnover
  - Rural counties with few TB cases
- Monitoring for submission patterns
  - Business Intelligence (BI) report
  - Generated quarterly, pulls data from LIMS
    - Can work one on one with repeat offenders
    - Includes smear and culture results
- Newsletter articles
Electronic Submissions/Reporting

- **LimsNet/STARLIMS**
  - Submitters enter patient demographics and UPS tracking info into LimsNet
  - Samples are then received into STARLIMS at the lab
  - Results, QC, etc. entered into STARLIMS by lab staff
  - Lab reports released from STARLIMS into LimsNet
  - Preliminary reports released for smear, PCR, pyro, HPLC, DST, preliminary ID

- **HL7 messaging**
  - STARLIMS results coded via HL7 and sent to D-REX, where they pass into TB-SWIMSS
## LimsNet Test Results Screen

### Search Test Results

- **New Search**

  - Open Reports in a new window
  - Open Reports in this window

#### Select Report Status

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[View Selected Reports]

**Pages:** 1 2 3 4 5 6 7 8 9 10
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Acknowledgements

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- Shanica Alexander
- Sarah Burkholder
Questions?

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