Background

Tuberculosis (TB)
- Caused by Mycobacterium Tuberculosis
- Mainly affects the lungs
- Spread via droplet nuclei
- Can take 8-10 weeks for infected individuals to seroconvert

Index Case
- High school student
- February 27: diagnosed with probable TB disease
- Chest X-ray showed large upper lobe infiltrate
- 3 month history of cough, fever, weight loss, night sweats

Methods

Index Case Diagnosis
- Obtained sputum specimens
- Tested by acid-fast bacilli (AFB) smear and confirmed by nucleic acid amplification test at the Kansas Health and Environmental Laboratories (KHEL)
- Performed using interferon-gamma release assay QuantiFERON®-TB Gold and tested at KHEL

Contact Testing
- All contacts were sent a letter informing them of their exposure and the need for testing
- Testing was conducted through the Johnson County Department of Health and Environment (JCDHE)
- Through interviews, second weight class (Weights2) identified as sharing the room with the index patient's class

School Clinics
- 3 testing clinics were held at the high school
- Fully staffed by JCDHE and Kansas Department of Health and Environment

Investigation Timeline

February 27
- Suspect TB patient reported to JCDHE; treatment initiated

March 3
- Lab results on index patient show AFB positive (grading 4+) and confirmed as TB

March 11
- First school clinic held
   - N = 345

March 18
- Through interviews, second weight class (Weights2) identified as sharing the room with the index patient's class

April 8
- School clinic held for second weight class contacts
   - N = 79

May 5
- Final school clinic held
   - N = 260

School Investigation

- N = 412
- Tested 399 (99%)
- Not Tested 13 (3%)
- Positive 43 (11%)
- Negative 369 (92%)

Non-School Investigation

- N = 12
- Tested 9 (75%)
- Not Tested 3 (25%)
- Positive 3 (25%)
- Negative 6 (50%)

Discussion

Limitations
- Due to the timing of the index patient’s diagnosis, investigators were unable to document seroconversion in the majority of positive individuals.
- Incomplete class schedules were provided by the school

Conclusions
- The low prevalence of TB infection in this population implicates the index patient as the infection source
- On average, positive students spent significantly more time in classrooms with the index patient than students who tested negative
- High percentage of positive students in year-long classes and second semester weight lifting and physical education classes
- High ceilings and adequate air flow present throughout the high school, except in the weight room
- Documented transmission in weight lifting and physical education likely due to poor airflow as well as exertion (and potential subsequent coughing) involved with physical activity

*These classes are year-long

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