Calculating Exposure Hours for Contact Investigations

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Abstract
Tuberculosis is a National Notifiable Disease that continues to threaten the health of our nation. Epidemiologists and public health professionals work to detect, prevent, and treat TB patients. Tuberculosis (TB) is caused by a bacterium called Mycobacteria tuberculosis. The bacteria usually attack the lungs but can also attack other parts of the body. Not everyone infected with TB bacteria becomes sick but if not treated properly, TB disease can be fatal. TB control programs utilize contact investigations (CI) to assign priorities to individuals also known as “contacts” of TB cases. “The closeness of a contact has been defined by the amount of time spent in a shared airspace per week with minimal emphasis on specific environmental or social factors.” Disease investigators use this information to perform targeted screening on individuals that may have become infected in timely manner.

Introduction
Tuberculosis (TB) is caused by a bacterium called Mycobacteria tuberculosis. The bacteria usually attack the lungs, but TB bacteria can attack any part of the body. Not everyone infected with TB bacteria becomes sick but if not treated properly, TB disease can be fatal.

Methods
Identify the index case and information about their infectious period.
Obtain class rosters with respect to the index case’s schedule.
Determine the days and times that each of the classes took place and consider omitting holidays (Figure 1)
Calculate the cumulative hours of exposure for each student who shared a class with the index case (Figure 2)
Produce a report to help investigators prioritize their screening of contacts.

Figure 1. Consider the number of days a class took place between start and end date of semester and exclude any holidays during the period.

Figure 2. Calculation for the cumulative hours of exposure with respect to class days and times that took place over the infectious period.

Conclusion
The decision to initiate a CI is based on several criteria such as the estimated degree of contagiousness of the patient (based on site of disease, clinical and/or radiographic findings, sputum AFB smear and molecular diagnostic results.) This report allows the TB Controller use data on the exposure hours in combination with other assessments such as site assessment, index case interview to make recommendations for screening. Students who have higher hours of exposure will likely be prioritized for screening. This information can also help calculate projected screening dates for students if their first result is negative just to be safe and make sure they are TB free.

References


Acknowledgements
The author wishes to thank Bezaleel Gebru, Jelilat Majekodunmi, Stephen Passman, and Ying Kerr, for their time in reviewing and making recommendations for this project.

Special thanks to William Coar, for his mentorship in preparation for SAS Global Forum presentation.
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