



## Service Priorities and Programmes Electronic Presentations

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### **Is Population Density related to the spread of Airborn Disease?**

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#### **Keywords:**

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#### **Introduction**

Tuberculosis (TB) is an airborne disease. Droplet can throw to 1 meter or so and some small droplet can float in the atmosphere for some time. It is believed that close contact with patients with tuberculosis has a higher chance of getting tuberculosis. As the population grows and the area remains static, Hong Kong population density increases and TB notification rate should increase theoretically. Males are particular at risk due to higher portion of smokers than the females resulting in poor lung function. By recruiting Hong Kong data in the recent 30 years, it is not found to be the case.

#### **Objectives**

Using the tuberculosis data in Hong Kong, can we obtain any insight in the prevention of air-born disease?

#### **Methodology**

Data on the population, gender, TB notification and TB mortality are recruited from TB and Chest Service Department, Center for Health Protection, Census and Statistics Department. The data are interpreted with correlation test and Cox regression analysis. Descriptive result and the clinical significance are stated.

#### **Result**

The TB notification number and the TB death number decrease with increase in population in Hong Kong. The correlation coefficient of population and gender to TB notification are -0.8254 and -0.7279 ( $p < 0.0001874$  and  $< 0.00181$ ) respectively. Population size is significantly correlated with TB notification ( $p = 0.0142$ ) in a negative manner. The correlation coefficient of population, gender, and TB notification to TB mortality are -0.96, -0.8978, and 0.8937 ( $p < 1.553e-06$ ,  $< 1.958e-05$ , and  $< 2.261e-05$ ) respectively. In Cox regression, no parameter is significantly related to TB mortality Conclusion and future direction: The natural course of spread of airborne infection has not been seen in tuberculosis in Hong Kong. Public hygiene measure,

BCG vaccination, direct-observed therapy, advance in TB detection and drug treatment account for this. Can we apply to the other air-born disease as well?