

Exercise 4: Confirmatory results in serial smears

At the end of this exercise you should be able to:

- a. Create a subset of 'suspects' from the working dataset, with the required number of examinations to test the hypotheses
- b. Make a distinction between scanty and positive smear results
- c. Create string variables that combines the three results for each examinee
- d. Recode some string variables to numeric variables
- e. Make calculations using a spreadsheet
- f. Test the given hypotheses on confirmatory results in serial smears
- g. Reject or accept a study hypothesis for each country
- h. Interpret your findings

The bacteriological definition by microscopy of a sputum smear-positive tuberculosis case following WHO required that a positive smear examination had to be confirmed by a second positive result.

This study:

Mabaera B, Lauritsen J M, Katamba A, Laticevschi D, Naranbat N, Rieder H L. Sputum smear-positive tuberculosis: empiric evidence challenges the need for confirmatory smears. *Int J Tuberc Lung Dis* 2007;11:959-64.

contributed to a policy change in WHO recommendations that were decided in June 2007 following the publication of these findings.

In this exercise, the approach to the problem is reproduced.

The dataset provided here allows the determination of how frequent a scanty positive or a positive smear result is actually confirmed in daily practice in these four countries. It allows further to determine how frequent such a confirmation can be made among suspects who actually had a complete set of examinations.

Exercise hypotheses

- H₀₁: At least 80 per cent of suspects with at least one scanty or positive smear result have a confirmatory scanty or positive result
- H₀₂: At least 90 per cent of suspects with three serial examination among which there is at least one scanty or positive smear result have a confirmatory scanty or positive result in another examination

Tasks:

- *Write a program C_EX04.PGM that determines the proportion of suspects who have a confirmatory examination, making a distinction between scanty and positive smears. Produce a table by country.*
- *Produce a second table in the same program to determine the proportion of suspects who have a confirmatory examination and who had a complete series of smears, making a distinction between scanty and positive smears.*
- *Interpret the findings.*