The Rwanda Biomedical Center and ITM discover false resistance problem of tuberculosis

Based on this finding, the diagnostic algorithm was changed and patients now receive proper care.

09-06-20

Dit is de omschrijving

With around 1.5 million deaths a year, tuberculosis (TB) is the world's deadliest infectious disease. Rifampicin is the most effective drug against TB, yet it no longer works against all TB strains. It is important to know as early as possible whether the strain that has infected a patient is rifampicin-resistant. A PhD student at the Institute of Tropical Medicine (ITM) in Antwerp exposed a serious problem in Rwandan patients with tests that detect resistance to TB drugs. Half of the tested persons infected with resistant TB were falsely diagnosed and did not get the correct treatment. Based on this finding, the National TB Programme in Rwanda changed its diagnostic algorithm and patients now receive proper care. The findings are published in [The Lancet Microbe](.)

Detecting resistance to rifampicin is important to select the right treatment for TB patients. Over the last decade, the diagnosis of rifampicin resistance has become much easier and faster with the Xpert MTB/RIF test. The early diagnosis of rifampicin resistant TB - when bacteria are few in number - has led to fewer patients dying from this devastating disease.

As more and more patients are tested with Xpert MTB/RIF, and increasing outreach activities with screening of persons with minimal or no symptoms, Claude Semuto, PhD student at ITM and researcher at the national TB reference laboratory in Kigali, Rwanda, uncovered a serious problem. Half of the patients diagnosed with rifampicin resistance in fact had rifampicin-susceptible TB. Because of the false resistance diagnosis, these patients were treated without rifampicin. They received a longer 'second line' treatment with higher toxicity drugs. Claude identified this false resistance problem to arise when patients have few bacteria in their sputum, whereby the Xpert software erroneously interprets insufficient DNA binding as evidence of resistance.

Since 3 January 2020 the National TB Programme in Rwanda changed its diagnostic algorithm based on this finding. If a patient with few bacteria is now diagnosed with rifampicin resistance, additional testing confirms or rules out rifampicin resistance before they are started on appropriate treatment. Today, TB patients in Rwanda only receive second line treatment if they really need it.

"I hope that colleagues in TB control in other countries will urgently check if they also encounter false resistance diagnoses", says Claude Semuto. Together with his colleagues in Rwanda, they are monitoring the impact of the changed algorithm and changes towards the newly improved version of Xpert (Xpert MTB/RIF Ultra).

ITM's research on TB is world-renowned. The Institute has the largest public collection of TB strains for research. ITM researchers caused a breakthrough with a shorter combination treatment for resistant TB and researches new diagnostics and case detection techniques.