

An ISGlobal Team Develops an Approach to Facilitate the Diagnosis of Tuberculosis as Cause of Death

The approach, which combines a simple-to-use molecular test with the minimally invasive autopsy, could be a valuable tool in regions with high burden of the disease

Barcelona, July 16, 2020- The molecular test ‘Xpert Ultra’ combined with the minimally invasive autopsy technique can facilitate the diagnosis of tuberculosis as cause of death in low-income countries, according to a study led by the Barcelona Institute for Global Health ([ISGlobal](#)), an institution supported by the “la Caixa” Foundation. This technology, which can be applied to easily available bodily fluids such as plasma, could be a valuable tool in regions where the disease burden is high.

Tuberculosis (TB) is estimated to have caused one 1.5 million deaths in 2018. However, the real number of deaths caused by the disease remains unknown: around 30% of cases are not diagnosed or not reported and, even if they are reported, **it is not easy to determine whether it was the cause of death.**

The complete autopsy is the gold standard for establishing the cause of death, but the procedure is rarely performed in low-income countries, due to a shortage of trained pathologists and low acceptability by relatives. For this reason, an ISGlobal team has worked over the last years to [develop and validate the minimally invasive autopsy \(MIA\) technique](#). “This technique is **easier and faster to perform** in low-income countries and **better accepted by the relatives**, since it takes samples from different organs with fine biopsy needles that barely leave a mark,” explains Jaume Ordi, co-coordinator of the [CADMIA](#) and [CADMIA plus](#) projects, funded by the Bill & Melinda Gates Foundation and of which these findings form part.

The present study led by **Miguel Martínez**, ISGlobal researcher and microbiologist at the Hospital Clinic, evaluated the accuracy of a rapid and simple molecular test, called **Xpert MTB/RIF Ultra**, for diagnosing tuberculosis as the cause of death in patients who died in the **Central Hospital of Maputo, in Mozambique**. To do so, the research team used samples obtained by MIA from the lung, central nervous system, cerebrospinal fluid, and plasma of 117 patients with or without TB diagnosis at the time of death.

A high predictive value

Xpert Ultra **applied to MIA lung samples correctly detected 78% of death by TB cases, and 67% when using plasma samples.** “The combined analysis of lung and central nervous system **would only have missed 15% of TB deaths,**” says Alberto García-Basteiro, first author of the study. In a region such as Mozambique, where [mortality by TB and HIV is very high](#), positivity in plasma MIA samples had a **high predictive value (>90%)** for establishing TB as cause of death.

“The results show that we can use a simple and highly sensitive tool to analyse MIA samples and confirm -or rule out- that TB was the cause of death,” says Martínez.

Reference

Garcia-Basteiro A, Hurtado JC, Castillo P. et al. Performance of the Xpert MTB/RIF Ultra assay for determining cause of death by tuberculosis in tissue samples obtained by minimally invasive autopsies. *Chest*. <https://doi.org/10.1016/j.chest.2020.06.071>

About ISGlobal

The Barcelona Institute for Global Health, ISGlobal, is the fruit of an innovative alliance between the "la Caixa" Foundation and academic and government institutions to contribute to the efforts undertaken by the international community to address the challenges in global health. ISGlobal is a consolidated hub of excellence in research that has grown out of work first started in the world of health care by the Hospital Clínic and the Parc de Salut MAR and in the academic sphere by the University of Barcelona and Pompeu Fabra University. The pivotal mechanism of its work model is the transfer of knowledge generated by scientific research to practice, a task undertaken by the institute's Education and Policy and Global Development departments. ISGlobal has been named a Severo Ochoa Centre of Excellence and is a member of the CERCA programme of the Generalitat de Catalunya.

ISGlobal Press Office

Carol Pozo

carolina.pozo@isglobal.org

0034 93 214 73 33 / 0034 696 91 28 41

Marta Solano

marta.solano@isglobal.org

0034 93 214 73 33 / 0034 661 451 600

A partnership of:



"la Caixa" Foundation

