

## LSTM summary for UK TB Academics & Professionals website

### Overview:

Our research on TB at LSTM spans the whole spectrum of the complex aspects of this disease, from drug and diagnostic discovery to applied health research. We work closely with partners in developing countries and take a practical approach to find the best solutions which can be effectively applied in resource-constrained settings, and which also benefit poor and vulnerable populations. Further details can be found through these links:

<http://www.lstmed.ac.uk/research/topics/tuberculosis>  
<http://www.lstmed.ac.uk/research/departments/clinical-sciences/tuberculosis-research>  
<http://www.lstmed.ac.uk/research/themes/lung-health-tuberculosis>  
[https://www.youtube.com/watch?v=n1NIIxYG6Q&list=UUoS5m6Kak5uHUg\\_2vnZd12A#action=share](https://www.youtube.com/watch?v=n1NIIxYG6Q&list=UUoS5m6Kak5uHUg_2vnZd12A#action=share)  
<http://www.lstmed.ac.uk/impala>  
<http://impacttbproject.org/>  
<http://rcdd.lstmed.ac.uk/>

### Selected examples of work

#### 1. Poverty and Tuberculosis

Working with colleagues in Malawi, we were one of the first groups to demonstrate that even when health services for TB are provided free at the point of contact to patients, the patients incur catastrophic costs in care-seeking:

Costs as a percentage of monthly income (US\$)  
[urban Lilongwe, Malawi]

**#socialprotect4TB**

	All poor	All less-poor	Note:
<b>Total Costs</b>	<b>\$16</b>	<b>\$46</b>	<b>Consultations, investigations, and drugs are free in the public health service</b>
<b>Total costs as % of monthly income</b>	<b>248%</b>	<b>124%</b>	

Kemp JR, Mann G, Nhlema-Simwaka B, et al. Can Malawi's poor afford free TB services? Patient and household costs associated with a TB diagnosis in Lilongwe *Bulletin of the World Health Organisation* 2007 85; 580-585.

Since then, there have been systematic reviews of patient cost surveys which indicate that this problem is repeated in most settings round the world with a differential impact on the poor<sup>1,2,3</sup>. This work has contributed to the goal in the current WHO End TB Strategy <http://www.who.int/tb/strategy/end-tb/en/> of eliminating catastrophic costs for TB patients and their households.

#### 2. Finding and treating more cases of tuberculosis

With colleagues in Ethiopia, Nigeria and Yemen we have demonstrated that engaging community health workers and private health providers in TB case-finding and referral not only significantly increases the numbers of cases getting on to treatment but also massively increases treatment adherence.<sup>4-7</sup> This work, funded through the UK ESRC and the TB REACH initiative of the Stop TB

Partnership led to the award of the Kochon Prize in 2014  
(<http://www.stoptb.org/global/awards/kochon/awardees/2014.asp>).



Increasing the numbers of TB patients enrolled into TB treatment and care is also the focus of the IMPACT-TB programme funded by the European Union. This work, launched early in 2017, is developing the knowledge base for scale up of different active TB case-finding approaches in Nepal and Vietnam (<http://impacttbproject.org/>).

*A patient identified in the community starting treatment at the local health centre*



*A network of community health extension workers in Nigeria*

### **3. Evaluation of novel diagnostics and diagnostic algorithms**

With colleagues in Ethiopia, Nigeria, Barcelona and Moldova, we have worked in improving the diagnostic pathways of patients with presumptive TB. Our work, funded by WHO-TDR, EDCTP and the UK Research Councils has included studies to develop the concept of ‘same-day diagnosis’

(adopted by WHO in 2011), the assessment of promising diagnostic platforms, optimising their use in a diagnostic cascade and the development of new tools for epidemiological surveillance and treatment monitoring.<sup>8-13</sup>

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<sup>1</sup> **Ukwaja et al:** The economic burden of tuberculosis care for patients and households in Africa: a systematic review. *IJTLD* **2012**.

<sup>2</sup> **Barter et al:** Tuberculosis and poverty: the contribution of patient costs in sub-Saharan Africa-- a systematic review, *BMC Public Health* **2012**.

<sup>3</sup> **Tanimura et al** Financial burden for tuberculosis patients in low- and middle-income countries: a systematic review. *ERJ* **2014**.

<sup>4</sup> **Datiko et al.** Health extension workers improve tuberculosis case finding and treatment outcome in Ethiopia: a large-scale implementation study. *BMJ Global Health* **2017**.

<sup>5</sup> **Mhimbira et al** Interventions to increase tuberculosis case detection at primary healthcare or community-level services. *Cochrane Database Syst Rev.* 2017. doi: 10.1002/14651858.CD011432.

<sup>6</sup> **Datiko et al.** A community-based isoniazid preventive therapy for the prevention of childhood tuberculosis in Ethiopia. *IJTLD.* 2017.

<sup>7</sup> **Abdurrahman ST.** Are patients with pulmonary tuberculosis who are identified through active case finding in the community different than those identified in healthcare facilities? *New Microbes New Infect.* 2016.

<sup>8</sup> **Cuevas et al.** A multi-country non-inferiority cluster randomized trial of frontloaded smear microscopy for the diagnosis of pulmonary tuberculosis. *PLoS Med.* 2011

<sup>9</sup> **Davis et al.** Diagnostic accuracy of same-day microscopy versus standard microscopy for pulmonary tuberculosis: a systematic review and meta-analysis. *Lancet Infect Dis.* 2013

<sup>10</sup> **Obasanya,** FluoroType MTB system for the detection of pulmonary tuberculosis. *ERJ Open Res.* 2017.

<sup>11</sup> **García-Basteiro et al.** IP-10 Kinetics in the First Week of Therapy are Strongly Associated with Bacteriological Confirmation of Tuberculosis Diagnosis in HIV-Infected Patients. *Sci Rep.* 2017

<sup>12</sup> **den Hertog, et al** Cytokine Kinetics in the First Week of Tuberculosis Therapy as a Tool to Confirm a Clinical Diagnosis and Guide Therapy. *PLoS One.* 2015.

<sup>13</sup> **Abdurrahman ST.** Testing Pooled Sputum with Xpert MTB/RIF for Diagnosis of Pulmonary Tuberculosis To Increase Affordability in Low-Income Countries. *J Clin Microbiol.* 2015