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SCHOOL of  
HYGIENE  
& TROPICAL  
MEDICINE



Title of PhD project	<b>Linking acute and chronic cough to undetected transmission of <i>Mycobacterium tuberculosis</i> – analysis of UK electronic health records and mathematical modelling</b>	
Supervisor	<a href="#">Dr Rein Houben</a>	LSHTM
Co-Supervisor	<a href="#">Dr Helen McDonald</a>	LSHTM
Co-Supervisor	<a href="#">Professor Ian Douglas</a>	LSHTM
Brief description of project	<p>While tuberculosis (TB) is the biggest cause of death from a single infectious agent globally, our understanding of its natural history remains limited. In particular the drivers of undetected <i>Mycobacterium tuberculosis</i> (Mtb) transmission present urgent challenges to TB care and prevention efforts.</p> <p>A recent hypothesis is that individuals with low-level infectious TB disease ('subclinical TB') experience periods of high infectiousness due to transient respiratory tract infections, or chronic cough from other causes (Esmail, Dodd &amp; Houben, Lancet RM 2018).</p> <p>This PhD project will explore the potential role of unrelated acute and chronic cough in Mtb transmission, in particular how these interact with subclinical TB disease.</p> <p>Work will involve analysing a large, linked UK Electronic Health Records database (the Clinical Practice Research Datalink) to estimate the incidence, prevalence and duration of acute and chronic cough in the general population and among patients who are subsequently diagnosed with pulmonary TB. Results will be brought together in a mathematical model to quantify the contribution of acute and chronic cough to Mtb transmission.</p> <p>The project provides an excellent development opportunity for individuals with strong ability and interest in quantitative techniques, looking to develop skills in large dataset analysis and mathematical modelling. Individuals would ideally have evidence of quantitative ability. Training in medicine or physiology is welcome, but not required. Interested candidates are encouraged to contact Rein Houben (<a href="mailto:Rein.Houben@lshtm.ac.uk">Rein.Houben@lshtm.ac.uk</a>) for an informal discussion about the project.</p>	

Skills we expect a student to develop/acquire whilst pursuing this project	Analysis of large datasets, mathematical modelling.
Particular <u>prior</u> educational requirements for a student undertaking this project	MSc with strong quantitative component. Clinical or physiological training welcome, but not required.