Title of PhD project	**Improving model projections of intervention impact through investigating the effects of choices made in the design and analysis of social contact surveys**	
Supervisor	Dr Nicky McCreesh	LSHTM
Co-Supervisor	Professor Richard White	LSHTM
Brief description of project	Mathematical modelling has been used extensively to understand the spread of SARS-CoV-2, and to project the potential impacts of different control measures. For instance, what effect do school closures have on R0? Social contact data play a key role in the parameterisation of these models, informing patterns of age mixing, and social mixing by location. These data are also widely used in models of other infections, such as tuberculosis and influenza. Despite this, little research has been conducted into what effect choices made in how data are collected and analysed have on model projections and estimated intervention effects. The student will use a combination of data analysis of existing social contact datasets and mathematical modelling to explore a number of issues around the design and analysis of social contact surveys. This includes the choice of recall period, if and how the duration of contacts should be incorporated into analysis and modelling, and how the definition of contact used effects estimates. This work comes at a critical time, with the COVID-19 pandemic driving a surge in social contact data collection and analysis, and with technology availability leading to new methods of data collection (for instance the 2018 BBC Pandemic Experiment).	
Skills we expect a student to develop/acquire whilst pursuing this project	Mathematical modelling, epidemiology, data analysis.	
Particular prior educational requirements for a student undertaking this project	The student should have a background in quantitative data analysis (e.g. an MSc in Epidemiology), or a mathematical background (e.g. degree in maths or physics). Some experience of mathematical modelling is desirable, but not essential.	

Project key words	Social contact Mathematical modelling COVID-19 Airborne transmission
Possible under 1+4 route? Master's options identified.	Yes LSHTM – MSc Epidemiology LSHTM – MSc Medical Statistics
MRC Core Skills developed through this project	Quantitative skills Interdisciplinary skills
MRC LID themes	Global Health Infectious Disease
Further reading	Estimating age-mixing patterns relevant for the transmission of airborne infections An explanation for the low proportion of tuberculosis that results from transmission between household and known social contacts