Title of PhD project	**Modelling the effectiveness of antibiotic mass administration in acute humanitarian crises**	
Supervisor	Professor Stefan Flasche	LSHTM
Co-Supervisor	Dr Bhargavi Rao	LSHTM
Co-Supervisor	Kevin Van Zandvoort	LSHTM
Brief description of project	Pneumonia is the single largest infectious cause of death in children worldwide, particularly in humanitarian emergencies. Recently, the WHO recommended Mass Drug Administration (MDA) of Azithromycin to children in regions with high mortality but concerns regarding the potential to select for resistance have led to limited uptake. Combining MDA with pneumococcal vaccination could limit this risk and thus help reduce pneumonia mortality in crises. Working closely with collaborators at our field sites including Somaliland, the Gambia and Vietnam as well as MSF the project will see the successful applicant further the understanding of the complex interdependencies in lung health in humanitarian crises and learn and apply and range of advanced analytical techniques to estimate the benefits and risks of a combined PCV and MDA programme. These will include Bayesian statistics to estimate the preventable disease burden and mathematical modelling to estimate the dynamic effects of disease prevention and resistance acquisition following a combined MDA and pneumococcal vaccination campaign.	
Skills we expect a student to develop/acquire whilst pursuing this project	The student will develop skills in infectious disease modelling, data analyses, fitting models to data and epidemiology. They will build skills in scientific writing, as well as critical reading of the literature. The student will also learn to give clear scientific presentations and posters communicating their work.	
Particular prior educational requirements for a student undertaking this project	The successful candidate will have previous experience in programming, ideally with languages typically used in the field (e.g., R, C, Python, Julia, ...) and a good understanding of epidemiology.	

Project key words	Humanitarian crises Antibiotics Antimicrobial resistance *S pneumonia* Modelling
Possible under 1+4 route? Master's options identified.	Yes LSHTM – MSc Epidemiology LSHTM – MSc Health Data Science
MRC Core Skills developed through this project	Quantitative skills Interdisciplinary skills
MRC LID themes	Global Health Health Data Science Infectious Disease
Further reading	Pneumococcal conjugate vaccine use during humanitarian crises Azithromycin to Reduce Childhood Mortality in Sub-Saharan Africa