LONDON SCHOOL OF HYGIENE & TROPICAL MEDICINE

FACULTY OF EPIDEMIOLOGY & POPULATION HEALTH

DEPARTMENT OF INFECTIOUS DISEASE EPIDEMIOLOGY

ADVERTISEMENT

RESEARCH ASSISTANT OR FELLOW IN VACCINE MODELLING

Job Title:	**Research Assistant or Research Fellow in Vaccine Modelling**
Department:	Department of Infectious Disease Epidemiology
Faculty:	Faculty of Epidemiology and Population Health
Location:	London
FTE:	Full-time (1.0). A part-time position may be considered if requested.
Grade:	Research Assistant Grade 5 or Research Fellow Grade 6
Accountable to:	Mark Jit, Professor of Vaccine Epidemiology
Job Summary:	The post holder will help develop a programme of work to generate model-based estimates of the impact of different vaccines to inform decisions by the Bill & Melinda Gates Foundation (BMGF) and Gavi, the Vaccine Alliance. She/he will advance vaccine modelling methodology and construct models to study the impact of vaccine investments in 96 low and lower-middle income countries.

We are recruiting a Research Assistant or Research Fellow to join our growing team of vaccine modellers and economists. Since 2011, the London School of Hygiene & Tropical Medicine (LSHTM) has supplied model-based estimates of the impact of different vaccines to the Bill & Melinda Gates Foundation (BMGF) and Gavi, the Vaccine Alliance. These estimates have been used to set funding priorities, to evaluate performance and to advocate for greater global commitment towards controlling vaccine-preventable diseases in the world's poorest countries. The range of models used in our group includes both transmission dynamic and static models, and covers a range of antigens including measles, human papillomavirus, pneumococcal, rotavirus and *Haemophilus influenza* vaccines.

Since 2017, the scope of this work has expanded with LSHTM becoming a founding member of the Vaccine Impact Modelling Consortium (VIMC). The Consortium brings world-leading vaccine modellers at LSHTM with other leading vaccine modelling groups including Imperial College (the secretariat), Cambridge University, Johns Hopkins University, Harvard University, Public Health England and the US Centres for Disease Prevention and Control.

The post holder will help develop a programme of work aligned with the objectives of VIMC. She/he will advance vaccine modelling methodology and construct models to study the impact of vaccine investments in 96 low and lower-middle income countries. The post holder will join a vibrant multidisciplinary team of graduate students, research fellows and faculty members in the Modelling and Economic Evaluation of Vaccines (MEEV) group who are working on issues related to vaccine modelling and economics. Our team has successfully obtained large grants from a range of funders including the NIHR, MRC, BMGF, Gavi and WHO. We also collaborate closely with immunologists, epidemiologists and clinicians through LSHTM's Vaccine Centre, as well as other infectious disease modellers through LSHTM's Centre for Mathematical Modelling of Infectious Diseases.

The successful applicant will have an MSc or PhD in mathematical modelling, health economics, statistics, epidemiology or another relevant discipline with a strong quantitative component. Candidates should also demonstrate experience in mathematical modelling, preferably on infectious diseases, and have good publication record.

FURTHER PARTICULARS

THE SCHOOL

The London School of Hygiene & Tropical Medicine is a world-leading centre for research and postgraduate education in public and global health. Our mission is to is to improve health and health equity in the UK and worldwide; working in partnership to achieve excellence in public and global health research, education and translation of knowledge into policy and practice.

Founded in 1899, the School has expanded in recent years at its two main sites on Keppel Street and Tavistock Place. Our staff, students and alumni work in more than 150 countries in government, academia, international agencies and health services. Research income has grown to more than £110 million per year from national and international funding sources including UK government and research councils, the European Union, the Welcome Trust, Gates Foundation and other philanthropic sources. The School's multidisciplinary expertise includes clinicians, epidemiologists, statisticians, social scientists, molecular biologists and immunologists, and we work with partners worldwide to support the development of teaching and research capacity.

Our education provision has expanded to more than 1,000 London-based Master's and Research students, 3,000 studying postgraduate courses by distance learning, and 1,000 each year on short courses and continuous professional development. Our free online courses (Moocs) are studied by more than 30,000 participants globally.

The School performs well in various global university league tables. In the US News Best Global Universities Ranking 2017, we are ranked sixth in the world (together with Oxford University) in the fields of social sciences and public health. In the 2016 CWTS Leiden Ranking, the School was ranked fifth in the world for research impact across all disciplines, based on the share of institutions' outputs within the top 1% of papers by citation in all areas of science and independent of size of output.

The School was named University of the Year 2016 by Times Higher Education, in recognition of our response to the Ebola epidemic. The School is a member of the M8 Alliance of Academic Health Centres, Universities and National Academies, the Association of Schools of Public Health in the European Region, and the Consortium of Universities for Global Health.

THE FACULTY

The Faculty of Epidemiology & Population Health (EPH) houses a large group of epidemiologists, demographers, statisticians and nutritionists working on issues of major public health importance in the UK and globally. EPH has approximately 400 staff members organised into four research departments.

- Department of Infectious Disease Epidemiology
- Department of Medical Statistics
- Department of Non-communicable Disease Epidemiology

- Department of Population Health

The Faculty has a teaching programme consisting of ten MSc courses: Epidemiology, Demography and Health, Medical Statistics, Public Health for Development (run jointly with the Faculties of Infectious & Tropical Diseases and Public Health & Policy), Nutrition for Global Health, Reproductive & Sexual Health Research, Veterinary Epidemiology (run jointly with the Royal Veterinary College), Global Mental Health (run jointly with Kings College London - Institute of Psychiatry) and the Distance Learning courses in Epidemiology, Clinical Trials and Demography and Health. The Faculty also has approximately 120 research students studying for an MPhil, PhD or DrPH degree.

The Dean of Faculty is Professor John Edmunds.

THE DEPARTMENT

Department of Infectious Disease Epidemiology conducts research on the epidemiology and control of infectious diseases of public health importance. It also conducts research on maternal and neonatal health. Work is carried out in low-, middle- and high-income countries, including the United Kingdom. Research ranges from ecological studies of variations in disease frequency in different populations, through observational case-control and cohort studies to define risk factors for disease, to randomized controlled trials to test the impact of specific preventive and curative interventions.

The Department Head is Prof Veronique Filippi.

THE VACCINE CENTRE

The **Vaccine Centre at the LSHTM** is a formed consortium of over 100 scientists based at the school and among its partner institutions with a common interest in research and training on vaccines. The Centre encompasses a tremendous breadth of vaccine research from vaccine design and immunological characterisation through clinical trials, and on to epidemiological evaluation, vaccine safety, economic modelling, social science and policy analysis. Centre scientists work in over 50 different countries worldwide and contribute to some of the principal global networks of vaccine investigation. The portfolio of current projects includes research on vaccines to control malaria, tuberculosis, pneumococcal and meningococcal diseases, influenza, measles, rubella, HPV, rotavirus, Hib, Hepatitis B, norovirus, dengue, Ebola, sleeping sickness and traveller's diarrhoea as well as veterinary pathogens. The Centre also aims to enhance the teaching of vaccine research skills spread across the School's post-graduate training programmes and in the short course for the Epidemiological Evaluation of Vaccines run each July.

THE CENTRE FOR MATHEMATICAL MODELLING OF INFECTIOUS DISEASES

The **Centre for the Mathematical Modelling of Infectious Diseases (CMMID)** is a multidisciplinary grouping of epidemiologists, mathematicians, economists, statisticians and clinicians from across all three faculties of the LSHTM. Research focuses on understanding and predicting the epidemiology of infectious diseases so that more effective control programmes can be devised. Researchers are developing and applying mathematical models to a range of infections including HIV and other sexually transmitted infections, HPV, tuberculosis, hepatitis C, influenza, rotavirus, measles, varicella, pneumococcal disease, Hib, malaria and sleeping sickness. More fundamental research includes developing methods to measure underlying contact patterns, sampling hard-to-reach populations (such as drug users), efficiently fitting complex mathematical models to data, and the integration of epidemiological models with economic analyses. CMMID runs the flu-survey, an online influenza surveillance platform. CMMID is actively engaged in developing links with other

modelling groups; members of the CMMID include mathematical modellers working at Public Health England (formerly the HPA) and the Royal Veterinary College.

MODELLING AND ECONOMIC EVALUATION OF VACCINES GROUP

The **Modelling and Economic Evaluation of Vaccines (MEEV) group** is a team of mathematical modellers and health economists based at LSHTM and Public Health England who conduct applied epidemiological and economic research to inform public health decisions about vaccination. Our work focuses on three research areas: (i) Conducting UK-based research in collaboration with Public Health England to inform recommendations by the Joint Committee on Vaccines and Immunisation (JCVI) and other key stakeholders; (ii) Conducting research to inform funding decisions and global recommendations by international organisations including the World Health Organization; Gavi, the Vaccine Alliance and the Bill & Melinda Gates Foundation; and (iii) Conducting research to support vaccine decision-making in countries across the world, including high-, middle- and low-income countries. Our country-based work is always done in collaboration with local researchers and stakeholders.

THE POST

JOB DESCRIPTION

Posts: Research Assistant or Research Fellow in Vaccine Modelling

Responsible to: Mark Jit, Professor of Vaccine Epidemiology

Grades: Research Assistant (Grade 5) or Research Fellow (Grade 6)

Main Activities and Responsibilities

RESEARCH

Research Assistant

1. Construct, parameterise and extend models of the impact of different vaccine strategies in low and lower-middle income countries.
2. Write and manage code written in R, C++ and Visual Basic, as well as source code management platforms such as Github.
3. Understand the methodology of mathematical models of infectious diseases in areas such as sensitivity/uncertainty analysis, multi-model comparisons and parameter inference.
4. Lead and contribute to reports for key stakeholders as well as manuscripts for top peer-reviewed journals.
5. Liaise with key partners including collaborators in other universities; global experts in vaccine-preventable diseases; in-

Research Fellow

1. Construct, parameterise and extend models of the impact of different vaccine strategies in low and lower-middle income countries.
2. Write and manage code written in R, C++ and Visual Basic, as well as source code management platforms such as Github.
3. Understand, discuss and advance the methodology of mathematical models of infectious diseases in areas such as sensitivity/uncertainty analysis, multi-model comparisons and parameter inference.
4. Lead and contribute to reports for key stakeholders as well as manuscripts for top peer-reviewed journals.
5. Liaise with key partners including collaborators in other universities; global

country stakeholders; funders such as BMGF and Gavi; as well as intergovernmental organisations such as WHO.

6. Identify, apply to and participate in consultations, Consortia meetings, scientific conferences and other dissemination fora.

experts in vaccine-preventable diseases; in-country stakeholders; funders such as BMGF and Gavi; as well as intergovernmental organisations such as WHO.

6. Identify, apply to and participate in consultations, Consortia meetings, scientific conferences and other dissemination fora.

7. Contribute to future grant applications in relevant areas.

EDUCATION

Research Assistant

1. Participate in the teaching programme of the Faculty of Epidemiology & Population Health, including acting as an academic supervisor for MSc students.

Research Fellow

1. Participate in the teaching programme of the Faculty of Epidemiology & Population Health, including acting as an academic supervisor for MSc students.

INTERNAL CONTRIBUTION

Research Assistant

1. Contribute to the activities of LSHTM's Modelling and Economic Evaluation of Vaccines group, Vaccine Centre and the Centre for Mathematical Modelling of Infectious Diseases.
2. Undertake activities that support the Department, Faculty and/or School.
3. Participate in the School's Personal Development Review (PDR) process.

Research Fellow

1. Contribute to the activities of LSHTM's Modelling and Economic Evaluation of Vaccines group, Vaccine Centre and the Centre for Mathematical Modelling of Infectious Diseases.
2. Undertake activities that support the Department, Faculty and/or School.
3. Participate in the School's Personal Development Review (PDR) process.

EXTERNAL CITIZENSHIP

Research Assistant

1. Contribute to the activities of the multi-institution Vaccine Impact Modelling Consortium funded by Gavi and BMGF.

Research Fellow

1. Contribute to the activities of the multi-institution Vaccine Impact Modelling Consortium funded by Gavi and BMGF.

PERSON SPECIFICATION

ESSENTIAL

Research Assistant	**Research Fellow**
• Master's degree in mathematical modelling, health economics, statistics, epidemiology or	• PhD degree in mathematical modelling, health economics, statistics, epidemiology or other relevant discipline with a strong

other relevant discipline with a strong quantitative component. • Experience in constructing mathematical models, preferably of infectious diseases. • Ability to program in a suitable language, such as R (preferred), Python, C/C++ or Visual Basic. • Ability to communicate findings both in writing and verbally for academic and policy audiences, including non-modellers. • Ability to work with colleagues and collaborators from a range of countries and cultural backgrounds.	quantitative component, OR Master's degree and substantial research experience in a relevant discipline with a strong quantitative component. • Experience in constructing mathematical models, preferably of infectious diseases and ideally including fitting models to data. • Experience in understanding and analysing epidemiological data. • Publication record in good peer-reviewed journals. • Ability to program in a suitable language, such as R (preferred), Python, C/C++ or Visual Basic. • Ability to communicate findings both in writing and verbally for academic and policy audiences, including non-modellers. • Ability to work with colleagues and collaborators from a range of countries and cultural backgrounds.

DESIRABLE

Research Assistant	**Research Fellow**
• Research experience in a relevant discipline with a strong quantitative component. • Experience in using Github for version control. • Experience in parallel and high-performance computing. • Experience in handling large databases. • Experience in understanding and analysing epidemiological data.	• Experience in using Github for version control. • Experience in parallel and high-performance computing. • Experience in handling large databases. • Familiarity with the epidemiology and/or immunology of vaccine-preventable diseases such as measles, human papillomavirus, pneumococcus, rotavirus and *Haemophilus influenzae*.

• Publication record in good peer-reviewed journals. • Familiarity with the epidemiology and/or immunology of vaccine-preventable diseases such as measles, human papillomavirus, pneumococcus, rotavirus and *Haemophilus influenzae*. • Experience in conducting research in low and middle-income country contexts. • Experience in conducting health economic evaluations such as cost-effectiveness analyses.	• Experience in conducting research in low and middle-income country contexts. • Experience in conducting health economic evaluations such as cost-effectiveness analyses.

SALARY AND CONDITIONS OF APPOINTMENT

The post is available immediately and is funded until 31 March 2020. The appointment will be made on LSHTM's Research Assistant scale (£34,238-£39,304) or Research Fellow scale (£39,304), depending on qualifications and experience. The post will be subject to the LSHTM terms and conditions of service. Annual leave entitlement is 30 working days per year and in addition to this, there are a number of discretionary "Director's Days". Membership of the Pension Scheme is available.

Applications should be made on-line via our website jobs.lshtm.ac.uk. Applications should include the names and email contacts of 2 referees who can be contacted immediately if shortlisted. Any queries regarding the application process may be addressed to jobs@lshtm.ac.uk.

Asylum and Immigration

The School will comply with the Immigration, Asylum and Nationality Act 2006, which requires all employees to provide documentary evidence of their legal right to work in this country prior to commencing employment. Candidates will be required to email a copy of their passport (and visa if applicable) to HR prior to their interview and if appointed will be asked to bring the original documents in to be copied and verified before their start date.

Research Assistant applications - This role does not meet the minimum requirements set by UK Visas and Immigration to enable sponsorship of migrant workers. Therefore we cannot progress applications from candidates who require sponsorship to work in the UK.

Research Fellow applications - Applications from candidates who require sponsorship to work in the UK will be considered alongside other applications. Applicants who do not currently have the right to work in the UK will have to satisfy UK Visas & Immigration regulations before they can be appointed.

Further information about Certificate of Sponsorship and eligibility to work in the UK, can be found at: www.ukba.homeoffice.gov.uk/employers/points

APPLICATIONS

Applications should be made on-line at our website at jobs.lshtm.ac.uk. Online applications will be accepted by the automated system until midnight on of the closing date. Any queries regarding the application process may be addressed to jobs@lshtm.ac.uk.

The supporting statement section should set out how your qualifications, experience and training meet **each** of the selection criteria. Please provide one or more paragraphs addressing each criterion. The supporting statement is an essential part of the selection process and thus a failure to provide this information will mean that the application will not be considered. An answer to any of the criteria such as "Please see attached CV" will not be considered acceptable. **Please note** that if you are shortlisted and are unable to attend on the interview date it may not be possible to offer you an alternative date.

The London School of Hygiene & Tropical Medicine is committed to being an equal opportunities employer.