RESEARCH FELLOW

Job Title:	**Research Fellow in Applied Machine Learning**
Department:	Infectious Disease Epidemiology & International Health
Faculty:	Epidemiology and Population Health
Location:	Keppel Street (London, United Kingdom)
FTE:	1.0
Grade:	G6
Accountable to:	Head of Department through Principal Investigators (Co-PIs) Dr James Cross and Professor Eric Ohuma
Job Summary:	Applicants are invited to join the NeoShield team, a multi-country, multi-disciplinary study led by the London School of Hygiene & Tropical Medicine (LSHTM) in collaboration with the Malawi-Liverpool-Wellcome Trust, the Zambia National Public Health Institute, and other national and international partners. NeoShield aims to reduce healthcare-associated infections, halt outbreaks and improve outcomes for hospitalised newborns in Malawi and Zambia through an integrated approach that includes: A. Strengthening microbiology laboratory systems to improve diagnostic capacity. B. Developing and validating an AI- and machine learning-based Clinical Decision Support Algorithm (CDSA) to improve the diagnosis and management of neonatal sepsis. C. Establishing a real-time outbreak detection system to identify and respond to infection clusters at ward level. D. Co-developing an antibiotic stewardship and sepsis care intervention bundle to optimise clinical practice and infection prevention. E. Undertake genomic characterisation of bacterial pathogens to inform surveillance and guide infection control strategies. The study integrates clinical, microbiological, and data science approaches to generate evidence and tools for safer, more targeted infection management in hospitalised newborns. The post-holder will be a Research Fellow based at LSHTM, working closely with Dr James Cross and the NeoShield teams in Zambia and Malawi. Our team brings extensive experience developing and deploying routine health data systems in global health settings and will provide the appropriate technical and strategic mentorship throughout the study. The Research Fellow will lead NeoShield's applied machine learning agenda, taking full ownership of the development pipeline for both the Clinical Decision Support Algorithm (CDSA) and the real-time ward-level outbreak detection system.

	This is a rare opportunity to develop and implement a machine learning model from concept to real-world clinical deployment, with your tools used directly by neonatal teams in Malawi and Zambia. The work will deliver immediate real-world impact, transforming infection management and outbreak response in high-burden hospital settings. Working with large-scale routine clinical and microbiological datasets, the post-holder will develop, validate and refine supervised and unsupervised models, ensure interpretability and safety, and oversee integration into bedside digital tools. The role involves close collaboration with clinicians, laboratory teams and Ministries of Health, and includes research travel to Zambia and Malawi to support implementation, user testing and real-time evaluation. Applicants should hold a scientific or engineering degree with a strong machine-learning component, alongside extensive experience of hands-on, applied machine-learning experience outside classroom settings. Essential skills include working with temporal data, data engineering/ETL workflows, and producing well-documented, version-controlled code (e.g. GitHub). Experience with healthcare datasets, multi-disciplinary teamwork and scientific publication is desirable. The post-holder will contribute to scientific outputs and technical documentation and will be supported in pursuing future fellowship and funding opportunities. The role offers a clear pathway for proof-of-concept development and potential national and regional scale-up of next-generation ML-driven infection-care tools across sub-Saharan Africa.

General Information

The London School of Hygiene & Tropical Medicine (LSHTM) is one of the world's leading public health universities.

Our mission 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.

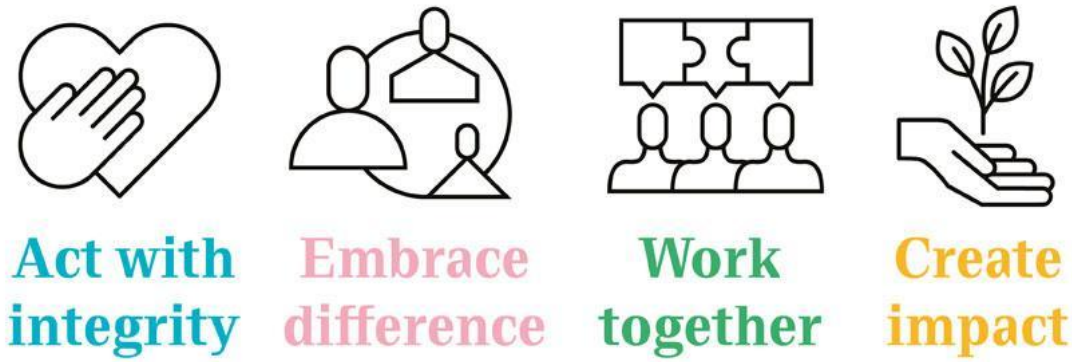
Staff and students are committed to helping create a more healthy, sustainable and equitable world for everyone, because we believe our shared future depends on our shared health.

We embrace and value the diversity of our staff and student population and seek to promote equity, diversity and inclusion as essential elements to improve health worldwide. We believe that when people feel respected and included, they can be more creative, successful, and happier at work. While we have more work to do, we are committed to building an inclusive workplace, a community that everyone feels a part of, which is safe, respectful, supportive and enables all to reach their full potential.

To find out more please visit our Introducing LSHTM page.

Our Values

Our values establish how we aspire to achieve our mission both now and in the future - demonstrating what it means to work and study at LSHTM. Please visit our LSHTM Values page for further information.



Faculty Information

The Faculty of Epidemiology & Population Health (EPH) houses a large group of epidemiologists, demographers, statisticians and nutritionists working on major issues of importance to public health provision in the UK and globally. EPH employs approximately 560 people in five research departments.

- Department of Infectious Disease Epidemiology & Dynamics
- Department of Infectious Disease Epidemiology & International Health
- Department of Medical Statistics, which includes the Clinical Trials Unit
- Department of Non-communicable Disease Epidemiology
- Department of Population Health

The Faculty has a postgraduate teaching programme including eleven intensive MSc courses: Epidemiology, Demography and Health, Medical Statistics, Health Data Science, Public Health for Development (jointly with Faculties of Infectious & Tropical Diseases and Public Health & Policy), Nutrition for Global Health, Global Mental Health (jointly with Kings College London, Institute of Psychiatry), Reproductive & Sexual Health Research, Sexual & Reproductive Health Policy and Practice (online), Veterinary Epidemiology (run jointly with the Royal Veterinary College) and Climate Change and Planetary Health. There are also two Distance Learning MSc courses: Epidemiology and Clinical Trials. The Faculty also has approximately 220 research students studying for an MPhil, PhD or DrPH degree.

The Dean of Faculty is Professor Elizabeth Allen.

Department Information

The Department of Infectious Disease Epidemiology and International Health conducts research on the epidemiology and control of infectious diseases, and other topics relevant for global public health. Work is carried out in low-, middle- and high-income countries, including in the United Kingdom, in close collaboration with country partners and global stakeholders.

The Department has research groups working on maternal, perinatal and child health; adolescent health; infectious diseases including HIV, tuberculosis, malaria and Neglected Tropical Diseases; vaccines; and humanitarian crises. Most staff have a disciplinary training in epidemiology or medical statistics, and a background in one or more of biology, medicine, mathematics, or social science.

The Department works closely with the Department of Infectious Disease Epidemiology & Dynamics.

The Department Heads are Professor Oona Campbell and Professor Sian Floyd.

LSHTM Centres

The postholder will work closely with the Antimicrobial Resistance Centre (AMR). The AMR Centre works to address the threat of AMR to life and healthcare globally through high quality research and evidence to guide action. The Centre's breadth of disciplines, ranging from microbiology and clinical medicine to social studies and economics, is being used to meet this complex challenge, fostering connections between scientific

approaches and generating innovative approaches to science and policy.

The postholder will also be affiliated with the MARCH Centre (Centre for Maternal, Adolescent, Reproductive and Child Health) at LSHTM. The Centre's vision is to improve the health of women, children, and adolescents worldwide through research excellence, relevance to policy and programmes, and by nurturing the next generation of research leaders. MARCH brings together more than 500 researchers across disciplines - from anthropology and epidemiology to clinical care and laboratory science - united by a shared focus on advancing evidence and innovation in high-burden settings. The Centre's work spans the full research pipeline, from description and discovery to development and delivery, generating insights that shape global policy and improve health outcomes across the life course.

Additionally, the post-holder will be welcome to engage with the Centre for Data and Statistical Science for Health (DASH). DASH brings together LSHTM's data science community, connecting experts in machine learning, statistical modelling, and digital health to drive innovation in global health research. The Centre focuses on developing and applying state-of-the-art quantitative methods to large, complex and longitudinal datasets, many of which now arise from high-volume, real-world digital systems.

NeoShield Study

NeoShield is an applied global health research study in Malawi and Zambia that aims to strengthen the diagnosis, management, and prevention of neonatal sepsis in sub-Saharan Africa. The study brings together clinicians, microbiologists, data scientists, and public health experts to improve how hospitals detect and respond to healthcare-associated infections in newborns. It will generate new epidemiological, microbiological, and implementation evidence to inform national infection prevention and antibiotic stewardship policies.

Funded by the Wellcome Trust, NeoShield is led by the London School of Hygiene & Tropical Medicine (LSHTM) in partnership with the Malawi-Liverpool-Wellcome Trust (MLW) and the Zambia National Public Health Institute (ZNPHI). The Principal Investigators are Dr James H. Cross and Professor Eric O. Ohuma. The project will evaluate integrated digital and clinical tools that link laboratory systems, decision-support algorithms, and outbreak detection to help neonatal teams make faster, data-driven clinical decisions and strengthen infection control practices.

The portfolio of duties outlined below will vary in accordance with the academic expectations of the role, which may be varied from time to time, and agreed at your annual Performance and Development Review (PDR).

Job Description

Main Activities and Responsibilities

Knowledge Generation

1. To undertake high quality research & scholarship, including contributing to drafting major grant proposals and/or leading on drafting small grant proposals, and evaluating teaching practice;

2. To contribute to peer-reviewed publications and other outputs, including as lead author;
3. To make a contribution to doctoral student supervision, as appropriate to qualifications and experience;
4. To manage small grants or elements of larger grants, ensuring compliance with good practice in relation to the conduct of research, the ethics policy and other relevant LSHTM policies.
5. To lead the development and operationalisation of NeoShield's Clinical Decision Support Algorithm (CDSA), including model design, training, validation and preparation for integration into routine clinical workflows.
6. To lead the development and operationalisation of the Ward-Level Outbreak Detection System, including construction of aggregated surveillance models and integration with dashboards and automated alerting tools.
7. To work closely with clinical and laboratory teams to gather operational feedback, understand workflow needs, and adjust both models to maximise usability and clinical relevance.
8. To design and deliver a structured evaluation framework that monitors model performance, accuracy, clinical impact and user experience, and to oversee iterative refinement throughout the grant period.
9. To create and maintain reproducible analytic pipelines, documentation and version-controlled codebases that support transparency, maintenance and scale-up of NeoShield's digital tools.
10. To produce high-quality research outputs, including peer-reviewed publications, open-source code, technical reports, academic presentations and policy-oriented summaries.
11. To ensure that all machine-learning activities comply with responsible AI/machine-learning principles, including fairness, transparency, safety, and alignment with ethical and regulatory requirements in partner countries.

Education

1. To contribute to the delivery of high quality, inclusive, research-informed teaching and assessment in relation to your specific subject and within the broader area covered by your department and disciplinary field;
2. To contribute to the improvement of the quality of LSHTM's education, by participating in the development of new and updated learning and teaching materials or approaches.
3. To co-supervise MSc summer projects aligned with NeoShield's aims and outputs
4. To support the development of linked PhD studentships, where appropriate.

Internal Contribution

1. To undertake activities that support the Department, Faculty, MRC Unit or LSHTM;
2. To reflect LSHTM's EDI goals in your work and behaviour;
3. To participate in LSHTM's PDR process.

4. To actively participate in activities by the AMR Centre, MARCH Centre, and DASH activities, contributing specialist expertise in applied machine learning, digital health and infection modelling.
5. To support internal workshops, cross-centre collaborations, working groups and strategic discussion that advance LSHTM's capabilities in AI/machine-learning for global health, and to share lessons emerging from NeoShield's research.

External Contribution

1. To demonstrate good external citizenship by contributing to learned society/conference events, journal and grant reviews etc;
2. To support the design and delivery of training materials, workshops and job aids for clinicians, laboratory team and Ministry of Health partners on the use, interpretation and safe deployment of NeoShield's machine-learning tools.
3. To contribute to capacity-building in partner organisations by supporting local teams to operate, evaluate and improve the CDSA and outbreak system after implementation.
4. To represent NeoShield at external meetings, conferences, workshops and stakeholder engagements, demonstrating leadership in applied machine-learning for neonatal care and infection surveillance.
5. To contribute to open-source communities, public repositories and collaborative forums where NeoShield tools and methods could be shared for wider adoption and scale-up.

Professional Development and Training

1. To keep up to date with the latest research/thinking in your academic field and with changes to pedagogic practice within LSHTM and more generally;
2. Where the length and nature of the position permits, to apply for and, if accepted, undertake a doctoral degree (if not already acquired);
3. To undertake and successfully complete the mandatory training required by LSHTM as appropriate to the role.
4. To remain up to date with advances in machine-learning, digital health systems and infection analytics, participating in relevant meetings, webinars and seminars as required.

General

All academic staff are free within the law to question and test received wisdom, and put forward new ideas and controversial or unpopular opinions, to enable LSHTM to engage in research and promote learning to the highest possible standards.

All staff at LSHTM are also expected to:

1. Act at all times in LSHTM's best interests;
2. Treat staff, students and visitors with courtesy and respect at all times;
3. Comply fully with LSHTM policies, procedures and administrative processes relevant to the role, including when acting as Principal Investigator, accepting academic, managerial, financing and ethical responsibility for a project
4. Uphold and support LSHTM's values (as set out in the LSHTM Strategy);
5. Act as ambassadors for LSHTM when hosting visitors or attending external events.

Academic Expectations

All academic roles have a statement of academic expectations attached to each level. Please ensure that these have been read and understood. For further information please refer to the Academic Expectations page.

The above list of duties is not exclusive or exhaustive and the role holder will be required to undertake such tasks as may reasonably be expected within the scope and grading of the role.

Role descriptions should be regularly reviewed to ensure they are an accurate representation of the role.

Person Specification

This form lists the essential and desirable requirements needed by the post holder to be able to perform the job effectively.

Applicants will be shortlisted solely on the extent to which they meet these requirements.

Essential criteria:

1. A postgraduate degree, ideally a doctoral degree, in a relevant topic (e.g. machine learning, data science, statistics, computer science, engineering, epidemiology or another relevant quantitative field).
2. Applied experience in machine-learning, with extensive experience of hands-on model development, testing, validation and deployment using real-world datasets in operational environments (e.g. digital health systems, public health platforms, or other complex production settings such as logistics, finance, energy, mobility, or large-scale consumer or industrial systems). Experience must be beyond classroom or theoretical work.
3. Contributions to written output, preferably peer-reviewed, as expected by the subject area/discipline in terms of types and volume of outputs.
4. Proven ability to work independently, as well as collaboratively as part of a research team, and proven ability to meet research deadlines.
5. Evidence of excellent interpersonal skills, including the ability to communicate effectively both orally and in writing
6. Evidence of good organizational skills, including effective time management.
7. Experience working with temporal or time-series data.
8. Demonstrated experience in data engineering and ETL workflows required to prepare large, real-world dataset for machine-learning development.
9. Evidence of producing well-documented, version-controlled code (e.g. GitHub/GitLab) and familiarity with best practices in reproducible, transparent machine-learning workflows.

Desirable Criteria

1. Some experience of contributing to research grant applications.
2. Some experience of teaching and assessment.
3. Some experience of supervising and supporting junior researchers and/or research degree students, and non-academic staff.
4. Experience working with healthcare or biological datasets, including routine clinical, laboratory or microbiology data.
5. Experience working within multi-disciplinary research teams, especially across data science, clinical, laboratory, or global health domains.
6. Experience with model interpretability, safety evaluation, or bias assessment in applied machine-learning systems.
7. Experience deploying models or analytics into production environments, including

digital applications, dashboards, APIs, or real-time decision-support tools, and working across different compute environments such as cloud-based infrastructure and on-premise local servers.

8. Experience engaging with ethical, regulatory, or governance frameworks related to AI, machine-learning, data protection or responsible innovation in health (e.g. fairness, bias mitigation, accountability, transparency and safety).
9. Experience working in environments with high autonomy and end-to-end ownership of technical systems, such as start-ups, scale-ups, applied research labs, or small product teams.

Salary and Conditions of Appointment

The post is fixed-term for 24 months, with potential for extension subject to funding, and full-time 35 hours per week, 1.0 FTE. The post is funded by the Wellcome Trust and Gates Foundation and is available immediately. The salary will be on the LSHTM salary scale, Grade 6 in the range £45,728 - £51,872 per annum pro rata (inclusive of London Weighting).

The post will be subject to the LSHTM terms and conditions of service. Annual leave entitlement is 30 working days per year, pro rata for part time staff. In addition to this there are discretionary “Wellbeing Days”. Membership of the Pension Scheme is available.

LSHTM operates a Hybrid Working Framework which, alongside agreed service requirements, enables teams to work more flexibly where the role allows - promoting wellbeing and a better work/life balance. Please note that roles based in London are required to work on-site a minimum of two days per week.

Application Process

Applications should be made on-line via our jobs website. Applications should also include the names and email contacts of 2 referees who can be contacted immediately if appointed. Online applications will be accepted by the automated system until 10pm of the closing date. We regret that late applications cannot be accepted. 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”, “Yes” or “No" will not be considered acceptable and will not be scored.

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.

Asylum and Immigration Statement

LSHTM will comply with current UKVI legislation, 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.

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 Sponsorship and eligibility to work in the UK, can be found on the government immigration rules page.

Date amended: January 2026