

Supervisors	Prof Ruth Keogh, Prof Linda Sharples, Dr Tom Cowling
Institution/Division	London School of Hygiene & Tropical Medicine, Department of Medical Statistics
Funding Period	2021-2024
Stipend	£17, 285 p.a.
How to Apply	<p>The application has two stages. For stage 1 please submit your CV and a covering letter outlining the reasons for your interest in the project and your suitability to Ruth Keogh by email (ruth.keogh@lshtm.ac.uk).</p> <p>The deadline for first stage applications is 5<sup>th</sup> March 2021 and applicants may be invited for an interview. The successful candidate at stage 1 will be supported in making a stage 2 application to the ESRC, and the deadline for this will be 2nd April 2021.</p>
PhD Title	<b>Estimating treatment effects using real world data when there are competing risks</b>
The Studentship	<p><b>Project overview</b></p> <p>This project investigates the value of evidence from “real-world data” (RWD) on design and analysis of randomized controlled trials (RCTs), the gold standard for evaluating effects of medical treatments and other interventions. Electronic health records databases present opportunities to study treatment effects in large and diverse patient populations, and to investigate whether treatment effects differ between patient subgroups. To do this requires careful analysis to control for confounding of the treatment-outcome association and other potential sources of bias. Statistical methods for such analyses have been developed in recent years and are referred to as ‘causal inference’ methods. Death due to a specific cause is a common outcome in studies of treatment effects, for example in studies of cancer treatments. In this setting it is important to consider death due to other causes, referred to as ‘competing risks’.</p> <p>This PhD project will evaluate and develop methods for the appropriate handling of competing risks to estimate causal effects of treatments using real world data. The methods will be illustrated using treatments for prostate cancer (surgery, radiotherapy, drug therapy) recorded in linked data from cancer registries, hospital records and national death registries. In collaboration with the co funder AstraZeneca, we will also identify further examples and contrast different approaches to decision making for different types of intervention.</p> <p>The student will benefit from the experience of the co-funder AstraZeneca in developing trial protocols, understanding the potential for use of evidence from real world data in drug</p>

	<p>development and its place in the regulatory framework. The LSHTM supervisory team brings together expertise on statistical methodology for survival analysis and causal inference and on the analysis of both RCTs and RWD.</p> <p>The student will have the opportunity to undertake placements in the Statistical Innovation Group at AstraZeneca during the course of the PhD.</p> <p><b>Skills development</b></p> <p>This project will enable the student to develop skills in a number of areas:</p> <ul style="list-style-type: none"> <li>• Applying state of the art statistical methodology to a substantive research question</li> <li>• Developing statistical methodology and evaluating methods using simulation studies.</li> <li>• Collaborating with clinical advisors and data and policy experts to refine the research questions.</li> <li>• Transferrable skills including research ethics, scientific writing, presentation skills.</li> </ul> <p><b>Environment</b></p> <p>The student will join a highly active and collaborative group of researchers in the Medical Statistics Department and Centre for Statistical Methodology at LSHTM, including existing PhD students at different stages and other early career researchers. The project would also involve linking with expert advisors in addition to the supervisory team, clinical collaborators and national and international networks. The student will have the opportunity to undertake placements in the Statistical Innovation Group at AstraZeneca during the course of the PhD.</p> <p>LSHTM provides a stimulating environment with state-of-the-art facilities in which to carry out research training. The breadth of scientific interests coupled with the geographic diversity of research projects at LSHTM offers a unique opportunity for you to participate with a dynamic and stimulating group of internationally renowned researchers. LSHTM provides a range of activities to support building of supportive student cohorts.</p>
Key Requirements	<p><b>Candidate</b></p> <p>Ideally, applicants should have an excellent undergraduate degree (first or upper second) in mathematics, statistics or a related field and an MSc in statistics, medical statistics, health data science, or a related field, or equivalents for qualifications gained outside the UK.</p> <p>UK and international students are eligible to apply. For full eligibility criteria please see: <a href="https://ubeldtp.ac.uk/esrc-studentships/">https://ubeldtp.ac.uk/esrc-studentships/</a>. Further</p>

	information about the level of funding available for international students is available here: <a href="https://www.lshtm.ac.uk/study/fees-and-funding/funding-scholarships/ukriinternational-recruitment-lshtm">https://www.lshtm.ac.uk/study/fees-and-funding/funding-scholarships/ukriinternational-recruitment-lshtm</a>
Further Details	Potential applicants are encouraged to contact the first supervisor Prof Ruth Keogh ( <a href="mailto:ruth.keogh@lshtm.ac.uk">ruth.keogh@lshtm.ac.uk</a> ) for an informal discussion and to find out more about the project.
Closing Date	Stage 1: 5 <sup>th</sup> March 2021, 5pm Stage 2: 2 <sup>nd</sup> April 2021
Latest time for Submission of Applications	See above
Details for Submission	See above: How to apply.
Interview date	Week of 8 <sup>th</sup> March or 15 <sup>th</sup> March.