3 Year PhD Studentship available for September 2019

Project Title: Estimating excess rates of disease-specific morbidity and mortality in cardiovascular disease patients

Department: Health Sciences (Biostatistics Research Group)

Supervisors: Dr Michael Sweeting michael.sweeting@le.ac.uk
Professor Paul Lambert paul.lambert@le.ac.uk

Eligibility: The scheme is open to nationals from all countries, but fees can only be provided at the Home/EU rate.

Applicants that do not qualify for the UK/EU tuition fees must be able to demonstrate that they can pay the difference between UK/EU and International fees for the duration of their studies.

Funding covers:

- PhD tuition fees at UK/EU rates
- A stipend at current British Heart Foundation rates (£19,919 - £23,398 pa)
- travel allowance

Project Description:

Linkage of large-scale disease registry and population electronic health record (EHR) data has huge potential to address key questions regarding the life-course of patients following a cardiovascular disease (CVD) diagnosis, determining whether there are excess rates of comorbidity and determinants of variations in excess rates. However, statistical methods that fully utilise EHRs for this purpose are relatively underdeveloped.

This PhD focusses on development and application of statistical methods. Specifically, the student will investigate how linked disease registry data can be suitably matched to control populations using published statistics and large-scale EHRs (e.g. from primary care) to address questions of excess rates of comorbidity following diagnosis and intervention for CVD. The student will build on research undertaken in the Biostatistics Research Group in relative survival analyses and multistate modelling.
Background:
As a result of improvements in treatments and management of cardiovascular disease (CVD), patients are now living longer but with a potentially higher risk of developing comorbidities. A large population of patients now live with both CVD and cancer but there is limited data concerning the interplay between these two conditions.

Control populations are required to address questions of excess rates of disease in a cohort. At an individual level, it is not possible to ascertain whether a subsequent event (e.g. a cancer diagnosis) is caused by the patient having CVD or not. However, at an aggregate level it is possible to compare the rate at which events occur in the CVD cohort with the rate in a control group free of CVD.

Proposed study:
In this project the student will investigate different approaches to using control group data, either utilising published population statistics or using individual patient data from large scale electronic health records, for estimating excess rates of morbidity and mortality. The advantages and disadvantages of each approach will be formally investigated. Survival analysis methods, including the use of multistate and relative survival models, will be used to calculate clinically useful quantities such as expected years of life lost due to comorbidities. The student will be encouraged to develop free-to-use software and provide web implementation of clinically relevant metrics to disseminate their research.

Training and Research Study Environment
This project will provide the student with a comprehensive Biostatistical and Epidemiological scientific education, including training in Statistical Programming and Applied Research. The work will be conducted in the Biostatistics Research Group at the University of Leicester, with direct supervisory input from Dr Michael Sweeting, and second supervisor Professor Paul Lambert.

Funding details:
This project is funded by the British Heart Foundation (BHF) (Non-Clinical PhD Studentship). The Studentship is for three years, starting September 2019, and offers tuition fees at UK/EU rates, a generous stipend at current BHF rates (£19,919 - £23,298), research expenses and some travel costs.

Entry requirements:
Applicants are required to hold/or expect to obtain a UK Bachelor Degree 2:1 or better or Master’s degree in a subject that relates to the goals of the research group (e.g. Biostatistics), or overseas equivalent qualification.

The University of Leicester English language requirements apply where applicable.

Informal enquiries about the PhD to discuss further details are encouraged.
How to apply:

You should submit your application using our [online application system](#).

Apply for **Health Sciences Research**

In the funding section of the application please indicate you wish to be considered for **British Heart Foundation Studentship**

In the proposal section please provide the name of the supervisor and project.

Include a CV and a personal statement explaining your interest in the project and why we should consider you together with all other relevant application documents.

**Project / Funding Enquiries:**  Dr Michael Sweeting  [michael.sweeting@le.ac.uk](mailto:michael.sweeting@le.ac.uk)  
Professor Paul Lambert  [paul.lambert@le.ac.uk](mailto:paul.lambert@le.ac.uk)

**Application enquiries to**  [pgradmissions@le.ac.uk](mailto:pgradmissions@le.ac.uk)

**Closing date for applications 15th April 2019**