3 Year PhD Studentship available for September 2019

**Department:** Health Sciences

**Supervisors:** Prof Alex Sutton (Health Sciences) [ajs22@le.ac.uk](mailto:ajs22@le.ac.uk) & Prof Nicola Cooper (Health Sciences) [njc21@le.ac.uk](mailto:njc21@le.ac.uk)

**Eligibility:** UK/EU applicants only

**Project Title:** Complex synthesis of multi-component interventions studies impacting on multiple outcome measures: Optimisation of packages of care for preventing childhood accidents in the home.

**Project Description:**
There is increasing interest and use of ‘complex’ interventions - which include multiple components - in many areas of health research (Higgin et al.). While identifying the optimal packages of care from both effectiveness and cost-effectiveness perspectives is of ultimate interest this is currently rarely attempted due to i) it not being possible to conduct randomised trials to evaluate all potential combinations of intervention components; and ii) under-development of appropriate methodology for the complex modelling required maximising the use of all relevant data (e.g. individual subject data and aggregate data from randomised and observational studies) (Achana et al.). This project would aim to extend existing methods to allow optimal care packages to be identified, specifically in the area of public health, where these issues are of tantamount importance. The possibility of interventions varying in effectiveness depending on individuals’ characteristics will be examined through exploration of subject and study level covariates; thus acknowledging that optimal care packages may not be the same for all individuals.

The methods will be developed using a case study evaluating interventions to prevent child injuries in the home for which we already have access to systematically identified evidence; a lot of which is available at the individual subject level (Kendrick et al.). The analysis will utilise cutting edge multi-parameter synthesis models extending network meta-analysis models to simultaneously incorporate separate intervention component effects, covariates, and both summary and individual subject level data. The results from the evidence synthesis will inform an economic decision analytical model to evaluate the cost-effectiveness of the intervention strategies. Finally, while the statistical and economic modelling to address the above is necessarily complex, consideration will be given to developing methods to best visualise the results for communication to clinicians, decision makers and lay audiences. The student will have the opportunity to work closely with a world leading expert in accident prevention research, Professor Denise Kendrick (University of Nottingham), who has agreed to be a collaborator on this project.
It is envisaged that the methods developed will be of interest to those carrying out effectiveness, and cost-effectiveness, evaluations of interventions in both public health, and health technology assessment contexts and beyond. Ultimately, this will improve healthcare decisions by considering a more inclusive evidence base while allowing the data to be modelled within a realistically complex framework.

This project will suit an enthusiastic and dynamic student with a background in Statistics/Biostatistics or similar quantitative discipline. The student will gain skills in applied biostatistics and related fields including evidence synthesis, health technology assessment and economic decision modelling. This project will use a combination of R and WinBUGS software for the statistical analyses, and Shiny for R for the presentation and dissemination of results.

References:


Funding details:
The College of Life Sciences (CLS) HDRUK Studentship will provide a tax-free stipend at RCUK rates (£15,009 for 2019/20) and UK/EU fees for 3 years.

Entry requirements:
Applicants are required to hold/or expect to obtain a data science related UK Bachelor Degree 2:1 or better (e.g. Computer Science, Bioinformatics, Biostatistics), and preferably also a similar MSc qualification. The University of Leicester English language requirements apply where applicable.

How to apply:
You should submit your application using our online application system.

Apply for a PhD in Health Sciences Research

In the funding section of the application please indicate you wish to be considered for a CLS HDRUK Studentship.
In the proposal section please provide the name of the supervisor and project you want to be considered for – please list both your first and second choices.

Project / Funding Enquiries: Prof Alex Sutton ajs22@le.ac.uk

Application enquiries to pgradmissions@le.ac.uk

Closing date for applications: 3rd April 2019

Interviews are likely to be week commencing 8th or 15th April 2019