Funded PhD Studentship in Evidence Synthesis in Health

Applications are invited for a full-time 3-year PhD studentship in evidence synthesis, funded by and hosted within the Centre for Reviews and Dissemination (CRD) at the University of York (http://www.york.ac.uk/inst/crd/), commencing October 2013.

We are seeking an exceptional and self motivated individual who wishes to develop their research skills and build a career in evidence synthesis and who will make an active contribution to CRD’s growing methodology portfolio.

CRD has a broad remit including systematic review and synthesis of aggregate and individual participant data (IPD) to address prognostic, diagnostic and therapeutic questions, across health and public health settings. Potential PhD projects and supervisors are given below. However, we particularly welcome applications from those who come with their own ideas for an area of methodological development that is complementary to CRD’s research portfolio, which can be accessed on our website.

The successful candidate will be based and supervised within CRD which has been rated joint first for health services research in the last Research Assessment Exercise. Although based in CRD, the research student will be formally registered through the Department of Health Sciences and during the first year will undertake research training by accessing appropriate Health Sciences modules. The person who wins this award will be exposed to a range of evidence synthesis projects (systematic reviews and economic evaluations) across different health care areas, and will be expected to participate fully in CRD’s research activities.

The award will cover academic fees at the UK/EU rate and a maintenance grant of £12,000 per annum for 3 years (International students would need to find funds to cover the remaining fees).

For students whose first language is not English there is a minimum requirement of an IELTS score of at least 7 in each component of the test.
About CRD

CRD is part of the National Institute for Health Research (NIHR) and an academic department of the University of York.

The Centre specialises in systematic review; a research methodology which is internationally recognised as the gold standard in generating evidence to inform decision making. Our aim to be a world leader in evidence synthesis is driven by a commitment to innovate and provide best evidence to inform decision making and maximise health benefits. We produce internationally renowned databases of research evidence, undertake rigorous systematic reviews and economic evaluations across a wide range of health, public health and social care areas and develop evidence synthesis and knowledge transfer methods. In the 2008 RAE, researchers from CRD, together with those from associated departments were placed joint top for health services research. Further details of our research can be found on our website (http://www.york.ac.uk/inst/crd/).

CRD currently has over 50 members of staff, comprising experienced health and social care researchers, health economists, information specialists, dissemination specialists and an administrative team, all of whom play an important role in achieving our aspirations.

CRD’s core work programme, which primarily supports production of our databases, is funded through the NIHR, the Department of Health, Public Health Agency, Northern Ireland and the National Institute for Social Care and Health Research, Welsh Government. The Centre is also contracted to undertake syntheses for the NIHR Health Technology Assessment programme and its customers which include the National Institute for Health and Clinical Excellence (NICE). We also hold a variety of project and programme funding by the NIHR, MRC, charities and other funders. To avoid potential conflict of interest, CRD has a policy not to undertake work for or receive funding from the pharmaceutical industry.

The University

The University of York is one of the foremost Universities in the UK and a member of the Russell Group of leading UK Universities. It has an outstanding record of research, teaching, and training across a full range of disciplines. The most recently reported Research Assessment Exercise (RAE) placed York in the top ten UK universities. The University has a particular strength in health-related research.

The main campus is a 200-acre landscaped park, well-known for its lake and wildfowl, with colleges and academic buildings within walking distance of each other. Proximity to the historic city of York makes the University a popular choice and provides a pleasant working environment. Transport connections to York are fast and effective.
Possible PhD topics

Rapid reviews of the effects of healthcare interventions

Potential supervisors: Julian Higgins, Lesley Stewart, Amanda Sowden

Systematic reviews use rigorous methods to integrate and summarize the totality of reliable evidence in a research area. A full systematic review can be very resource-intensive. An alternative to a full systematic review is a streamlined version which is undertaken in a reduced period of time and in which some aspects of the methodology are compromised. These are often referred to as rapid reviews. However, there has been very limited research on methods for rapid reviews and it is unclear which aspects of methodology are most important for the validity of the findings. The project will start by collating and reviewing evidence that is relevant to informing decisions about how rigorous a review needs to be. The student will then contribute to the evidence base on methods for rapid reviewing on the effect of healthcare interventions. Part of the research will involve performing rapid versions of reviews undertaken by colleagues within the Centre for Reviews and Dissemination, so that the results of different approaches to reviews can be compared empirically.

Further reading:


Regular updating of meta-analyses

Potential supervisors: Julian Higgins, Mark Simmonds

Meta-analyses of studies addressing questions of on-going interest should be updated regularly as new studies are performed. The increasing consideration of automation in the collation of research evidence means that meta-analyses might be updated frequently. However, if meta-analyses are repeated using conventional statistical methods then there is an increased risk of false-positive findings. Sequential methods for meta-analysis can be used to overcome this, which mirror established sequential methods for clinical trials. There are strong proponents of this approach, and there are those who argue that sequential approaches are not appropriate when analysing other people's research. This project will examine the role of Bayesian and classical methods for regularly-updated meta-analyses, with applications in clinical trials. The research may take a conceptual approach, by addressing questions of whether, when and why to take formal sequential approaches. Alternatively, the research could be more technical in nature, by developing the statistical methods themselves.
Further reading:


Developing a framework for presenting and synthesizing findings for the totality of eligible studies in a systematic review

Potential supervisors: Amanda Sowden, Lesley Stewart, Julian Higgins

Systematic reviews aim to collate and integrate the findings of all studies meeting pre-specified eligibility criteria, and they are commonly applied to clinical trials. Ideally, complete data will be available from all identified studies such that a statistical synthesis, or meta-analysis, can be undertaken to combine the results for each key outcome. In practice, when relying solely on published data, it is unlikely that all identified studies will contribute to a meta-analysis for any particular outcome. There are three possible reasons for this: some studies may not collect data for the outcome of interest; some studies might not report results for the outcome of interest; and some studies might report the results for the outcome in a format that is not amenable to meta-analysis. The distinction between these is important, since the failure to report an outcome that was measured will (at best) reduce precision of the meta-analysis, and may (at worst) introduce bias into the meta-analysis if the data were suppressed from the study report because of the results obtained.

Many published systematic reviews provide inadequate explanation of the reasons for data being missing from each meta-analysis. It is intended that this project will (i) assess the extent of the problem (e.g. collecting empirical evidence on what proportion of eligible studies typically collect and/or report usable and unusable data for any particular outcome); (ii) develop graphical and tabular approaches to presenting the available information (taking into account any evidence – or suspicions – of selective reporting biases); and (iii) consider novel statistical and non-statistical methods for improved integration of the available information when the desired (i.e. complete) meta-analyses cannot be undertaken.

Dealing with diverse covariates in meta-analysis of observational studies

Potential supervisors: Julian Higgins, Bob Phillips, Mark Simmonds

A common problem in meta-analysis of observational studies is that different studies include different covariates in the regression models they use to analyse the data. For example, in meta-analysis of non-randomized studies of interventions, or in meta-analysis of exposure-disease relationships in epidemiology, different sets of potential confounders may have been ‘adjusted for’ in an attempt to reduce bias. In meta-analyses of risk prediction models, different sets of predictors may have been included in the model. Estimates of regression coefficients from models with different covariates estimate different parameters. Such differences may or may not be important, depending on the magnitude of the relationships among the variables.
Some methods have been proposed for handling these situations. For example, given the individual participant data, multivariate meta-analysis can be used to model coefficients that are adjusted in different ways [FSC 2009]. Alternatively, Bayesian approaches for accounting for unmeasured confounders can be used [McCandless 2012]. However, there is a need for further consideration and development in this area.

This project will explore statistical methods for synthesizing results from regression models when different sets of covariates have been included in the models used by different studies. Methods applicable to both individual participant data and aggregate (e.g. published) results will be explored.

Further reading:


### Person Specification

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<tr>
<td><strong>Qualifications</strong></td>
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<tr>
<td>Degree in a health, health services research, statistical or science topic. Minimum upper second class.</td>
<td>✓</td>
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<td><strong>Knowledge</strong></td>
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<td>Evidence synthesis including methods of data synthesis appropriate to chosen area of study</td>
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<td>Understanding of the health field</td>
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<td>Understanding of and familiarity with statistical packages</td>
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<td><strong>Personal Attributes</strong></td>
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<td>Analytical thinker with good problem solving abilities. Ability to both ‘think outside of the box’ and be pragmatic in approach.</td>
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<td>Self-motivation, excellent organisational skills and a commitment to the delivery of high quality outputs.</td>
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<td>Excellent written and verbal communication and inter-personal skills</td>
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<td>Ability to work collaboratively.</td>
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Process for application

Closing date for applications is 31 July 2013.

Applications should be made using the Department of Health Sciences on-line application process which can be accessed using the following link.

http://www.york.ac.uk/admin/uao/ugrad/courses/cupid/index.cfm?ippCode=DRPHSC\SHSC3&level=postgraduate.

Applicants should state that they are applying for the advertised CRD studentship in Evidence Synthesis and provide a *curriculum vitae* and two academic references. You should also upload an outline of your intended area of research, stating potential methods or approaches to be adopted, and set in the context of how it will contribute to developing evidence synthesis methods and/or contribute to better health decision making (up to 500 words in PDF format). If you have already published academic papers, one of these may also be uploaded.

Interviews

Interviews are likely to take place during the week beginning 5th August. At interview candidates will be expected to give a short presentation on a project or piece of research that they have undertaken previously and outline their plans for developing a suitable project.

Informal Enquiries

Prospective applicants who wish to discuss the studentships should contact Annie Christie, the Centre Administrator who will arrange a time to talk with potential supervisors. (01904 321059, email: annie.christie@york.ac.uk).