PhD Studentship – Type 2 diabetes in women after a diagnosis of gestational diabetes: understanding uptake to screening, progression rates and costs, using evidence synthesis methodologies

The Department of Health Sciences is pleased to offer a funded studentship, within the Diabetes Research Centre, for entry to its Doctor of Philosophy (PhD) programme.

**Funded PhD Studentship**

**School/Department:** Department of Health Sciences/Diabetes Research Centre

**Supervisor(s):** Dr Clare Gillies, Dr Sudesna Chatterjee and Professor Kamlesh Khunti

**Start Date:** September 2018 (negotiable)

**Eligibility:** UK/EU applicants

**Application Close Date:** Open until filled

The studentship is available for full-time registration and is payable as a full UK/EU tuition fee waiver for three years together with an annual tax-free stipend of £14,553. The successful applicant will receive an annual allowance of £1,300 towards travel, conference and running costs.

**Research Area**

**Project aims**

i) To investigate uptake and determinants of postpartum screening for Type 2 diabetes in women after a diagnosis of gestational diabetes

ii) To utilise Markov multistate modelling techniques to assess the current health and monetary costs of progression to T2DM following GDM

iii) To utilise the developed Markov model to assess the potential cost-effectiveness of improving screening uptake, and intervening to reduce progression to T2DM, following gestational diabetes

**Background**

Gestational diabetes mellitus (GDM) is a transient condition whereby women develop glucose intolerance and insulin resistance during pregnancy, followed by complete resolution in most cases after delivery. In England and Wales, approximately 700,000 women give birth annually of which about 30,625 are complicated by GDM. As well as increased pregnancy complications, women with GDM have a seven-fold higher risk of developing T2DM in the
future, compared to those who have not suffered the condition, with this risk being even higher in South Asian populations.

The National Institute for Health and Care Excellence (NICE) recommends performing a fasting plasma glucose test by 13 weeks postpartum or an HbA1c test if a fasting plasma glucose test isn’t possible, after 13 weeks. For women who have negative postnatal test for diabetes NICE recommends offering an annual HbA1c test. These annual screening appointments can also be used to provide and reinforce lifestyle advice for prevention of T2DM. However, women usually perceive GDM to be a transient condition with no future risks and evidence suggests that approximately 50% of women with GDM perceive themselves to be at low risk of future diabetes. To improve screening in the UK, a more accurate understanding of current screening rates and predictors of poor concordance with screening is required. There is currently very limited evidence on the update of screening and associated factors in the UK.

**Understanding uptake to screening**

The first part of the project will aim to assess rate of compliance with post-natal annual screening for type 2 diabetes (T2DM) following gestational diabetes mellitus (GDM) in pregnancy, and examine the factors associated with regular annual screening versus poor uptake.

Data from the Clinical Practice Research Datalink (CPRD) (http://www.cprd.com/researcher/), including primary care data and Hospital Episodes Statistics (HES) data will be used. Previous work indicates that GDM is underreported in primary care and using linked primary-secondary care data adds a significant number of cases, therefore we feel that it is important to use both primary and secondary care data.

**The Markov model**

A Markov multistate model will be developed to assess the current health and monetary costs of progression to T2DM following GDM, as well as the potential impact of reducing future incidence rates. The model will predict the progress of a cohort of women who suffered from GDM during pregnancy, stratified by ethnicity, and will model their risk of developing T2DM over their lifetime. The model will include states for normal glucose tolerance (NGT), impaired glucose tolerance (IGT), T2DM and death, and transition rates between states will be taken from the CPRD-HES database, and will be stratified by age and ethnicity. Relevant costs and utilities (quality of life estimates) from published sources will be attached to each state, to allow the long-term cost and health impact of GDM to be modelled.

As well as assessing the current impact of progression to T2DM after gestational diabetes, the model will be used to assess the potential cost-effectiveness of improving screening uptake for T2DM following gestational diabetes, as well as the potential impact of any interventions could also be run through the model by reducing transition rates between the relevant health states. This will aid a greater understanding of the potential long-term impact of interventions.
aimed at reducing progression to T2DM after gestational diabetes. The model will also allow for consideration of the level of costs which could be spent on an intervention, whilst allowing for the intervention to be cost-effective.

Research Environment

Diabetes and Metabolic Medicine is one of ten themes within the College of Medicine, Biological Sciences and Psychology. The main aim of the Diabetes and Metabolic theme is to develop and evaluate novel methods of preventing and treating metabolic disease, improve routine clinical practice and target the health of the nation. The Diabetes Research Centre, has strong links with the NHS and other research institutions, and has established an international reputation in the field of diabetes and cardiovascular research. It is jointly led by Professor Melanie Davies and Professor Kamlesh Khunti.

The student will work within the Diabetes Research Centre, University of Leicester and be based at the Leicester Diabetes Centre, Leicester General Hospital. The Centre has a multidisciplinary research group of over 140 University and NHS staff, including epidemiologists, statisticians, social scientists and clinicians. There are excellent laboratory, clinical and specialist research exercise facilities. The Centre provides a stimulating and exciting environment in which to study for a postgraduate degree.

The student will be supervised by Dr Clare Gillies (Lecturer in Medical Statistics), Dr Sudesna Chatterjee (Consultant Physician and Diabetologist), and Professor Kamlesh Khunti (Professor of Primary Care Diabetes and Vascular Medicine)

Entry Requirements

- It is expected that applicants will hold (or have completed by the start date) a Masters degree in statistics, medical statistics, health technology assessment or health economics.
- First class or upper second class undergraduate degree or an equivalent overseas qualification with a high statistical content
- Standard English language entry requirements for the University of Leicester
- Applicants should have a good knowledge of statistical methodologies and an interest in medical statistics, health services research and decision modelling.
- Available to suitable UK/EU applicants
- Available for full-time registration only

Informal Enquiries

We are keen to attract the very best applicants for this opportunity and would be pleased to have informal conversations with interested individuals prior to applications - please contact:

Dr Clare Gillies (clg13@le.ac.uk , tel +44 (0)116 252 3286)
Apply Now

1. Draft a brief (no more than one page) personal statement that explains
   - why you are interested in the studentship
   - why you would be a good candidate
   - how the project fits with your interests/experience/expertise

2. Prepare your supporting documents - with your application you need to include proof that you meet the academic and English language entry requirements:
   - include all relevant certificates/diplomas and transcripts
   - international applicants must provide official copies of their entire course transcripts including explanations of the mark schemes used and, where possible, an indication of their class ranking/position in class
   - supporting documents not in English must be provided with a certified English translation
   - please also include a full curriculum vitae

3. Submit your online application - online Apply for Health Sciences Research

Important Advice for Applicants

- The studentship will remain open until filled - so early application is strongly encouraged
- Applications that do not include a full personal statement and the required supporting documents will not be considered
- In the Funding section of the application, applicants must state that they wish to be considered for 2018 PhD Studentship in Health Sciences - Gillies
- In the Proposal Section include the project title and supervisor’s name