Summer project

1. **Declarations of interest by healthcare professionals- Where can we find them , and what do we do with them?**
   Conflicts of interest in medicine are an important source of bias. The General Medical Council says that doctors must be open about their conflicts of interest. Doctors can record their interests in a variety of places, such as journals, NHS Trust registers, or personal or academic websites. There have been suggestions that these are difficult to locate and interpret. We plan to assess the ease of finding declared interests, though asking citizens and students to locate them using time limited searches. We will also be researching how people interpret, and what people understand of the declarations which doctors make.

   We invite students to help with designing and running this web-based project, and to assist in interpreting and publishing the results. This project can be done remotely.

   We will also invite colleagues in the School of Computer Science to participate.

   Co-supervisors: Dr Margaret McCartney and Professor Frank Sullivan.

2. **Effective prescription of oral iron for anaemia**
   Anaemia is a common clinical condition. Iron is often prescribed to treat it, but it can be unpleasant to take as it has multiple side effects. The usual dosing is three times a day, but there have been suggestions that it is equally effective to take on alternate days. However we suspect that, because of side effects, many patients do not take it three times a day. We will use prescribing records in four NHS Fife GP practices and all Tayside and Fife practices in the Data Safe Haven in the Health Informatics Centre(HIC) to assess the prescribing patterns of Ferrous Sulphate and other iron preparations. We will examine how many prescriptions were initiated and dispensed as well as the indication for prescribing and reasons for consulting during treatment. This will allow us to gauge how many tablets people take over periods of time, and whether this is less than the three times a day usual dosage. The work in practices will not require patient contact and the HIC data will be accessed remotely via the safe Haven. Data will be analysed using the R Statistics package. It is intended that this work will be suitable for publication.

   Co-supervisors: Professor Frank Sullivan and Dr Margaret McCartney.

   Additional support on statistical analysis will be provided by Prof. Fergus Daly

3. We have a number of areas of interest in respiratory infection. These include but are not limited to Mycobacterial infection, Aspergillus and Pseudomonas. The clinical conditions of interest include bronchiectasis, pneumonia and other complex respiratory infection. The work would largely consist of gathering data in these areas to identify the nature of the problem, present clinically relevant associations of the data, and provide recommendations for improving our understanding of the disease. Data collection will likely be from clinical systems with appropriate training and approvals, and may involve time in the Victoria Hospital although this will not be essential.

   Supervisor: Devesh Dhasmana

4. Title: Does a novel design Revision Knee Arthroplasty implant fully restore posterior condylar offset and improve outcome of Revision Total Knee Replacement?

   Failure to restore the posterior condylar offset (PCO - ratio between the anatomical axis of the femur and articular surface of the posterior condyle or articulating surface) is associated with poorer function and outcome scores following revision total knee replacement. In NHS Fife we collect prospective data on knee arthroplasty and since 2017 we have been using a new design revision total knee replacement system. This project will use this data, and radiograph measurements, to analyse if the PCO is restored compared to the previously established target values and the values from the patient's original native knee as well as the effects on function or outcome scores.

   Supervisor: Phil Walmsley

5. **Mapping putative steroid transporters in the collecting duct of the kidney.** This project focuses on renal epithelial cells which are critically involved in regulated sodium transport processes that contribute to volume and blood pressure homeostasis. Recent work in our lab has provided novel evidence that volume-regulating corticosteroid hormones may be transported across epithelial cell membranes *via* regulated active transport, rather than just simple diffusion due to the lipophilic nature of these hormones. This project will couple analysis of already published single cell sequencing libraries to determine the expression of these putative transporters in the kidney across species with image analysis to determine subcellular localisation of transporters. The latter will involve using Cell Profiler software to analyse high resolution images of polarised epithelial cells grown in our lab where putative transporters have been fluorescently labelled in order to determine apical and/or basolateral expression.

   Supervisor: Morag Mansley

6. **Project title: 'We are hear for you' - experiences and challenges of GPs using telephone and online consultations with their patients.**

Background: The spread of COVID-19 was declared a global pandemic on 11 March 2020 by the WHO. Within UK primary care, a change in the delivery of health care to patients, to reduce disease transmission of COVID-19, was immediate. Telephone and online consultations by primary care doctors for their patients became usual practice in place of traditional face-to-face consultations during COVID-19. This change in practice was comprehensive and enacted swiftly, with little opportunity for significant training. Effective communication with patients during these remote consultations is essential to preserve patient safety.

Aim: To investigate the experiences and challenges of primary care practitioners using telephone and online consultations with their patients.

Design and methods: A cross sectional mixed methods research study is proposed. This could include semi-structured interviews with GPs (remotely) and or development of an online survey (via Qualtrics) for GPs about the challenges faced by doctors for diagnosing patients remotely via telephone/online. Recruitment of GPs would be via NHS Scotland primary care centres. Qualitative/ quantitative data will be synthesised to address the study aim.

Supervisors: Dr J Cecil & Dr A Laidlaw