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| Host department: Southampton |
| Project Title:  |
| Developing robust cancer risk scores for lung and colon cancer in primary care |
| Proposed supervisory team: Names and areas of expertise to be included |
| * Professor Paul Little (clinical and quantitative expertise)
* Professor Geraldine Leydon (sociology and qualitative expertise)
* Dr Beth Stuart (Southampton) and Dr Richard Stevens (Oxford) (statistical expertise)
* Professor Lucy Yardley (Southampton and Bristol; Health Psychology/behavioural expertise)
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| Potential for cross consortium networking and educational opportunities: |
| This project build on long term networking among departments in the consortium with strong interests in clinical scoring methods and will Network with all members contributing to the original prospective CANDID cohort - Universities of Keele, Manchester, Nottingham,Oxford,University College London, Birmingham, and CambridgeIn addition to the opportunities for the post holder the project will provide educational opportunities for early career clinical researchers (e.g. ACF) and non-clinical researchers from each of the above original contributing groups. |
| Project description: |
| The proposed project is aligned closely with the £2.5 million CANDID cohort, a flagship prospective diagnostic cohort for two of the commonest cancers in clinical practice (lung and colon), funded by the NIHR through the School for Primary Care Research (SPCR), and is a collaboration across 8 departments. For lung cancer, NICE guidelines suggest that any haemoptysis, or cough lasting longer than three weeks should be investigated with a CXR but we know that for the commonest acute infection presenting in primary care (chest infection) the median duration of symptoms is 3 weeks so this guidance arguably is setting much too low a threshold for investigation. There is also evidence from secondary care settings that a normal X ray may not be helpful in excluding cancer. If clinicians in primary care acted on the NICE guidance for X rays this could dramatically increase the number of CXRs performed for the primary care population, which is likely to increase the dangers of iatrogenesis, and may not be cost-effective. A clinical prediction rule based on prospective clinical data collection and assessing the place of simple investigations in primary care (full blood count, CXR) is the most robust way to better inform thresholds for such investigations and for referrals. Similar considerations about efficient referral and limiting iatrogenesis apply to colon cancer. There is suggestive evidence that clinical prediction rules (CPRs) for diagnosing both lung and colon cancer can be developed in primary care. However, current prediction rules ‘weight’ each variable based on routinely collected observational data i.e. what a GP happens to record, and not based on structured and consistent data collection. Such scores have the great advantage of efficiently identifying possible ‘signals’ for cancer but given the major limitations due to differential recording of clinical data by GPs, they make it difficult to adequately quantify the importance of individual variables and their possible weighting – and so make it extremely difficult to develop valid CPR risk scores. There have been no sufficiently powered prospective primary care cohort studies to develop CPRs, nor to test and validate such rules in primary care cohorts. We also have limited information about the key issues for doctors and patients in engaging with using risk scores, and unless we do understand the issues CPRs will not be used effectively in practice.The objectives of CANDID are:1. To use prospective diagnostic cohorts to develop and validate Clinical Prediction Rules for lung and colon cancer
2. To assess the incremental utility of incorporating additional measures (e.g. genetic, inflammatory and lifestyle information including smoking and alcohol status) in the prediction models.

CANDID has now finished recruiting more than 20,000 patients who are currently being followed up in the cancer registries and also in GP records to see if cancer develops. The whole of the CANDID data set will be available to the fellow. A range of PhDs are possible for the doctoral fellow, using either quantitative or qualitative methologies or both (mixed methods) depending on the preference and interests of the fellow, and to be agreed with the supervising team.Qualitative methods: the fellow would explore the key issues among both patients and doctors in using clinical scoring systems (both existing clinical scores and the scores developed from CANDID) with a view to developing an effective training package, working with both clinicians and patients. The theoretical framework for the PhD would include theories of behaviour change, including Protection Motivation Theory (for patients) and May’s Normalisation Process Theory (NPT) (for clinicians). The work with clinicians will address key questions such as do practitioners agree about the usefulness of CPRs?; are they viewed as a legitimate part of their work?; how are they implemented and which methods do clinicians favour/use?; and how is the ‘work’ of using CPRs understood? The work with patients will address questions such as what are the benefits and problems associated with communicating personal risk based on CPRs?; and how best should this risk information be communicated?; Quantitative methods: the fellow would use the CPR based on prospective data collected in CANDID, and also scores based on the existing CPRs, and compare how well each score compares with the observed risk of cancer. An extensive range of other baseline measures have also been collected in CANDID (such as satisfaction with life; life orientation, cancer fatalism, illness behaviours, attitudes to doctors, attitudes to medical threats, diet, physical activity, continuity of care, multi-morbidity) which will allow the fellow to explore the way bio-psychosocial variables determine both the presentation of cancer related symptoms and also the risk of developing cancer.  |

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| Training and development provision by host: |
| *Formal training:*The training plan will be informed by an analysis of the academic needs of the candidate carried out in the first month. Training will be directed towards helping the candidate develop as an independent researcher, as well as towards the needs of the programme.The formal taught postgraduate research training programme at the University of Southampton includes epidemiology, statistics, research governance and study design. In addition, transferable skills courses are offered including Good Clinical Practice, time management, leadership, grant writing, and presentation skills. The candidate will also be able to access free on-line masterclasses on systematic reviews and meta-analysis, research governance, ethics, patient and public involvement and engagement, developed by leaders in the SPCR.  |
| *Informal training:* The Fellow will also be offered mentorship from a senior primary care academic working in an external institution, meeting twice a year. Mentors receive formal training, developed by the Society for Academic Primary Care, to ensure independence and appropriate support. The Fellow will also have access to informal mentoring from senior members of the collaboration at an annual training meeting, and to participate in national and international (Brisbane) exchange programmes.  |
| *PPIE:* Named PPI individuals joined the research team from the start and were involved in the development of the original application, and in the development of patient facing materials. Our collaborators supported the proposed elements of the investigation - but particularly the development of simple tools for doctors to use in the consultation in discussion with patients. We had additional external PPI review to refine proposals from the SPCR review panel which supported the proposals aims and methods. We will work with PPI collaborators to ensure that this research continues to address the needs of patients and the public and that the clinical prediction rules are feasible and acceptable to patients. PPIE collaborators will lead the development of proposals for dissemination.  |