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| Host department:Keele |
| Project Title:  |
| The impact of primary care clinical risk prediction tools on management to prevent new morbidity |
| Proposed supervisory team:  |
| Primary Supervisor: Prof Kelvin Jordan (Keele University)Second supervisor: Dr Annette Plüddemann (Oxford University)Other members of the supervisory team: Prof Danielle van der Windt (Keele University) Dr Vicki Welsh (Keele University) |
| Potential for cross consortium networking and educational opportunities: |
| The study will benefit from cross consortium expertise: Jordan (Keele) brings statistics/epidemiology expertise; Plüddemann expertise in evidence synthesis, and use and impact of point of care tests in primary care; van der Windt in epidemiology, prognosis research (including impact of prognostic models), and systematic reviews; Welsh in primary care/qualitative research. The proposal evolved from an idea generated through the Evidence Synthesis Working Group (ESWG), which offers a training and collaboration platform for systematic reviews across the NIHR School for Primary Care Research (SPCR). There will also be opportunity to develop collaborations across other institutions in the consortium (for example, with other teams interested in the use and impact of risk prediction tools) including networking, sharing methodological expertise, and informal training. |
| Project description: |
| BACKGROUNDThe NHS England’s Five Year Forward View and the NHS Long-Term Plan propose moving services from urgent and secondary care into the community and primary care. This included a shift towards prevention with increasing focus on proactive case finding and preventative strategies. The use of appropriately developed, validated, and tested clinical prediction tools is increasingly recommended in UK primary care to support the identification of patients at risk of future health conditions in order to offer appropriate advice and preventative care. There is an ever-increasing number of algorithms available for use in UK primary care to predict the risk of a future morbidity (for example, cardiovascular events, cancer, frailty, fracture) and several prediction tools are recommended for use in clinical guidelines to guide preventative management (for example, QRISK3[1] and QFracture[2]).This PhD aims to determine the extent of use and the impact of using clinical prediction tools available in UK primary care to understand if their implementation leads to optimal preventative care, in particular for those most likely to benefit, and to offer recommendations as to how they should be optimally used in primary care.OBJECTIVES AND METHODSThe first part of the PhD will be a systematic review of observational studies and randomised controlled trials, focusing on the use and impact of clinical prediction tools and algorithms embedded in UK primary care and recommended by NICE or other clinical guidelines. The review will be based on the PROGRESS framework for prognosis research.[3,4] The objectives of the first part of the PhD are to determine: 1. the extent risk prediction algorithms are used in UK primary care;
2. whether use of an algorithm is associated with increased use of preventative management;
3. whether those at highest risk based on such algorithms receive preventative management;
4. whether use of these tools reduces modifiable risk factors and incidence of relevant health conditions.

The second part will further focus on the potential impact of using risk prediction algorithms in primary care. Depending on the skills, experience, and interests of the student, and on the results of the systematic review, the student may take a qualitative, quantitative or mixed methods approach, and include: (a) semi-structured interviews with primary care professionals to investigate their attitudes towards, and opinions of, the impact of prediction tools on their practice and the communication of estimated risk from these tools to patients; and/or (b) use of individual patient data such as existing anonymised healthcare data to investigate characteristics of people for whom such tools are used who have outcome predictions recorded in the patient records, and to what extent the care offered to patients (e.g. prescriptions, referrals) is related to estimated risk of future outcomes, selecting examples of tools that have been embedded in primary care systems and recommended for use in NICE guidance.REFERENCES1. NICE. Clinical guideline [CG181]. https://www.nice.org.uk/guidance/cg181.2. NICE. Short clinical guideline [CG146]. https://www.nice.org.uk/Guidance/CG1463. Hemingway H et al. BMJ. 2013;346:e5595. 4. Hingorani AD et al. BMJ. 2013;346:e5793. |
| Indicative project costs:  |
| Fees and stipendCost for Prognosis course (50% discount: approx. £350)Review costs including interlibrary loans and Covidence license (£250). Costs for interview transcription (£1500), and PPIE workshops (£1,000).Costs for external qualitative / electronic health record / prediction modelling courses (£1,000) |
| Training and development provision by host: |
| *Formal training:** PROGRESS Summer School in Prognosis Research in Healthcare at Keele University
* Systematic review and meta-analysis workshops/modules delivered at Keele University

Depending on the focus of the second part of the studentship and current skills:i) qualitative research methods course (e.g. Introduction to Qualitative Research Methods at Bristol University or 1-day courses from Social Research Association or National Centre for Research Methods), ii) 1-day electronic health record research short courses (e.g. fromHealth Data Research (HDR) UK), or iii) University of Birmingham risk prediction and prognostic model course. |
| *Informal training:* Internal training at Keele using synthetic primary care data on recording of health conditions and risk in primary care. Attendance at seminars and journal clubs at Keele and Oxford. The student will be part of a multidisciplinary research team with informal supervision and training regarding applied clinical research and a supportive environment to receive feedback regarding their PhD research. The student will be part of the Methods Hub at Keele with access to experts across a broach spectrum of methodologies. The student will join Keele’s Digital Society Institute (DSI) linking to its Digital Health theme.  |
| *PPIE*: The student will work with an advisory group of healthcare professionals and patient contributors to agree which risk prediction tools to include in the review, and to discuss and interpret findings. The group will be involved in developing topic guides for the interviews and/or priorities for statistical analysis, and help formulate recommendations to increase awareness and optimal use of tools where needed.  |