

Project Details	
Project Code	MRC23PHSBr Turner
Title	Post diagnostic risk stratification for screen detected prostate cancer using routinely collected clinical variables.
Research Theme	Population Health Sciences
Summary	To determine if measurements at diagnosis of screen-detected prostate cancer (age, serum prostate specific antigen (PSA) level and tumour characteristics) can help doctors predict individual long-term outcomes. High-quality information will: i) enable better diagnostic/treatment decisions by men and doctors through greater understanding of prostate cancer outcomes after screening ii) could be used to update NHS post-diagnostic risk stratification recommendations.
Description	<p>Prostate cancer is the UK's commonest male cancer and represents a significant public health challenge. Screening for prostate cancer would only be recommended by UK NHS National Screening Committee (NSC) if there was evidence that the potential benefits outweighed the potential harms. For example, clinically significant cancers get detected earlier than they would be found through clinical presentation and effective treatments are available. The UK National Screening Committee currently does not recommend prostate cancer screening (https://legacyscreening.phe.org.uk/prostatecancer). The CAP randomised controlled trial (RCT) was influential in this recommendation, showing no significant prostate cancer-specific mortality benefit of one-time PSA screening at 10-years follow-up [rate ratio 0.96 (95%CI:0.85,1.08)]. doi:10.1001/jama.2018.0154 There are also concerns about screening's adverse-effects on men's quality-of-life through biopsy-related complications, overdiagnosis and overtreatment. The key challenge facing the implementation of prostate cancer screening is being able to identify aggressive cancers which account for approximately 12,000 deaths in the UK annually. Whilst also being able to reduce over-treatment for indolent cancers that would likely not cause harm during a man's lifetime. Utilising the long-term follow-up data from CAP and the linked ProtecT treatment trial DOI: 10.1056/NEJMoa1606220 provides the opportunity to consider whether any diagnostic factors affect the long-term outcomes for an individual man. This project could provide information that would help doctors decide diagnostic tests and treatments for prostate cancer, that would maximise the benefits and potentially reduce the harms from screening. Questions such as, what PSA cut point should be selected to start the screening programme? Answers to these questions could be used to build prognostic tools DOI: 10.1056/NEJMms1914228 This project aims to determine if measurements at diagnosis (age, serum prostate specific antigen (PSA) level and tumour characteristics) help doctors predict long-term outcomes for an individual man, to better decide his diagnostic tests and treatments for prostate cancer. To achieve this the student will:</p> <ol style="list-style-type: none"> 1. Review existing prostate cancer prognostication literature, and through discussion with clinical advisors the student will develop clinically meaningful variables for inclusion in a clinical prediction algorithm to inform treatment options 2. Determine the performance of screening (age, PSA) variables to predict 15-year PCa-mortality to inform diagnostic and treatment strategies. 3.

	<p>Determine the performance of diagnostic (Gleason, stage) variables to predict 15-year PCa-mortality to inform diagnostic and treatment strategies. 4. Build prognostic tools enabling the provision of high-quality information to help men and their doctors understand the possible benefits and harms of prostate cancer screening. This project utilises data already collected as part of the CAP trial, where 415,357 men aged 50-69 from 573 primary-care practices across 8 centres in England and Wales were randomised between 2001-2009. This work exploits the continued linkage of >96% of the originally randomised CAP trial men to routine electronic NHS databases, making data collection and analysis extremely efficient. Whilst working with linked data, and potentially conducting supplementary data collection of granular prostate cancer Gleason grade, provides the opportunity for students to develop data science and statistical skills. The student, once they are familiar with the background and dataset, will design the analysis plan with support from the supervisors. They also have the opportunity to decide whether they want to focus on the existing dataset, collect additional data or apply to use routine datasets in accordance with their area of interest to further inform their research.</p>
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