Reducing the burden of cancer through prevention and early diagnosis

Previous work by Richard Martin, Professor of Clinical Epidemiology, and Caroline Relton, Professor of Epigenetic Epidemiology, has shown that lifestyle changes and modification of certain risk factors can have dramatic effects on cancer prevention. Their research distinguishes between risk factors that are possible targets for therapeutic or behavioural interventions (including lifestyle and metabolic factors) and biomarkers that can predict who may be at risk of developing the disease.

They now lead the Integrative Cancer Epidemiology Programme (ICEP), a major 5-year programme funded by Cancer Research UK, to identify modifiable risk factors for developing cancer and gene targets that could be exploited for drug prevention; categorise the interaction between genes and environmental factors in the development of cancer; and isolate blood-based biomarkers for cancer risk prediction. They particularly focus on the common cancers: bowel, prostate, breast, and lung, as well as kidney, ovarian, and head and neck cancers, accounting for well over half of all new cancer cases annually.

ICEP is hosted by the University of Bristol, in collaboration with the International Agency for Research on Cancer (IARC, Lyon, France) and the University of Manchester. Other international links include the Nord-Trøndelag Health Study, one of the largest longitudinal population health studies ever performed, based in Norway.

Building on the success of the CAP and ProtecT trials led by Professors Martin and Donovan (see next page), Professors Martin and Relton are also developing new early cancer detection tools to address cancer mortality by finding cancer at a stage when it is still easily curable.

www.bristol.ac.uk/integrative-epidemiology/programmes/icep

The CAP and ProtecT trials

The CAP (Cluster randomised trial of PSA testing for Prostate cancer) is the largest trial of prostate cancer screening ever, addressing the controversial question as to whether a routine single PSA (prostate specific antigen) test can reduce deaths from prostate cancer.

Almost 409,000 men without known prostate cancer were either invited for a single PSA blood test or nothing, referred to as NHS standard care. Forty percent of the men invited to the blood test had this done, of whom around 4,700 had or later developed a cancer, compared to approximately 3,400 in the control group who developed prostate cancer over the 10-year follow-up period. During this period, there was no difference in the rate of men who died from prostate cancer, but longer studies are ongoing to see whether differences emerge as the treatment of prostate cancer has also become more effective over this timeframe.

Embedded within the CAP trial was the ProtecT (Prostate Testing for Cancer and Treatment) Trial, looking at the best treatment for those prostate cancers detected within the CAP trial, enrolling over 3,000 men with early prostate cancer into the three treatment arms: surgery, radiotherapy, and surveillance (with further treatment if required), showing that surveillance is as effective as surgery or radiotherapy in preventing prostate cancer deaths, potentially saving thousands of men from life-changing treatment consequences.

The Office for National Statistics (ONS) Research Excellence Award recognises excellence by a team or individual in undertaking innovative high-quality research that provides an evidence base for sound decisions supporting the formulation of effective government policies, the management of public service delivery, and the direction of economic and commercial activities. The focus is on outstanding and ground-breaking use, analysis and presentation of data, rather than just doing the job well. The panel, on behalf of the ONS, highlighted the impact CAP has already had; the diverse dissemination of these results; collaborative working practices; and the innovative methodology developed.