Public Health
England

Protecting and improving the nation's health

Current analytical partnerships involving the National Cancer Registration and Analysis Service

March 2019

About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. We do this through world-leading science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. We are an executive agency of the Department of Health and Social Care, and a distinct delivery organisation with operational autonomy. We provide government, local government, the NHS, Parliament, industry and the public with evidence-based professional, scientific and delivery expertise and support.

Public Health England
Wellington House
133-155 Waterloo Road
London SE1 8UG
Tel: 020 7654 8000
www.gov.uk/phe
Twitter: @PHE_uk
Facebook: www.facebook.com/PublicHealthEngland

Published March 2019
PHE publications
gateway number: GW-277

PHE supports the UN
Sustainable Development Goals

Contents

Executive summary

The National Cancer Registration and Analysis Service (NCRAS) undertakes a number of analytical projects in partnership with other organisations. An outline of each of the current analytical partnerships is given in this document.

The organisations NCRAS is in partnership with are:

- AMMF – The Cholangiocarcinoma Charity (The Alan Morement Memorial Fund)
- British Association for the Study of the Liver (BASL)
- Cancer Research UK (CRUK)
- Health Data Insight Community Interest Company (CiC)
- Macmillan Cancer Support
- Neuroendocrine tumour (NET) Patient Foundation
- NHS England
- NHS Improvement
- Transforming Cancer Services Team for London (TCST), part of Healthy London Partnership
- University of Leeds
- University of Leicester
- University of Liverpool

AMMF – The Cholangiocarcinoma Charity (The Alan Morement Memorial Fund)

Analysis of the Epidemiology of Cholangiocarcinoma in England – Partnership between Public Health England (PHE) and AMMF – The Cholangiocarcinoma Charity

- partner organisation: AMMF – The Cholangiocarcinoma Charity
- current

Cancer data from many western countries across the world have shown that the incidence of cholangiocarcinoma (CCA) has been increasing year on year over the past few decades. Published data for the UK is only available until 2007, yet many specialists who care for patients with cholangiocarcinoma believe that the incidence of this rare disease is higher than most accessible data show, and that it is continuing to increase year on year. Robust data is required to inform policy, awareness, research funding and improvements in diagnosis, treatment and survival. Within the International Classification of Diseases (ICD), specific information for cholangiocarcinoma is submerged within several sub-codes, and has changed between intra-hepatic and extra-hepatic classification across ICD revisions (8th, 9th and 10th). In addition, varying terminology is used for this cancer – cholangiocarcinoma, bile duct cancer, biliary tract cancer – and this has resulted in lack of uniformity in coding practices across cancer data registries (Khan et al 2012).

In June 2017 a working group of concerned specialists, arising from the NCRI Hepatobiliary Sub-group, was formed to address the problems of accessing accurate cholangiocarcinoma data, and with the coding of this disease.

Partnership project aim:

95% of patients with CCA die within 5 years of diagnosis and this has not changed in several decades. Given that CCA is apparently rising at a continued and alarming rate in England, and has apparently overtaken mortality from, for example HCC (hitherto the commonest primary liver cancer globally) and cervical cancer, which has much more media and public awareness, several urgent questions need to be addressed:

- is CCA truly increasing in England? If so, which age groups/ gender(s)?
- which type(s) of CCA are rising/falling?
- has adoption of new ICD-codes affected incidence rates?
- is the basis of diagnosis for CCA appropriate?
- has the route to diagnosis changed over recent years?

- if the rise in CCA is due to better diagnosis, is the stage of disease at time of diagnosis changing?
- are there regional variations in mortality which might reflect variation in referral practices
- are there common co-morbidities emerging in CCA patients and are there regional variations in incidence or areas of case clustering, which may indicate potential underlying risk factors?

This project aims to answer these questions by analysing incidence and mortality time trend data for England for the relevant cancer codes, alongside specific clinically relevant breakdowns.

CADEAS

Cancer Alliance Data, Evidence and Analysis Service: Partnership between Public Health England and NHS England

- partner organisation: NHS England
- current

Background

Sixteen Cancer Alliances have been established across England. Together with the 3 sites of the Nation Cancer Vanguard, the Alliances are responsible for leading the delivery of the Cancer Taskforce ambitions for their geographies. Cancer Alliances bring together local clinical and managerial leaders from providers and commissioners who represent the whole cancer pathway. Alliances look at cancer outcomes for their populations.

The National Cancer Programme has secured new capacity (funding for approximately 15 posts) to support Alliances with their data, evidence and analysis needs.

Purpose

The Cancer Alliance Data, Evidence and Analysis Service (CADEAS) is there to support Cancer Alliances to lead transformation for their populations by providing population-level analysis, evidence and data. CADEAS' purpose is not to monitor or assure performance.

The work programme will cover 3 equally important core domains of analytical work:

- data – reporting on established indicators, measuring progress against Taskforce ambitions, providing local anonymised cuts of the data
- evidence – collating and disseminating evidence on what works from local initiatives, ensuring Alliances use best available evidence (eg from national pilots or national reports) in shaping their implementation decisions, supporting and advising on local evaluations (eg initiatives that received Transformation Funding)
- analysis – providing one-off analysis to inform local decision making, eg modelling of new pathways and activity

CORECT-R

COloRECTal cancer Repository

- partner organisation: University of Leeds
- current

High-quality data improve cancer outcomes. Good intelligence underpins patient choice, helping individuals reduce their risk of disease and access the best care. It identifies and quantifies inequalities, improves the cost-effectiveness and quality of services, and supports cancer research. The availability of such high-quality cancer intelligence has, however, been limited.

The initial programme of work seeks to create a UK Bowel Cancer Intelligence Hub.

Phase 1 – An enhanced cancer registration record for all bowel cancer patients diagnosed and/or treated in England.

The overall aim of this linkage phase of this project is to enable patient-level linkage of all administrative and electronic health datasets relevant to bowel cancer within England. This resource will be developed by linking the English National Cancer Registration Dataset (COSD), Hospital Episode Statistics (HES), Cancer Waiting Times (CWT), National Radiotherapy (RTDS), National Bowel Cancer Screening Programme (BCSP) records and Systemic Anti-Cancer Therapy (SACT) data.

All data linkage will occur within the Public Health England Cancer Analysis System (CAS).

CRUK

Public Health England - Cancer Research UK Partnership

- partner organisation: Cancer Research UK
- current

Cancer Research UK and PHE have committed to work in partnership to generate new insight and deliver innovative projects. This will demonstrate the value of cancer data and can bring benefits to patients and the health service. The partnership will open up new ways of working aligned to the strategic aims of both organisations and to national cancer strategies.

The intention of the Partnership is to provide the intellectual space and additional capacity to explore new projects that will benefit from the transfer of skills between both organisations. The legacy of its achievements will be in the impact of outputs and by instilling collaborative working which will benefit both organisations into the future.

The guiding principles of partnership are to:

- improve our understanding of and the evidence base related to the diagnosis and treatment of cancer
- deliver benefits to both organisations and the wider cancer community
- demonstrate the importance of comprehensive cancer data across the pathway through the publication and accessibility of outputs
- create platforms, systems or processes that provide new infrastructure that can be used by both organisations and the research community
- ensure outputs have maximum impact, either within the cancer intelligence community or in service design and delivery
- build capacity and capability by sharing expertise and avoiding duplication or replication of existing work
- create a robust framework for ongoing and future collaborations

The partnership will report to the PHE Cancer Board which has senior representation from CR-UK and to the CR-UK Senior Leadership Team. A CRUK-PHE Steering Group will oversee the partnership, providing strategic leadership and direction. Day-to-day oversight will be through the Partnerships Analytical Lead (PHE) and the Analytical Manager (CRUK-PHE Partnership).

GIRFT

Analytical partnership between NCRAS PHE and Getting It Right First Time

- partner organisation: NHS Improvement
- current

Getting It Right First Time (GIRFT) is a national improvement programme that supports NHS hospitals to recognise and address variation in the delivery of services. It is led by respected clinicians who visit hospitals to encourage senior clinicians and managers to reflect upon and improve their service by making best use of staff, skills, tools, techniques and facilities. There are 30 medical and surgical specialties in the GIRFT programme, each with a clinical lead. The clinical leads visit every Trust in England where services related to their specialty are delivered.

Site visits are informed by an analytical report or 'data pack' which is shared with Trusts in advance. The clinical lead uses the report to highlight variation (both positive and negative) to Trusts and to facilitate discussion during site visits.

The GIRFT analytics team work with the GIRFT clinical leads and clinical professional associations (eg royal colleges and clinical audit/registry organisations) to develop a suite of metrics that are used in the data packs, and other products (including specialty specific national recommendation reports). The metrics are used to support implementation of planned service improvement within hospitals, consultant learning and appraisal (NCIP programme), and are shared with the Model Hospital programme for inclusion in their portal.

The partnership between PHE NCRAS and GIRFT is to enable delivery of cancer analysis and statistics to support the GIRFT and Model Hospital programmes.

Specific pieces of work will be agreed on a project by project basis and will be managed in line with the NCRAS Partnership principles of working.

HCC-UK/BASL

Prospective study of hepatocellular carcinoma (HCC) in the UK

- partner organisation: British Association for the Study of the Liver (BASL)
- current

Hepatocellular carcinoma (HCC) is by far the most common primary malignancy arising in the liver, accounting for more than 90% of cases. In most patients HCC arises on a background of chronic liver injury with cirrhosis or advanced fibrosis. Wide geographical variation in incidence can be attributed readily to those aetiological factors that account for the underlying liver disease, with disparity in exposure to risk factors and the prevalence of predisposing conditions.

The next most common group is that with cholangiocarcinoma without underlying liver disease. A smaller number with HCC are younger women without liver disease in whom the disease remains unexplained. For both groups therapeutic options are restricted to resection in most instances.

Proposal

HCC-UK is a multidisciplinary UK-wide group interested in all facets of management and sits currently under the BASL umbrella. BASL and HCC-UK collaboration with PHE aims to increase our understanding of HCC in England & Wales. The main focus will be on prospective data collection but in the early stages retrospective data that are available will be analysed.

A steering committee will comprise 3 representatives of HCC-UK, 1 from BASL and 3 from PHE and will be responsible for governance of the project in line with good clinical practice, the direction of research and identifying the information needed to respond appropriately. The steering committee will meet every 4 to 6 months.

It is proposed that HCC multidisciplinary teams across England & Wales will be educated to record the relevant data at the weekly meeting that is additional to that collated by PHE currently.

HCC – University of Liverpool

Review of national outcomes and treatments offered to patients presenting with Hepatocellular Carcinoma in the UK

- partner organisation: The University of Liverpool
- current

Background

The prevalence of liver disease in the UK is rising and in parallel to this there has been an increase in the number of the case presenting with Hepatocellular Carcinoma (HCC). Recent work from the national survey demonstrated that only 40% of patients had radiologically curable disease at presentation. Given that the responses from the survey are likely to be from clinicians with an interest in this condition, the overall picture may be worse than this.

Treatment and disease outcomes for HCC have often been from single centre studies or from studies outside the UK. These may not be representative of a UK population where disease aetiology, age and co-morbidities may also impact. To continue the work UK HCC performed on ultrasound surveillance nationally, it would be informative to perform a national audit of outcomes for patients presenting with Hepatocellular Carcinoma. This would form the basis for a post-graduate project culminating in a doctor of medicine degree (MD). The project would run for 2 years, with preliminary results being available within 1 year. Further results would be at year 2 with the project being written up as an MD thesis by year 3 of the start time. The project would lead to abstracts, presentations at conferences and publication in peer reviewed journals.

Proposal

In collaboration, PHE and the clinical fellow will access the Cancer Analysis System to conduct a detailed national clinical audit of HCC to ascertain any variance in access to MDTs, curative treatments, access to clinical trials and disease free/overall survival.

This audit will form the basis to determine where the UK is situated in the management of HCC patients. The intention is that it will provide the foundations for future work for the generation of a national prospective registry for HCC and determine the future direction of HCC funding and research. This basic but essential work is long overdue and could lead to some interesting results that could have a profound impact on how HCC will be managed in the future.

A steering committee with representatives from University of Liverpool and PHE will be responsible for governance of the project in line with good clinical practice, the direction of research and identifying the information needed to respond appropriately. The steering committee will meet every 4 to 6 months.

HDI

Public Health England (PHE) and Health Data Insight Community Interest Company (HDI) Partnership

- partner organisation: Health Data Insight Community Interest Company (CiC)
- current

Proposal

Projects approved under the PHE and HDI partnership are designed to improve/ enhance the analytical delivery of NCRAS or the technical architecture of information systems within PHE.

Examples of approved projects include the National Cancer Diagnosis Audit, Standing Cohort Study, Ovarian Cancer Audit Feasibility Pilot, CAS development project, Prescriptions index of suspicion, HQIP-funded National Cancer Audits, Pathway analysis and interpretation, BRCA challenge with Newcastle University, and the annual summer Intern Programme.

Analytical projects

Analytical partnership projects are managed day-to-day by the Analytical Programme Manager as part of the NCRAS Analytical Work Programme. Appropriate working patterns will be put in place that will facilitate and foster close working between PHE and HDI partnership colleagues to meet project needs and share learning.

IT projects

IT partnership projects will be managed day-to-day by the designated functional team leader within which the partnership developer works. Appropriate working patterns will be put in place that will facilitate and foster close working between PHE and HDI partnership colleagues to meet project needs and share learning.

IT partnership developers will be expected to work as part of the wider developer team and to contribute ideas and share learning. Review of working relationships will be conducted by the Head of IT on regular basis.

Partnership IT projects will be reviewed by the NDR IT project owner’s group.

Macmillan

Partnership between Public Health England (PHE) and Macmillan Cancer Support

- partner organisation: Macmillan Cancer Support
- current

There were almost 2 million people living with and beyond cancer in England in 2015 and this number is expected to rise to 3.4 million by 2030. People affected by cancer will have very different levels of need and these needs are likely to change over time and depend on the type of cancer and treatment they have had. To make personalised care a reality, there is a need to understand these needs, the health, social and economic impacts of cancer and the consequences of its treatment alongside people's experience of care.

In this context, robust data analysis provides valuable intelligence and is critical to informing and delivering initiatives and change, which will enable people affected by cancer to get the care which best fits their individual needs and to achieve the best possible outcomes.

The focus of this partnership between Macmillan Cancer Support (Macmillan) and Public Health England's (PHE) National Cancer Registration and Analysis Service (NCRAS) is to deliver insightful analysis through the use of high quality routinely collected data for England and the UK and the development and application of conventional and innovative approaches and statistical techniques.

The partnership began in 2012 in recognition of the significant amount of additional analyses that both parties have been interested in taking forward but that neither organisation would otherwise be able to progress for various reasons (including analytical capacity and access to data). The partnership will continue while both parties agree mutual benefit and resources allow. The vision for the partnership is to use data and information to push the boundaries of understanding of the whole cancer population, now and in the future, of the impact and costs of cancer and its treatment on patients, the wider community and the NHS. In addition, to work to enable wider health and social care services to extend the usage of this information to improve the care, experience and outcomes for patients by designing, testing and implementing better models of delivery.

The steering group will agree strategic priorities and new areas of work in the context of the wider NCRAS and Macmillan work programmes, and the external environment. Such priorities and areas of work will be of mutual interest to both Macmillan and NCRAS. The partnership aims to carry out UK wide projects where possible, facilitated through Macmillan’s partnerships plans in Scotland, Wales, and Northern Ireland and UK wide collaboration.

Specific projects for work will be developed within the operational group and project proposals will be developed and signed off by the operational group (ensuring proposed projects align with the steering group priorities and NCRAS and Macmillan interests). The proposals will be sent to the Steering Group for agreement and also sent to the project review panel at NCRAS for approval. They will be responsible for ensuring proposed projects align with the steering group priorities and NCRAS and Macmillan interests. Proposed projects will be sent to the project review panel at NCRAS for approval.

NET Patient Foundation

Neuroendocrine tumour (NET) Patient Foundation - partnership with PHE

- partner organisation: Neuroendocrine tumour (NET) Patient Foundation
- ended 9th December 2018

The NET Patient Foundation (NPF) was undertaking a project in conjunction with Public Health England and a team of NET experts to find out more about NET cancers in the UK.

It is crucial that we are able to obtain data about NET cancers from the cancer registry in order to be able to better understand the pathway of NET patients and identify unmet needs (eg better diagnosis and access to treatments and specialist care).

The NPF will work together with the UK and Ireland Neuroendocrine Tumour Society (UKINETS) and Public Health England to draw up a definitive list of neuroendocrine cancer codes. We will fund an analyst position within Public Health England to help identify these codes and then interrogate the registry to provide the data we require.

This will help us to better understand how many people are affected by NET cancers, and whether people affected by NET cancers are receiving the best possible care, no matter where they are in the country. If there are inequalities, and unmet needs, these data will arm us to lobby for better care for NET patients. NET Patient Foundation and NCRAS Public Health England partnership project has been compiling statistics on the incidence, prevalence and survival of NET patients in England using English cancer registry data, with an aim to also access Scottish, Welsh and Northern Irish cancer registry data to also get UK wide statistics. The English data will also be used for statistics on diagnostic and treatment referral pathways, the occurrence of multiple primaries in people with NETs, and the occurrence and treatment of carcinoid heart disease in England.

NHSI-HE

NHS Improvement Health Economics

- partner organisation: NHS Improvement
- current

The partnership between PHE and the Economics Team within NHS Improvement is for the purpose of facilitating work investigating the variation in the care pathway for people with cancer.

This includes (but is not limited to) waiting times, diagnostics, standardised care pathways and costs. In addition, the feasibility of linking economics data from NHS Improvement to PHE cancer registration data will be investigated in order to enable the full investigation of the effect of patient characteristics.

Initially the partnership will focus on 1 project proposal, but additional projects will be considered and approved via the NCRAS project proposal panel.

Ovarian Cancer Audit Feasibility Pilot

Public Health England (PHE) and Health Data Insight Community Interest Company (HDI) Partnership for the Ovarian Cancer Audit Feasibility Pilot

- partner organisation: Health Data Insight Community Interest Company (CiC)
- current

A collaboration of stakeholders has been formed to undertake a two-year Ovarian Cancer Audit Feasibility Pilot, to demonstrate feasibility and highlight the potential for a national audit as a lever for change and improving outcomes of ovarian cancer patients.

The project will take a “whole systems” approach, capturing all cases of ovarian / fallopian tube / female peritoneal cancer diagnosed throughout England. In particular, this will enable outcomes to focus on regional variations of access to treatment including route to diagnosis and delayed diagnosis, short term mortality including death without undergoing anticancer treatment, the use of neoadjuvant chemotherapy / interval debulking surgery, variations in surgical radically and residual disease, and the management of recurrent disease.

The project will be funded and led by a collaboration between the ovarian cancer charities Ovarian Cancer Action and Target Ovarian Cancer and the British Gynaecological Cancer Society (BGCS), in association with Health Data Insight Community Interest Company and National Cancer Registration and Analysis Service (NCRAS). It is supported by the Royal College of Obstetricians & Gynaecologists (RCOG).

This pilot will lay the foundation for the national audit, asses the feasibility of the analytical and data collection approach, and publish relevant results based on the data that are currently available. Whist clinical teams will be encouraged to ensure high quality and complete data entry into the existing data sets which will form the data sources for the pilot, there is no additional data collection burden placed on the provider organisations, and therefore there are no additional data collection costs above and beyond routine NHS cancer data capture systems. This ensures inclusion of all cases of ovarian cancer diagnosed in England during the period of the pilot.

Analytical approach & expected outputs or deliverables:

The project will utilise a “standing cohort” based analysis, and will analyse only data items which are currently routinely collected in England, including the Cancer Outcomes and Services Dataset (COSD), the Systemic Anti-Cancer Treatment (SACT) data set and Hospital Episode Statistics (HES) data. The clinical community will be encouraged to ensure that a defined list of COSD data items are collected with very high completion rates and accuracy, including in particular FIGO stage, performance status and the new COSD data item “residual disease”. The surgical teams will also be advised to identify OPCS codes from a menu of preferred codes to fully and accurately document surgical procedures, and if possible to highlight relevant co-morbidities. The feasibility of this process was demonstrated in the UKGOSOC surgical outcomes and outcomes audit, which documented baseline surgical complications data from 3000 surgical procedures performed in 10 centres throughout the UK. Clinical teams will be encouraged to work with their clinical coders to ensure that these codes are captured in HES data.

Outcomes of the pilot will be published nationally and will populate clinical “dashboards” to demonstrate performance of MDTs / providers and cancer alliances against national comparators. Appropriate reports will be available for public review, and aggregated national outputs will be available for international comparison to augment the ongoing work of the ICBP. In addition to improving the accuracy of incidence, survival and mortality data, the pilot will facilitate analysis of diagnostic delays, chemotherapy treatment rates and protocols, surgical radicality and outcomes, and the diagnosis and management of recurrent disease.

The alliance between Ovarian Cancer Action, Target Ovarian Cancer and the BGCS will fund a formal partnership agreement with Health Data Insight Community Interest Company, to embed a part-time analyst committed to the pilot and associated gynaecological oncology outputs within NCRAS. A Project Steering Group will be established which will oversee all aspects of the pilot.

The analyst will facilitate data completeness monitoring in collaboration with other NCRAS colleagues. He / she will develop data analysis queries in collaboration with the Project Steering Group, and will be responsible for dissemination of the audit reports and outputs utilising the existing NCRAS / NHS Cancerstats and other appropriate platforms. The audit will link to the NHS Quality Surveillance (“peer review”) process and will inform commissioners regarding service provision. Specific analytical outputs will be fully defined and agreed through the NCRAS project proposal route.

SACT

Systemic Anti-Cancer Therapy (SACT) partnership between NHS England and PHE

- partner organisation: NHS England
- current

Support for the Cancer Drugs Fund (CDF)

- establish a programme of work to resolve the uncertainty identified by The National Institute for Health and Care Excellence (NICE) concerning CDF drugs, engaging with NHS England (NHSE) and NICE to ensure outputs are co-created and meet the business needs of NHSE
- document, plan, administer and coordinate the processes required to deliver quarterly, annual and final reports for Market Authorisation Application indications to facilitate the re-appraisal of CDF drugs
- contribute to the development and sign-off of CDF Data Collection Agreements and commit to the delivery of reports
- develop robust approaches to using routinely collected data that will hold up to scrutiny and allow PHE to present reports that are publishable and can usefully support NICE re-appraisal
- provide data liaison support for all NHS trusts submitting SACT data
- publish data to support NHSE policy development for off-label CDF indications

Support for Specialised Commissioning, NHS England

- improve and expand routine SACT reports to NHS trusts
- improve and expand routine reports to NHS England to inform commissioning decisions, policy, financial planning, clinical safety and data collection
- provide ad hoc ‘rapid response’ data and information to support commercial negotiations and commissioning decisions, as reviewed and agreed by NHSE partnership manager (CDF Deputy Ops Lead)
- establish and provide metrics, targets and monitoring data in the NHSE Medicines Optimisation Commissioning for Quality and Innovation through consultation with NHS England and NHS trusts

Infrastructure and IT projects

- upgrade to SACT database to improve the interface for trusts uploading data

TCST

Transforming Cancer Services Team for London (TCST) Partnership

- partner organisation: Transforming Cancer Services Team for London, part of Healthy London Partnership
- current

A partnership between the National Cancer Registration and Analysis Service (NCRAS) and Transforming Cancer Services Team (TCST) was established in 2015. The partnership recognised that an investment in cancer analytics would enable commissioners and providers to accelerate improvements in cancer services and data across London. There are significant additional analyses that both parties have been interested in taking forward, but neither organisation has been able to progress for various reasons (including analytical capacity and access to data). Therefore the recruitment of 3 new cancer analysts to work jointly between NCRAS and TCST was agreed.

The availability of local analyses of nationally collated data will provide the opportunity to drive improvement in outcomes in London, both in quality of patient care and efficiency. Providing these analyses is the core focus of this partnership.

Our Priorities

NCRAS and TCST will agree strategic priorities and new areas of work in the context of the wider NCRAS and TCST work programmes, and the external environment. These should consider the wider London landscape, including the Cancer Alliances.

The partnership aims to carry out analyses which will deliver a high quality, London-wide cancer analytical resource. The deliverables will fall into 2 categories: novel and derivative work. Novel work will evolve as the partnership develops, but the analysts will need to have close links to the clinical context through the pathway boards in the Integrated Cancer Systems, as well as to commissioners. Derivative work would be based on existing national reports but broken down into a more useful population / geography scale for London.

VICORI

Virtual cardio-oncology research institute Partnership

- partner organisation: University of Leicester
- current

VICORI is a 5-year programme charitably funded by the British Heart Foundation and Cancer Research UK to undertake electronic health care record population research. The programme has been developed in collaboration with the National Cancer Registration and Analysis Service (NCRAS) and the National Cardiovascular Intelligence Network in Public Health England (PHE).

The objective is to understand the interplay between cancer and cardiovascular disease in a real world, national population and to quantify the potential opportunity to improve patient outcomes through a population-based linked multisource electronic health record national cohort study. Specific aims are to investigate if:

- cardiac conditions are managed differently in cancer patients and cardiovascular outcomes are influenced by a prior cancer diagnosis
- cardiovascular treatments, interventions and surgery alter cancer risk or outcomes
- cancer treatments cause long term adverse cardiovascular diseases states or cardiovascular events
- pre-existent cardiac disease alters cancer management or outcomes.