NHS Innovation Accelerator 4th Call| Theme 1: Prevention and early intervention in cancer and cardiovascular disease

Why cancer and cardiovascular disease?

The mortality rate in the UK among people treated for the three leading causes of premature death - cancer, heart attacks and stroke[1] - is higher than average among comparable countries.[2]

More than 360,000 people are diagnosed with cancer each year in the UK.[3] The UK has below-average survival for lung, colorectal, breast and pancreatic cancers.

Cardiovascular diseases (CVD), which includes heart attacks and stroke, causes 26% of all deaths in the UK and is the second leading cause of death after cancer. UK healthcare costs relating to CVD are estimated at £9 billion each year rising to £19 billion when costs to the wider economy are included.[4]

Why prevention and early intervention?

Four in ten of all cancers are preventable, equating to more than 135,000 per year.[5]

Academic studies show that for lung, colorectal and breast cancers the UK's below-average survival rates are in part due to later detection than in comparable countries.[6] For CVD, early detection and management of the risk factors that lead to the disease, e.g. smoking, hypertension, high cholesterol, diabetes, atrial fibrillation etc, can prevent the development of CVD.

For CVD, we know 80% of premature heart disease and stroke is preventable.[7] Preventing people from developing CVD will reduce the number of deaths from these diseases, and improve people's quality of life.[8]

CVD is also one of the conditions most strongly associated with health inequalities. Risk factors such as smoking, physical inactivity and obesity are greater in lower socio-economic groups and the burden of morbidity and mortality is disproportionately shouldered by the most deprived.[9]

> ## SOME KEY FACTS
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> **75%** of cardiovascular disease is preventable [*World Health Organisation*]
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> **430 people** in England die every day from CVD [*British Heart Foundation*]
>
> **80%** of strokes are preventable (*Stroke Association*]
>
> As many as **7 million people** in the UK are living with **undiagnosed high blood pressure**, without knowing they are at risk [*British Heart Foundation*]
>
> **Around 4 in 10 cancers could be prevented** by changes in lifestyle behaviours [*Cancer Research UK*]
>
> **21% cancers** are diagnosed after presenting as an emergency [*Cancer Research UK*]
>
> **Only 7 in every 100 people** diagnosed with bowel cancer at a late stage survive for at least five years, compared to 93 in every 100 people who are diagnosed at an early stage [*England, 2014 (one-year), Former Anglia Cancer Network, 2002-2006 (five-year), ICD-10 C18-C20*]

Where cancer and CVD are not prevented, early intervention offers a significant difference to the quality of life a person can expect to lead and, in some cases, their chances of survival. A number of factors contribute to late diagnosis; from people not being aware or acting on their symptoms through to health care professionals failing to spot vital signs. Early intervention can also be enhanced through the detection and management of risk factors; for example, high blood pressure, high cholesterol, atrial fibrillation, raised blood glucose.

1 https://www.nhs.uk/live-well/healthy-body/top-5-causes-of-premature-death/
2 https://www.health.org.uk/sites/health/files/NHS-70-How-good-is-the-NHS.pdf
3 https://www.cancerresearchuk.org/health-professional/cancer-statistics-for-the-uk#heading-Zero
4 https://www.bhf.org.uk/what-we-do/our-research/heart-statistics
5 https://www.cancerresearchuk.org/health-professional/cancer-statistics/risk/preventable-cancers
6 https://www.health.org.uk/sites/health/files/NHS-70-How-good-is-the-NHS.pdf
7 http://www.euro.who.int/en/health-topics/noncommunicable-diseases/cardiovascular-diseases/data-and-statistics
8 https://www.england.nhs.uk/rightcare/2016/10/03/matt-kearney/
9https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/556135/Action_on_cardiovascular_disease-getting_serious_about_prevention.pdf

A range of innovations exist to enable prevention and early intervention, however they are not widely or routinely available including: behaviour change interventions, point of care testing, portable technologies, genome sequencing, real time analytics, clinical decision tools, digital therapeutics, machine learning, patient monitoring tools and predictive risk factor identification and management.

What prevention and early intervention innovations are we seeking?

We are seeking evidence-based innovations that have been proven to support the prevention and/or early intervention of two major conditions: cancer and CVD.

For prevention, we are looking for interventions that support people to adopt healthy behaviours linked to the prevention of cancer and/or cardiovascular disease. These include: quitting smoking, being more active, eating more healthily and reducing alcohol intake, and intervening at key moments in people's lives. We are also looking for innovations that support people to manage medical risk factors: high blood pressure, high blood cholesterol and raised blood glucose.

For early intervention, we are seeking evidence-based innovations that ensure people are diagnosed and treated earlier through, in particular, making every contact count, enhancing delivery of the NHS Health Check programme, increasing participation in cancer screening programmes, risk factor assessment and management, reaching those least likely to be diagnosed through traditional NHS pathways, and diagnosing complex conditions earlier than previously experienced and in lower cost settings

Your innovation can be a device, digital app or platform, a service, process or pathway.

Your innovation will need to have been co-designed with users, be accessible to a diverse population, address health inequalities and based on a robust theory of behaviour change.

What impact does your innovation need to demonstrate?

An application for this category will require evidence on:

- **Health impact** e.g. significant, sustained improvement in healthy behaviour or reduction in risk factors, earlier diagnosis, reduction in unwarranted variation
- **Utility** e.g. feedback from patients, the public and professionals, where appropriate, on the accessibility, etc.
- **Cost savings** e.g. reduced treatment costs, reduced A&E attendances and admissions. Including reference to the time period over which savings will be realised, and where relevant across health and social care