



The UK Prevention Research Partnership (UKPRP): Vision, objectives and rationale

This document sets out the vision and objectives for the UKPRP. It includes outline information on the research funding that UKPRP will provide and further details of this will be included in the calls for applications which will be published in June 2017.

1. Vision

The UKPRP is a partnership of charity and public funders¹ focussed on improving population health, and reducing health inequalities, through the primary prevention of non-communicable diseases (NCDs).

UKPRP will:

- engage a wide range of academic disciplines and build ambitious new multidisciplinary networks of researchers working on prevention;
- provide substantial long-term investment for multidisciplinary consortia to develop actionable evidence that addresses important research challenges in a coordinated and sustained way;
- foster whole systems approaches to prevention based on the appropriate disciplinary skills mix;
- co-develop research programmes with policy makers, providers and professionals to enable the translation of new knowledge;
- capitalise on emerging technologies, big data and discovery research;
- support methodological innovation;
- engage with industry in the business of prevention;
- promote coordination of prevention research across funders.

2. Objectives

The multi-funder partnership will:

- i. build and support research teams, containing a range of relevant disciplines, to develop, implement and evaluate generalisable and scalable preventive policies, practices, designs and interventions which will enable change within complex adaptive systems to prevent NCDs.
- ii. deliver solutions for large scale and cost-effective improvements in health and the prevention of NCDs that meet the needs of providers and policy makers and are responsive to the challenging timescales of policy making. This will involve co-production of research with the public, policy makers, professionals and those likely to implement the intervention.

¹ Current core funders: British Heart Foundation, Economic & Social Research Council, Engineering and Physical Sciences Research Council, National Institute of Health Research and the health departments, Medical Research Council, The Wellcome Trust.

The UKPRP will extend the existing academic networks in prevention research by enabling public health specialists to join with other experts such as engineers, architects, computer scientists, and social scientists. These more innovative and diverse research teams should have the capability to drive the broad systems-level changes that will be required.

3. Background and Rationale

Many risk exposures for NCDs cluster together: social deprivation is associated with smoking; smoking is associated with drinking; and workplace stress often co-exists with exposure to poor air quality and neighbourhood environments, and higher rates of alcohol and tobacco use. Preventive strategies targeted at the common determinants of such exposures may therefore improve several outcomes. Smoke free legislation, for example, has had an impact on hospital admissions for asthma among children, as well as hospital admissions for acute myocardial infarctions among adults and respiratory health among bar workers, and has helped change social attitudes to smoking. Many of the most successful and cost effective primary preventive measures have focused on changing physical or regulatory environments (e.g. Clean Air Acts or workplace legislation), rather than on changing behaviour in individuals (e.g. smoking cessation or dietary advice programmes).

Socio-economic inequalities in health are consistently observed in the UK and have been increasing despite overall improvements in health and life expectancy. Information-based prevention approaches, such as nutrition labelling and anti-smoking advertisements, may increase inequalities, while interventions at higher regulatory or environmental levels appear more likely to reduce inequalities in health.

The UK's National Prevention Research Initiative (NPRI), which operated from 2005-2011, provides the proof of concept for UKPRP. NPRI successfully generated £34m to support 74 primary prevention research projects aimed at reducing the burden of chronic disease caused by four health-related behaviours (alcohol consumption, smoking, diet and physical activity). This transformed the funding landscape for prevention-related research and important lessons were learnt which have been incorporated into the current initiative. In particular, the review of NPRI recommended an increased emphasis on solving problems rather than simply describing them, a greater focus on developing interventions that may act at a level other than the individual (for example at group, community or population level), and more work on the cost effectiveness of prevention strategies, as well as the modelling of likely long term impact on disease outcomes².

The recent "Improving the Health of the Public by 2040" report from the Academy of Medical Sciences³, identified the challenges and opportunities for research into preventing NCDs and reducing inequalities in health. The report identified a number of environments which influence health and health behaviours (e.g. the built and natural environment; political economic and commercial environment; educational and occupational environment; and the digital and technological environment); and for each of these identified gaps in the evidence which research should aim to address.

The report also concluded that current biomedical approaches to research are unable to solve major problems such as obesity and dementia. This is because most public health research (and the models of funding that support it) is predicated on the assumption that the desired outcome is achievable as long as the 'right' intervention is used. However, such complex problems may not be fixed by single interventions with a linear causal pathway (such as individual smoking cessation programmes or dietary advice),

² <https://www.mrc.ac.uk/publications/browse/national-prevention-research-initiative-npri-report-2015/>

³ <http://www.acmedsci.ac.uk/policy/policy-projects/health-of-the-public-in-2040/>

but instead may be more responsive to multiple actions within a complex adaptive system. Developing effective intervention strategies requires understanding of these complex inter-linkages, which can only be achieved through multi-disciplinary research.

New approaches to population health research are clearly needed and there are opportunities to develop and evaluate policies and actions which drive broad, systems-level changes. This new partnership seeks to incentivise this shift to occur.

4. Scope of the research partnership

The UKPRP will examine the best ways of modifying common risk factors for and determinants of NCDs, and reducing inequalities in these, through population level actions. It will develop and build on basic research in a number of relevant disciplines (e.g. social, biomedical, engineering, environmental and computing sciences); use and develop appropriate methods for evaluating the effectiveness and value of existing or novel preventive strategies; and engage with stakeholders to produce clear answers to important questions relevant to decision makers.

The partnership will target NCDs since this is where the needs and opportunities are greatest. It will seek to cover:

- mental health and wellbeing as well as physical health;
- common risk exposures relevant across a range of NCDs;
- environments or settings relevant to these risk exposures (for example schools, neighbourhoods, workplaces, retail outlets, families, dwellings);
- systems relevant to these exposures and settings (such as local government, design and construction of neighbourhoods, primary and secondary care, transport or urban planning, education, welfare, workplaces);
- strategies relevant both to whole populations and to subgroups (e.g. regional and local contexts; or ethnic, gender or socio-economic groups), rather than focusing solely on individuals, in order to investigate both population wide effects and subgroup differences in the impact of preventive approaches;
- the tailoring or adaption of strategies for particularly vulnerable groups;
- the development of better understanding of the reasons for the differential benefit derived from preventive strategies (e.g. by socio-economic group, ethnicity, gender etc);
- protective or enabling factors and how to support these, as well as risk factors/exposures;
- the costs and benefits of existing or proposed preventive strategies, and a broad assessment of return on investment in these, recognising the long term nature of some of these returns;
- the assessment of the social and environmental co-benefits of strategies to reduce NCDs;
- the development of better understanding of implementation and evaluation strategies in complex adaptive systems.

5. UKPRP funding

The ambition is to invest the £40 - £50 million over 6-7 years in research that delivers impact through working closely with policy makers, providers and the beneficiaries of new interventions, products or strategies.

Recognising that in most cases the required groupings of researchers with necessary stakeholder linkages will not exist, UKPRP will provide support both to build multidisciplinary prevention networks and to fund research consortia.

Prevention Network Awards

These will support new interdisciplinary networks of researchers based around important prevention themes. Funding will be provided for building, leading and maintaining the network through scientific meetings and workshops that identify and prioritise key research challenges. The primary output of the UKPRP Networks is expected to be a self-sustaining and interlinked research community which draws in a range of research users from policymakers to industry. Funded networks will be expected to self-organise their own “network-of-networks” to share best practice and disseminate their key research challenges more broadly.

It is possible that collaborations established through the networks may lead to the formation of UKPRP Consortia; however, the funders expect that network leaders will be motivated by the benefits of bringing the UK prevention research community together over a longer term period.

Prevention Consortium Awards

Initially, six-month **Consortium Development Grants** (CDGs) will be awarded to provide time for consortia to be established and to enable the development of full consortium proposals. CDGs will be awarded on the basis of an outline proposal. Full consortium awards will be awarded in competition; therefore securing a CDG does not provide a guarantee of further funding.

Consortium Awards will be for 60 months. Each consortium will comprise a critical mass of researchers focussed on primary prevention, including, for example, experts in: the evaluation and synthesis of evidence; understanding contextual influences; urban planning; economic evaluation; behavioural change, etc. The consortia should generate new knowledge that meets the needs of potential users and beneficiaries of the research; knowledge brokerage will therefore be a key activity of all the consortia. We recognise that consortia will need to evolve during the five-year funding period, including building networks of their own or reaching out to existing investments; this will be taken into account in the structuring of the award.

Research focus

UKPRP-funded research delivered through the consortia should focus on solutions, policies and strategies which are sustainable, replicable, feasible and affordable and which aim to drive broad changes to trigger system realignment. Without wishing to be prescriptive, the following are given as non-exclusive examples of the sorts of research envisaged:

- the evaluation, by natural experimental and/or big data methods, of population-level policy changes relevant to the primary prevention of NCDs (e.g. congestion charging, soft drinks levy, changes in the child benefit system etc);
- examining how local and central government policies impact on inequalities in health, and developing and testing strategies most likely to reduce inequalities in health;
- the development, design and evaluation of strategies or technologies to reduce mental health problems during key life-course transitions;
- evaluating the effects of central and local government transport or planning policies on air pollution, accidents and physical activity levels;
- the development, design, application and evaluation of new technologies such as smart traffic management systems, telemedicine approaches to distance screening or monitoring, or digital and social feedback mechanisms for self-monitoring;
- studying how features of housing design (internal and external) can promote independence and prevent frailty, cognitive decline, social isolation and need for

care in the elderly; enhance community cohesion; or improve mental and physical health in young children;

- the co-design, implementation and evaluation of spaces and places (e.g. housing, workplaces, and public spaces) to improve physical and mental health;
- the evaluation of strategies (in relation to price, promotion, place and product) to combat the commercial marketing of alcohol, ultra-processed food and tobacco;
- the application and testing of integrated behaviour, organization and community change theories to weight management, to reductions in smoking and alcohol consumption, and to improvements on mental health;
- modelling the impact on future population health of 'Brexit' and associated trade policies, and modelling strategies for mitigating any predicted ill effects.

Methodological approaches

The research funded by UKPRP is expected both to adopt and to develop a diverse range of methods, tailored as appropriate to best address the specific research questions. These could include 'big data' approaches and modelling; the use of common digital technologies or platforms; the development and trialling (for example, via cluster randomised trials) of new design solutions, strategies or interventions; the evaluation of 'natural experiments'; and mixed methods, including qualitative approaches. Testing how to replicate locally successful approaches to larger geographies, or to reduce inequalities in health, will be important, as will be improving how to measure costs and benefits across a range of perspectives (i.e. who pays and who gains: individual, family, local or central government, the NHS, industry etc). Working across administrative territories, both local and national, where this adds value to the quality and robustness of the research, will be encouraged.

Given the focus of the UKPRP on NCDs and the complex environments that influence them, adopting a systems approach to methodological design is encouraged. Proposed research will be expected to specify clear deliverables that will inform policy in an appropriate timescale and to provide a clear rationale, theory of change, or logic model for the solutions or strategies to be studied.

Studies which take a staged co-design approach, with policy makers, implementers and the public, to building from basic and theoretical knowledge to wide scale application, will also be encouraged. This might involve the phasing of a series of activities in each programme, such as scoping, reviewing, designing, prototyping, and scaling up approaches prior to full scale implementation and evaluation. Attention should be paid to contextual factors that might influence wider adoption and implementation. Given the likelihood that many new products or strategies may take a long time to influence population level prevalence of NCDs, it will be important to develop robust measures of intermediate outcomes.

The systematic evaluation of the value of not only new but also existing preventive strategies will be encouraged; therefore some of the research funded might demonstrate that existing strategies are ineffective or poor value for money and should be discontinued

Interdisciplinarity and researcher-user links

The UKPRP seeks to promote interdisciplinary research. However, not all UKPRP Networks or UKPRP Consortia will require the same disciplinary mix, which will be dictated by the specific needs of the research to be undertaken. Existing academic networks could be extended to bring together population health science, built environment and architecture, water engineering, device design, town planning, sports science, retail and marketing, psychiatry, psychology, anthropology, economics, political science, mathematical sciences, data science, computer science including human

computer interface (HCI), machine learning and AI, environmental science, and operational research.

In developing solutions, it is necessary to go beyond traditional individually focussed epidemiologic and intervention methods. The new partnership will therefore enhance collaboration and mutual understanding across a range of different stakeholders, in different sectors, not all of whom may previously have seen the relevance of their work to improving the health of the population, but who have a range of perspectives and experiences to bring to UKPRP.

Given the goal of developing knowledge to underpin feasible and implementable solutions to major population health problems, it will be essential that users and providers of any likely new policies, practices, and strategies are actively involved in the research from its inception and throughout the process. Such stakeholders might include potential users of any new services or products, local government, central government, the NHS, the voluntary sector, professional groups (such as teachers, engineers, town planners), and industry bodies (such as employer or retailer organisations, and house-building, consumer electronics, social media, sports and fitness, medical device design, food or drinks industries). The funders have drawn up a code of practice for researchers entering into collaborations with industry. Patient and public involvement will also be crucial.

Expected outcomes

The expected outcome from the research funded by UKPRP is robust new knowledge which contributes to demonstrable changes in policy and practice, or the bringing to market of new products or technologies. As well as contributions to the scientific literature, deliverables might include, for example:

- clear, evidence based, recommendations to national and local government on cost effective NCD preventive policies and strategies tailored to population needs, which are incorporated into official policy and implemented;
- advice to the policy makers in the four UK Nations on return from investment in different types of public and population health strategies, and identification of policies or practices which are cost ineffective and from which disinvestment could be considered;
- the design, development, testing and roll out of improvements to physical and social environments;
- the creation of new partnerships with businesses to reduce health damaging environments; or the design and marketing of new products or technologies which promote health improvement.

Assessment of applications

Outline applications for Consortium Development Grants or Prevention Network Awards will be assessed by a specially constituted expert review panel. Further details will be provided in call documents issued later. Once consortia and networks are established, further funding will be made available to incentivise cross-consortia working and focus on emerging research challenges and opportunities, tackle common methodological issues or address important gaps in the prevention portfolio.