

**NATIONAL PREVENTION  
RESEARCH INITIATIVE  
(NPRI)**

**REPORT OF THE NPRI  
SCIENTIFIC REVIEW GROUP**

**ANNEXES**

September 2015

# Contents

Annex 1.....	03
Annex 1: Appendix 1.....	06
Annex 2.....	15
Annex 3.....	20
Annex 4.....	25
Annex 5.....	31

# Annex 1

## The NPRI evaluation: Data sources and methodology

This annex outlines the data sources and the analyses that were undertaken for presentation to the SRG. It also explains some of the limitations of the data.

### A2.1. DATA SOURCES

#### **The NPRI portfolio**

The portfolio of project titles and abstracts was assembled and distributed to the SRG to inform all discussions. Each project was designated a number (see Annex 4) which appear in square brackets in the report.

#### **Researchfish**

This was the source of raw data used for most of the analyses.

Researchfish is an online, self-reported repository of a range of outputs including: publications and dissemination, collaborations, instances of further funding, impacts on policy and practice; research materials and intellectual property materials generated, products and spin out companies; and awards or significant knowledge generated by the research. Researchers can enter free text on all of the outputs they submit in Researchfish. All researchers holding grants awarded by the NPRI are required to update Researchfish annually, for up to five years after their award has finished.

The NPRI Researchfish dataset included the seventy-four NPRI research studies and encompassed an accumulation of data collected from the inception of Researchfish (formerly e-val) in 2006 to the last data collection before the review in October 2013. Four of the 71 researchers did not submit data in 2013 but had returned data in previous years.

#### **Key publication outputs**

Fifty five of the 74 PIs had reported publications to date.

### A2.2. METHODOLOGY

The data taken from Researchfish was reported in October 2013. Data were cleaned to remove duplication and in various parts of the analysis verified or updated as described in the text under the following subheadings.

## Number of publications

All publications reported in Researchfish by the awardees were manually checked to see that they acknowledged the NPRI funding and that the publication date did not precede the grant start date. Publications which were not outputs (eg trial protocols) were not counted in this analysis nor were the small number of conference proceedings. In all, 16 publications were excluded. In a few cases, the publication appeared soon after the NPRI award was made, which might bring into question whether the paper was a genuine output of the award. However, if the investigator confirmed that the NPRI funding contributed to the publication, it was included.

In addition to publications in Researchfish, 17 publications that were not in the database were identified by the NPRI-funded investigators; these were also included in the assessment. No more data were added to datasets after 13 August 2014, although we were aware of several manuscripts submitted and being prepared and some were published during the drafting of this report. Around one third of the papers had been published between October 2012 and October 2013 and as PIs told us of only 17 new publications arising since the Researchfish data had been obtained, the number quoted in this report is likely to be an under-estimation of the number of publications arising since October 2013.

The SRG noted that a small number of PIs reported a much higher number of publications than the average publication output per NPRI-funded project. These 'outliers' were included in part of the analysis and included in the total of 318 by the SRG, since the published papers acknowledged the NPRI grant reference number. However, the SRG took the view that this confounded the analysis and therefore the outcomes were also shown with the outliers removed from the data analysis, such as in the average number of papers per project.

In order to form a qualitative view on the published outcomes, a library of 'key publication outputs' was compiled for the SRG members. The SRG assessed 51 of the 55<sup>2</sup> projects with published outcomes. When an NPRI supported study had resulted in many publications, the PI was contacted and asked to verify which one or two papers "most comprehensively and succinctly articulated the project's major outcomes". Relevant excerpts from the interview transcripts were also made available to the SRG to further inform its discussions.

A citation analysis of an NPRI publication subset was attempted in order to compare the NPRI citation impact to international norms for the field. On expert advice this has not been included in the review because there had not been sufficient time for enough citations to have accumulated for a meaningful evaluation. In addition, finding a suitable comparator from a different branch of science was going to be difficult. It was noted however that some papers had already been highly cited and reference was made to this in the SRG's evaluation.

## Semi-structured qualitative interviews

All the NPRI award holders were invited to participate in semi-structured qualitative interviews. The interviews were intended to provide additional information to that provided by Researchfish data. Fifty seven award holders were available for interview, representing 69 of the 74 funded projects<sup>3</sup>. Volunteers from the BHF, ESRC, BBSRC, Wellcome Trust and the MRC undertook the interviews after a brief training workshop. Each grant holder was questioned on three areas:

- Enablement - what had the NPRI enabled in terms of science, capacity, policy and practice and communications?
- What are the future challenges and opportunities in public health prevention research?
- How can research funders meet the needs of future challenges and accelerate innovation in prevention research?

Following the interview the interviewer drafted a summary transcript which was approved by the grant holder and then submitted to the NPRI secretariat for analysis. Each section of the transcripts was reviewed for common themes identified and used to build the first level of the analysis framework. The report of this analysis is appendix 1 of this annex.

As part of the evaluation the views of the funders were also sought to understand the value of the NPRI to each organisation and to expand opinion about how best to support public health prevention research in the future. Excerpts from the interviews were incorporated into the narrative on the NPRI outcomes.

### **Policy and practice outputs**

Policy and practice outputs from each of the NPRI awards were compiled from the PI's Researchfish data and the interviews (46 out of 66 PIs included). The outputs were circulated to a policy sub-group of the SRG which met to verify the impacts and comment on the relative importance of reported policy and practice impacts.

# Annex 1:

## Appendix 1

### The NPRI grant-holders – analysis of transcripts of qualitative interviews

#### 1. METHODOLOGY

Fifty seven interview transcripts, relating to 69 awards, were included in the analysis. The transcripts were reviewed and analysed for common themes. The transcripts were divided into the three areas the interviews focused on with an additional section for other general comments on the scheme.

Each section of the transcripts was reviewed and common themes identified. The common themes were used to build the first level of the analysis framework. The themes were then further subdivided and these categories were used to code the interviews and to produce qualitative data for the analysis.

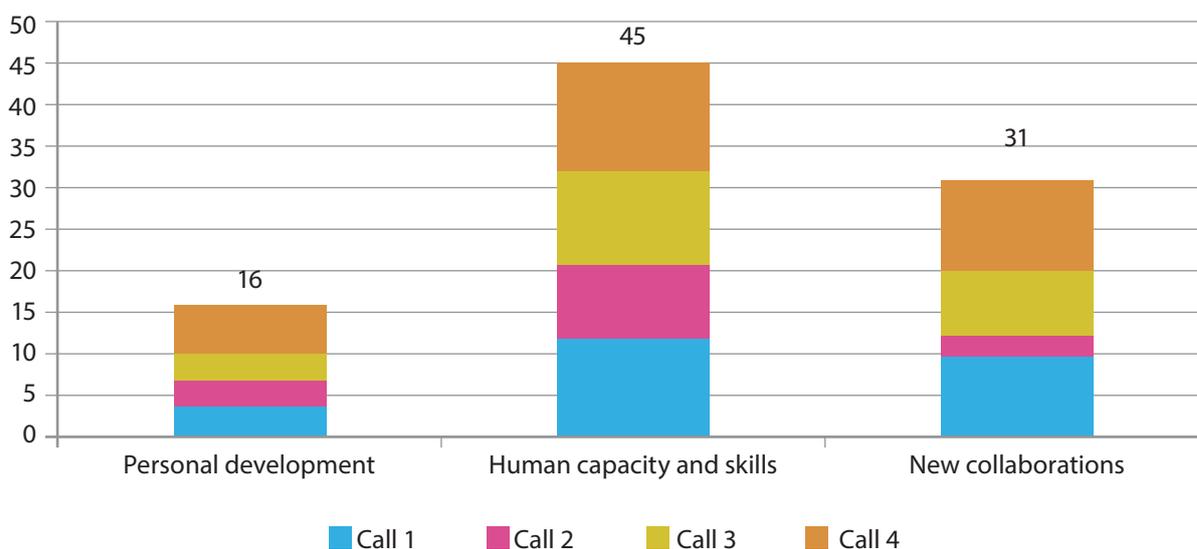
#### 2. ANALYSIS

##### 2.1. Enablement

The interview section on enablement was divided into three themes: Capacity, Policy and Practice, and Communication. The data presented is taken from interviews relating to 69 awards. Each award holder may report in more than one category and more than one instance within each category.

##### 2.1.1. The role of the NPRI in the enabling of capacity

Within capacity there were three key areas reported by the grant-holders: personal development, human capacity and skills, and new collaborations (Figure 1). Each of these areas was sub-divided by the particular ways the NPRI grant has supported this area (Figures 2 to 4).



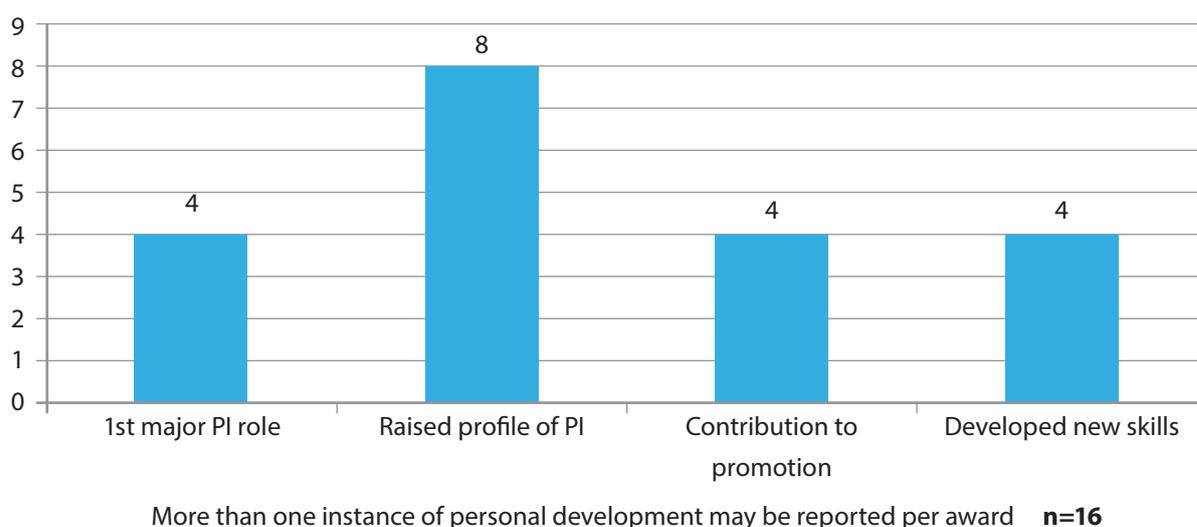
**Figure 1. Number of awards reporting enablement of capacity by the NPRI Call**

Figure 1 shows aspects of capacity building by NPRI call. Of the 69 awards included in this analysis 57 (83 percent) reported some form of capacity building. Overall capacity building has been supported evenly across all stages of the NPRI with new collaborations in Call 2 being the only exception, which is to be expected as many of these studies involved secondary data analysis.

#### 2.1.1.1. PERSONAL DEVELOPMENT

Sixteen of the award holders reported at least one instance of the NPRI award supporting their own personal development. Figure 2 demonstrates the types of activities that have been captured within this category. Within these subcategories the types of support or esteem the award has provided includes:

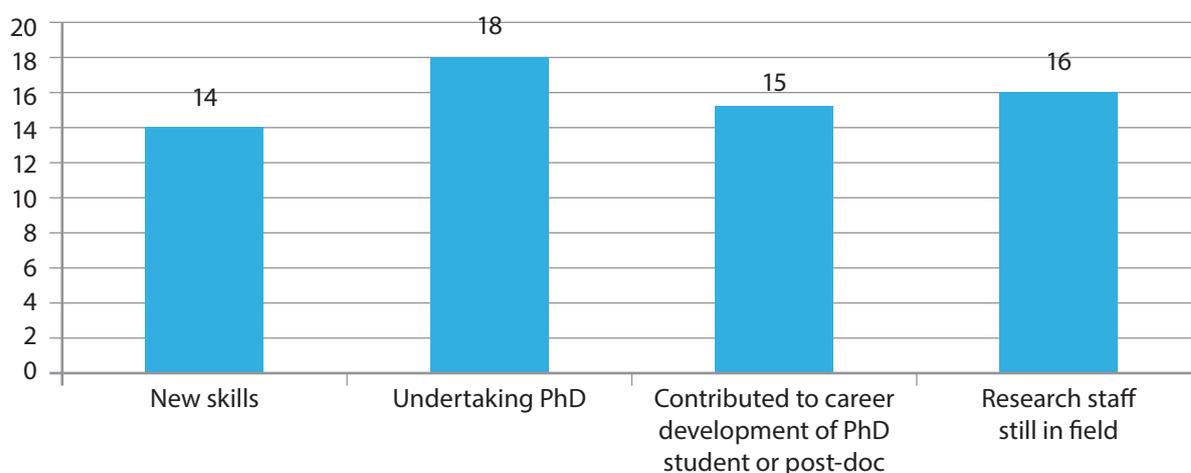
- Investigators being approached by international institutions to lead new projects
- Contributing to a successful application to obtain a more senior position
- The PI gaining experience in managing multi-centre studies, working with other disciplines and new statistical methods



**Figure 2. Number of instances of personal development reported**

### 2.1.1.2. HUMAN CAPACITY AND SKILLS

Award holders reported NPRI-funding contributing towards the development of human capacity or new skills in 45 of the projects. This included a range of different activities as demonstrated in Figure 3.



More than one instance of capacity building may be reported per award **n=45**

**Figure 3. Number of instances of human capacity and skills reported**

Fourteen award-holders reported the development of new skills during the course of the award including:

- Learning about conducting research in medical settings
- Building expertise in electronic health records research, statistical methods and health economics
- Those with clinical experience or background gaining research skills
- Developing cross-disciplinary skills across behavioural research and clinical trials

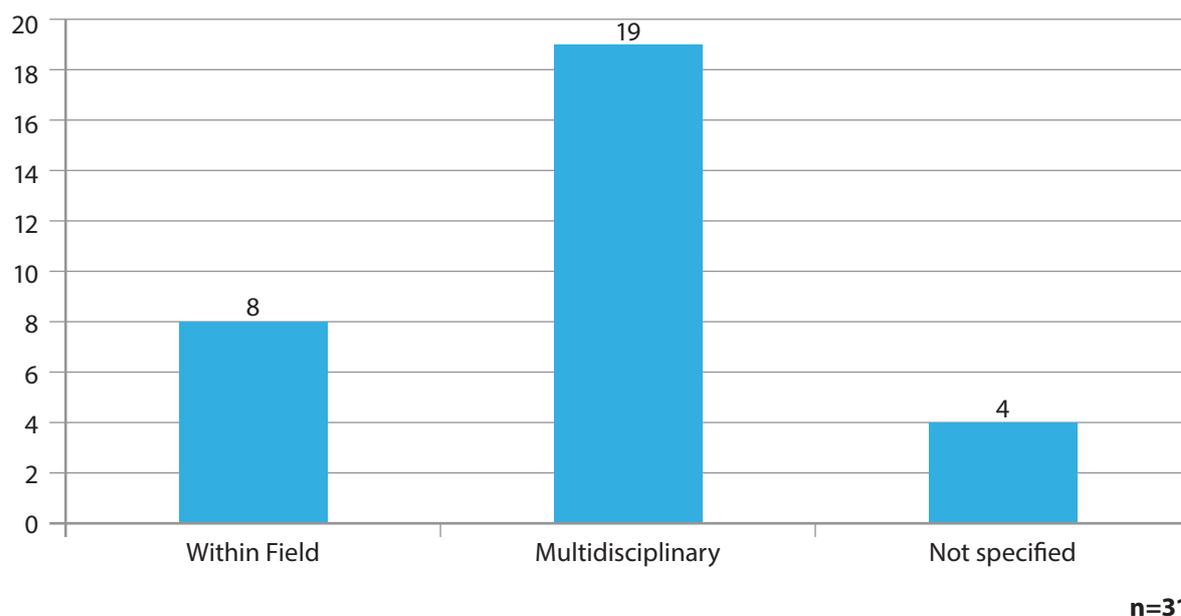
Eighteen award-holders reported the NPRI award either enabled the leveraging of funding for a PhD student or influencing a member of research staff to undertake a PhD within the same area, in some cases using data generated from the NPRI award. Fifteen award-holders stated that the NPRI award had directly contributed towards the career development of a PhD student or post-doc involved in the research project. This included the award of fellowships, appointment to faculty positions and becoming the principal investigator on projects within the field.

Sixteen of the NPRI award-holders have reported that staff employed on the grant have stayed within the field in a research capacity. This has included administrators being appointed as trial managers, dieticians employed as research assistants on subsequent grants and the appointment of staff to a relevant health policy position.

### 2.1.1.3. COLLABORATIONS

As shown in Figure 4, during the interviews, award holders reported new collaborations arising out of 31 projects. Nineteen of these collaborations involved a new, different discipline. PIs reported how the NPRI projects catalysed collaborations among different disciplines that would not traditionally have contributed to prevention research.

The numbers of collaborations reported is lower than in Researchfish. This disparity is not unexpected because in the interviews, PIs were asked about enablement and the incidences of collaborations when mentioned (because it was an important aspect of the enablement of the work) were counted. In Researchfish, PIs are simply asked to record as a numerical value the collaborations associated with the study.



**Figure 4: New collaborations reported**

Note on Figure 4: Multidisciplinary was not defined in the interviews but from the texts of the interviews it seems clear that PIs were referring in this respect to collaborations with people from other disciplines and also those they had not considered by way of background and expertise to be of value to their research prior to embarking on the NPRI project.

The credibility of researchers funded through the NPRI was a reported factor in establishing collaborations and there was a theme throughout of ‘profile boost’ which helped pull in further expertise, sometimes from abroad but also for networking at a more applied level with practitioners and policy makers. In one case, a government agency randomised the implementation of the intervention and allowed educational and health data records to be linked to trial data.

### 2.1.2. Policy and practice

Forty three award-holders reported having interactions with an individual working in policy or practice, through a number of activities (Figure 5). Thirty five of the award-holders reported having some engagement with research users and a further breakdown of this can be seen in Figure 6. The highest proportion of these grants was in Call 1. Nine award outcomes have been cited in policy document, and a breakdown of the type of documents can be seen in Figure 7.

Fifteen of the award holders reported a firm impact on policy or practice in Researchfish and thirteen of these were verified by the SRG. Eleven projects have laid the foundations for potential future impacts. This includes providing a gateway to future studies and trials which have had an impact or have the potential to have future impact.

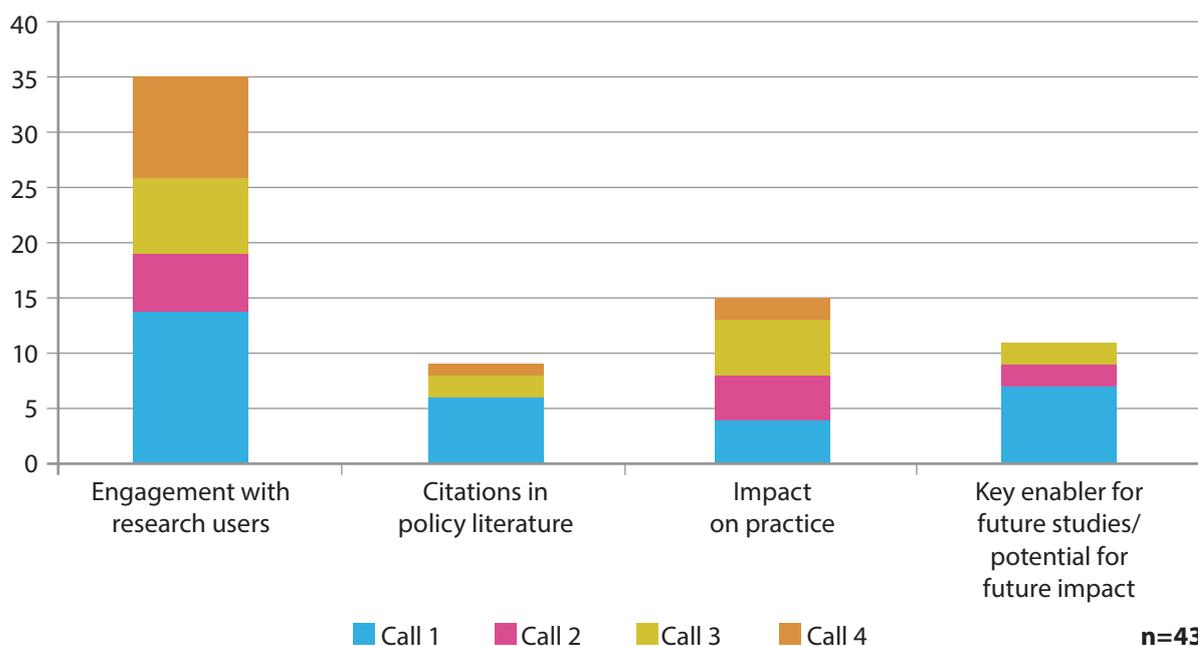


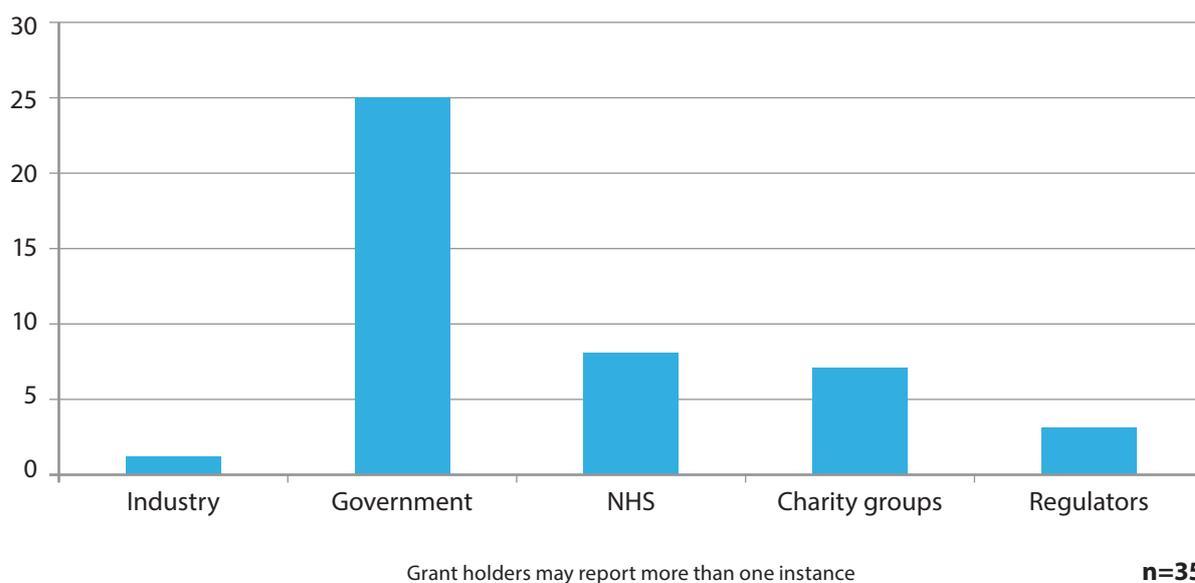
Figure 5. Number of awards reporting some impact on policy and practice by NPRI Call.

Figure 6 shows the types of research users the grant-holders have engaged with. The most commonly reported sector was local or national government with 25 grant-holders reporting engagement with this sector. This engagement included:

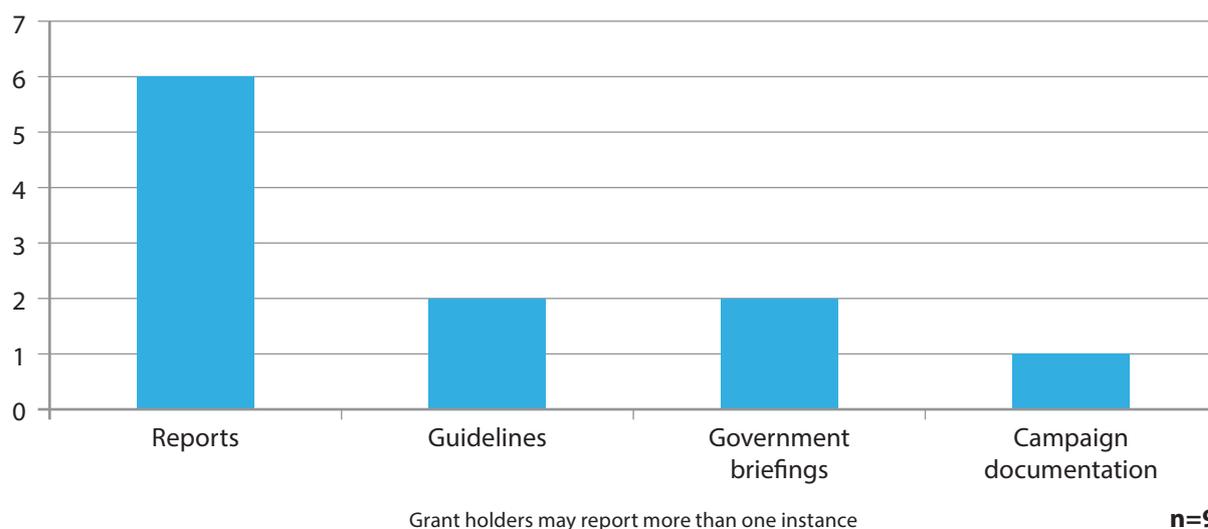
- Presentations to regional directors in public health departments
- Meetings with regulators
- Gaining attention and holding discussions with PHE
- Discussions with *Sustrans*<sup>4</sup>

Although this engagement has not always led to a direct impact on policy or practice, many grant-holders have reported that this has led to further discussions regarding other research and has built relationships and a profile that may be useful for future translation and impact.

Grant-holders reported nine instances of citations in policy literature including from the Association of Medical Royal Colleges, the Health and Safety Executive, a report by the Chief Medical Officer and a House of Commons Health Select Committee Report. This is shown in Figures 7.



**Figure 6. Number reporting engagement with research users by sector**



**Figure 7. Number of instances of citations in policy literature**

In addition six of the projects also reported the NPRI project as being included in a REF impact statement.

### 2.1.3. Communication

The NPRI grant-holders reported 15 instances of projects being reported or included in national press coverage.

## 2.2. Future challenges and opportunities in prevention research

The grant-holders reported a wide range of future challenges and opportunities in prevention research, which is to be expected given the broad remit covered by the NPRI grants. The types of challenges and opportunities presented by the grant-holders can be grouped into different categories: targeted health behaviour/outcome, intervention type/approach and underpinning factors. The grant-holders suggested fourteen target health behaviours or outcomes that are challenges for the future; Table 1 presents the most common suggestions.

TARGETED HEALTH BEHAVIOUR/OUTCOME	NUMBER OF GRANT-HOLDERS
Alcohol consumption	7
Diet/obesity	12
Inequalities	5
Physical inactivity	4
Tobacco and e-cigarettes	8

Table 1: Targeted health behaviour/outcome

The grant-holders suggest a range of intervention type and approaches as a future priority. The most frequently cited intervention type or approach was policy change as seen in Table 2.

INTERVENTION TYPE/APPROACH	NUMBER OF GRANT-HOLDERS
Behaviour change (incl. understanding and maintenance of)	8
Policy change	11
Population/environment change	8
Whole systems approach	3

Table 2. Intervention type/approach

There were several underpinning factors the grant holder highlighted as being important for the future of prevention research. The most common challenge was for innovative study design and new methods (n=17). Other frequent suggestions included linking with innovative technologies (n=8) and translation into practice (n=3).

## 2.3. Meeting the needs of future challenges

The grant-holders were questioned on two aspects of how the future challenges in prevention research can be supported, the most appropriate type of funding and supporting research outputs into translation.

### 2.3.1. Funding mechanisms

The grant-holders suggested various ways funders can support future challenges in prevention research. The most common suggested funding models suggested by the grant-holders are shown in Table 3.

FUNDING MODEL	NUMBER OF GRANT-HOLDERS
NPRI 5/ dedicated prevention scheme	21
Programme grants	5
Project grants	8
Centre of Excellence	4
Mixed models - combo of centres and project grants	5
Feasibility/preparatory work	17
Individual networking	6
Capacity building/training/early career	13
Long-term funding	3

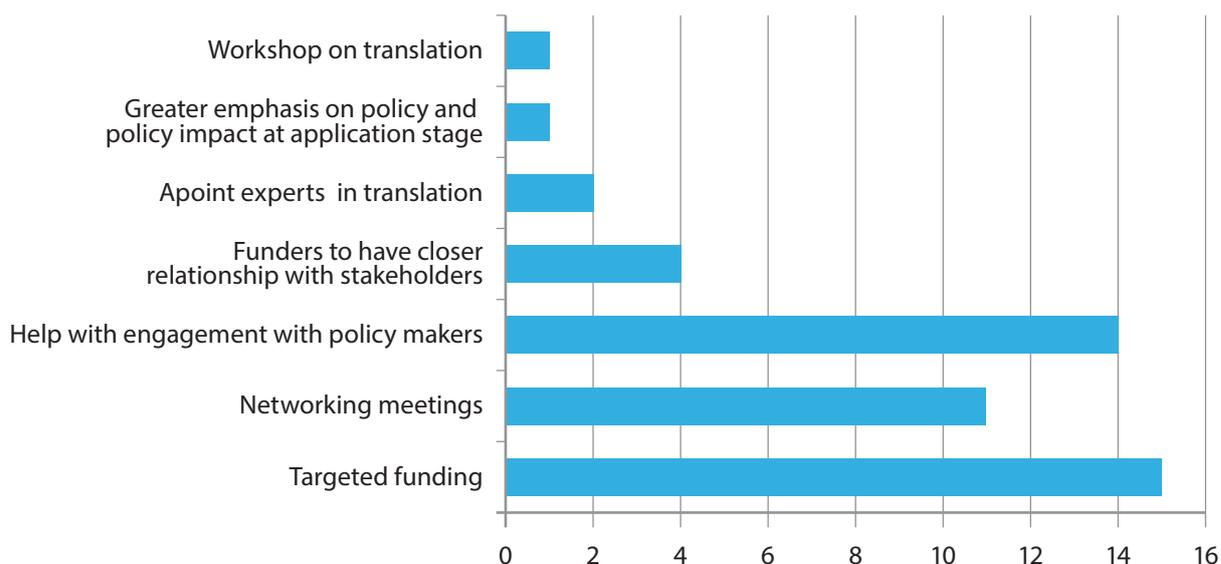
**Table 3. Activities and funding models to support prevention research**

Across the different types of funding model the most frequent suggestion was for a dedicated funding scheme for prevention research such as the NPRI. Grant-holders also frequently highlighted the importance of funding feasibility and preparatory studies. The MRC Public Health Intervention Development Scheme (PHIND) was mentioned as a positive addition to the funding landscape but it was felt that more funding in this area would be beneficial.

Grant-holders also raised several underpinning concepts that would be important to support the challenges of prevention research in the future. A key factor for any future funding highlighted was multidisciplinary (n=19). The importance of prevention as a multi-funder and multi-discipline issue was repeatedly raised as a way to meet future challenges. Grant-holders also suggested that greater and closer interactions between funders and researchers would be beneficial (n=3).

### **2.3.2. Supporting research outputs and translation**

As shown in Figure 8, many grant-holders felt that funders should do more to support the translation of research outputs into policy and practice. Fifteen grant-holders commented that targeted specific funding at the end of the award to support translation activities would be beneficial. Some of the grant-holders had established good relationships with policy makers but the difficulty of engaging with the right people was raised as a concern. Grant-holders commented that funders were better placed to facilitate this engagement.



**Figure 8. Funding and activities to support research outputs**

Note on Figure 8: The term ‘appoint’ in respect of experts in translation was not defined but was generally taken to mean that funders would provide support for such a post and that the post-holder would work with policy makers and practitioners to ensure translation potential was fully optimised.

## The overall benefits of the NPRI

The grant-holders were not specifically questioned on the overall benefits of the NPRI but across the interviews some common themes regarding the key benefits of the scheme as a whole emerged. Sixteen grant-holders commented that funding for their study would not have been possible without the NPRI and the scheme had filled a gap in the landscape. Nine grant-holders commented that the scheme had raised the profile or improved the quality of prevention research. Ten grant-holders highlighted the annual NPRI meeting at the UK Society for Behavioural Medicine conference as being very beneficial. The meeting allows networking and new collaborations to be formed and the suggestion was made to make this meeting even broader to include policy makers.

# Annex 2

## The specification of each NPRI call

The NPRI was launched on 12 November 2004 at an Open Meeting attended by approximately 100 researchers. The Call for applications (see below) was published in the national press and appropriate scientific or medical journals. There was an outline application stage and the response was overwhelming (248 outline proposals). A flexible approach was taken to the types of awards funded by the NPRI, to allow pilot or feasibility studies, research grants and trials. Applications were welcome for funding for up to 5 years.

### FIRST CALL FOR APPLICATIONS

The following text is taken from the call details.

The NPRI will provide a source of dedicated funding for high-quality research and appropriate infrastructure support aimed at the primary prevention of cancer, coronary heart disease and diabetes.

Outline applications should:

- Have direct relevance to reducing risk and influencing health behaviours including the translation of formative research and the development, evaluation and implementation of effective and cost-effective interventions.
- Address the following key research areas, individually or in combination, within the context of the gap in health equalities: tobacco use; alcohol misuse; physical activity; and diet and nutrition, in particular, but not solely in relation to weight gain and obesity

The NPRI is looking for innovative approaches and fresh ideas from inter-disciplinary collaboration to support high quality research aimed at identifying effective and cost-effective approaches to reduce risk factors and influence health behaviour, possibly through interventions. These approaches should positively impact upon the incidence of new cases of major preventable diseases or conditions such as certain cancers, coronary heart disease and diabetes.

The NPRI will focus on four areas of risk-related health behaviour (below), which may be examined as single factors or as multiple factors affecting one or more of the above diseases or conditions: physical activity, diet and nutrition, tobacco use, alcohol misuse

Continued next page

Continued from previous page

Research applications should consider one or more cross-cutting themes:

- Socioeconomic and other forms of inequality in health, and especially the 'gap' between/among groups.
- The effectiveness of the intervention, and its cost effectiveness, in any eventual implementation.
- The need to identify and address methodologies relating to behavioural change (including: outcome measures; biomarkers; study design, methodological development for naturally occurring experiments), and particularly translation from theory to practice.
- The need to develop better methodologies of assessing and comparing cost-effectiveness of preventive measures

In addition, research applications should consider one or more of the following overarching issues:

- Environment - the wide range of environments within society e.g. open/natural, built, work/school, home, transport, cultural, media and political environments.
- Life course - both inter- and intra- generational issues and transitions between life stages (including foetal, infant, child, adolescent, adult, parent, mid-life, the youngest old and the oldest old).
- Communities and their context - the differences and inequalities experienced by different social, cultural, socio-economic, ethnic and gender groups and how this affects behaviour in different ways

## SECOND CALL FOR APPLICATIONS

The following text is taken from the Call details.

Research must relate to risk reduction and/or health behaviour – specifically tobacco use, alcohol misuse, diet and/or physical activity including their relation to weight management and obesity. The research must aim towards the primary prevention of cancer, coronary heart disease, stroke and diabetes. Applications relating to multiple health behaviours or health outcomes will be received positively, although disease endpoints do not need to be measured or available. In addition, proposals with a particular relevance to deprived communities and/or the differential impact of universal services on different socio-economic groups will be especially welcomed

Applications must specifically focus on one or both of the following:

- Analysis of existing datasets, possibly by the creation of novel linkages, in order to further realise the benefits of past investment and put existing data to new uses relating to health behaviours, their determinants and barriers to change. Proposals may be relevant to policy either by focusing on the evaluation of existing policy or practice, or informing priority policies and practice.
- Role of incentives, including economic incentives, in behaviour or behaviour change of the consumer, retailer, manufacturer or producer in respect of products or services relating to tobacco, alcohol, diet and/or physical activity."

## THIRD CALL FOR APPLICATIONS

The following text is taken from the Call details.

Research funded through the Call will be translational, i.e. based on good science and relevant to practice or policy. It may include studies to develop interventions (including elucidating the underpinning biology), test efficacy, or evaluate effectiveness and cost-effectiveness, and studies to evaluate methods for encouraging the uptake or implementation of interventions known to be effective.

Studies that focus on long-term behaviour change are particularly welcomed, and applicants should be able to indicate they have considered societal factors, health inequalities and the diversity of human culture and condition. Applications relating to multiple health behaviours or health outcomes will be received positively. Disease endpoints do not need to be measured or available.

Researchers are encouraged to involve relevant users in the development of their applications. Partnerships are encouraged where possible, for example between academia, the NHS, LEAs, local government, community groups, and industry. The proposed research must be relevant to multiple funding organisations and meet the strategic aims of the NPRI.

To be relevant to primary prevention, research should focus on healthy individuals or target individuals at particular risk of any of the above health outcomes (e.g. obese individuals, or patients with impaired glucose tolerance). In addition, prevention of a disease or condition within a specific patient group where the preventable disease is either unrelated to or may be a future sequela of the patient's current condition is also within the remit (e.g. prevention of cardiovascular disease in diabetic patients with no current cardiovascular disease diagnosis).

## FOURTH CALL FOR APPLICATIONS

The following is taken from the Call details.

Research funded through the Call will be translational and must be relevant to, or directly impact on, policy and/or practice.

Research will:

- develop interventions (including work to understand the underpinning basis);
- test efficacy of interventions;
- evaluate effectiveness and cost-effectiveness of interventions; and/or
- evaluate methods for encouraging the uptake or implementation of interventions known to be effective.

Interventions with a strong element of joint or communal exposure - characteristic of population-level and community-level interventions - are especially welcome but applications will also be received for individual-level interventions.

In the context of this call, a population-level or community-level intervention is one that is delivered to the entire population or a well-delineated community except where the community is defined by an existing biomarker, health status or health outcome. The key element is that exposure to the intervention is communal. Examples include public bans, legal or fiscal measures such as price increases, advertising restrictions or warning labels, public or community-based education campaigns or the provision of public or community-based guidance.

An individual-level intervention should be considered one where the mechanism of exposure is not communal and is determined by selection on the basis of an existing biomarker or health status. Examples include one-to-one counselling or personalised guidance.

The following multiple example explores differences between intervention types.

- An intervention in which vouchers for healthier food options (from Supermarket X) are posted to everyone in the country would be a population-level intervention;
- An intervention in which vouchers for healthier food options (from Supermarket X) are posted to everyone in a specific city using the postcode address file (say, perhaps to focus on a specific deprived community), would be a community-level intervention;
- An intervention in which vouchers for healthier food options (from Supermarket X) are available to all shoppers at the entrance of outlets in a specific city, would be a community-level intervention; but
- An intervention in which vouchers for healthier food options (from Supermarket X) are offered to any individual, or any family with an individual member, who has been selected because of a specific biomarker (for example, Body Mass Index) or health status (for example, overweight), would be an individual-level intervention.

Continued on next page

Continued from previous page

Studies that focus on long-term behaviour change are particularly welcomed, and applicants should be able to indicate they have considered societal factors, health inequalities and the diversity of human culture and condition. Applications relating to multiple health behaviours or health outcomes will be received positively. Outcome measures must be clearly stated and justified, although it is not necessary that specific disease endpoints are measured or available. Applicants will wish to reflect on intervention feasibility, replicability, scalability, specificity, acceptability and sustainability as well as comparability with other interventions.

Researchers are encouraged to involve relevant users in the development of their applications. Partnerships are encouraged where possible, for example between or among academia, national government and agencies (for example, the NHS), local government and agencies (for example, local education departments), community groups and industry. Applicants should explain what organisations would be approached and how they would be involved.

The proposed research must be relevant to multiple funding organisations and meet the strategic aims of the NPRI.

To be relevant to primary prevention, research should focus on healthy individuals or target individuals at particular risk of chronic non-communicable diseases or conditions such as some cancers, heart and circulatory diseases, diabetes, obesity, stroke and dementia (for example, obese individuals, or patients with impaired glucose tolerance). In addition, prevention of a disease or condition within a specific patient group where the preventable disease is either unrelated to or may be a future sequela of the patient's current condition is also within the remit (for example, prevention of cardiovascular disease in diabetic patients with no current cardiovascular disease diagnosis).

# Annex 3

## National Prevention Research Initiative: Research portfolio

### Project numbers, title and PIs of awards made under calls 1, 2, 3 and 4

Each project was designated a number which appear in square brackets in the report and are listed below with the title of the project and the PI<sup>s</sup> and his or her affiliation.

#### THE NPRI CALL 1 AWARDS (N=26): AWARDS 2005

PROJECT NUMBER	NAME	INSTITUTION	TITLE
1	Dr Peymane Adab	Birmingham University	Preventing childhood obesity in the UK, with a focus on South Asian children
2	Dr Ashley Adamson	Newcastle University	Early origins of obesity: developing strategies for intervention
3	Prof Annie Anderson	Dundee University	Health force - development and feasibility of a peer-led, bodyweight and lifestyle management programme
4	Prof Greg Atkinson	Liverpool John Moores University	Shift work and health: optimal timing of meals and physical activity
5	Prof Raj Bhopal	Edinburgh University	A family based trial for primary prevention of type 2 diabetes in South Asians (RCT)
6	Prof Chris Butler	Cardiff University	Preventing disease through opportunistic, rapid engagement by primary care teams using behaviour change counselling (RCT)
7	Prof Janet Cade	Leeds University	Optimisation of the National School Fruit and Vegetable Scheme (RCT)
8	Dr Ashley Cooper	Bristol University	Environmental determinants of physical activity and obesity in adolescents
9	Prof Rachel Davey	Staffordshire University	Social ecological mapping of physical activity behaviours and health outcomes in deprived inner-city communities
10	Prof Ken Fox	Bristol University	Profiles of physical activity in older adults
11	Prof Mark Gabbay	Liverpool University	Exploring the ability of lay workers to support health-related behaviour change in deprived areas through Heart of Mersey (RCT)
12	Dr Simon Griffin	MRC Epidemiology Unit, Cambridge	Environmental and social influences on physical activity

PROJECT NUMBER	NAME	INSTITUTION	TITLE
13	Prof Gerard Hastings	Stirling University	Assessing the cumulative impact of alcohol marketing communications on youth drinking
14	Prof Graham Hitman	Queen Mary University of London	Diabetes prevention in people from Bangladesh; a pilot trial in east London (RCT)
15	Dr Susan Kerr	Glasgow Caledonian University	Reducing the prevalence of smoking in people with mental health problems: an exploration of the role, knowledge and attitudes of community-based mental health professionals and general practitioners
16	Prof Keith Lloyd	University of Wales Swansea	Lifestyle interventions to improve the physical health of people with severe mental illness: barriers to uptake
17	Dr Richard Morris	University College London	Analysing the decline in the British coronary heart disease epidemic
18	Dr Andrew Russell	Durham University	Regional tobacco control boards - can the US model work in the UK?
19	Prof Aziz Sheikh	Edinburgh University	Promoting smoking cessation in Bangladeshi and Pakistani male adults: pilot randomised controlled trial (RCT)
20	Ms Martine Stead	Stirling University	Buywell: evaluation of a targeted marketing intervention to influence food purchasing behaviour by low income consumers
21	Prof Andrew Steptoe	University College London	Web-based weight loss interventions for African-Caribbean women delivered over the internet in a work place setting
22	Dr Adrian Taylor	Exeter University	Walking as an aid to smoking cessation: a feasibility study in an NHS Stop Smoking Service
23	Dr Luke Vale	Aberdeen University	An economic evaluation of obesity prevention for UK adults
24	Prof Paul Wallace	University College London	DYD-RCT: on-line randomised controlled trial of an interactive web-based intervention for reducing alcohol consumption (RCT)
25	Prof Robert West	University College London	The effect of Tabex (cytisine) on success of attempts to stop smoking (RCT)
26	Prof Peter Whincup	St George's University of London	Early emergence of ethnic differences in chronic disease risk: the contribution of diet and physical activity

## THE NPRI CALL 2 AWARDS (N=14): AWARDS 2008

PROJECT NUMBER	NAME	INSTITUTION	TITLE
27	Dr Jean Adams	Newcastle University	The new TV diet - evaluating the effect of the UK 2007 OfCom restrictions on television food advertising to children
28	Dr Lucy Cooke	University College London	The influence of incentives on children's consumption of vegetables
29	Dr Anne Ellaway	MRC Social and Public Health Research Unit, Glasgow	Availability of and access to physical activity opportunities and links with health behaviours and obesity among adults
30	Dr Mark Hamer	University College London	Physical activity behaviours and mortality risk among South Asian communities living in England
31	Prof Seeromanie Harding	MRC Social and Public Health Research Unit, Glasgow	Do neighbourhood environments contribute to ethnic differences in obesity, physical activity and diets?
32	Prof Sarah Lewis	Nottingham University	A comprehensive evaluation of the impact of English tobacco control policy on smoking cessation activities
33	Prof Laurence Moore	Cardiff University	Free School Breakfast Initiative Data Augmentation and Analysis
34	Prof Chris Riddoch	Bath University	Pooling of children's' physical activity data
35	Dr Andrew Russell	Durham University	Contraband and Counterfeit Tobacco – exploring an economic disincentive to the denormalization of tobacco
36	Dr Murray Smith	Aberdeen University	Economic Appraisal of the Choice and Targeting of Lifestyle Interventions to Prevent Disease in Deprived Populations
37	Dr Martyn Standage	Bath University	The use of incentives in the formation of healthy lifestyle habits following the school to work transition
38	Dr Alison Stephen	MRC Human Nutrition Research Unit, Cambridge	Eating behaviours: tracking through the lifecourse and impact on chronic disease
39	Prof Andrew Steptoe	University College London	Sociodemographic, economic and biomedical determinants of multiple health behaviours in older adults
40	Prof Bruce Traill	Reading University	The effectiveness of fat taxes and thin subsidies in improving diets

## THE NPRI CALL 3 AWARDS (N=15): AWARDS 2009

PROJECT NUMBER	NAME	INSTITUTION	TITLE
41	Prof Annie Anderson	Dundee University	BeWEL the impact of a BodyWEight and physical activity intervention on adults at risk of developing colorectal adenomas
42	Prof Paul Aveyard	Birmingham University	Testing the feasibility of nicotine assisted reduction to stop in pharmacies. The RedPharm Study
43	Prof Stuart Biddle	Loughborough University	An intervention to decrease sedentary behaviour in young adults at risk of type 2 diabetes mellitus
44	Prof Janet Cade	Leeds University	Smart phone: promoting weight loss and improved health using mobile phone technology
45	Prof Simon Capewell	Liverpool University	Prevention IMPACT: developing and evaluating economic models for planning optimal cardiovascular prevention strategies
46	Prof Joan Duda	Birmingham University	A intervention fostering autonomous motivation, physical activity and cardiovascular fitness in rheumatoid arthritis
47	Dr Frank Eves	Birmingham University	Prompting Increases in Stair Climbing at Work to Promote Physical Activity
48	Prof Martin Gulliford	King's College, London	Role of primary care in translating effective lifestyle modification strategies
49	Dr Melvyn Hillsdon	Bristol University	The feasibility of a simple, low-cost, general practitioner delivered intervention to promote physical activity
50	Dr Russell Jago	Bristol University	Development of an after-school programme to increase physical activity and dance skills in 11-12 year old girls
51	Prof Frank Kee	Queen's University of Belfast	Physical Activity and the Regeneration of Connswater (the PARC Study)
52	Prof Laurence Moore	Cardiff University	Preventing substance misuse: Randomised Controlled Trial of the Strengthening Families 10-14 Programme
53	Dr Sharon Simpson	Cardiff University	Healthy Eating and Lifestyle in Pregnancy
54	Prof Jane Wardle	University College London	Randomised controlled trial of habit-based advice for weight control in general practice (The 10TT Trial)
55	Prof Robert West	University College London	The development and evaluation of an internet-based smoking cessation intervention (ISCI)

## THE NPRI CALL 4 AWARDS (N=19): AWARDS 2011

PROJECT NUMBER	NAME	INSTITUTION	TITLE
56	Prof Ashley Adamson	Newcastle University	How can we help parents recognise unhealthy body weight in their children
57	Dr Adrian Taylor	Exeter University	A pilot RCT on the effects of behavioural activation, plus physical activity promotion, for depressed patients
58	Dr Amanda Lewis	Birmingham University	A randomised controlled trial of the effectiveness of brief weight management for obese adults in primary care
59	Dr Amy Ahern	MRC Human Nutrition Research Unit Cambridge	An RCT to test the clinical and cost-effectiveness of primary care referral to a commercial weight loss provider
60	Dr Benjamin Gardner	University College London	Promoting sustained physical activity following retirement: Development of a brief intervention for older adults
61	Dr Christopher Owen	St George's University of London	Will moving into social and affordable housing in the Athletes' Village increase family physical activity levels?
62	Dr Clare Relton	Sheffield University	BONUS Breastfeeding study
63	Dr Dylan Thompson	Bath University	Personalised social marketing of multi-dimensional physical activity profiles in at risk men & women
64	Dr Falko F Sniehotta	Newcastle University	How can weight loss be maintained? Development of an intervention for weight maintenance after initial weight loss
65	Dr Gerard Hastings	Stirling University	Alcohol Control in Scotland and England: Longitudinal Survey of Adult Drinkers
66	Dr Jayne Woodside	Queen's University of Belfast	Peer support to encourage adoption and maintenance of Mediterranean diet: a feasibility and pilot study
67	Dr Kamran Siddiqi	Leeds University	Muslim Communities Learning About Second-hand Smoking-MCLASS Study
68	Dr Linda Irvine	Dundee University	Preventing alcohol-related harm among young women: development and feasibility testing of a community-based intervention
69	Dr Mark Conner	Leeds University	Smoking prevention in young people: A cluster randomised controlled trial of implementation intentions
70	Dr Mike Rayner	Oxford University	The effect of front of pack labelling on consumer choice and purchasing of foods
71	Paul Norman	Sheffield University	Time to change! Using the transition from school to university to promote healthy lifestyle habits in young people
72	Prof Rajalakshmi Lakshman	Cambridge University	Establishing a healthy growth trajectory from birth: The Baby Milk Trial
73	Dr Russell Jago	Bristol University	Action330: Promoting children's physical activity via enhanced after-school leadership
74	Prof Sarah Lewis	Nottingham University	The effectiveness of mass media campaigns in reducing smoking, second-hand smoke exposure and smoking-related disease in England & Wales

# Annex 4

Highly cited papers arising from the NPRI-funded studies

These are the nineteen projects referred to in Chapter 5.1 that had attracted a high level of citations soon after publication. In this table, those publications with an NCI great than 4 are listed. This data was taken from Researchfish in August 2014.

PI SURNAME	PROJECT NUMBER	NPRI PROJECT TITLE	TITLE OF PAPER	JOURNAL	YEAR PUBLISHED	NCI VALUE
Cooper	8	Environmental determinants of objectively measured physical activity and overweight and obesity in adolescents	Moderate to vigorous physical activity and sedentary time and cardiometabolic risk factors in children and adolescents.	JAMA : the journal of the American Medical Association	2011	36.6
Adamson	2	Early origins of obesity: developing strategies for intervention	Longitudinal study of physical activity and sedentary behavior in children.	Pediatrics	2009	10.1
Wallace	24	DYD-RCT: On-line randomised controlled trial of an interactive web-based intervention for reducing alcohol consumption	Impact and costs of incentives to reduce attrition in online trials: two randomized controlled trials.	Journal of Medical Internet Research	2011	9.6
Griffin	12	Environmental and social influences on physical activity	Effect of school-based interventions on physical activity and fitness in children and adolescents: a review of reviews and systematic update.	British Journal of Sports Medicine	2011	9.4
Hastings	13	Assessing the Cumulative Impact of Alcohol Marketing Communications on Youth Drinking	Impact of alcohol advertising and media exposure on adolescent alcohol use: a systematic review of longitudinal studies.	Alcohol and Alcoholism	2009	9.3

PI SURNAME	PROJECT NUMBER	NPRI PROJECT TITLE	TITLE OF PAPER	JOURNAL	YEAR PUBLISHED	NCI VALUE
Capewell	45	Prevention IMPACT: developing and evaluating economic models for planning optimal cardiovascular prevention strategies	Proportion of the decline in cardiovascular mortality disease due to prevention versus treatment: public health versus clinical care.	Annual Review of Public Health	2011	8.8
Griffin	12	Environmental and social influences on physical activity	Effect of early intensive multifactorial therapy on 5-year cardiovascular outcomes in individuals with type 2 diabetes detected by screening (ADDITION-Europe): a cluster-randomised trial.	Lancet	2011	8.4
Capewell	45	Prevention IMPACT: developing and evaluating economic models for planning optimal cardiovascular prevention strategies	Cardiovascular health behavior and health factor changes (1988-2008) and projections to 2020: results from the National Health and Nutrition Examination Surveys.	Circulation	2012	6.8
Capewell	45	Prevention IMPACT: developing and evaluating economic models for planning optimal cardiovascular prevention strategies	Cardiovascular risk factor trends and potential for reducing coronary heart disease mortality in the United States of America.	Bulletin of the World Health Organization	2010	6.7
Capewell	45	Prevention IMPACT: developing and evaluating economic models for planning optimal cardiovascular prevention strategies	Decline in mortality from coronary heart disease in Poland after socioeconomic transformation: modelling study.	BMJ (Clinical research ed.)	2012	6.4

PI SURNAME	PROJECT NUMBER	NPRI PROJECT TITLE	TITLE OF PAPER	JOURNAL	YEAR PUBLISHED	NCI VALUE
West	25	The effect of Tabex (cytisine) on success of attempts to stop smoking	Placebo-controlled trial of cytisine for smoking cessation.	The New England Journal of Medicine	2011	6.4
Capewell	45	Prevention IMPACT: developing and evaluating economic models for planning optimal cardiovascular prevention strategies	Association of temporal trends in risk factors and treatment uptake with coronary heart disease mortality, 1994-2005.	JAMA : the Journal of the American Medical Association	2010	6.1
West	25	The development and evaluation of an internet-based smoking cessation intervention (ISCI)	A pilot study of StopAdvisor: a theory-based interactive internet-based smoking cessation intervention aimed across the social spectrum.	Addictive Behaviors	2012	6.1
Griffin	13	Environmental and social influences on physical activity	Targeting sedentary time or moderate- and vigorous-intensity activity: independent relations with adiposity in a population-based sample of 10-y-old British children.	The American Journal of Clinical Nutrition	2009	5.6
Lewis	74	A comprehensive evaluation of the impact of English tobacco control policy on smoking cessation activities	Can data from primary care medical records be used to monitor national smoking prevalence?	Journal of Epidemiology and Community Health	2012	5.5
Capewell	45	Prevention IMPACT: developing and evaluating economic models for planning optimal cardiovascular prevention strategies	Healthy lifestyle behaviours and all-cause mortality among adults in the United States.	Preventive Medicine	2012	5.5

PI SURNAME	PROJECT NUMBER	NPRI PROJECT TITLE	TITLE OF PAPER	JOURNAL	YEAR PUBLISHED	NCI VALUE
Griffin	12	Environmental and social influences on physical activity	Physical activity and dietary behaviour in a population-based sample of British 10-year old children: the SPEEDY study (Sport, Physical activity and Eating behaviour: environmental Determinants in Young people).	BMC Public Health	2008	5.3
Whincup	26	Early emergence of ethnic differences in chronic disease risk: the contribution of diet and physical activity	Ethnic and gender differences in physical activity levels among 9-10-year-old children of white European, South Asian and African-Caribbean origin: the Child Heart Health Study in England (CHASE Study).	International Journal of Epidemiology	2009	5.3
Griffin	12	Environmental and social influences on physical activity	Attitudes, social support and environmental perceptions as predictors of active commuting behaviour in school children.	Journal of Epidemiology and Community Health	2010	5.0
Cooper	8	Environmental determinants of objectively measured physical activity and overweight and obesity in adolescents	Mapping the walk to school using accelerometry combined with a global positioning system.	American Journal of Preventive Medicine	2010	4.0
Biddle	43	An intervention to decrease sedentary behaviour in young adults at risk of type 2 diabetes mellitus	Rationale and study design for a randomised controlled trial to reduce sedentary time in adults at risk of type 2 diabetes mellitus: project stand (Sedentary Time AND diabetes).	BMC Public Health	2011	4.9

PI SURNAME	PROJECT NUMBER	NPRI PROJECT TITLE	TITLE OF PAPER	JOURNAL	YEAR PUBLISHED	NCI VALUE
Capewell	45	Prevention IMPACT: developing and evaluating economic models for planning optimal cardiovascular prevention	Persistent socioeconomic inequalities in cardiovascular risk factors in England over 1994-2008: a time-trend analysis of repeated cross-sectional data.	BMC Public Health	2012	4.9
Capewell	45	Prevention IMPACT: developing and evaluating economic models for planning optimal cardiovascular prevention	Trends in cardiovascular disease biomarkers and their socioeconomic patterning among adults in the Scottish population 1995 to 2009: cross-sectional surveys	BMJ Open	2012	4.8
Cooper	8	Environmental determinants of objectively measured physical activity and overweight and obesity in adolescents	Greenspace and children's physical activity: a GPS/GIS analysis of the PEACH project.	Preventive Medicine	2013	4.8
Whincup	26	Early emergence of ethnic differences in chronic disease risk: the contribution of diet and physical activity	Patterns of body size and adiposity among UK children of South Asian, black African-Caribbean and white European origin: Child Heart And health Study in England (CHASE Study).	International Journal of Epidemiology	2013	4.7
Wallace	24	DYD-RCT: On-line randomised controlled trial of an interactive web-based intervention for reducing alcohol consumption	Methodological challenges in online trials.	Journal of Medical Internet Research	2013	4.7
Hamer	30	Physical activity behaviours and mortality risk among South Asian communities living in England	Assessment of physical activity levels in South Asians in the UK: findings from the Health Survey for England	Journal of Epidemiology and Community Health	2011	4.4

PI SURNAME	PROJECT NUMBER	NPRI PROJECT TITLE	TITLE OF PAPER	JOURNAL	YEAR PUBLISHED	NCI VALUE
Adamson	2	Early origins of obesity: developing strategies for intervention	Physical activity, sedentary behavior, and adiposity in English children.	American Journal of Preventive Medicine	2010	4.4
Griffin	13	Environmental and social influences on physical activity	Neighbourhood, route, and school environments and children's active commuting.	American Journal of Preventive Medicine	2011	4.3
Adamson	2	Early origins of obesity: developing strategies for intervention	Correlates of objectively measured physical activity and sedentary behaviour in English children.	European Journal of Public Health	2009	4.2
Atkinson	4	Shiftwork and Health: optimal timing of meals and physical activity	Lifestyle factors and colorectal cancer risk (1): systematic review and meta-analysis of associations with body mass index	Colorectal disease : the official journal of the Association of Coloproctology of Great Britain and Ireland	2011	4.1

# Annex 5

THE NPRI SCIENTIFIC REVIEW GROUP (SRG)

RESEARCH PRIORITISATION WORKSHOP

## SCOPING FUTURE OPPORTUNITY IN PREVENTION RESEARCH

**1 and 2 October 2014  
Royal Berkshire Hotel, Ascot**

### Introduction

A workshop on prevention research priorities was held over 2 days in Ascot on 1 and 2 October 2014 to develop potential priority areas. The discussion aimed to identify opportunities in the light of the current landscape of public health research relevant to prevention. This is a summary report to reflect the views expressed at the workshop.

### Intended Audience for This Report

The intended audience for this report includes all those involved in the research process for prevention research including academics and other researchers, Research Councils, health research charities, other research funders and commissioners.

### About the workshop

The workshop was split into three activities:

1. Four presentations giving an overview of the NPRI portfolio, the public health landscape (two presentations) and the best way of working with policy makers to increase the potential for translation into policy and practice
2. Open discussion in plenary sessions
3. Two group sessions where participants were split initially three groups to draw up potential future research themes and them into two groups to synthesise these.

After presentations and discussion on the changing landscape for public health, participants were divided into three groups with a mix of expertise to draw up a list of research themes for future primary prevention research.

# Summary of findings

Table 2 on page 34 summarises the key research priorities identified during the discussion on day 1. Further finessing of these priorities occurred on day 2 leading to the two themes listed on page 66. The discussions leading to these priorities can be found in the accompanying text.

## DAY 1

The Chairman reminded the Group that the aim for the workshop was to scope future opportunity in prevention research and that should be informed by the NPRI evaluation. Discussion was informed by a presentation on the public health landscape from Dr Janet Valentine and reflections on public health research in NIHR by Professor Catherine Law. Dr Gavin Malloch also relayed the perspective of the NPRI grant-holders.

## Context

### Changing Funding Landscape – Presentation by Dr Janet Valentine

The two UK Health Research Analysis report published in 2006 and 2012 provided an overview and comparison of all types of health research activity for the year 2004/5 and 2009/2010. Both used the Health Research Classification System (HRCS)<sup>6</sup> and included the health research portfolios of 12 of the largest government and charity health-related research funders. Both analyses had highlighted the relatively low investment in prevention research. Funding for primary prevention<sup>1</sup> research by those contributing to the UKCRC HRCS analysis of 2004/5 showed a Figure of £4,976,166 for primary prevention (0.5% of total spend) with CRUK and MRC the major contributors. Funding for primary prevention increased to £21,730,313 (1.3% of total spend) in 2009/10 when MRC and DH/NIHR were the major contributors. The expansion was notably due to DN/NIHR (from £1.35m to £10.7m in 5 years).

The 2004/5 report captured the research spend of the Department of Health just prior to the establishment of NIHR. The Department's budget for research and development increased 48% between 2004/05 and 2009/10 and the total spend on research for all the funders increased from £965m to £1,636m.

During the life time of the NPRI there were significant changes in public sector funding responsibilities and funding for public health. Therefore it was important that the SRG took into account these changes and available funding schemes in their deliberations.

The HRCS analyses in 2002 and 2006 had catalysed multi-funder reviews and joint initiatives. The first of these new initiatives was the NPRI. The other major joint funding initiative was the UKCRC Public Health Research Centres, established to strengthen public health research in the UK and build capacity across public health research. The Centres now in their second five year funding term had increased the UK public health research infrastructure (£16m total investment) and engaged with stakeholders in policy and practice to facilitate the translation of research. In addition to joint funding schemes, individual funders had also initiated dedicated public health initiatives including the NIHR Public Health Research programme, the NIHR School for Public Health Research and the MRC Public Health Intervention Development (PHIND) scheme. Most funders had fellowships schemes that were open to public health researchers with some having specific population health fellowship schemes.

### Reflections on public health research – Presentation by Professor Catherine Law

Professor Law provided her reflections on public health research based on her experience after 6 years as Programme Director of the NIHR Public Health Research Programme. She emphasised that her views were personal and not necessarily the views of the NIHR.

Professor Law highlighted progress in the availability of funding streams, increasing capacity development, use of secondary data sources/resources and epidemiology; and multi-disciplinary/team science.

There was also significant challenge including the need to further the capacity to develop innovation and move the research agenda away from “more of the same”. There was also inherent caution and conservatism in peer review and there remained a significant academic/practice gap.

Taken together this provided opportunities in intervention development, research on/in/with systems, context specificity, operationalizing a life-course approach, and in addressing inequalities. There were opportunities for more patient and public involvement and working with industry. Further work is needed in generating evidence syntheses to assist public health decision making.

In discussion the SRG commented that while risk factors had become common proxy outcomes for diseases it was not clear what the size of the effect of these risk factors were on specific disease causation. The issue of how to innovate methods to evaluate policy using short time frames was also raised.

### The views of the NPRI grant-holders – Dr Gavin Malloch

Dr Malloch reported that during the interviews with NPRI grant-holders they had been asked for their views on the future of prevention research in the UK. They had reported a wide range of future challenges and opportunities in prevention research, which was to be expected given the wide range of research areas they were working in. The types of challenges and opportunities presented by the grant-holders could be grouped into different categories; target health behaviour/outcome, intervention type/approach and underpinning factors.

The grant-holders suggested fourteen target health behaviours or outcomes that are challenges for the future with the most common suggestions being diet/obesity and tobacco and alcohol. This appeared to reflect their own research interests. The grant-holders suggested a range of intervention type and approaches as a priority for the future. There was support for continuing behaviour change approaches at the individual level but the most frequently cited intervention type was national policy change as seen in Table 1, reflecting a growing view that this was the most effective way of bringing about change in large populations despite their inherent lack of political and public support. There was comparatively little mention of whole systems approach.

INTERVENTION TYPE/APPROACH	NUMBER OF GRANT-HOLDERS
Policy change	11
Population/environment change	8
Individual behaviour change (incl. understanding and maintenance of)	8
Whole systems approach	3

**Table 1. Intervention type/approach**

The grant-holders were also questioned on two aspects of how the future challenges in prevention research might be supported; the most appropriate type of funding and supporting research outputs into translation. By far the most common response (n=21) was to continue the NPRI (that is launch ‘NPRI-5’) but nearly as many

(17) raised the need to support feasibility work. The latitude within the NPRI to carry out feasibility work and then implement the findings within the ambit of the NPRI grant, or with follow-up funding was particularly welcomed. The MRC Public Health Intervention Development Scheme (PHIND) was mentioned as a positive addition to the funding landscape but that more funding in this area would be beneficial.

Grant-holders also suggested several routes to enhancing research outputs and translation as shown in Figure 1.

Many grant-holders felt that funders could do more to support research outputs and translation into policy and practice. Fifteen of the grant-holders commented that targeted specific funding at the end of the award to support translation activities would be beneficial. Some of the grant-holders had established good relationships with policy makers but the difficulty of engaging with the right people was raised as a concern. Grant-holders commented that funders are well placed to facilitate this engagement.

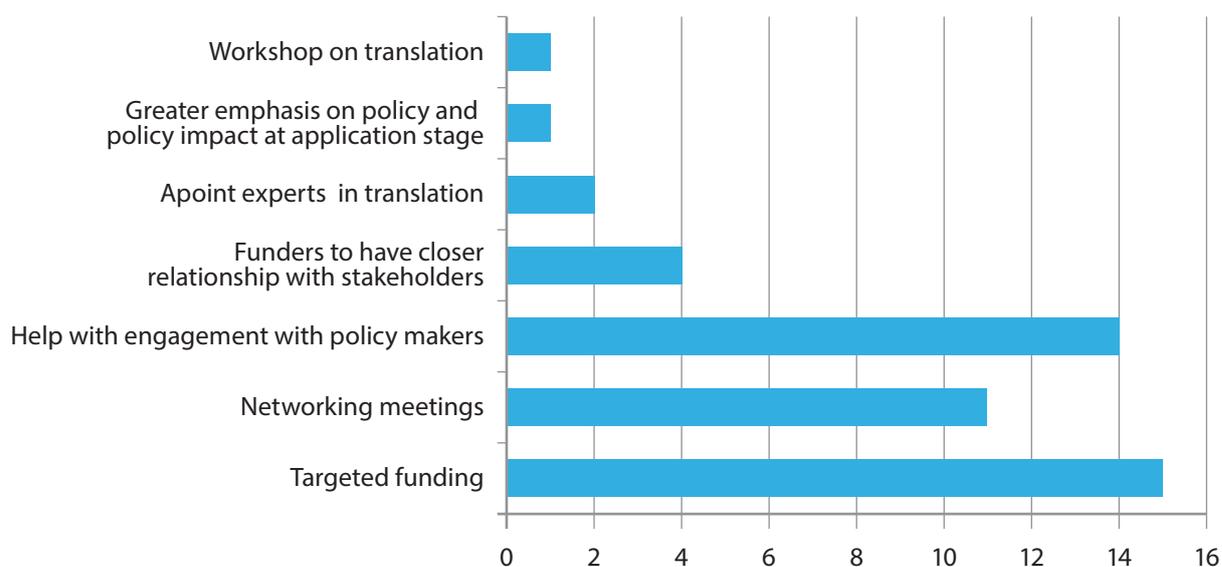


Figure 1. Funding and activities to support research outputs

### Future opportunities: Identification of research challenges

Participants were divided into three groups with a mix of expertise to draw up a long list of research themes for future primary prevention research. The three groups then combined in plenary to share thoughts, leading to a combined list of research themes.

During the plenary session, delegates noted that common themes had clearly emerged during the breakout discussion. Noticeable was the agreement around the need to identify how, when and why an intervention was successful so that opportunities for scalability and use in different contexts was maximised. Some NPRI-supported research projects may have been effective due to the nature of the delivery vehicle for example, or because it had targeted a 'teachable' moment which had been an unexplored opportunity. Understanding the mechanisms of an intervention was considered a need, and an opportunity for the development of new interventions, as well as a more efficient use of existing ones. It would inform on why interventions did not work which might in turn inform disinvestment which was a current focus of policy makers given fiscal austerity measures.

The delegates also raised an approach to delivery based on 'systems thinking', taking account of the complex social system of a community, school or worksite in such a way as to maximise the impacts of interventions.

Delegates raised the notion of working towards a 'health improvement system' in which resources might be moved around the system to maximise the efficiency of population health improvement.

Across all these areas there was clearly opportunity to exploit recent developments in trial methodology and to build on current progress in informatics.

## Summarising the research challenges

Following the plenary feedback at the end of day 1 the research challenges identified were summarised into research themes under sub-headings as shown in table 3.

METHODS AND DESIGN	UNDERSTANDING THE ACTIVE INGREDIENT OF INTERVENTIONS	TEACHABLE MOMENTS	SYSTEMS APPROACH	COMMUNITY/ POPULATION INITIATIVES
Operationalising the life course approach	Generalisability - ability to apply an intervention to different setting and target groups	Targeting interventions at teachable moments and transitions – Do we know enough about what they are?	Mapping and identifying key nodes for change in complex systems	Community network analyses
Modelling	Scalability			Measuring economic and wider benefits
Better use of existing data	Delivery vehicles			
Developing surrogate markers	Understanding mechanisms of behaviour change			

Table 2: Summary of 'day 1' research themes under sub-headings

Day 1 ended with a talk from Dr Tim Wilson, Partner, Health Industries, PricewaterhouseCoopers LLP. He highlighted the advent of the internet and social media and the use of these new technologies to monitor behaviour, for example through smartphones. The older models of communication and monitoring on which the NPRI were originally based are now outmoded so there was a challenge around understanding how these new approaches are relevant and how they can be used most effectively.

## DAY 2

### Policy needs in prevention research.

The day opened with a talk by Professor Susan Jebb on the policy needs in prevention research. Professor Jebb highlighted how academic research sets the scene but does not take the outputs far down the track to policy and practice. The need for less observational data which describes a known problem and more solution-focused research - what, when and who should act, the costs and benefits, the risks to everyone involved, was highlighted.

When consulted about their research needs, policy makers identified the following:

- Visionary: Modelling of future trends, future scenarios
- Creative: ahead of policy agenda, not lagging behind
- Solution-focused: a coherent intervention/strategy for change
- Process measures: e.g. feasibility, sustainability, equity
- Holistic: Consideration of wider benefits and unintended consequences, comparisons with other policies
- Economic: ROI, making the business case for investment
- Qualitative: what do consumers think/want?
- Engagement: Involving policy makers

The following were proposed as helpful to address policy maker needs and closer engagement between academic researchers and policy makers:

- **Describe the range of options available** - Frameworks which set out the policy options (education, choice architecture, fiscal etc.) are popular and stimulate thinking.
- **Consider new thinking from scientific community** the notion of the 'causes of the causes' shaped new thinking, (perhaps 'systems' analysis is the next step)?
- **Document other benefits to health or wider society** - useful in developing impact assessment and engaging interest across government e.g. benefits of active travel for health, environment and social cohesion, or reductions in meat on health and sustainable agriculture.
- **Consider the risks, especially of unintended consequences and how can these be mitigated** – for example could health inequalities be widened by the approach proposed.
- **Measure cost effectiveness** - Assessment of costs and benefits, refining assumptions in standard models. Great opportunity to develop more sophisticated methods which reflect the inherent uncertainty.
- **Consider the Impact of policies on inequalities** - Need for specific research to prioritise the most vulnerable groups by age, gender, SES, region. Recognition that despite years of effort, very few signs of closing the gap. Need new approaches to this issue.
- **How acceptable are the policies to stakeholders/public?** - Qualitative research is highly valued, but more needed to explore the gap between public perceptions and actual behaviour.
- **How can opinion be mobilized to support policy action?** - Accepting that some interventions may not be acceptable in current climate, how can we create social movements for change?
- **Summaries** - Evidence synthesis across a body of research and citizens in the discussion.

## Expansion of the research themes

Having endorsed the summary of themes, the delegates broke out into two new groups to add further details to the research themes from day one. The following points were raised when reporting back:

### Group One

- Innovative methods need to be embedded within the research
- The 'active ingredient' needs to be identified – requires multi-level conceptual frameworks that are grounded in theory and context to understand the mechanism of behavioural change
- Translation into what works, for whom, when and in what circumstances
- More population level interventions are required that are at a systems or area level – multi-dimensional
- Greater participation and engagement with stakeholder is needed to identify priorities and deliver interventions through co-production
- Working up systems level interventions will require workshops with the community and stakeholders – this could not be delivered immediately through a call for proposals

## Group Two

- More theoretical research to understand impact on health outcomes of health and non-health based interventions – testing theories and learning from the past
- A life course approach is needed with interventions tailored to suit different needs at different ages – identifying the optimal point for intervening
- Should be shift towards more population based research moving away from individual level-interventions

## Synthesising the research themes

The groups then reconvened in plenary to highlight key overarching issues and to finally synthesise the research themes into a smaller number of topics

## Key overarching issues

### TO IMPROVE THE PROSPECTS FOR TRANSLATION OF INTERVENTIONS

In terms of gaps more thought was needed to ensure that studies adequately captured possible interactions and confounders, effect size, SES and target population metadata. To improve the prospects for translation of interventions in different settings studies should seek to elucidate the theory and mechanism of an intervention so that the 'active ingredients' that underpin the success or generalizability of an intervention are known i.e. identifying the 'active ingredient' of why an intervention was successful (or not).

### COMPLEX AND INTERLINKED OVERLAPPING SYSTEMS

The focus for prevention needs to shift to take a whole systems approach, thinking about the population and the environment, not the individual. Systems approaches require us to think about all of the elements that create an environment, community or setting. Secondly, the Group highlighted the observation that most research tends to focus on one intervention and its effect on a limited number of outcomes when the reality is that the research takes place in highly complex systems where there are wider determinants and multiple synergistic influences. Co-production and engagement with stakeholders was seen as crucial to design complex systems-based intervention approaches.

### METHODOLOGY AND DATA

Methodological research is needed to develop and evaluate behaviour within complex systems. Existing data sets need to be more open, easier, and cheaper to access to allow more secondary analysis/reanalysis of existing data sets. Better ability to link social care and health data would also facilitate further research.

### ADDITIONAL ISSUES ARISING

Delegates also recorded the elements that were considered to be essential or desirable components of future research projects. The delegates agreed that:

- research should evaluate health outcome measures of health and non-health interventions
- there should be more scope to evaluate existing interventions
- prevention should include primary and secondary prevention in the context of promoting health in groups with existing conditions
- extending the existing NPRI focus to other communicable diseases linked to risk taking behaviours would help meet the challenge of emerging public health issues such as gambling
- there was a need for more comprehensive collection and reporting of SES data
- it should be mandatory to publish study findings regardless of the outcome
- researchers must engage with appropriate stakeholders such as end-users
- prevention research could benefit from being more embedded in other academic disciplines such as informatics, trial design and social science to maximise the innovation possible

## Conclusion – the research topics identified

The Group concluded that there are opportunities given the developments in the field and expertise now available to develop a strategic approach to future prevention research. There was agreement that gaps in the research prevention landscape still existed even given the NIHR public health research programme and the MRC PHIND scheme. The two areas that the group agreed were currently not covered or where there was potential for a new or multi-funder scheme were:

- Intervention design – mechanisms and methodology to identify the active ingredients of new or existing interventions
- Interventions delivered using a systems and complex population/area level approach

# Research prioritisation workshop - Participants and agenda

## AGENDA DAY ONE

TIME	AGENDA ITEM	FORMAT	LEAD
15:05 to 15:15	Context – the public health landscape	Presentation	Janet Valentine
15:15 to 15:25	Reflections on public health research in NIHR	Presentation	Catherine Law
15:25 to 15:35	Feedback of possible areas for future focus	Presentation	Gavin Malloch
15:35 to 15:40	Aims of break-out groups	Presentation	Gavin Malloch
15:45 to 16:30	Developing and clustering themes for new opportunities in prevention research	Break out groups	
16:30 to 17:15	Feedback and discussion of themes	Plenary	

## AGENDA DAY TWO

TIMES	AGENDA ITEM	FORMAT	LEAD
08:30 to 09:00	Policy needs in prevention research – the diet/nutrition example	Presentation	Susan Jebb
09:00 to 09:05	Aims of next break-out session	Presentation	Janet Valentine
09:05 to 10:15	Synthesis of research challenges from clusters on day one	Breakout in new groups	
10:15 to 10:30	Break		
10:30 to 11:15	Plenary session for feedback		
11:15 to 11:30	Short break while funders and Chair draw up themes		
11:30 to 11:45	Prioritisation on importance		
11:45 to 12:00	Summary of decisions and further action		Phil Hannaford
12:00	End of meeting		

## ATTENDEES

SRG MEMBERS			
Professor	Philip	Hannaford (Chair)	University of Aberdeen
Professor	Linda	Bauld	University of Stirling
Professor	Rona	Campbell	University of Bristol
Professor	Cam	Donaldson	Glasgow Caledonian University
Professor	Susan	Jebb	University of Oxford
Professor	Theresa	Martean	University of Cambridge
Professor	Tim	Peters	University of Bristol
Dr	Andrew	Fraser*	NHS Health Scotland
Mr	Paul	Lincoln*	UK Health Forum
Mr	Chris	Roberts	Welsh Government

FUNDERS			
Dr	Kate	Allen	World Cancer Research Fund International
Dr	Nicola	Armstrong	HSC Research & Development Division, Public Health Agency (NI)
Mr	Michael	Bowdery	Health and Care Research Wales <sup>7</sup>
Dr	Kate	Holmes	Stroke Association
Dr	Christine	McGuire	Department of Health
Dr	James	Pickett	Alzheimer's society
Dr	Alasdair	Rankin	Diabetes UK
Dr	Rosa	Sancho	Alzheimer's Research UK
Mrs	Joy	Todd	Economic and Social Research Council
Dr	Mary	Travers	Biotechnology and Biological Sciences Research Council
Mrs	Kate	Aylett	Medical Research Council (MRC)
Dr	Gavin	Malloch	Medical Research Council (MRC)
Dr	Janet	Valentine	Medical Research Council (MRC)

GUESTS AND SPEAKERS			
Professor	Catherine	Law	Institute of Child Health, University College London
Dr	Tim	Wilson**	Partner, Health Industries PricewaterhouseCoopers LLP

\* first day only

\*\* only end of first day

# Endnotes

1. During the NPRI the funding partner was the NISCHR which has now been incorporated into a Directorate of Health and Care Research Wales.
2. Publications from four studies could not be assessed by SRG members in time for the SRG meeting on 1 and 2 October.
3. Twelve of the award holders were interviewed regarding two projects.
4. Sustrans is a charity that works with communities, policy makers and partner organisations to promote healthier, cleaner and cheaper journeys and enjoy better, safer spaces to live in.
5. The PI shown is the name of the individual who was awarded the grant as PI. In some cases, the PI has changed subsequent to the award.
6. HCRS also includes a category called "Interventions to alter physical and biological environmental risks" which other funders may have used to code prevention research but nearly all NPRI research is coded as primary prevention. The meta-HRCS category "prevention" includes research on vaccines so this value has not been reported.
7. During the NPRI the funding partner was the NISCHR which has now been incorporated into a Directorate of Health and Care Research Wales.